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TRADE AND DEVELOPMENT INDEX

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PREFACE

by Dr. Supachai Panitchpakdi, Secretary-General, UNCTAD

Development is the fundamental vocation of UNCTAD. In the context of growing interdependence among nations in today's globalizing world economy, trade and development are becoming increasingly interrelated. The contribution of trade to development depends greatly on the context in which it works and the ends it serves. To act as a genuine engine of development, trade must lead to steady improvements in human conditions by expanding the range of people's choices. This is the central concern of this new publication entitled *Developing Countries in International Trade*.

The trade and development index (TDI), which is the heart of the report, is an attempt by the UNCTAD secretariat to capture the complex interaction between trade and development and, in the process, to monitor the trade and development performance of countries. Such performance is not merely the sum of trade expansion and economic growth. Instead, it is a composite notion, reflecting the interplay among the many factors that determine trade outcomes and development outcomes.

The TDI is designed as a mechanism for monitoring the trade and development performance of countries, a diagnostic device to identify factors affecting such performance, and a policy tool to help stimulate and promote national and international policies and actions for development and poverty reduction. It will also contribute to the follow-up of the Millennium Development Goals and the outcome of the 2005 World Summit.

In addition, the framework will allow comparison of the TDI scores of developing countries with those of developed OECD countries, which should serve as a long-term trade and development benchmark for developing countries, and with the newly acceded EU member countries as medium- to long-term benchmarks.

We hope that the TDI, which is a work in progress, will contribute to fulfilment of the relevant mandate given to the UNCTAD secretariat by the São Paulo Consensus. Further work on the TDI will require country-level analysis, which will help UNCTAD to concentrate more on national trade and development policies. It will also provide a broad frame of reference for the overall activities of the secretariat, thereby enhancing the coherence of our work.

Finally, I am proud that the TDI is entirely the result of work by UNCTAD secretariat staff members, and I warmly commend those involved for their efforts. I am also deeply grateful to Nobel Laureate Professor Lawrence R. Klein for his wise and generous guidance in connection with this work.

Supachai Panitchpakdi

FOREWORD

by Professor Lawrence R. Klein, Nobel Laureate in Economic Sciences

The world economy is a many-faceted thing. The traditional way of describing its magnitude and role of expansion is through valuation of its total volume of production, often as a rate-of-change and often in per capita terms. Real per capita gross world product is not the only key concept for such measurement, although it has served economists well, in increasingly refined calculations, but it behooves economic analysts to move on to other dimensions for judging world economic health and the very name of UNCTAD, the United Nations Conference on Trade and Development provides an immediate thought of a new step for more revealing measurement, namely, through a quantitative Trade and Development Index (TDI). I fully support this step forward by the Secretariat and congratulate them for undertaking the formidable task of analyzing the complex array of trading activities among, effectively, all the nations of the world.

In familiar summaries of the World economic situation, we have become accustomed to examining Gross World Product (GWP) as an appropriate average of the Gross Domestic Product (GDP) of the individual economies. GWP or GDP are not the only measures that we need to consult in order to gain an immediate description of the world economic situation. The next major indicator should be the volume of world trade, made up of all the export volumes flowing in a chosen period of time, or, what should be equivalent, all the corresponding import volumes.

To throw more light on the complex world economic situation the TDI should be prepared for developing and more advanced economies to show the paths along which trade moves from country-to-country, among the trading partners, at various important stages of economic development. This promises to add immensely to our understanding of the functioning of the world economy.

It will serve to promote understanding world economic performance in terms of structural and institutional factors, trade policies and processes, and level of development.

In order to appreciate the working of the world's system of trading activities, in both goods and services, it will be important to use quantitative methods that distill the key underlying forces of a very complex process. In this respect, the indices to be computed will be based on a multivariate statistical approach known as principal component analysis. This will enable one to compose time periods, regions of the total world economy, and the identification of the sources of healthy economic development. It will enhance our understanding of what is taking place in the intricate pattern of trading relationships, and thus provide guidance for international economic policy.

Lawrence R. Klein

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Developing Countries in International Trade 2005 was prepared under the general direction of Lakshmi Puri, Director of the Division on International Trade in Goods and Services, and Commodities. Khalil Rahman, Chief of the Trade Analysis Branch, led the team of staff members responsible for preparing this report. Chapter 1, on the trade and development index (TDI) was prepared by Sudip Ranjan Basu, Marco Fugazza and Khalil Rahman. Chapter 2, on the determinants of export performance is based on empirical work by Marco Fugazza. Chapter 3, on adjusting to trade reforms, derives from work by Santiago Fernández de Córdoba and Sam Laird drawing upon a number of country case studies.

Support and guidance by Professor Lawrence R. Klein in developing the TDI are gratefully acknowledged. Professor A. L. Nagar made technical comments on the methodology of the TDI and its statistical properties. Comments on the concept, methodology and results of the TDI were also received from Professor Patrick Conway, Andrew Cornford, Victor Ognivtsev, Taffere Tesfachew, Hiroaki Kuwahara, Bonapas Onguglo, Robert Hamwey and Lucian Cernat. Fabien Dumesnil provided statistical assistance.

Consultations were carried out with staff members of a number of international organizations, including the World Bank, the International Monetary Fund and the United Nations Department of Economic and Social Affairs. Background papers benefited from comments by Jörg Mayer and Professors Diana Tussie, Frédéric Robert-Nicoud, Patrick Messerlin and Joseph Francois, and participants in seminars at UNCTAD and the University of Geneva.

Desktop publishing was done by Jenifer Tacardon-Mercado. Diego Oyarzun-Reyes designed the cover. Graham Grayston edited the report. Chris MacFarquhar, Brigitte Ruby, Jean-Marc Humblot, Tadib Muqtada and Josie Maximo provided support to the preparation of the report.

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ABBREVIATIONS

ACP	African, Caribbean and Pacific
AD	anti-dumping
ADM	anti-dumping measures
BNDES	Brazilian Development Bank
BOP	balance of payments
CGE	computable general equilibrium
CIP	competitive industrial performance
CIS	Commonwealth of Independent States
CV	coefficient of variation
DITC	Division on International Trade in Goods and Services and Commodities, UNCTAD
EAP	East Asia and Pacific
ECDR	*E-commerce and Development Report*
ED	economic development
ES	environmental sustainability
ET	economic structure
EU	European Union
FDI	foreign direct investment
FE	financial environment
FTAA	Free Trade Area of the Americas
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GD	gender development
GDI	gender development index
GDP	gross domestic product
GSP	generalized system of preferences
GSTP	Global System of Trade Preferences Among Developing Countries
HC	human capital
HDI	human development index
ICAO	International Civil Aviation Organization
ICRG	International Country Risk Guide
ICT	information and communication technology
IEA	International Energy Agency
IFI	international financial institutions
IMF	International Monetary Fund
IQ	institutional quality
IRF	International Road Federation
ITU	International Telecommunication Union
LAC	Latin America and Caribbean
LD	level of development
LDC	least developed country
MA	market access
MDGs	Millennium Development Goals
MENA	Middle East and North Africa
MERCOSUR	Southern Common Market

MFN	Most favoured nation
MHT	medium and high technology
MTS	multilateral trading system
MVA	Manufacturing value added
NAMA	non-agricultural market access
NIE	newly industrializing economy
NTB	non-tariff barriers
NTM	non-tariff measures
OECD	Organisation for Economic Co-operation and Development
OT	openness to trade
PC	principal component
PCA	principal component analysis
PI	physical infrastructure
PPP	purchasing power parity
REER	real effective exchange rate
RTA	regional trade agreement
SD	social development
SDT	special and differential treatment
SEE	South-Eastern Europe
SI	structural and institutional
SME	small and medium-sized enterprise
SOA	South Asia
SPS	sanitary and phytosanitary
SSA	Sub-Saharan Africa
TAB	Trade Analysis Branch, DITC
TAM	trade assessment mechanism
TBT	technical barriers to trade
TDI	trade and development index
TNC	transnational corporation
TP	trade policies and processes
TRAINS	Trade Analysis and Information System
TRIM	Trade-related investment measures
TRIPS	Trade-related aspects of intellectual property rights
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization
USD	United States dollar
WB	World Bank
WHO	World Health Organization
WTO	World Trade Organization

OVERVIEW

OVERVIEW

In the current economic environment of globalization, trade plays an increasingly important role in shaping economic and social performance and prospects of countries around the world, especially those of developing countries. This new series, *Developing Countries in International Trade* (DCIT), aims to analyse key trade and development issues facing developing countries on an annual basis. To organize the analytical work, an attempt has been made to develop a conceptual framework to account for the complex interaction of factors affecting trade and development. This interaction is expressed in terms of the Trade and Development Index (TDI), which is the subject matter of Chapter 1. Two special issues are taken up in this report. An in-depth empirical treatment of the determinants of export performance is provided in Chapter 2. In Chapter 3, the issue of adjustment to trade reforms is analysed.

The Heads of State and Government at the 2005 World Summit reaffirmed their commitment to ensure that trade plays its full part in promoting economic growth, employment and development for all. How can implementation of this commitment be monitored? The elaboration of the TDI tries to respond to this question by developing a conceptual and quantitative framework to systematically monitor the trade and development performance of developing countries with a view to facilitating national and international policies and strategies that would ensure that trade serves as a key instrument of development.

The Trade and Development Index

In constructing the TDI, a point of departure is to recognize that to act as an engine of development, trade must lead to steady improvements in human conditions by expanding the range of peoples' choices. The latter depends much on the interplay among factors determining both trade outcomes and human development outcomes. The trade and development performance of a country is not a mere sum of these two outcomes. Instead, it is a composite concept, reflecting the state in which a country finds itself as a result of interactions among underlying factors determining them. By accounting for these interactions, the TDI tries to provide a quantitative indication of trade and development performance of countries.

The TDI identifies three sets of such determinants, referred to as *dimensions*—namely, structural and institutional factors; trade policies and processes; and, finally, level of development. Each dimension is composed of a number of *components*, which are derived from a set of *indicators*.

In addition to the construction of the TDI for developing countries, similar indices are prepared for two other groups of countries: the TDI for the OECD group is taken as the long-term trade and development benchmark for developing countries, while that for the newly acceded EU10 group of countries as the medium- to longer- term benchmark for developing countries, against which progress in trade and development performance will be assessed.

The selection of appropriate indicators and methodology was central to the construction of the TDI. An extensive review of literature was undertaken to help choose the most relevant indicators. A similar review was conducted in respect of available methodologies, including those employed by a number of UN system organizations. Eventually, it was decided to follow the pathways laid by the Nagar-

Basu methodology to construct the TDI as a weighted sum of a normalized version of these identified indicators, where respective weights are the outcome of multivariate statistical analysis of principal components. The main reason for employing principal components analysis is that it makes it possible to define a synthetic measure that is able to account for interactions and interdependence between the selected set of components making up the TDI. Other attractive features of this methodology are that it permits calculation of statistical weights of the various components of the TDI for the sample that thereby identify what drives the results, and that it allows comparison of results over time.

Main results of the TDI

The results indicate that the top 20 are all developed countries, except Singapore (rank 15). Denmark leads the pack, followed by the United States and the United Kingdom. The TDI scores of Sweden, Norway, Japan, Switzerland and Germany are particularly close. The countries of southern Europe members of the EU are at the bottom of the top 25. Only three developing countries are in the top 30. Besides Singapore, they include the Republic of Korea (rank 25) and Malaysia (rank 28). This partly indicates that only a handful of developing countries have been able to come close to the trade and development performance of developed countries.

At the other extreme all the bottom 20, excepting Pakistan and Papua New Guinea, are either least developed countries (LDCs) or African countries, or both. The entire bottom 10 are African countries, with 9 being LDCs; indeed, only two African countries, South Africa (rank 41) and Mauritius (rank 47) are among the top 50 scorers. This indicates the severity of the trade and development problematique of LDCs and African countries. A word about the two largest developing countries in population terms, *viz.*, China and India. Years of economic and trade growth notwithstanding, China (rank 51) is not among the top 50 performers. India, on the other hand, ranks 90th among all countries in the sample.

Within the developing countries group, the top 10 ranking countries include mostly newly industrializing economies of East and South-East Asia, and some Latin American and Caribbean countries. After Singapore, the Republic of Korea and Malaysia, Uruguay ranks fourth among all developing countries, and scores highest among the Latin America and Caribbean countries. The pattern changes as one goes down the list. With regard to the middle-20 developing countries, the results show that 10 countries are from the Latin American and Caribbean region; eight are from Africa; and one each from the East and Central Asian regions. Finally, the 10 lowest scorers comprise only African countries, of which nine are LDCs.

The inter-country differences among developing countries with respect to the TDI scores also indicate certain regional patterns. The East Asia and Pacific(EAP) countries group lead the entire developing country sample, followed by countries of the Latin American and Caribbean (LAC) group and Middle East and North African (MENA) countries. Gaps between these three regions' average scores are not very far apart. However, the scores of South Asian (SOA) and sub-Saharan African (SSA) countries show significantly lower TDI scores compared with the other three groups. Indeed, the two regions have comparable scores, and lag quite substantially behind other regions.

An overall analysis of the TDI components reveals that the EAP countries' lead is due to relatively high average scores for physical infrastructures and financial environment, and to some extent market access indicators. As to SOA and SSA countries, they are lagging behind for most components. This is particularly true for the social development component, the financial environment component and the physical infrastructure component. SSA countries score particularly low on

physical infrastructure. SOA countries score low in terms of their trade openness. EAP countries' disaggregated scores reveal a relatively high level of uniformity of performance across different components.

Results of benchmarking

In order to obtain benchmarking results, countries are aggregated into three groups: developing countries, newly acceding EU 10 countries (i.e. new EU members since May 2004) and developed countries (i.e. EU 15 plus other OECD countries). Two sub-groups are identified, namely the top 10 developing country performers, and LDCs. As indicated above, the score of the developed countries group is the highest, followed by the EU 10 countries, whose performance stands between the performance of developing and of developed countries. The top 10 developing country performers have come significantly closer to developed countries in some areas, such as environment, economic structure, openness to trade and social development. As a group, they have nearly caught up with EU 10 in respect of physical infrastructure, environment, economic structure, openness to trade, market access, economic development and social development. In other areas, their differences are not very pronounced; this indicates that there is a strong possibility of their catching up with EU 10 in the medium term. However, there is a substantial gap between the two groups with regard to human capital, physical infrastructure, institutional quality, market access and economic development. There are huge differences in performance between developed countries and other developing countries. The catching up challenge is especially formidable for LDCs.

What drive results?

The analysis also indicates that the contribution to the TDI of the openness to trade component is the largest and explains almost 15 per cent of the TDI score. Contributions of other components vary between 3.9 per cent and 13 per cent. The contribution of the social development component is the second most important, followed by the contribution of the economic structure component, the environmental sustainability component and the gender development component. The lowest contribution came from economic development component, represented by per capita GDP in PPP terms.

A disaggregated analysis of relative contributions of the components indicates that the importance of the openness to trade component tends to be higher for countries with lower TDI scores, and vice versa. While its contribution to the TDI is around 17 per cent for developing countries as a group, it falls to less than 12 per cent for the EU 10 countries and less than 10 per cent for developed countries. In other words, trade liberalization played a much larger role in the case of developing countries as a whole, and especially LDCs, in explaining the TDI score than in the case of developed countries. The contribution of the access to markets component is similar for all country groups, although it plays a much less pronounced role relative to the openness to trade component in the case of developing countries than in the case of developed countries.

The contribution of environmental sustainability, economic structure and social development components is closer to one another across countries. However, there are significant differences among country groups with regard to the respective contribution of economic development, human capital, physical infrastructure, financial environment and institutional quality. In general, their contribution tends to decline as one moves down the list of countries in declining order of TDI scores.

TDI and variability among components

The TDI scores also point to an interesting pattern as regards the relative contribution of different components to the TDI scores among the country groups. The highest TDI scoring countries tend to score uniformly high in different components. In other words, these countries display a low variability, defined by the coefficient of variation among contributions of individual components. The variability increases as one moves down the list in decreasing order of TDI scores. The greatest variability is found among the bottom 10 scores. It is observed quite clearly that the higher TDI scoring countries exhibit lower variability in the contribution of individual components, while lower scoring countries have higher variability. Taking the sample of countries as a whole, the correlation coefficient between the TDI and coefficients of variation indicates a very high degree of reverse association between them, so that the following general rule holds:

The higher the TDI score, the lower the variability in the contribution of its components, and vice versa.

An implication of this finding is that while changes in the value of TDI scores over time could be regarded as a *quantitative* indication of trends in the trade and development performance of countries, those in respect of the variability could be seen as *qualitative* changes. Thus, trade and development policies and strategies should simultaneously aim at improving TDI scores and reducing the variability in the contribution of different components. As the case of low scoring countries indicates, a disproportionate emphasis on a limited number of objectives such as trade liberalization without concomitant focus on factors that make liberalization work can yield only marginal results. By demonstrating significant inter-country differences in the coefficient of variation, the findings point to the importance of country-specific approaches to trade, development and poverty reduction strategies.

The above analysis also has implications for development partnership. For example, a comparison between the disaggregated results of the EU 10, on the one hand, and developing countries, especially middle- and low-ranking ones, on the other, indicates what works: a simultaneous thrust on a broad-based development agenda to be pursued with a well-defined time frame under strict institutional discipline, and facilitated by adequate financial and technical support and market access. Indeed, the European integration process, as well as the experience of more successful developing countries could provide important insights into the formulation of development cooperation paradigms aiming at fast-improving TDI performance. The above rule points to the need for greater coherence between trade policy and rule making, on the one hand, and development strategies, as well as development solidarity and partnership, on the other. It should also help elaborate priorities for "Aid for Trade". Future work on TDI will include in-depth focus on these issues.

Determinants of export performance

The subject matter of Chapters 2 and 3, namely determinants of export performance and adjustments arising from trade agreements, has implications for the trade and development performance of developing countries. Chapter 1 illustrates

the need to adopt a pluri-dimensional policy approach in order to make trade a proper instrument for development. In that context, export performance cannot only mean the good fortune to be producing goods in great demand. Rather, it is likely to be the outcome of the combination of various elements framing the production environment and export products' access to international markets.

Determinants of export performance can be split into internal and external components. External factors are related to market access conditions and other factors affecting demand for imports. Apart from trade barriers and competition factors, foreign market access is also determined by transportation costs, including geography and physical infrastructures. Internal factors refer to supply-side conditions. Supply capacity is also affected by the location-related elements, which may, for example, affect access to raw materials and other resources. It also depends upon factor costs: labour and capital. Besides resource endowment, factor costs are essentially the outcome of economic policy and the institutional environment. Access to technology, which is likely to affect the productivity of the external sector, may also be an important determinant.

In order to examine these issues, an econometric model of bilateral trade flows is constructed using gravity techniques. This model is tested using data series representing foreign market access and supply capacity for a sample of 84 countries. It is observed that in the aggregate, all regions have benefited in different degrees from the greater integration in the world economy in the period 1985-2003. African countries appear to have faced severe supply capacity constraints over the last two decades, while their access to foreign markets has remained largely unchanged. East Asian and Pacific countries' export performance has been driven by improvements in both supply capacity and foreign market access. South Asian countries' export growth can mainly be explained by increased supply capacity.

Further investigation was undertaken to consider possible non-linearities in the relationship between export performance, supply capacity factors and foreign market access. It was found that limitations on foreign market access are a major contributor to poor export performance. However, good performers in the second half of the 1990s also faced higher external constraints but were able to overcome them. In general a rise in exports would tend to increase factors of production prices, which in turn contains export expansion. As to supply capacity elements, internal transport infrastructures are found to have a significant and positive impact in lifting performance, as does a good macroeconomic environment. The contribution of foreign direct investment to capital formation is used in order to include a technology-related element, possibly linked to the structure of the external sector. The finding is that FDI is significant and has a positive impact on export performance at all levels.

The general policy implication is that foreign market access and supply capacity have to be considered equally important in the development process of the external sector. Acting simultaneously on both supply capacity and foreign market access drives the performance and structural deepening of the external sector. Important elements of supply capacity at the early stage of development of the external sector are transport infrastructure and macroeconomic stability. FDI is a significant determinant at all levels of export performance.

Adjustment to trade reforms

In Chapter 1, trade liberalization, represented by the openness to trade indicator of the TDI, was found to be the most significant driver of trade and development performance, especially in the case of developing countries. That gains from trade liberalization come about in the long run is widely accepted, at least in the

absence of externalities, but there are often short- to medium-term adjustment implications. These adjustments, by producing winners and losers, ultimately affect the level of well-being of people through altering their access to goods, services and opportunities. Particularly at risk are those that are least able to cope with the changes induced by trade reforms, including the poor, women, the elderly, and unskilled and low-skilled workers. Unfortunately, most developing countries do not have well-developed social safety nets—unemployment benefits, retraining programmes, portable pensions, and the like—to address these problems. From this perspective, liberalization can have some serious short- to medium-term implications for development in developing countries, and the latter may need adjustment assistance going beyond implementation support to see them through this process.

To gauge the possible developmental implications of trade reforms, the final Chapter of this report looks at the experience of a number of developing countries that have undergone important trade reforms as well as the possible magnitude of further adjustments under the current WTO negotiations, drawing upon a number of country studies, and CGE modelling of various proposals in the Doha negotiations, supplemented by a review of number of other studies on the adjustment process. This study on adjustments to trade reforms is useful also in the further development of the TDI, especially by helping to design shocks in trade and trade-related processes and simulate resulting changes in trade and development performance.

Preliminary analysis from country case studies and reviews of other experiences suggest that it would be desirable to anticipate adjustments in a number of ways: encouraging domestic and foreign investment, including through legislation and institutions that are business-friendly; developing capital markets to provide access to finance, especially by SMEs; providing social safety nets; introducing labour retraining and extending other skills-oriented education programmes; providing physical infrastructure, especially in the transport sector; trade facilitation; debureaucratization; helping developing countries meet SPS/TBT barriers in major markets; and encouraging cluster group formation.

The IFIs, with their considerable technical expertise in a wide range of projects, can play an important role in helping developing countries to implement or extend programmes in many of the ways outlined, and have already indicated their willingness to help, for example the IMFs' trade assessment mechanism (TAM). However, there is also a key role for the donor community, particularly where the affected countries are already heavily indebted. The WTO process can also help by providing for meaningful liberalization by developed countries in areas where the developing countries have comparative advantage, ahead of the liberalization by the latter group of countries, so that jobs start to be created ahead of job losses in sectors that are likely to suffer from increased competition as their own barriers are lowered. The WTO could also usefully address systemic and rules-related issues in order to provide some policy space to allow the use of trade and trade-related policies for development purposes. This was partly envisaged in the original GATT, but its seems that such options, including the use of support policies in the presence of externalities, are increasingly being called into question.

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Trade and Development Index

1

1. INTRODUCTION[1]

All economies are increasingly open in today's economic environment of globalization. Trade plays a vital role in shaping economic and social performance and prospects of countries around the world, especially those of developing countries. No country has grown without trade. However, the contribution of trade to development depends a great deal on the context in which it works and the objectives it serves. In recent decades, a number of developing countries, most notably the East Asian newly industrializing countries, have been able to purposefully use the elemental force of trade to boost growth and development within a relatively short time span. At the same time many other developing countries, especially the least developed countries (LDCs), have embarked on unilateral trade liberalization in recent years, with very limited results at best in terms of increased growth and development.[2]

To act as an engine of development, trade must lead to steady improvements in human conditions by expanding the range of people's choice, a notion that the concept of human development[3] tries to capture. From this standpoint, the trade and development performance of a country cannot be seen as the mere sum of its economic growth and export performance. Instead, it is a composite notion, reflecting how trade relates to the range of choices available to people in a country at a particular point in time. The extent of such choice, in turn, depends much on the interplay among factors that determine both trade outcomes and human development outcomes. The trade and development index (TDI) provides a quantitative indication of the trade and development performance of countries by systematically accounting for the interactions among factors governing these outcomes.

The TDI considers three sets of determinants of trade and human development, namely (a) structural and institutional factors; (b) trade policies and processes; and (c) level of development. This framework, by systematically accounting for the linkages of these determinants and their constituent elements, aims to serve as a monitoring mechanism of trade and development performance of developing countries, a diagnostic device to identify factors affecting such performance, and a policy tool to help stimulate and promote national and international policies and measures with a view to keeping trade focused on development and poverty reduction.

Exploring these linkages is desirable for a number of reasons:

- It is important to consider trade as a means to its ultimate goal, namely the well-being of people. Conventional technical analyses of trade performance of developing countries are for the most part preoccupied with trade trends and liberalization policies, and often overlook the real object of trade and growth.
- Development strategies pursued by countries affect the interaction among the factors defining trade and development performance. It is therefore necessary to shed light on how best such strategies can be designed to enhance trade and development performance.
- Trade negotiations have far-reaching implications for the range of choices which people can have by affecting their access to goods, services and opportunities. Outcomes of these negotiations need to be judged against their contribution to human development.
- In recent years, some developing countries have made significant gains in trade and development, while many others, especially LDCs, are struggling to keep up. It is necessary to keep the spotlight on the constraints faced by countries that have performed poorly, and also to maintain a focus on the need to employ trade in the service of human development in countries that have been more successful.

- The Millennium Development Goals and the 2005 World Summit, by highlighting the role of trade in development, have added to the urgency of examining trade and human development linkages.

In addition to the construction of the trade and development index for developing countries, similar indices were prepared for two other groups of countries: developed countries of the OECD, and the 10 newly acceding countries of the EU (EU 10).[4] The OECD index will serve as the long-term trade and development benchmark for developing countries. The EU 10 countries are at an intermediate stage between developed and developing countries and are in the process of integrating into a highly developed grouping. Their trade and development index will serve as the medium- to longer-term benchmark for developing countries against which progress in trade and development preference will be assessed.

In all, 110 countries are included in the present analysis, of which 72 are developing countries according to UN classification,[5] which includes 17 LDCs. The rest includes OECD developed countries, EU 10 and South-Eastern European and CIS countries. The scarcity of a comparable data set precluded the computation of TDI for a number of countries. In future work, emphasis will be given to increasing country coverage.

2. THE TDI AND BENCHMARKS: CONCEPTS, METHODOLOGY AND CONSTRUCTION

2.1 The conceptual and methodological approach to the TDI

As indicated above, the constituent elements of TDI are grouped under three broad sets of determinants which will be referred to as *dimensions*: structural and institutional (SI); trade policies and processes (TP); and level of development (LD). The relationships among these dimensions, which themselves are composed of a number of *components*, are complex, mutually interacting and multi-directional, so that each of the components is both a cause of change in others and an outcome of the influences of the latter.[6] Finally, these components are composed of a set of *indicators*.

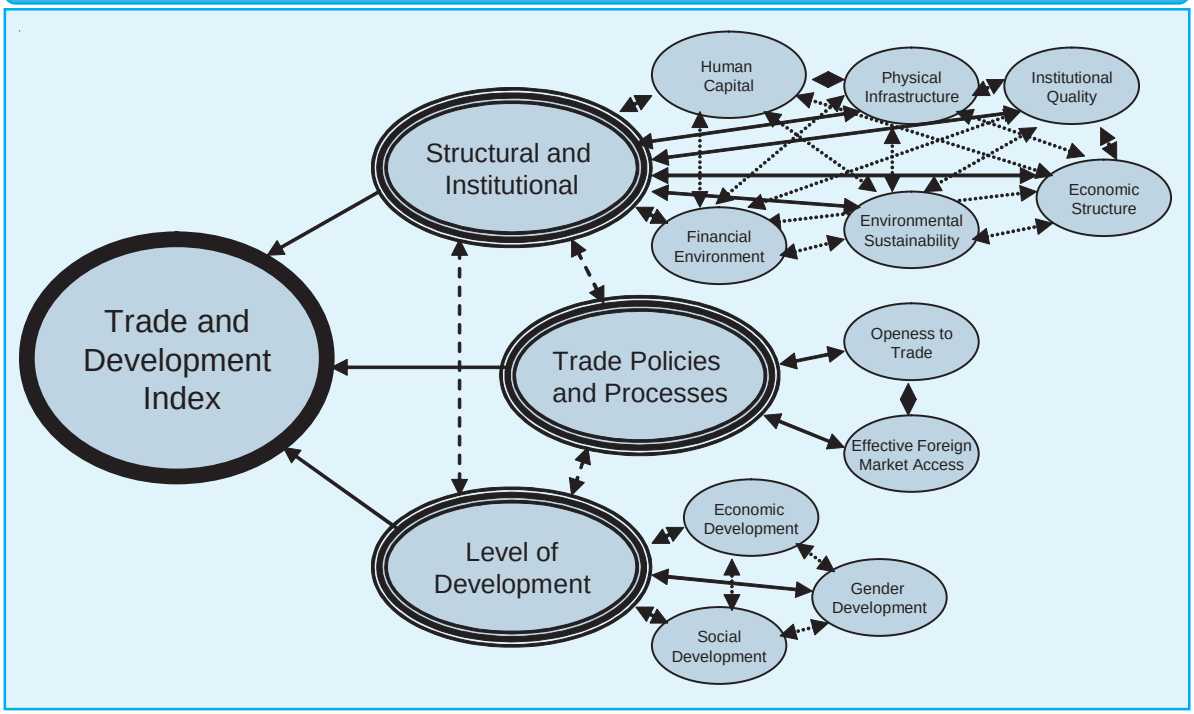
Figure 1.1 presents the conceptual framework of the TDI. The three broad dimensions of the TDI comprise 11 components, which in turn are composed of 29 indicators. In constructing the TDI, the indicators are aggregated to form the respective components. *The weighted sum of the components is the TDI*. The choice of indicators is taken up below. It is not easy to capture the interactions among the constituent parts of TDI in a single numerical figure. The choice of indicators and methodology assumes special significance in this regard.

2.2 Selection of indicators

A description of the indicators under the different components of the three dimensions, as well as the criteria for their retention and their use, is provided below. Attention was paid to data coverage in terms of both number of countries and time period. Cross-country significance and widespread acceptability were also considered. As noted above, lack of availability of data has restricted choice of indicators as well as coverage of countries in our analysis.[7]

What factors go into the complex interplay of trade and human development? This question was posed while selecting the indicators. For example, structural and institutional environment, by affecting supply capacity, has a key role in determin-

Figure 1.1. Conceptual framework of the TDI



ing the range of choices. Access to imports influences the range of choices by increasing the quantity and variety of goods and services that consumers can acquire[8] and making available intermediate goods that firms can use as inputs in the production of final goods.[9] Extensive access to international markets, in its turn, can act as a catalyst for building supply capacity, on the one hand, and improve affordability of imports, on the other.

While such general notions of interrelationships among the components of TDI are useful, they alone do not constitute a sound basis for selecting the indicators. An extensive literature survey was therefore conducted to select possible candidates for inclusion in the TDI framework. Regression analyses were carried out using a generalized linear model to find coefficients of these candidate indicators capturing the strength of their relationship with a combined index made up of Human Development Index (HDI) and Gender Development Index (GDI), which served as a screening device. All retained components are positively and significantly related[10] to the combined index. It was possible that a number of indicators could be highly correlated. To remove possible redundancy caused by it, bivariate analysis was carried out.

To allow for increasing data coverage of indicators chosen in this analysis, and to control for possible yearly volatility that can be observed for some, indicators were constructed on a three-year average between 2000 and 2002. This also serves to capture, although only partly, possible lag effects in the interaction among the various dimensions and their constituents as well as possible cyclical variations.

The selection process yielded the following indicators:

(a) Components of structural and institutional dimension (SI)

Human capital (HC): Human capital plays an essential role in economic growth and development.[11] Two dimensions of human capital are considered here: health and education. Health is a key component of human capital and is expected to be positively related to labour productivity, as better health should lead to higher

Box 1.1. An empirical note on TDI components

The table below presents empirical results showing some degree of interdependence among the components of the trade and development index. Results are discussed extensively in Basu and Fugazza (2005, forthcoming).

The authors investigated the relationship between an index made up of the Human Development Index and the Gender Development Index and the nine indicators included in the SI and the TP dimensions.

Regressions are run in the Generalized Linear Models framework. More specifically, the probability function is binomial and the canonical link function is logit. Results are summarized in table B1.1:

Table B1.1. Regression results

Dependent variable is the combined index made up of HDI and GDI	
	Coefficient
Human capital	0.617**
	(0.287)
Physical infrastructure	0.680**
	(0.327)
Financial environment	0.419*
	(0.148)
Institutional quality	0.513**
	(0.226)
Environmental sustainability	0.940*
	(0.266)
Economic structure	0.668*
	(0.201)
Openness to trade	0.809*
	(0.326)
Market access	0.379**
	(0.194)
Constant	-3.009*
	(0.317)
Observations	110
Statistics	ML=-47.285 BIC=133.391 AIC=1.014

Note: (a) The independent variables are in the form of indices. Standard errors are reported in parentheses.
(b) * significant at 1% and ** significant at 5%.

Results indicate that all indicators included in the SI and TP dimensions are positively and significantly related to the combined index of HDI and GDI. The inclusion of interaction effects is also considered. However, coefficients values for direct effects are only slightly affected and the overall explanatory power increases only modestly.

output performance.[12] Education also has been found to play a major role in enhancing labour productivity and eventually the economic growth of a country.[13] Skilled manpower eases resource constraints, makes productive capacities efficient, and thereby increases productivity. In addition, better health conditions and higher education are generally associated with higher social and human development. Health expenditure per capita and expenditure per student are used as indicators of human capital. As data coverage for expenditure on education tends to be relatively poor, included information may not perfectly correspond to the period under consideration for all countries.

Physical infrastructure (PI): Availability of physical infrastructure is of paramount importance for the productive capacity of an economy. Two aspects are considered: transportation and information and communication technology (ICT).[14] The expansion of efficient transportation facilities also encourages growth prospects.[15] Moreover, it contributes positively to a country's export performance by providing faster, cheaper access to international markets. It is well known that many developing countries cannot achieve their full potential for trade expansion because of insufficient and poor availability of physical infrastructure that impedes their ability to benefit from globalization.[16] There is also an extensive empirical literature[17] indicating the importance of transport infrastructure in determining trade performance.

Selected indicators to reflect transportation conditions are the percentage of paved roads in total roads, and airfreight. Although expenditure on transport infrastructure could be a more appropriate indicator, and so could docks, containers, harbours and other parts of the shipping infrastructure, data availability and country coverage restrict their inclusion in the present analysis.

Information and communications technologies also have considerable potential to promote trade and economic growth.[18] They can foster innovation and as such contribute to the improvement of factor productivity. Efficient ICT activities related infrastructure would make it possible to substantially reduce transaction costs.[19] ICTs are recognized as being able to bring important gains in employment in developing countries especially if made available to small and medium-sized enterprises.

Number of telephone mainlines per 1,000 population is chosen as the indicator to reflect ICT infrastructure. This indicator is likely to capture the access to and the use of ICT facilities, although imperfectly. Other indicators, such as ICT expenditure, could have been more appropriate but have poor data coverage.[20]

Financial environment (FE): The functioning of financial markets significantly affects economic growth,[21] including by determining how businesses raise and manage funds. Not only is credit[22] required in order to finance working capital and investment in fixed capital, but it is also an important means for smoothing consumption. The credit market, if not functioning properly, may fail to direct available funds/savings to where they can be invested most efficiently or used to respond to temporary adverse situations faced by economic agents. As a consequence, credit rationing could negatively affect not only economic development prospects but also social and human development ones. Recent empirical work[23] shows that countries with better-developed financial intermediaries experience faster declines in measures of both poverty and income inequality. Eventually, access to credit enlarges the set of economic choices.

To capture the functioning of the financial system, the ratio of domestic credit to the private sector to GDP was selected as an indicator.[24] This indicator does not capture financial activities in the informal sector, which could be an important source of finance in developing economies and important vehicles for social and human development. However, informal financial activities could also be the consequence of credit rationing that would be associated with low values of the selected indicator.

Institutional quality (IQ): The main focus here is to identify indicators to assess public administration quality and government effectiveness. Since North's seminal research[25] on institutions, policymakers and international institutions, including the United Nations, have started underlining the importance of good practices, and the good governance agenda worldwide. Good institutions are the key to better economic performance. A burgeoning literature has shown that trade in general, and trade liberalization episodes in particular, would be positively related to eco-

nomic growth and eventually to human development only within a good institutional environment.[26] Good institutions also positively contribute to the establishment of a favourable environment for "doing business".[27] The latter is expected to enhance domestic supply capacity through, for instance, technological and know-how transfer.[28]

Bureaucratic quality and corruption are the two indicators (perception-based) that are included to reflect institutional quality. Greater bureaucratic quality and transparency are expected to facilitate economic interactions and then affect positively the productive potential of the economy. Indeed, one of the critical elements of good governance is enhancing of the rule of law including the protection of property rights.[29]

Economic structure (ET): The economic structure of a country can be seen as an indicator of its economic development. This relationship is clearly established in the Rostow-Kuznets theory of stages of growth. On the other hand, this relationship does not clearly appear in neoclassical growth and endogenous growth models. Nevertheless, independently of the underlying mechanism of economic development, developed countries and more advanced developing countries appear to be characterized by low shares of agriculture in GDP relative to that of manufactures and services.

The relationship between trade and development is likely to be conditional upon the structure of the economy concerned. In turn, trade and trade liberalization are also expected to affect the economic structure. It is therefore important to capture a measure of economic structure in the construction of the TDI. Using a somewhat backhanded approach, the indicator chosen to reflect the economic structure is the share of agriculture in total GDP.

Environment sustainability (ES): There is extensive evidence that intense productive activity can pose a risk to the environment, especially at the early stages of economic development.[30] The degradation of environmental conditions may lead to the deterioration of health conditions and as a consequence would affect human development. Poor environmental conditions could then hamper further economic development.[31] Similarly, the human health and development outcome is greatly influenced because of the environment in which people live.

Three indicators have been selected, which should capture the link between environment and human development. The first two indicators are (a) access to an improved water source as indicated by the percentage of the population with reasonable access to an adequate amount of water from an improved source, and (b) access to improved sanitation facilities as indicated by the percentage of the population with at least adequate access to excreta disposal facilities (private or shared but not public) that can effectively prevent human, animal, and insect contact with excreta. The third indicator is the use of energy per unit of GDP in PPP terms.

(b) Components of the trade policies and processes dimension (TP)

This dimension includes a country's own trade openness and market access abroad.

Openness to trade (OT): Trade openness measures will eventually determine the degree of foreign goods' penetration of the domestic economy. It is generally accepted that in the longer term trade liberalization is a pro-development policy (in the absence of externalities or market failures), although rapid liberalization may cause short-medium-term adjustment problems (see Chapter 3). Apart from the so-called optimal tariff, protection may also be motivated by the desire to promote infant industries, and may also be associated with positive externalities, but this needs some qualification, as suggested by practical cases. In particular, there is

theoretical and empirical evidence of the anti-export bias of import restrictions. Therefore, there may be an important difference between the short- and long-term impacts of liberalization. It is also recognized that some country-specific context may generate better results in a given time frame with higher trade barriers, as trade outcomes may reveal.

Two aspects are considered: tariff barriers and non-tariff barriers (NTBs). Three indicators are selected to reflect the former: applied trade-weighted average tariff, the share of tariff lines with national peaks and the share of lines with international peaks. Trade-weighted average tariff based on applied rate accounts for the preferences granted to trade partner countries. The share of lines with national and international peaks can be seen as an indicator of industrial policy, in the sense that it shows, although imperfectly, the extent to which government intervenes in international policy to protect specific sectors. Non-tariff barriers are assumed to be reflected in the share of lines with specific tariffs. This is a rather imperfect indicator of non-tariff barriers, but it remains the best proxy when considering availability and quantitative tractability of data on specific NTBs. NTBs, though increasingly becoming important protective measures in the face of tariff elimination and reductions, are still in the primitive stage in terms of classification and quantification, and their available data are sparse and not comprehensive enough to allow for the calculation of any consistent and comparable indicators.[32] Here the choice of indicator is the share of tariff lines with specific tariff rates drawn from a more comprehensive tariff database. A specific tariff rate, as opposed to an ad valorem rate, has a built-in effect of restricting less costly imports by applying, de facto, higher ad valorem rates to them.

Effective access to foreign markets (MA): Access to foreign markets is an important component of export performance.[33] However, good market access defined as low trade barriers in destination markets may not be sufficient in terms of the export performance of receiving countries. In that context, an attempt is made to define a possible measure of effective access to foreign markets. This measure is a combination of trade barriers faced in destination markets and of the structure of the export sector of the receiving country.

The respective indicators used to capture trade barriers mirror those used for trade openness. For instance, the trade-weighted average tariff that any country faces on international markets corresponds to the trade weighted average imposed by its trade partners. The share of the manufacturing exports in total merchandise exports and a standard index of export concentration capture the export sector structure.

A recent World Bank research paper attempted to compute measures of openness to trade and access to foreign markets that also include non-tariff barriers.[34] Their indices have also been considered for a robustness check. Quantitative results are only slightly modified and qualitative considerations remain the same.

(c) Components of level of development dimension (LD)

To reflect the level of development, the present analysis includes three different components, namely economic development, social development and gender development. These are captured using five indicators.

Economic development (ED) is reflected in GDP per capita in PPP terms. *Social development (SD)* is represented by an index combining adult literacy, gross school enrolment ratio and life expectancy at birth.[35] The education and health improvements are considered to be a fundamental requirement for increasing the quality of life. *Gender development (GD)* is represented by the UNDP Gender Development Index (GDI).[36]

Geographical considerations[37] are not included in our benchmarks essentially because of the absence of a consensual indicator of geography. Moreover, the role and the importance of geography in economic performance and development is intensively debated. Rather, geographical considerations will be used to qualify our results whenever relevant.

2.3 *Computational approach*

The selection of an appropriate methodology is central to any exercise attempting to reflect the interaction of the indicators such as in a system of TDI aggregation. Therefore, a review was undertaken of the available methodologies of construction of indices by a number of UN system organizations.

While these methodologies are well suited to the purposes for which they are employed, they are not designed to account for interactions among the constituents of an index like the TDI. Therefore, alternative methodologies were explored and eventually it was decided to follow the pathways laid by the Nagar-Basu methodology to construct the TDI as a weighted sum of a normalized version of the identified components, where respective weights are the outcome of multivariate statistical analysis of principal components.

Box 1.2. A short survey of three indices

This box presents three important indices developed by organizations of the UN system.

UNCTAD ICT development index: This index aims to evaluate the average achievements in a country in three dimensions: (a) Connectivity is measured by the number of telephone mainlines per capita, the number of mobile subscribers per capita, the number of Internet hosts per capita and the number of PCs per capita. (b) Access is measured by the number of estimated Internet users, the adult literacy rate, the cost of a local call and GDP per capita (PPP). (c) Policy is measured by the presence of Internet exchanges, the levels of competition in local loop telecom and the domestic long distance, and the level of competition in the Internet service provider market.

An index score is computed for each of these indicators of three dimensions with the following methodology:

$$\text{Index score} = \frac{\text{Value} - \text{Minimum}}{\text{Maximum} - \text{Minimum}}$$

It postulates that the minimum value achieved is zero for most of the indicators, and so the index scores amount to a percentage of maximum values:

$$\text{Index score} = \frac{\text{Value} - 0}{\text{Maximum} - 0} = \frac{\text{Value}}{\text{Maximum}}$$

Individual components index scores are averaged over the corresponding dimensions to obtain three indices of connectivity, access and policy. Finally, the Index of ICT Diffusion is computed as an average of the score of these three indices.

UNDP human development index (HDI)*:* The human development index (HDI) includes three following indicators: GDP per capita (PPP); adult literacy rate (with two-thirds weight) and the combined primary, secondary and tertiary gross enrolment ratio (with one-third weight); and life expectancy at birth. This method normalizes the indicators against the following minimum and maximum levels: 25 to 85 years for life expectancy; 0%- 100% for adult literacy rate; 0% to 100% for enrolment rate at all education levels; and US$ 100 to US$ 40,000 for GDP per capita.

.../...

(Box 1.2, cont'd.)

Each HDI index is computed according to the general formula:

$$\text{Index}_{ij} = \frac{X_{ij} - \underset{k}{\text{Minimum}}\, X_{ik}}{\underset{k}{\text{Maximum}}\, X_{ik} - \underset{k}{\text{Minimum}}\, X_{ik}},\ i: indicator,\ j: country, k: specific\ value$$

Finally, HDI is computed by averaging the values of all these different indices:

$$HDI_j = \frac{1}{n}\sum_{i=1}^{n} Index_{ij}$$

UNIDO competitive industrial performance (CIP) index: This index benchmarks a set of industrial performance and capability indicators and subsequently ranks countries. UNIDO computes the "Competitive industrial Performance (CIP) index" on the basis of four components, namely, manufacturing value added (MVA) per capita; manufactured exports per capita; industrialization intensity (simple average of the share of MVA in GDP and the share of medium and high-technology (MHT) activities in MVA); export quality (simple average of the share of manufactured exports in total exports and the share of MHT products in manufactured exports).

Following the standard normalisation procedure, the individual indices for each of the components are obtained as follows,

$$I_{ij} = \frac{X_{ij} - \text{Minimum}\, X_{ik}}{\text{Maximum}\, X_{ik} - \text{Minimum}\, X_{ik}}$$

where X_{ij} is the j-th country value of the i-th performance component. The normalization yields on 1 to 0 score, where 1 is the best and 0 is the worst in terms of the specific component.

The indices of four components are combined to arrive at a single index for each of the countries through the following formula:

$$CIP_j(\alpha) = \left\{\frac{W_1 I^{\alpha}_{1,j} + W_2 I^{\alpha}_{2,j} + W_3 I^{\alpha}_{3,j} + W_4 I^{\alpha}_{4,j}}{W_1 + W_2 + W_3 + W_4}\right\}^{\frac{1}{\alpha}}$$

where W_j are the weights given to the individual indices and α is a parameter to control how variations and weights of the individual indices affect the CIP index.

Finally, α is assumed to be unity, and the CIP index expressed by the following formula:

$$CIP_j = CIP_j(1) = \frac{1}{4}\sum_{i=1}^{4} I_{ij}$$

The main reason for employing principal components analysis is that it makes it possible to define a synthetic measure that is able to capture interactions and interdependence between the selected set of indicators making up the TDI. These indicators are called causal variables, while TDI is the explained variable. While standard regression techniques require the explained/dependent variable to be observed, principal component analysis treats the latter as a latent variable. Principal component constitutes a canonical form and helps to understand both the individual contribution of each of the indicators to the TDI and their aggregate contribution. An attractive feature of this methodology is that it permits calculation of statistical weights of the various components of TDI for the sample that thereby identifies what drive the results. A brief technical description of the methodology is presented in box 1.3.

Box 1.3. Constructing the trade and development index: The statistical approach

Principal components analysis (PCA) is a multivariate statistical approach that essentially transforms a set of correlated variables into a set of uncorrelated variables, termed components. The uncorrelated components are linear combinations of the original variables. PCA has in practice been used to reduce the dimensionality problems, and to transform interdependent coordinates into significant and independent ones. This justifies the approach adopted to construct the TDI. For a more comprehensive presentation of the approach we refer the reader to Nagar and Basu (2002). An application of this methodology is provided in Klein and Ozmucur (2002/2003).

The Nagar-Basu (2002) methodology is used to estimate the TDI. Principal components (PC) are used as linear combinations of the indicators selected to compose the TDI. They have special statistical properties in terms of variances. The first PC is the linear combination that accounts for the maximum variance of the original indicators. The second PC accounts for the maximum variation of the remaining variance, and so on. Maximizing variances helps to maximize information involved among the set of indicators, and hence as appropriate a weighting scheme is employed.

The TDI is an abstract conceptual variable and is supposed to be linearly dependent on a set of observable components plus a disturbance term capturing error.

Let $TDI = \alpha + \beta_1 X_1 + ... + \beta_{11} X_{11} + e$ (1)

where $X_1, X_2, ...X_{11}$ is a set of components of the TDI. The total variation in the TDI is composed of two orthogonal parts: (a) variation due to set of proposed components, and (b) variation due to error.

Components are all individually normalized by subtracting the minimum value of the particular component from its actual value and dividing it by the range, which is the difference between the maximum and minimum value of the selected components.

So, for component i for a country j is shown below:

$$C_{ij} = \left(\frac{\text{actual value}_{ij} - \underset{k}{\text{Minimum value}_{ik}}}{\underset{k}{\text{Maximum value}_{ik}} - \underset{k}{\text{Minimum value}_{ik}}} \right), \quad i: component, \; j: country, \; k: specific\ value \qquad (2)$$

When necessary, raw data have been transformed such that normalized values equal to unity correspond to the best situation in the sample.

Correlation matrix R is computed from standardized indicators, followed by solving the determinantal equation $|R - \lambda I| = 0$ for λ where R is a $11x11$ matrix; this provides a 11^{th} degree polynomial equation in λ and hence K roots. These roots are called eigenvalues of correlation matrix R.

Next λ is arranged in descending order of magnitude, as $\lambda_1 \rangle \lambda_2 \rangle ..... \rangle \lambda_{11}$. Corresponding to each value of λ, the matrix equation $(R - \lambda I)\alpha = 0$ is solved for the $11x1$ eigenvectors α, subject to the condition that $\alpha'\alpha = 1$ (normalization condition).

.../...

(Box 1.3, cont'd.)

The TDI is estimated as weighted average of 11 principal components, where the weights are the eigenvalues of the correlation matrix R, and it is known that

$$\lambda_1 = \text{var}\, P_1 (\text{first PC}), \lambda_2 = \text{var}\, P_2 = ...\lambda_{11} = \text{var}\, P_{11} \qquad (3)$$

Thus, the trade and development index is:

$$\hat{TDI}_j = \frac{\lambda_1 P_1 + \lambda_2 P_2 + ... + \lambda_{11} P_{11}}{\lambda_1 + \lambda_2 + ... + \lambda_{11}} \qquad (4)$$

In a nutshell, the estimator of the TDI is computed as the weighted average of the principal components, where weights are equal to variances of successive principal components.

2.4 Interpreting TDI values[38]

The TDI is conceptualized as having a positive relationship with trade and development performance. In other words, a higher value of the TDI reflects a higher trade and development performance, and vice versa. In addition, across periods, an increase in TDI score should indicate overall improvement of a country performance, irrespective of its performance relative to the rest of the countries in the sample. The reverse should also be true. This is essentially due to the fact that results obtained with the methodology used are not affected by the normalization procedure of components. In other words, even if the range of components (sample maximum value *minus* sample minimum value) varies across years, coefficients used to compute components weights should only reflect changes in the actual values of the normalized component. As a consequence, changes in countries' TDI values can be interpreted as absolute changes. TDI values should be comparable across periods even if country sample varies, as long as a sufficiently large number of countries are part of the sample, which is the case here.

A companion of TDI value is TDI ranking, which gives an assessment of any country performance relative to the whole country sample. TDI ranking could be an indicator of changes in relative performance over periods. However, this would be verified only if the selected country sample remains the same. Nevertheless, it would always be possible to refer to changes in TDI values over periods as an indicator of changes in relative performance. Indeed, as mentioned above, results obtained using principal components analysis are not sensitive to changes in country sampling as long as the sample is large enough.[39]

TDI values should then serve as a tool to track the progress of countries in respect of trade and development performance across countries and over time.

3. THE TDI AND BENCHMARKING RESULTS

3.1 TDI scores and rankings

The estimates and corresponding ranking of the TDI for the whole sample of 110 countries are shown in table 1.1. The results indicate that the top 20 are all developed countries, except Singapore (rank 15). Denmark leads the pack, followed by the United States of America and the United Kingdom. TDI scores of Sweden, Norway, Japan, Switzerland, and Germany are particularly close. Countries of southern Europe members of the EU are at the bottom of the top 25. Only three developing countries are in the top 30 performers. Besides Singapore, they are the Republic of Korea (rank 25) and Malaysia (rank 28). This partly indicates that only a handful of developing countries have been able to come close to the trade and development performance of developed countries, signifying the extent to which developing countries need to catch up.

Table 1.1. Trade and development index: Whole sample

TDI Rank	Country	TDI score	TDI Rank	Country	TDI score	TDI Rank	Country	TDI score
1	Denmark	874	38	Thailand	563	75	Rep. of Moldova	421
2	United States	854	39	Kuwait	561	76	Algeria	419
3	United Kingdom	825	40	Chile	558	77	Guyana	414
4	Sweden	811	41	South Africa	557	78	Indonesia	413
5	Norway	806	42	Bulgaria	556	79	Egypt	409
6	Japan	806	43	Argentina	554	80	Armenia	409
7	Switzerland	805	44	Belarus	545	81	Paraguay	405
8	Germany	804	45	Jordan	545	82	Guatemala	404
9	Austria	791	46	Bahrain	541	83	Morocco	370
10	Canada	790	47	Mauritius	525	84	Kenya	359
11	France	774	48	Trinidad and Tobago	513	85	Viet Nam	355
12	Belgium-Luxembourg	773	49	Mexico	505	86	Uganda	340
13	Australia	772	50	Lebanon	505	87	Senegal	332
14	New Zealand	770	51	China	505	88	Syrian Arab Rep.	331
15	Singapore	762	52	Russian Federation	493	89	Ghana	330
16	Finland	761	53	Jamaica	490	90	India	306
17	Ireland	758	54	Brazil	488	91	Madagascar	295
18	Portugal	756	55	Romania	484	92	Yemen	295
19	Spain	744	56	Ukraine	483	93	Bangladesh	294
20	Italy	729	57	Colombia	483	94	Papua New Guinea	290
21	Cyprus	721	58	Philippines	478	95	Pakistan	275
22	Malta	688	59	Sri Lanka	477	96	Malawi	272
23	Slovenia	678	60	Namibia	476	97	Zambia	262
24	Greece	661	61	Saudi Arabia	465	98	Nepal	255
25	Rep. of Korea	646	62	Tunisia	462	99	Côte d'Ivoire	254
26	Hungary	643	63	Iran (Islamic Rep. of)	458	100	Cameroon	248
27	Croatia	632	64	Oman	454	101	Mozambique	238
28	Malaysia	631	65	El Salvador	454	102	Togo	230
29	Estonia	621	66	Botswana	450	103	UR ofTanzania	229
30	Poland	612	67	Bolivia	449	104	Benin	225
31	Lithuania	609	68	Peru	449	105	Sudan	206
32	Slovakia	590	69	Dominican Republic	444	106	Burkina Faso	195
33	Uruguay	580	70	Venezuela, BR	440	107	Ethiopia	186
34	Bahamas	578	71	Nicaragua	435	108	Nigeria	172
35	Costa Rica	572	72	Honduras	433	109	Mali	161
36	Latvia	569	73	Ecuador	431	110	Niger	136
37	Panama	564	74	Albania	425			

Source: Basu, Fugazza and Rahman (2005).

At the other extreme all the bottom 20, excepting Pakistan and Papua New Guinea, are either LDCs or African countries, or both. All the bottom 10 are African countries, with 9 being LDCs; indeed, only two African countries—South Africa (rank 41), Mauritius (rank 47)—are among the top 50 scorers. This indicates the severity of the trade and development problematique of LDCs and African countries.

A word about the two largest developing countries in population terms, namely, China and India. Despite years of high economic and trade growth, China (rank 51) is not among the top 50 performers. India, on the other hand, ranks 90th among all countries in the sample.

It is also important to look into the inter-country differences among developing countries in the TDI. Table 1.2 presents the TDI scores and rankings of three groups of developing countries: top 10 performers, middle 20 performers and bottom 10 performers. The top 10 ranking countries include mostly newly industrializing economies of East and South-East Asia, and some Latin American and Caribbean countries. After Singapore, the Republic of Korea and Malaysia, Uruguay ranks fourth among all developing countries, and scores highest among Latin American and Caribbean countries.

Table 1.2. Trade and development index: Selected developing countries

	Country	TDI score	TDI Rank
Top 10 TDI ranks			
	Singapore	762	15
	Rep. of Korea	646	25
	Malaysia	631	28
	Uruguay	580	33
	Bahamas	578	34
	Costa Rica	572	35
	Panama	564	37
	Thailand	563	38
	Kuwait	561	39
	Chile	558	40
Middle 20 TDI ranks			
	Iran (Islamic Rep. of)	458	63
	Oman	454	64
	El Salvador	454	65
	Botswana	450	66
	Bolivia	449	67
	Peru	449	68
	Dominican Republic	444	69
	Venezuela, BR	440	70
	Nicaragua	435	71
	Honduras	433	72
	Ecuador	431	73
	Algeria	419	76
	Guyana	414	77
	Indonesia	413	78
	Egypt	409	79
	Paraguay	405	81
	Guatemala	404	82
	Morocco	370	83
	Kenya	359	84
Bottom 10 TDI ranks	Mozambique	238	101
	Togo	230	102
	UR of Tanzania	229	103
	Benin	225	104
	Sudan	206	105
	Burkina Faso	195	106
	Ethiopia	186	107
	Nigeria	172	108
	Mali	161	109
	Niger	136	110

Note: Based on Table 1.

Table 1.3. Distribution of dimensions of TDI (% of developing countries)

DIMENSION			Top 10	Middle 20	Bottom 10
Structural and institutional (SI)		High	90	0	0
		High-medium	10	30	0
		Medium	0	50	0
		Low-medium	0	20	0
		Low	0	0	100
Trade-related policies and processes (TP)	**Openness to trade (OT)**				
		High	40	20	0
		High-medium	20	45	0
		Medium	20	5	20
		Low-medium	10	10	50
		Low	10	20	30
	Effective foreign market access (MA)				
		High	50	5	0
		High-medium	40	20	30
		Medium	10	15	0
		Low-medium	0	35	30
		Low	0	25	40
Level of development (LD)		High	80	5	0
		High-medium	20	25	0
		Medium	0	45	0
		Low-medium	0	25	10
		Low	0	0	90

Explanation:

High	Top 20% ranking
High-medium	20%-40% ranking
Medium	40%-60% ranking
Low- medium	60%-80% ranking
Low	Bottom 20% ranking

The pattern changes as one goes down the list. When one looks at the middle 20 performers, the results show that 10 countries are from the Latin America and Caribbean; eight are from Africa; and one each from East and Central Asian region. Finally, the 10 lowest scorers comprise only African countries.

The results also indicate that the countries scoring high in their TDI score generally high in the constituent dimensions of the index. The reverse, however, is not necessarily observed. To see this more clearly, frequency distributions of developing countries in terms of ranks on three dimensions are categorized as follows: high (top 20%), high-medium (60% to 80%), medium (40% to 60%), low-medium (20% to 40%) and low (bottom 20%). Table 1.3 indicates the resulting distribution.

In the structural and institutional dimension, top-ranking countries in the TDI are also among top ranking countries in SI. Thus 9 out of top 10 TDI performers among developing countries scored high in SI, and 1 scored high-medium. Symmetrically, bottom ranking in TDI are also bottom-ranking countries in SI. Thus, all 10 of them scored low in SI. Middle ranking countries in TDI are fairly evenly distributed around medium ranking in SI.

As for the trade-related policies and processes dimension, there is, however, no such clear relationship with TDI ranking. The country rankings and corresponding OT and MA sub-dimension shares are very dispersed unlike in the case of SI. More specifically, for OT, the distribution of countries in Top-10 level is not remarkably different from the distribution at the Middle-20 and Bottom-10 level. Similar characteristics are obtained for MA as well. Therefore, in terms of trade-related policies and processes, the countries have oriented and implemented their strategies vigorously to match their superiors.

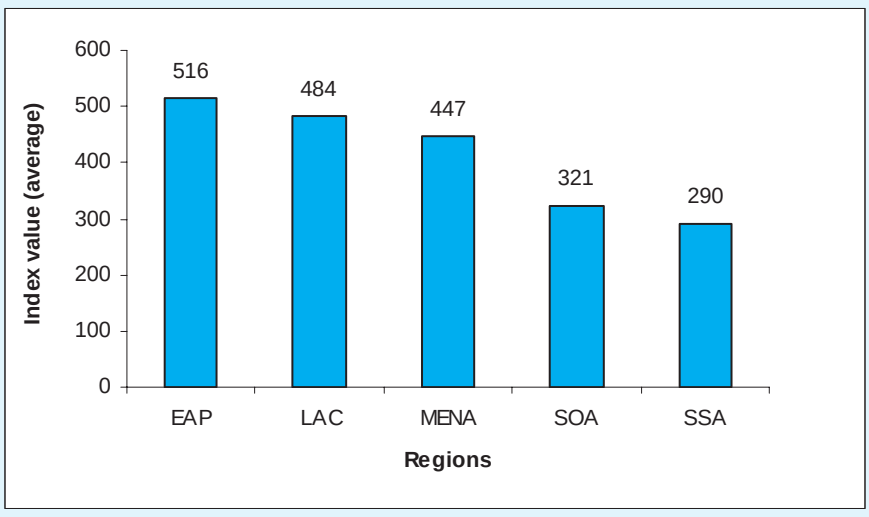
The results obtained for the level of development dimension are similar to those for the structural and institutional dimension. Thus, countries top ranking in TDI are also top ranking in LD components and those bottom ranking in TDI are also bottom ranking in LD components.

3.2 TDI scores and rankings of developing countries: Regional patterns

The inter-country differences among developing countries with respect to the TDI scores also indicate certain regional patterns. To demonstrate this in a more focused way, the 72 developing countries included in the sample are grouped into East Asia & Pacific (EAP), Europe & Central Asia (ECA), Latin America & Caribbean (LAC), Middle East & North Africa (MENA), South Asia (SOA) and sub-Saharan Africa (SSA).[40]

The unevenness in regional achievements confirms discussions and illustrations presented above. As far as the TDI scores are concerned, EAP countries are leading followed by LAC countries and MENA countries. Gaps between these three regions' average scores are not very far apart; thus about 70 points separate EAP and MENA average scores. However, scores of SOA and SSA countries show a significant drop compared with other groups. Indeed, the two regions have comparable scores, and lag quite substantially behind other regions (figure 1.2).

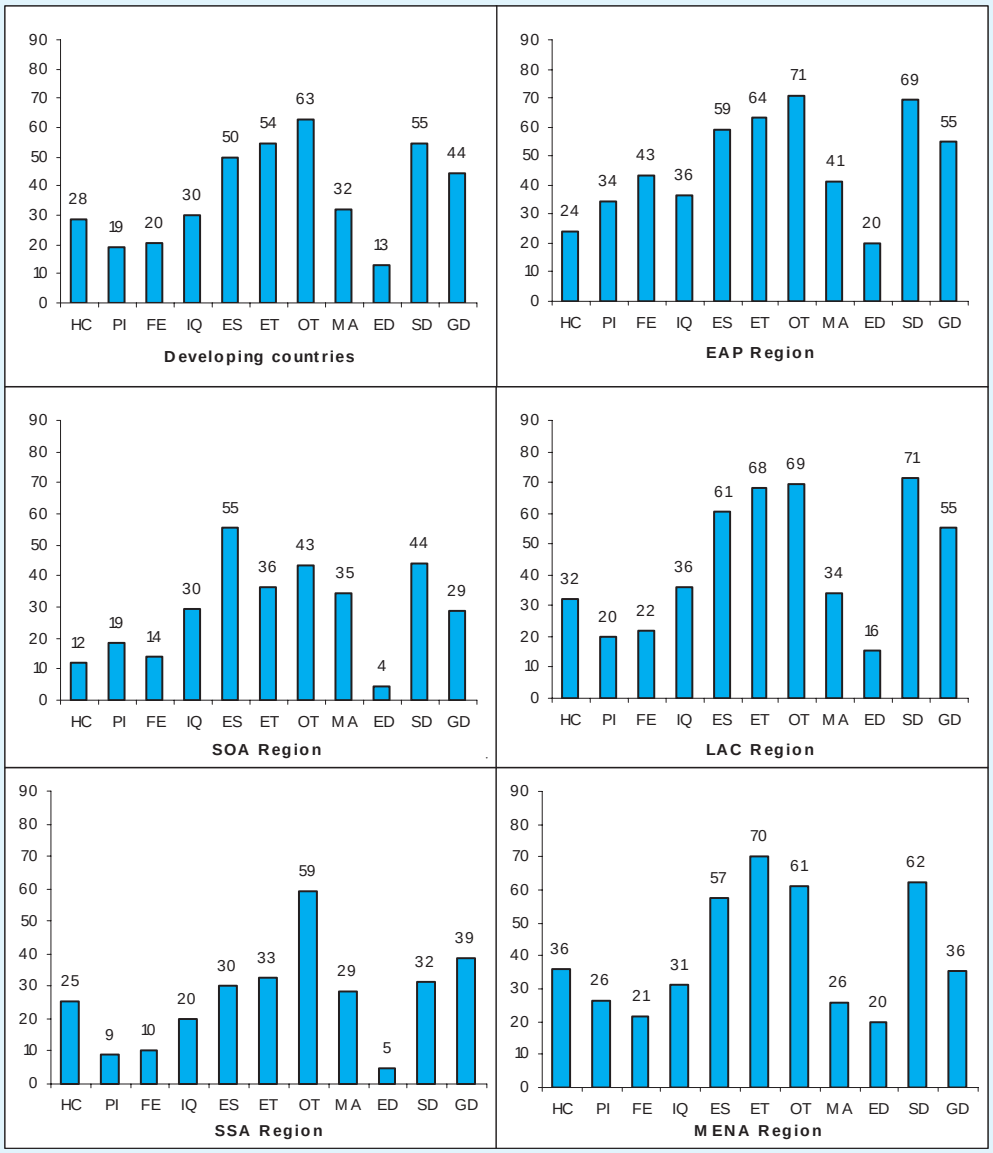
Figure 1.2. Regional pattern of the TDI scores



Note: For explanation of regions, see text.

An overall analysis of the TDI components reveals (figure 1.3) that EAP countries' lead is due to relatively high average scores for physical infrastructures (PI) and financial environment (FE) and to some extent market access (MA). As to SOA and SSA countries, they lag behind for most components. This is particularly true for the following components: social development (SD), the financial environment (FE) and physical infrastructure (PI). SSA countries score particularly low on their physical infrastructure (PI). SOA countries as a group score relatively low in terms of trade openness (OT) score. Significantly, EAP countries' disaggregated scores reveal greater uniformity of performance across different components compared with other regions.

Figure 1.3. Regional pattern in TDI components



Note: (a) The vertical axes represent scores of TDI components.
(b) For explanation of regions and abbreviations, see text.

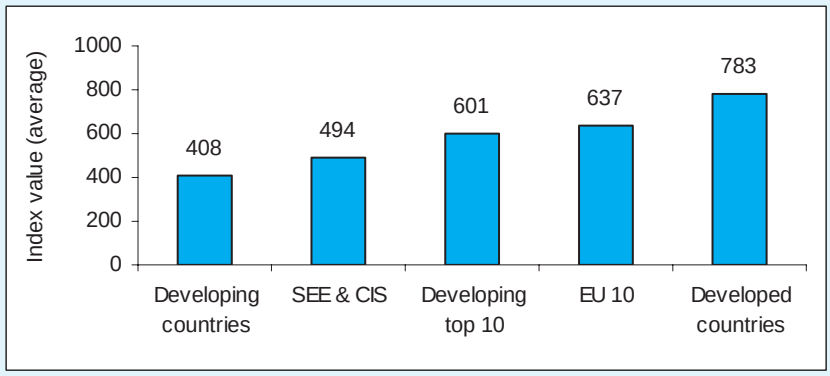
Box 1.4. Trade and development index in transition economies of South-Eastern Europe (SEE) and Commonwealth of Independent States (CIS)

This box locates the TDI performance of SEE and CIS countries (9 countries are in this study; see Annex for the list of countries).

Many countries in Eastern Europe and the Baltics became independent States in the early 1990s. At their early stage of independence, these countries experienced deep economic recession. Svejnar (2002) estimates show that GDP declined by 13-25% in Eastern Europe, 40% in the Baltics and 45-65% in the CIS. Transforming a socialist economic system into a market-based economy was equivalent to "rebuilding a ship at sea" and therefore the initial output collapse reflects the major institutional changes involved during the transition process and the disorganization that followed the sudden end of central planning (Cernat and Vranceanu, 2002).

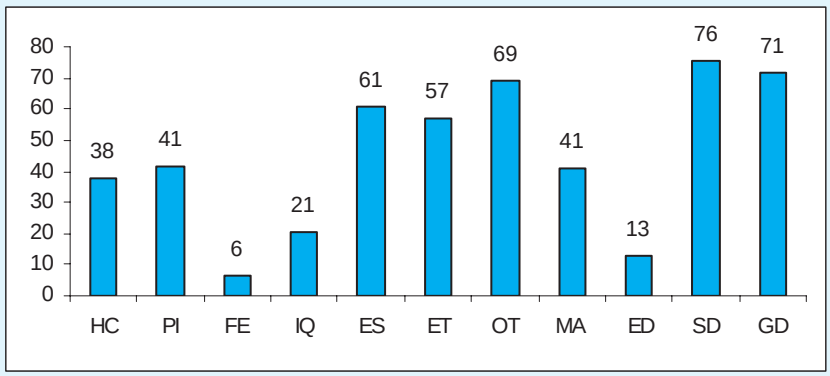
Figure B1.4.1 shows the average TDI performance of SEE and CIS economies. They perform better than the group of developing countries.

Figure B1.4.1 Average aggregate TDI component scores for SEE and CIS countries



A more disaggregated view of their performance (figure B1.4.2) shows that human capital, infrastructure development, environment factors and economic structure feature prominently in their domestic structural and institutional dimension. However, the financial environment and institutional factors are lagging behind. The results indicate that these countries have embraced policies to reduce barriers to trade.

Figure B1.4.2. TDI scores of SEE and CIS countries relative to other country groups

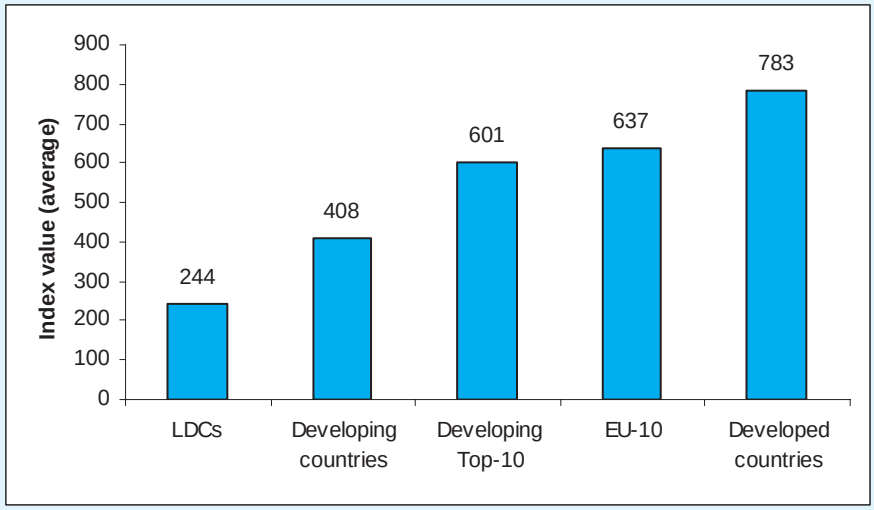


Note: Vertical axis denotes scores of TDI component. For explanation of abbreviations, see text.

3.3 Benchmarking

In order to obtain benchmarking results, countries are aggregated into three groups: developing countries (UN definition), EU10 countries (new EU members since May 2004) and developed countries (EU 15 plus other OECD countries). The two sub-groups are identified, namely the top 10 developing country performers, and LDCs. The average scores for these groups and sub-groups are displayed in figures 1.4 and 1.5.

Figure 1.4. Benchmarking in TDI

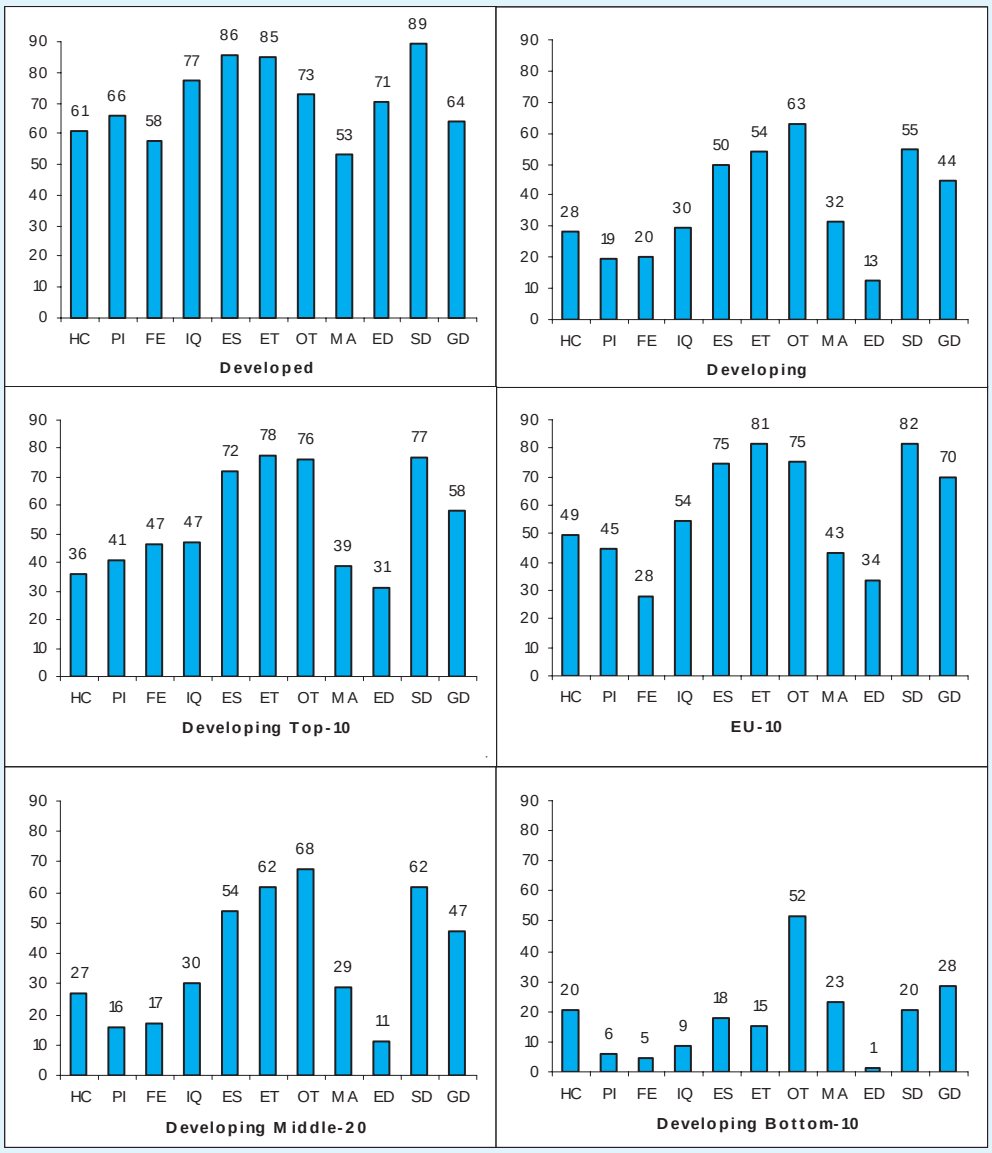


The developed countries group scores the highest, followed by the EU 10 countries, whose performance stands between that of developing and developed countries. Disaggregated scores are also obtained for all structural and institutional components (figure 1.5). The top 10 developing country performers have come significantly closer to developed countries in a number of areas, such as environment, economic structure, openness to trade, and social development. However, there is a substantial gap between the two groups in regard to most other areas, especially human capital, physical infrastructure, institutional quality, market access and economic development. It is therefore not surprising that there are huge differences in performance between developed countries and other developing countries. The catching up challenge is especially formidable for LDCs.

Figure 1.5 also indicates that the top 10 developing countries, as a group, have nearly caught up with EU 10 in respect of physical infrastructure, environment, economic structure, openness to trade, market access, economic development and social development. In other areas, their differences are not very pronounced, indicating a strong possibility of their catching up with EU10 in the medium term.

In terms of the three dimensions of TDI, a disaggregated analysis shows that the various groups of countries are closer to one another in respect of openness to trade relative to other components. In other words, most economies have become open economies. Yet, substantial differences in many other components indicate the limits to what openness alone can achieve. This question becomes especially pertinent when one looks at the differential performance in regard to the components of SI as well as ED.

Figure 1.5. Benchmarking the TDI components across country groups



Note: Vertical axes represents scores of TDI components. For explanation of abbreviations, see text.

Market access (MA) scores of developed countries and EU 10 are again above those of the developing country group. This result could be due in part to the existence of peaks and specific tariffs in developed countries' tariff schedules applied to developing countries. However, the lower score of developing countries is also driven by the persistence of relatively high trade barriers applied among developing countries.[41] The ongoing Global System of Trade Preferences Among Developing Countries (GSTP) negotiations could be useful in reducing these barriers.[42]

When the level of development (LD) scores are examined closely, the results indicate that developed countries' average score in ED is more than twice that of EU 10 and more than five times that of developing countries. The gap is much smaller when looking at the social development component, where the averages for EU10 countries and developed countries are very close, 89 against 82, respectively. The top 10 developing countries also score high at 77. The gender development (GD) component displays a pattern similar to that of the trade openness indicator. EU 10 countries are leading and the developing countries' average scores are relatively close to both developed and EU-10 countries.

3.4 TDI scores: Driving factors

What drives the results presented above? To respond to this question, coefficients of each of the 11 components of the TDI were obtained. These coefficients make it possible to work out the relative dominance and/or importance of the respective components in determining the TDI scores. A straightforward rearrangement of the weighted components of the TDI helps to express it as a weighted sum of the actual value of its 11 constituent components. Hence,

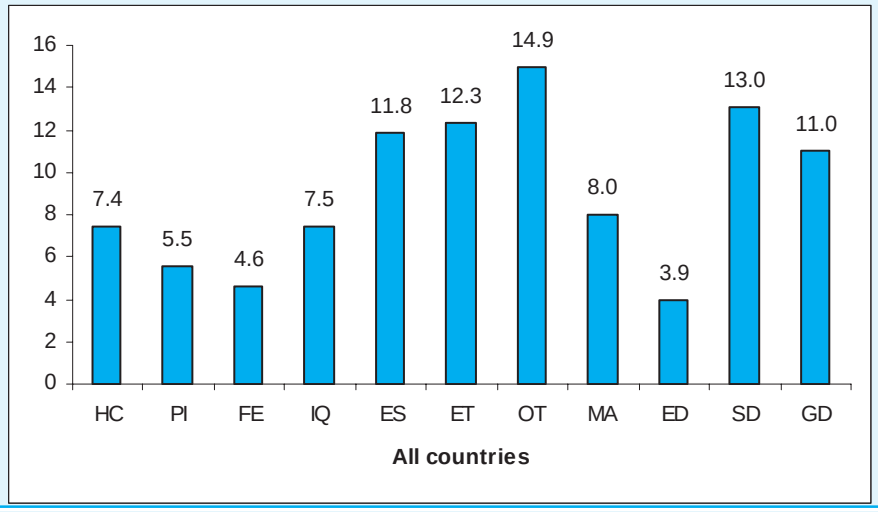
$$\hat{TDI} = 0.170*HC + 0.198*PI + 0.214*FE + 0.206*IQ + 0.191*ET + 0.190*ES + 0.218*OT + 0.130*MA + 0.201*ED + 0.205*SD + 0.178*GD$$

However, these coefficients should not be interpreted as partial regression coefficients since the left-hand side variable is not observable. For instance, it should not be interpreted as if as FE increases, TDI will increase by a figure that is proportional to the FE coefficient. The above identity can be used to compute the share of each component in the TDI for each country and for the average TDI value for the sample as a whole.

Figure 1.6 presents share of each component in the average TDI score for the entire sample.[43] The contribution to the TDI of the openness to trade component (OT) is the largest and explains almost 15 per cent of the TDI score. Contributions of other components vary between 3.9 per cent and 13 per cent. The contribution of the social development component (SD) is the second highest followed by that of the economic structure component (ET), the environmental sustainability component (ES) and the gender development component (GD). The lowest contribution comes from economic development component (ED).

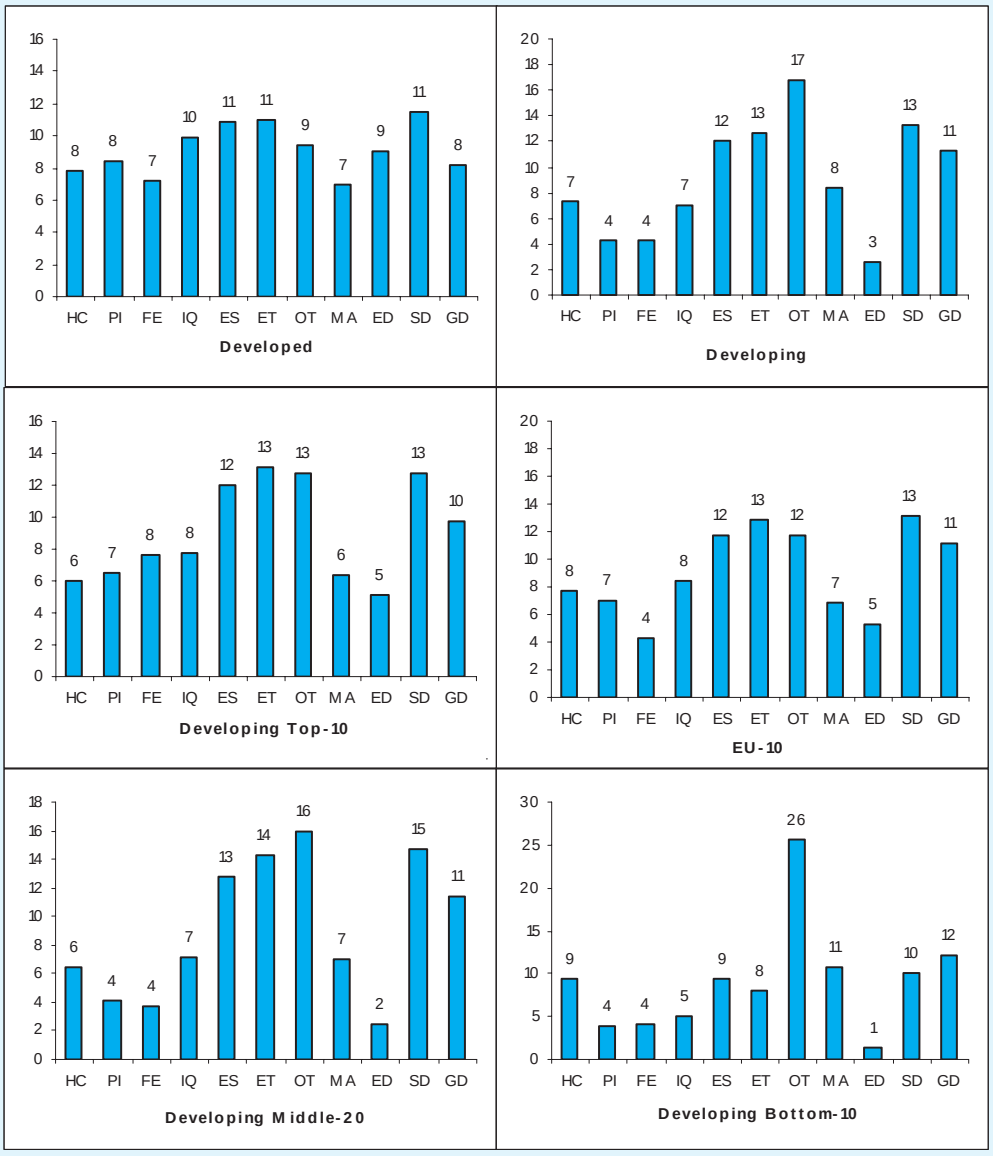
A disaggregated picture of relative contributions of the components is presented in figure 1.7. It shows that the importance of the openness to trade (OT) component tends to be higher for countries with lower TDI scores, and vice versa. While its contribution to the TDI is around 17 per cent for developing countries as a group, it falls to less than 12 per cent for the EU 10 countries and less than 10 per cent for developed countries. In other words, trade liberalization played a much

Figure 1.6. Average shares of TDI components



Note: Vertical axis represents shares of TDI components in TDI scores (in per cent). For explanation of abbreviations, see text.

Figure 1.7. Components' shares (%) in TDI: Country groups' average



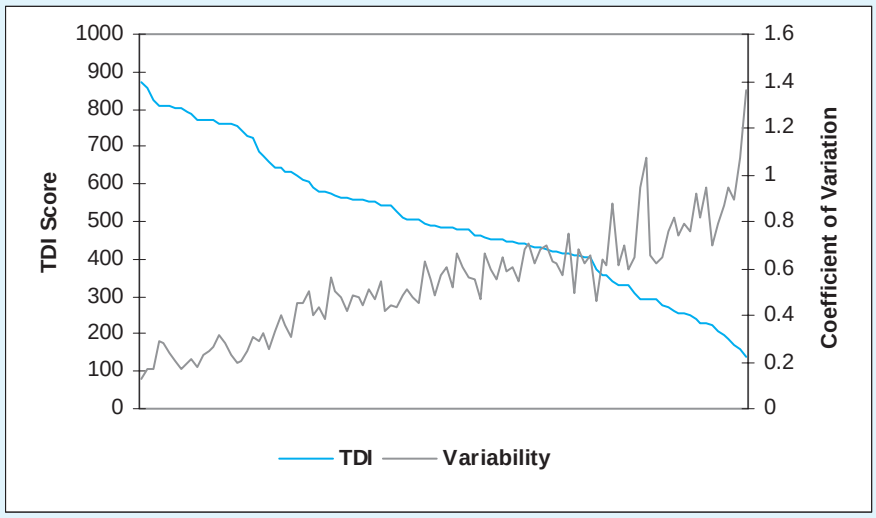
Note: Vertical axes represent shares of TDI components in TDI scores (in per cent). For explanation of abbreviations, see text.

larger role in explaining the TDI scores in the case of developing countries as a whole, and especially for LDCs, than in the case of developed countries. The contribution of the access to markets indicator (MA) is similar for all country groups, although it plays a much less pronounced role relative to OT in the case of developing countries than in developed countries. The contribution of environmental sustainability (ES), economic structure (ET) and social development (SD) indicators are closer to one another across countries. However, there are significant differences among country groups in regard to the respective contribution of economic development (ED), human capital (HC), physical infrastructure (PI), financial environment (FE) and institutional quality (IQ). In general, their contribution tends to decline as one moves down the list of countries in declining order of TDI scores.[44]

4. POLICY IMPLICATIONS

Results presented in section 3 point to an interesting pattern as regards the relative contribution of different components to the TDI scores among the country groups. The highest TDI scoring countries tend to score uniformly high in different components. In other words, these countries display a relatively low variability among contributions of individual components. Variability is defined by the coefficient of variation.[45] The variability increases as one moves down to list in decreasing order of TDI scores. The highest variability is found among the bottom 10 scores. This scissors pattern is evident in figure 1.8.

Figure 1.8. The scissor diagram of TDI and variability



It is observed quite clearly that the higher TDI scoring countries exhibit lower variability in the contribution of individual components, while lower scoring countries have higher variability. Taking the sample of countries as a whole, the correlation coefficient between the TDI and coefficients of variation series is equal to -0.93, while the respective coefficient for developing countries only is -0.90,[46] indicating a very high degree of reverse association between TDI scores and the variability of contribution of components. Therefore, the following general rule appears to hold:

The higher the TDI score, the lower the variability in the contribution of its components and vice versa.

An implication of this finding is that while changes in the value of TDI scores over time could be regarded as a quantitative indication of trends in the trade and development performance of countries, those in respect of the variability could be seen as qualitative changes. Therefore, in addition to TDI scores the coefficient of variation will serve as a tool to track the progress of countries in respect of trade and development performance over time.

Reducing the variability in the contribution of different components should be an important objective of trade and development policies and strategies. In other words, to be successful, a country must put a simultaneous thrust on multiple goals within a coherent trade and development strategy, while emphasizing reduction of the existing gaps in areas where performance is lagging. As the case of LDCs[47] and other low scoring countries indicates, a disproportionate emphasis on a limited number of objectives such as trade liberalization without concomitant focus on factors that make liberalization work can yield only marginal results. By demonstrating significant inter-country variations in the coefficient of variation, the analysis points to the importance of country-specific approaches to trade, development and poverty reduction strategies.

The above analysis also has implications for development partnership. For example, a comparison between the disaggregated results of the EU 10, on the one hand, and developing countries, especially middle- and low-ranking ones, on the other, indicates what works: a simultaneous thrust on a broad-based development agenda to be pursued with a well-defined time frame under strict institutional discipline, and facilitated by adequate financial and technical support and market access. In the case of EU-10, the policy stringency of the pre-accession strategy has been further balanced by clear perspectives of possible welfare gains associated with eventual EU membership. Indeed, the European integration process, as well as the experiences of more successful developing countries, could provide important insights into the formulation of development partnership paradigms aimed at fast improving TDI performance. The above rule also points to the need for greater coherence between trade policy and rule making, on the one hand, and development strategies and partnership and solidarity, on the other. Future work on TDI will include in-depth focus on these issues.

APPENDIX 1

A 1.1 List of countries in the sample

Developing countries (72)

Algeria
Argentina
Bahamas
Bahrain
Bangladesh
Benin
Bolivia
Botswana
Brazil
Burkina Faso
Cameroon
Chile
China
Colombia
Costa Rica
Côte d'Ivoire
Dominican Republic
Ecuador
Egypt
El Salvador
Ethiopia
Ghana
Guatemala
Guyana
Honduras
India
Indonesia
Iran (Islamic Rep. Of)
Jamaica
Jordan
Kenya
Kuwait
Lebanon
Madagascar
Malawi
Malaysia
Mali
Mauritius
Mexico
Morocco
Mozambique
Namibia
Nepal
Nicaragua
Niger
Nigeria
Oman
Pakistan
Panama
Papua New Guinea
Paraguay
Peru
Philippines
Rep. of Korea
Saudi Arabia
Senegal
Singapore
South Africa
Sri Lanka
Sudan
Syrian Arab Republic
Tanzania
Thailand
Togo
Trinidad and Tobago
Tunisia
Uganda
Uruguay
Venezuela, BR
Viet Nam
Yemen
Zambia

Developed countries (20)

Austria
Belgium-Luxembourg
Germany
Denmark
Spain
Finland
France
United Kingdom
Greece
Ireland
Italy
Portugal
Sweden
Australia
Canada
Switzerland
Japan
Norway
New Zealand
United States

EU-10 countries (9)

Cyprus
Estonia
Hungary
Lithuania
Latvia
Malta
Poland
Slovakia
Slovenia

SEE and CIS countries (9)

Albania
Armenia
Bulgaria
Belarus
Croatia
Rep. of Moldova
Romania
Russian Federation
Ukraine

A 1.2 Definitions of the indicators included in trade and development index

Health expenditure per capita (% of GDP): Total health expenditure is the sum of public and private health expenditure. It covers the provision of health services (preventive and curative), family planning activities, nutrition activities and emergency aid designated for health, but does not include provision of water and sanitation.

Education expenditure, public (% of GDP): It includes both capital expenditures (spending on construction, renovation, major repairs and purchase of heavy equipment or vehicles) and current expenditures (spending on goods and services that are consumed within the current year and would need to be renewed the following year). It covers such expenditures as staff salaries and benefits, contracted or purchased services, books and teaching materials, welfare services, furniture and equipment, minor repairs, fuel, insurance, rents, telecommunications and travel.

Roads, paved (% of total roads): Paved roads are those surfaced with crushed stone (macadam) and hydrocarbon binder or bituminized agents, with concrete, or with cobblestones, as a percentage of all the country's roads, measured in length.

Air transport, freight (million tons per km): Air freight is the sum of the metric tons of freight, express and diplomatic bags carried on each flight stage (the operation of an aircraft from takeoff to its next landing) multiplied by the stage distance, by air carriers registered in the country.

Telephone mainlines (per 1,000 people): Telephone mainlines are telephone lines connecting a customer's equipment to the public switched telephone network. Data are presented per 1,000 people for the entire country.

Domestic credit to private sector (% of GDP): Domestic credit to the private sector refers to financial resources provided to the private sector, such as through loans, purchases of non-equity securities, and trade credits and other accounts receivable that establish a claim for repayment. For some countries these claims include credit to public enterprises.

Bureaucracy quality: This is a perception-based indicator. The institutional strength and quality of the bureaucracy is another shock absorber that tends to minimize revisions of policy when Governments change. Therefore, high points are given to countries where the bureaucracy has the strength and expertise to govern without drastic changes in policy or interruptions in government services. In these low-risk countries, the bureaucracy tends to be somewhat independent of political pressure and to have an established mechanism for recruitment and training. Countries that lack the cushioning effect of a strong bureaucracy receive low points because a change in government tends to be traumatic in terms of policy formulation and day-to-day administrative functions.

Corruption: This also is a perception-based indicator. Corruption impedes investment for several reasons: it distorts the economic and financial environment; it reduces the efficiency of government and business by enabling people to assume positions of power through patronage rather than ability; and, last but not least, introduces an inherent instability into the political process.

Agriculture, value added (% of GDP): Agriculture corresponds to International Standard Industrial Classification (ISIC) divisions 1-5 and includes forestry, hunting and fishing, as well as cultivation of crops and livestock production. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated

assets or depletion and degradation of natural resources. The origin of value added is determined by the ISIC, revision 3.

Improved sanitation facilities (% of population with access): Access to improved sanitation facilities refers to the percentage of the population with at least adequate excreta disposal facilities (private or shared, but not public) that can effectively prevent human, animal and insect contact with excreta. Improved facilities range from simple but protected pit latrines to flush toilets with a sewerage connection.

Improved water source (% of population with access): Access to an improved water source refers to the percentage of the population with reasonable access to an adequate amount of water from an improved source, such as a household connection, public standpipe, borehole, protected well or spring, and rainwater collection. Unimproved sources include vendors, tanker trucks, and unprotected wells and springs. Reasonable access is defined as the availability of at least 20 litres a person a day from a source within one kilometre of the dwelling.

Energy use: GDP per unit of energy use is the PPP GDP per kilogram of the oil equivalent of energy use.

Weighted mean tariff: Average of effectively applied rates weighted by the product import shares corresponding to each partner country.

Share of lines with international peaks: Share of lines in the tariff schedule with tariff rates that exceed 15 per cent.

Share of lines with national peaks: Share of lines in the tariff schedule with tariff rates that exceed three times the average tariff.

Share of lines with specific rates: Share of lines in the tariff schedule that are set on a per unit basis or that combine advalorem and per unit rates.

GDP per capita, PPP (constant 1995 international dollar): PPP GDP is gross domestic product converted to international dollars using purchasing power parity rates. An international dollar has the same purchasing power over GDP as the USD has in the United States. GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in constant 1995 international dollars.

Literacy rate, adult: The percentage of people ages 15 and above who can, with understanding, both read and write a short, simple statement related to their everyday life.

Enrolment ratio, gross: The number of students enrolled in a level of education, regardless of age, as a percentage of the population of official school age for that level. The gross enrolment ratio can be greater than 100% as a result of grade repetition and entry at ages younger or older than the typical age at that grade level.

Life expectancy at birth: The number of years a newborn infant would live if prevailing patterns of age-specific mortality rates at the time of birth were to stay the same throughout the child's life.

Gender-related development index (GDI): A composite index measuring average achievement in the three basic dimensions captured in the human development index—a long and healthy life, knowledge and a decent standard of living—adjusted to account for inequalities between men and women.

Note: The definitions above are taken from their respective sources.

A 1.3. Primary sources of data

ICAO: Air transport indicator is obtained from International Civil Aviation Organization, Civil Aviation Statistics of the World.

IMF: Domestic credit to private sector data is from International Financial Statistics 2004.

IRF: The paved road indicator is obtained from International Road Federation, World Road Statistics 2004.

ITU: Telephone mainline indicator is taken from the World Telecommunication Development Report and database 2004.

PRS Group - International Country Risk Guide (ICRG): Bureaucratic quality and corruption are obtained from ICRG 2004 database. http://www.prsgroup.com/icrg.

UNCTAD: Data on tariff barriers are based on TRAINS database in WITS.

UNDP: The education expenditure per capita (% GDP) data is obtained from UNDP. Data on the adult literacy rate, gross enrolment ratio, life expectancy at birth, and data related to gender development measure are taken from Human Development Report 2004.

World Bank: GDP per capita, agriculture value added, and energy use database are obtained from World Development Indicators 2005.

WHO: The health expenditure per capita (% of GDP) data is obtained from the World Health Organization, World Health Report and updates from the OECD for its member countries, supplemented by World Bank poverty assessments and country and sector studies, 2004. The data on improved access to water and sanitation are obtained also from the WHO database.

A 1.4. Descriptive statistics of indicators

Dimension	Component	Indicator	Mean	CV (%)	Max.	Min.
Structural and Institutional (SI)	**Human capital (HC)**	Health expenditure per capita (%GDP)	3.59	51.05	8.10	0.60
		Education expenditure per capita (%GDP)	4.38	35.66	10.00	1.00
	Physical infrastructure (PI)	Paved roads ratio (of total roads)	52.39	62.15	100.00	3.50
		Air transport freight (million tonnes per km)	889.83	350.89	2 9051.97	0.00
		Telephone mainlines per 1000 population	220.74	97.80	749.07	1.90
	Financial environment FE)	Domestic credit to private sector (%GDP)	50.78	86.75	184.58	3.57
	Institutional quality (IQ)	Bureaucratic quality index (0-4 scale)	2.27	47.74	4.00	0.00
		Corruption index (0-6 scale)	2.71	40.60	6.00	1.00
	Economic structure (ET)	Agriculture value added (%GDP)	13.93	87.61	44.74	0.12
	Environmental sustainability (ES)	Access to improved sanitation (%)	63.41	47.54	100.00	4.00
		Access to improved water (%)	78.20	26.09	100.00	11.00
		Energy use	0.30	60.01	0.90	0.10
Trade policies and processes (TP)	**Openness to trade (OT)**	Applied trade-weighted average tariff (%)	9.55	61.39	30.10	0.00
		Share of lines with national peaks (%)	1.68	267.31	37.00	0.00
		Share of lines with international peaks (%)	2.77	187.75	33.22	0.00
		Share of lines with specific tariffs (%)	26.39	80.79	92.26	0.00
	Effective foreign market access (MA)	Applied trade-weighted average imposed by trade partners (%)	4.00	69.59	15.00	1.00
		Share of lines with domestic peaks in trade partners (%)	9.00	81.66	43.00	0.00
		Share of lines with international peaks in trade partners (%)	3.00	63.14	12.00	0.00
		Share of lines with specific tariffs by trade partners (%)	10.00	70.43	39.00	2.00
		Merchandise exports concentration index	0.30	69.93	1.00	0.06
Level of development (LD)	**Economic development (ED)**	GDP per capita, PPP constant 1995 dollar	8810.01	96.25	32398.45	495.22
	Social development (SD)	Adult literacy rate (%)	82.84	24.63	99.80	12.80
		Gross combined enrolment rate (%)	72.15	27.35	114.00	19.00
		Life expectancy (years)	67.21	17.38	81.50	32.70
	Gender development (GD)	Share of GDP per capita, female to Male	0.51	28.42	0.90	0.21
		Share of adult literacy rate, female to male	0.89	18.89	1.09	0.37
		Share of gross enrolment ratio, female to male	0.98	12.35	1.19	0.56
		Share of life expectancy rate, female to male	1.07	3.45	1.20	0.99

Source: See Appendix.
Note: CV (%)=coefficient of variation max = maximum min = minimum.

NOTES

1 This chapter draws on Basu, Fugazza and Rahman (2005, forthcoming).

2 See UNCTAD's *Least Developed Countries Report* (2004a) for a qualified discussion.

3 See Sen (1990) and Anand and Sen (1993) for conceptual framework of human development.

4 The following nine countries are in the EU-10 sample: Cyprus, Estonia, Hungary, Lithuania, Latvia, Malta, Poland, Slovak Republic, and Slovenia. The Czech Republic could not be included due to gaps in availability of certain data.

5 See appendix Table A 1.1 for the complete list of countries in the sample.

6 See appendix Table A 1.2 for definition and appendix Table A 1.3 for data sources. Descriptive statistics are provided in appendix Table A 1.4.

7 See De Vries (2001) for a review of the international debate on statistical indicators.

8 See Krugman (1979) for a seminal contribution on the theoretical rationalization on how countries could gain from trade through the import of new varieties. Broda and Weinstein (2004) present some estimates of the welfare gains due to the import of new varieties in to the United States over the period 1972-2001.

9 See Ethier (1982) for an early theoretical presentation of the argument and Fugazza and Robert-Nicoud (2005) for an application of the argument to South-South Trade. Madani (2001) provides some empirical evidence for Singapore, the Philippines and Malaysia.

10 For a detailed result, see Basu and Fugazza (2005, forthcoming).

11 See the seminal work of Uzawa, (1965) and Lucas (1988) for a theoretical presentation of the argument.

12 See Bloom, Canning and Sevilla(2001).

13 See for instance Krueger and Lindahl (2001) for a qualification of the relationship.

14 Future work will include also energy infrastructure. In particular, access to energy is also of primary importance in defining the productive potential of an economy and thus its trade potential. Energy services are also found to help meet basic human needs and eventually contribute to human development. See IEA (2004) for a discussion.

15 See Nagar and Basu (2004a) for an empirical investigation of the linkages between infrastructure and economic growth in India.

16 *World Development Report* (1994) and Krugman (1998).

17 See among others Limão and Venables (2001).

18 UNCTAD (2004b).

19 See Baldwin and Martin (1999) for an extensive discussion.

20 An indicator on the percentage of Internet users is excluded owing to its high correlation with telephone mainlines.

21 See Levine (1997).

22 See for a review of the theoretical literature Ghosh, Mookerjee and Ray (2000).

23 See Beck, Demirgu, and Levine (2004) for empirical evidence.

24 There are some difficulties in the use of the ratio of domestic credit to the private sector to GDP as an indicator of the quality of the financial environment. Growth of lending above a certain ceiling – which may be higher than that of GDP at current prices but not that much higher – is generally considered to be a harbinger of serious problems such as asset bubbles in the financial sectors of emerging-market economies. However, a good alternative is not easily at hand. Ideally, one needs an indicator of the availability not only of credit to firms and individuals but also of other basic financial services such as the storage of their assets and good facilities for payments and transfers. One possibility would be ratio of the value added of the financial sector to GDP but this solution faces the difficulty that the data for such value added are sometimes poor or even non-existent. Another possible indicator would be the net interest spreads of banks (and of other lending institutions, if available). i.e. total interest income minus total interest expense as a percentage of total assets. This

could be combined with an indicator of the availability of credit to individuals and firms such as credit to the private sector as a proportion of total bank assets. Again, data constraints preclude the use of such an indicator.

25 See North (1994).

26 See Rodrik (2002), Kaufmann et al (2003), and Basu (2004).

27 As defined and discussed in World Bank (2005)

28 See UNCTAD (2003) for an extensive discussion of the role played by FDI in fostering domestic supply capacity.

29 See Acemoglu et al (2002, 2004) for an extensive discussion and empirical investigation.

30 See UNEP, Annual Report, various years.

31 See UNDP (2003),*Human Development Report*. Water (e.g. emissions of organic water pollutants) and air (e.g. emissions of the sulfur dioxide or nitrogen dioxide) pollution indicators might be more appropriate to reflect the degradation of environment and its possible impact on health conditions. However, there are gaps in data availability.

32 The UNCTAD-TRAINS database (http://r0.unctad.org/trains/) remains the most comprehensive source of information on NTBs. In September 2005, UNCTAD hosted an Expert Meeting on Non-Tariff Barriers, where issues concerning collection, classification and quantification of NTBs were discussed. As a result, it was agreed that UNCTAD would reinforce its effort to improve the quality as well as data coverage of its NTB database and establish methodology for its quantification.

33 See Redding and Venables (2003) for a theoretical discussion and Fugazza (2004) for empirical evidence.

34 See Kee, Nicita and Olarreaga (2005).

35 ED and SD elements are included in the HDI. See UNDP *Human Development Report* (various issues) for a detailed description.

36 See Anand and Sen (1993 and 1995) for a conceptual discussion of the HDI and GDI.

37 See for instance Gallup, Sachs and Mellinger (1998) for an empirical assessment of the role of geography/location and climatic factors in explaining cross-country differences in economic growth and development

38 A more comprehensive discussion is provided in Basu, Fugazza and Rahman (2005, forthcoming).

39 See Nagar and Basu (2004b) for discussion of statistical properties of a composite index as estimate of a single latent variable. See also Rao (1964).

40 The World Bank (2005) country classification is followed.

41 See Cernat, Laird and Turrini (2003) and Fernandez de Cordoba, Laird and Vanzetti (2004) for quantitative evidence.

42 See São Paulo Consensus, 2004.

43 For example, to calculate the average share of HC, the current value of HC for each country is multiplied by the value of the coefficient (i.e. 0.17) and divided by the country's TDI current value. The average of countries' share of HC in TDI is then computed.

44 As mentioned before, statistical properties of principal component analysis should make results robust to the increase in the number of countries in the sample. In addition, results were found to be robust to changes in the set of indicators making each component.

45 The coefficient of variation is equal to the ratio of the standard deviation over the mean of the series under consideration. The measure is unit free and controls for possible scoring-scale effects.

46 Both these coefficients are statistically significant at 1% level.

47 See Puri (2005) on a comprehensive approach to the trade and development problematique of LDCs.

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Determinants of Export Performance

2

1. INTRODUCTION[1]

The previous chapter illustrates the need to adopt a pluridimensional policy approach in order to make trade a proper instrument for development. In that context, export performance cannot be only the good fortune to be producing goods in high demand. Rather, it is likely to be the outcome of the combination of various elements framing the production environment and export products' access to international markets. It is therefore necessary to identify those elements. It is also necessary to determine whether the latter affect export performance differently at different levels in order to draw up policy lessons.

The present chapter reflects the results of a recent empirical investigation by the UNCTAD secretariat into the determinants of export performance of developed and developing countries.[2] The findings highlight the importance of both demand and supply-side factors. The study shows that trade barriers continue to be of significance, as has been stressed in other studies, including those by UNCTAD over the years. Equally important is the issue of building competitive supply capacity to effectively exploit export opportunities. The study shows that the relative importance of demand and supply factors varies from country to country, depending a great deal on the stage of development of the external sector. Strong linkages to international markets, physical infrastructures, soundness of the macroeconomic framework and quality of institutions appear to be other major determinants of export performance.

An important purpose of the exercise is to get an order of magnitude of various factors affecting trade performance as a first step to taking a systematic look at policy options for using trade and trade-related factors as an instrument in order to generate desirable development outcomes. It can thus be seen as a direct contribution to the ongoing work on trade and development index.

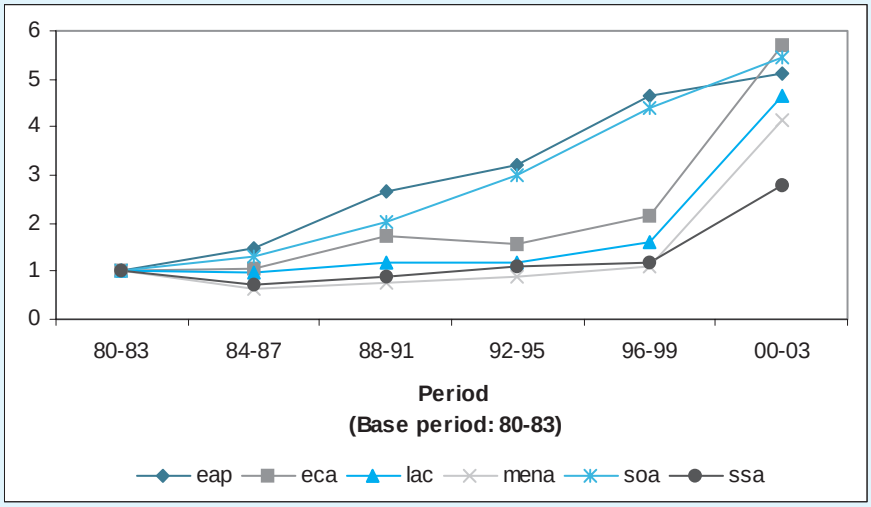
2. FOREIGN MARKET ACCESS

2.1 Foreign market access as an explanation of export performance

Access to foreign markets is a critical determinant of export performance. Here, the term "foreign market access" is seen as representing the foreign market potential of a country. In that sense, it is a broader notion than the term "market access" as used in trade negotiations. It relates directly to the characteristics of the trading partner countries, such as the size of their market and transport facilities, and inversely to their own internal transport costs. It also depends positively on the size of the export basket and the number of differentiated items and their prices, which in turn are affected by market entry conditions. Transborder costs, which also include tariff and non-tariff barriers, have the expected negative impact on foreign market access.

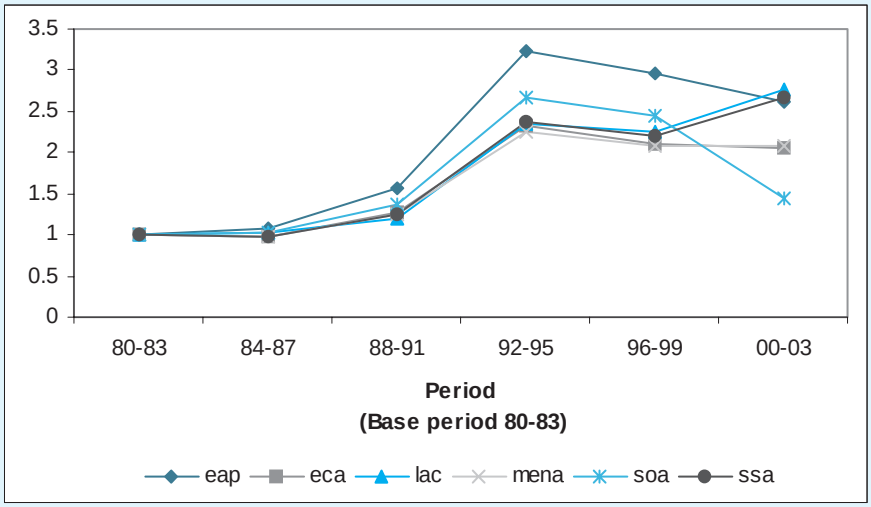
In general, there has been widespread improvement in foreign market access since the early 1980s, which matched to a large extent improvement in export performance (figures 2.1 and 2.2). This stabilized somewhat in the 1990s as the data also reflect the effects of the financial crisis of the late period as underlined by the fall of foreign market access for all Asian countries and in particular South Asian ones. On the whole, the results can be attributed to the important trends in unilateral, regional and multilateral liberalization in the last 20 years, although, as discussed later, there remain important, and, sometimes, shifting, trade barriers that inhibit the potential for further growth, especially in developing countries.

Figure 2.1. Evolution of export performance in developing countries (1980-2003)



Note: Vertical axis represents the ratio between the considered period and the base period. For explanation of abbreviations, see table A 2.4.

Figure 2.2. Evolution of market access in developing countries (1980-2003)



Note: Vertical axis represents the ratio between the considered period and the base period. For explanation of abbreviations, see table A 2.4.

The analysis indicates that the East Asian and Pacific countries in particular were among the main beneficiaries of the observed increase in foreign market access. As indicated in table 2.1, these countries have always been above the benchmark figures (that is, the average performance of the whole sample covered by the investigation). This coincides with their successful diversification efforts, including in the more dynamic sectors of world trade. The results have also been driven essentially by a rise in foreign market access both within and outside the region (table 2.2), although intra-regional market access has grown faster as regional trade

barriers have come down and markets have expanded. Those countries that on average enjoyed the highest growth rates are Singapore and Malaysia. The results underline the significant role of regional integration for East Asian and Pacific countries.

Middle Eastern and African countries initially experienced a fall in foreign market access generated within their respective regions (table 2.2). However, this negative trend was strongly reversed in the 1990s, as they also started to open their markets. Table 2.2 indicates that over the period 1988-1995 foreign market access within the region grew by almost 160 per cent for sub-Saharan countries and 130 per cent for Middle Eastern and North African countries. The highest growth rates are for East African countries, which are also the best performers in terms of overall foreign market access growth. However, this general tendency was reversed in the final period up to 2003, reflecting the difficult recovery from the financial crisis of the late 1990s.

A similar scenario holds for Latin American countries. Intraregional foreign market access grew by almost 200 per cent in Latin America over the period 1988-1995. The higher rates of foreign market growth are found for countries belonging to MERCOSUR, which was effectively launched at the beginning of the 1990s. The positive impact of this regional trade integration process is captured by above average growth rates for intraregional market access. The best performer in all foreign market access dimensions is Uruguay. Table 2.2 shows that Latin American countries also benefited from the high growth of market access outside their region.

Table 2.1. Components of regional exports growth (per cent)

	Exports growth					FMA growth					Supply capacity growth				
Region	80-87	84-91	88-95	92-99	96-03	80-87	84-91	88-95	92-99	96-03	80-87	84-91	88-95	92-99	96-03
EAP	54	46	11	49	21	7	48	111	-8	-12	43	44	-71	59	16
LAC	-5	20	3	45	102	4	16	96	-4	23	-4	3	-99	40	43
MENA	-26	-1	-6	17	92	-3	28	81	-8	1	-36	-1	-66	32	60
SOA	22	47	30	51	18	2	34	96	-8	9	30	19	-48	55	2
SSA	-23	10	-12	11	20	-2	29	89	-7	9	-25	-7	-64	16	31
Memo Item:															
Developed countries	13	41	-3	45	-3	9	21	89	-5	-12	6	17	-93	46	29
ECA	9	23	4	66	16	-2	31	80	-9	-3	7	34	-90	48	26
Benchmark	17	40	-2	42	8	1	28	87	-7	8	20	21	-86	49	36

Table 2.2. Geographical composition of regional foreign market access growth (per cent)

	Foreign market access growth					FMA growth within the region					FMA growth outside the region				
Region	80-87	84-91	88-95	92-99	96-03	80-87	84-91	88-95	92-99	96-03	80-87	84-91	88-95	92-99	96-03
EAP	7	48	111	-8	-31	10	63	124	-9	-31	3	21	81	-6	29
LAC	4	16	96	-4	35	-40	18	195	1	35	16	16	81	-6	20
MENA	-3	28	81	-8	46	-31	-3	127	-14	46	1	30	78	-7	-3
SOA	2	34	96	-8	-24	3	3	100	-12	-24	2	37	95	-8	12
SSA	-2	29	89	-7	-28	-51	6	156	-14	-28	4	30	86	-7	11
Memo Item:															
Developed countries	9	21	89	-5	-12	11	19	87	-5	-7	7	24	97	-5	-21
ECA	-2	31	80	-9	163	-17	30	117	5	163	-1	31	79	-9	-8
Benchmark	1	28	87	-7	-1	-6	33	91	-8	9	6	25	85	-7	8

Foreign market access in South Asia has been driven by improvements in market access inside and outside the region. In the second half of the 1980s, the improvements seemed to be driven principally by extraregional market access, but this changed in the 1990s as countries in the region began a series of major reforms, although, again, the financial crisis of the late 1990s had a negative effect on these countries (table 2.2).

As noted earlier, the term "foreign market access" is somewhat wider than the term as used by trade negotiators, as it includes geographical factors, trading partners' size, as well as traditional trade policy interventions. However, in this empirical context, partner characteristics cannot be entirely separated from policy components, so that a possible interpretation of the increased significance of foreign market access for the more successful exporters is the evolution of the external sector structure, for example participation in the more dynamic sectors of trade.

The analysis also indicates that improved access to international markets can contribute to the expansion of the external sector at all stages of its structural development,[3] but this seems to be relatively more important at the earlier stages of structural evolution than for countries that have already achieved a high degree of structural change. This suggests that the more advanced developing countries are better able to exploit market opportunities through product diversification and differentiation, for example by quality upgrading, and thereby also avoiding trade barriers.[4] The less advanced countries produce more homogeneous products that are more easily targeted by trade barriers (as well as suffering from commodity price declines), so that, when barriers come down, they experience a sharper increase in performance.

These results have important implications for national policies and strategies, development cooperation programmes and actions within the trading system, as discussed in the next section.

2.2 Improving foreign market access: Policy implications

2.2.1 Market access

Enhanced market access can induce a supply response. An important step in improving market access requires the further lowering of trade barriers for developing countries at all stages of development. Actions include tackling high tariffs, and tariff peaks and escalation facing items of export interest to developing countries' agricultural and non-agricultural exports; undertaking commercially meaningful reform in agriculture, including substantial improvement in market access for developing countries, phasing out of export subsidies and substantial reduction in trade-distorting domestic support; liberalizing of services sectors and modes of supply of export interest to developing countries, particularly Mode 4 of the GATS; providing adequate and operational special and differential treatment. These are issues that need to be addressed in the WTO Doha Work Programme if it is to fulfil its development goals, but progress so far has been slow.

Recent studies and reports by UNCTAD provide in-depth treatment of these issues, highlighting the potentially substantial welfare and trade gains. For instance, Anderson (2004) shows potential gains of over USD 100 billion a year from global trade liberalization in goods, of which the major gains – over USD 30 billion— come from liberalization in the agriculture sector. Other studies, using different assumptions, show even larger gains, especially if liberalization were to occur in the services sector: for example, Brown, Deardorff and Stern (2001) estimated that developing countries could see welfare gains of more than USD 500 billion from duty-free trade.[5] Winters et al. (2003) showed that liberalization of the movement of labour

could produce welfare gains for developing countries of the order of USD 156 billion. Francois, Glismann and Spinanger (2000) studied the effects of liberalization of the textiles and clothing sector and estimated income gains of USD 24 billion per year, export revenue gains of USD 40 billion and employment generation of about 27 million jobs for developing countries.

However, improved market access through WTO negotiations on tariffs and NTBs is not a sufficient condition for actual market acess to occur. NTBs relate to the application of discretionary measures by importing countries under certain WTO rules such as SPS, TBT and ADM, as well as evolving voluntary health, environmental and other standards set by the private sector operators, their associations and NGOs. The latter have become increasingly important in recent years. For instance, there is a growing trend towards harmonizing private sector standards among international supermarket chains, making conformity with those standards a requirement for market access. These barriers have serious implications for developing countries in terms of high compliance costs and potential or actual trade losses as an increasing number of their exports are being subjected to them.

To be commercially meaningful, actions to improve market access in agriculture and non-agriculture areas should be accompanied by measures to help developing countries gain actual market entry. These should include disciplining and removing, as appropriate, non-tariff barriers and evolving discretionary measures, particularly those related to technical regulations and standards, sanitary and phytosanitary measures, environmental conditions and anti-competitive market structures and practices. Anti-dumping, in particular, seems to have become the defence mechanism of choice (box 2.1), and further disciplines on the use of such measures may be required if the gains from trade are to be realized. Just as important are private sector measures and requirements such as voluntary standards. A key priority is to ensure that these standards and measures are developed transparently with the participation of developing countries, and applied in a non-discriminatory manner. At the same time, innovative measures, complemented by capacity-building support, are required in order to upgrade substantially developing countries' technical levels and capacity, particularly in standard setting, in accordance with relevant international standards and scientific criteria, as well as helping developing countries to meet legitimate health and safety requirements.

2.2.2 *Trade adjustment and policy space*

The issue of trade adjustment to trade reform is taken up in Chapter 3. Estimates by the UNCTAD secretariat[6] show that while the overall adjustment to various proposals is quite moderate, there are likely to be substantial changes in output in some sectors and regions, as well as considerable losses of tariff and government revenues. Preference losses are also likely to be considerable in some sectors, such as sugar, with particular impact on some countries. While these changes are expected to bring long-term gains for developing countries as a whole, in the short-term those countries are likely to face important adjustments in their economies (box 2.2).

The issue of policy space has become a major concern for developing countries as there is an increasing realization that inside border provisions of certain WTO agreements such as TRIPS, TRIMs and subsidies, and "WTO-plus" provisions under North-South RTAs, have limited the range of choices available to developing countries in terms of the policies and instruments to pursue development. In addition, a number of studies have shown the high cost of implementing a number of WTO Agreements.[7]

Box 2.1. Anti-dumping and its implications for developing country trade

Over the past quarter century, anti-dumping (AD) has emerged as one of the most widespread impediments to international trade. The number of AD initiations per year more than doubled between the late 1980s and the late 1990s, reaching 366 in 2001 and decreasing to about 220 in 2004. The traditional users (including Australia, Canada, the European Union and the United States of America) accounted for over 80 per cent of total AD initiations in the 1980s and the first half of the 1990s. More recently, a number of other countries, such as Argentina, Brazil, China, India, Mexico, the Republic of Korea, South Africa and Turkey, have initiated a significant number of investigations. As regards targets of AD initiations, Asian countries have increasingly been subject to such investigations, with their share rising from 30 per cent in the late 1980s to about 50 per cent in recent years.

An explanation for the large increase in AD is that it is relatively user-friendly: lack of strict definition of AD standards opens up the possibility of its widespread use. Contrary to most other trade policy instruments, such as tariff, quotas and voluntary export restraints, AD has not been brought under strict multilateral discipline through the GATT or WTO. This has led to an increasing gap between the legal definition of dumping and any economic notion of dumping: AD has less to do with combating unfair trade and more with improving the competitive position of the complainant against companies of countries against which complained is lodged. In other words, AD, in many cases, has become a contemporary form of trade protection.

This has important implications for the export prospects of developing countries trying to upgrade export products, including by improving domestic contents or selling their own-brand products through independent distributors. In doing so they often rely on a price policy involving a reduction in the retail price to make such products attractive in foreign markets. Even though such pricing may simply reflect lower profit margins arising from avoidance of middlemen's rent, it exposes the exporting country to the risk of being targeted for AD initiations.

AD has traditionally been debated in the context of competition policy and economy-wide welfare concerns. However, changes in macroeconomic variables, such as fluctuations in economic activity and movements of real exchange rates, affect the domestic and import variables used for determining government agencies' decisions on AD cases across all industries in an economy. This illustrates the linkage between trading system and monetary and financial systems. An effective approach to dealing with AD will therefore require a holistic treatment of the issue.

2.2.3 Commodity prices, market structures and export performance

Commodity production and trade have a significant bearing on sustainable livelihoods of the poor, as well as on the export and growth performance of the large number of commodity-dependent developing countries. Half of all developing countries depend on non-fuel commodities for more than half of their export earnings, two thirds if fuels are included. Over the past decade, commodity export dependence and export concentration have not decreased significantly, indicating the importance of actions in this area in improving export performance of these countries.

Commodity prices are continuing their long-term decline. After falling between 1995 and 2002, with the UNCTAD combined index in terms of current dollars decreasing by 30.8 per cent, commodity prices on average recovered slightly in 2003 and in early 2004, particularly in nominal US dollar terms, but considerably less so in terms of SDRs. Price fluctuations continue to be a characteristic common to almost all commodity markets, and if anything, the amplitude of the fluctuations appears to have increased (box 2.3). The commodity price instability index as calculated by the UNCTAD secretariat (average monthly deviation from exponential trend) for commodities in current US dollars was 2.8 per cent during the period 1999 to 2002, compared with 1.8 per cent ten years earlier, from 1989 to 1992.

Box 2.2. Possible size of implementation and adjustment costs of trade agreements: Lessons from the case of the countries acceding to the EU

Trade agreements do not come cheap. Their application requires substantial implementation costs as argued in Finger and Schuler (2002). Even large developed economies make provisions for these eventualities. The adjustment needs of developing countries, given their limited resources, raise the question whether these are the highest development priority compared with other pressing social issues, such as poverty alleviation, AIDS, and so on.

Support to countries acceding to the European Union, whose trade and development index is taken as the intermediate benchmark for developing countries in chapter 1 of this report, could provide a very rough indication of what might be in order. Under the Phare Programme, which is one of the three pre-accession instruments financed by the European Union to assist the applicant countries of Central Europe with EU integration, an amount of €11 billion has been allocated for the period 2000–2006 for institution building in 10 countries (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia). This corresponds to annual funds equal to 0.5 per cent of the combined GDP of these countries. Applying this factor to the combined GDP of developing countries yields USD 34 billion per year. This is not to say that the latter figure is a reliable guide to developing countries' need for support for adjustment to, and implementation of, WTO Agreements. Adjustment and implementation requirements arising from accession to the European Union cannot be equated with those stemming from WTO membership. Also, most developing countries' institutional and other related capacities are not comparable with those of the EU candidate countries.

Box 2.3. Commodity price movements and their implications for export performance and development

The amplitude of price fluctuations varies considerably among groups of commodities and individual commodities, with vegetable oilseeds and oils and minerals, ores and metals having, on average, higher fluctuations than agricultural raw materials and food and beverages. Over the past several decades, real prices of several important commodities have continued to fall. In 2002, the price index of agricultural commodities deflated by the price index of manufactured exports of industrial economies in US dollars (74) was one half of the same index in 1980 (145) on a base of 100 in 1985. The period from 1998 to 2002 witnessed major falls in the prices of some commodities of major export interest to developing countries, such as coffee, cotton and sugar. Coffee producers now receive roughly a third of the price they used to get in the mid-1990s.

The secular decline in real commodity prices and large price fluctuations have direct consequences for earnings and poverty levels, since farmers cannot generate the surplus needed to invest in measures to raise productivity through more intensive and appropriate use of capital and inputs, or to diversify production for export. Managing large fluctuations in commodity prices is a formidable task not only for farmers but also for Governments and enterprises. In addition, observing the large risks in agriculture and lacking the know-how for dealing with these, financiers have generally been reticent in providing the necessary seed and working capital. This is further complicated by the emergence of increasingly concentrated market structures at the international level and stringent standards and requirements in developed country markets. If present trends continue, a large number of commodity-dependent developing countries risk being excluded from the dynamic segments of the world economy, with serious implications for their export performance, sustainable development and poverty levels.

Parallel to the price decline, developing countries exporters of agricultural commodities have been faced with additional difficulties arising from their weakening position in global value chain. Increased concentration and vertical integration of different stages of the supply chain have strengthened the bargaining power of a few TNCs and large distribution networks in a number of commodity markets. For example, the reduction in the number of roasters and trading companies in the coffee sector has led to increased concentration in the global value chain for coffee. Roasters are now the lead actors in the international coffee market, with five of them accounting for half of global trade. The consolidation and globalization of retail distribution chains have also been accompanied by a widening of spreads between consumer prices and international commodity prices. Domestic reform and liberalization of commodity marketing, which saw the abolition of State involvement in agriculture, led to atomized producers facing large buyers and rendered the former ineffective price takers, without a concomitant reform of the international market structures and related processes.

This unfinished business of commodity sector reform needs to be urgently addressed; it should have significant positive welfare effects on both producers and final consumers. The aim should be to inject dynamism into commodity production and trade with a view to improving export performance and thereby contributing to speedy reduction of poverty. In this connection, the report of the Group of Eminent Persons on commodity issues convened by UNCTAD[8] includes an emphasis on the importance of enhanced, equitable and predictable market access for commodities of key importance to developing countries, addressing the problems of oversupply, making compensatory financing schemes user-friendly and operational, strengthening capacity and institutions, and the establishment of a diversification fund that would help private sector to seize opportunities.

2.2.4 Role of regional economic cooperation and integration

The difficulties in arriving at multilateral solutions within the WTO which take adequate account of development needs has led many developing countries to seek to reduce trade barriers through arrangements with neighbouring countries and, most recently, even across continents. South–South trade and regional economic and trade arrangements, which are allowed by WTO rules, can provide a supportive environment for improving export performance. As the empirical analysis indicates, intraregional market access played an important role in enhancing the export performance of East Asian countries. In the Latin American region, MERCOSUR has had a substantial impact on the expansion of trade in specific sectors among participating countries, as well as between these countries and the rest of the world. There has been a dramatic increase in the number of regional trade agreements (RTAs) in the post-Uruguay Round period, many of them among developing countries, indicating the interest of developing countries to open their own markets to one another (box 2.4).

Although only accounting for just over 10 per cent of total world trade, South-South trade is growing significantly and represents an important opportunity for developing countries to increase their exports. Over 40 per cent of developing country exports are to other developing countries, and trade between them is increasing at a rate of 11 per cent per year. This "silent" transformation is further underlined by increasing investment, transfer of technology and enterprise-level interaction at the intraregional level, but increasingly also at the interregional level. This presages the emergence of a new "trade geography" in the South.

South-South trade can also be a useful testing ground for developing countries to build export capacities, including in dynamic and new sectors. The dynamically changing regional division of labour, known as the "flying geese" model, where less developed countries enter simpler manufacturing stages as the more advanced

Box 2.4. Emerging issues in regional trading agreements

The proliferation, expansion and deepening of RTAs have been significant during the past decade. Today, a total of 215 RTAs are in force and altogether account for some 40% of world trade in 2000 and are estimated to cover over 50% in 2005. Recent "new generation" RTAs increasingly cover not only trade in goods, but also "behind the border" areas, including trade in services, investment, competition policy, intellectual property rights, government procurement, labour, environment and development cooperation, thereby going beyond multilateral disciplines and liberalization commitments ("WTO-plus"). Furthermore, RTAs can have trade creation or diversion effects. This raises the question of the interrelationship and coherence between trade liberalization and trade policy reform through RTAs and MTS. The proliferation of RTAs, especially among major trading nations, has raised concern among developing countries and other non-participants over a possible deterioration in their conditions of access to these integrated markets and a fragmentation of the MTS. A major development has been the growth of North-South RTAs and North-South-South RTAs.

A number of developing countries are in the process of transforming their trade and economic relations with their previously preference-granting developed countries into reciprocal free trade areas, as is the case with the ACP-EU negotiations for the Economic Partnership Agreement, Euro-Mediterranean Agreements between the EU and North African and Middle Eastern countries, and the FTAA negotiations involving countries in the Western hemisphere. A challenge facing developing countries in these novel forms of RTAs is that they would need to design the appropriate degree and pacing of regional liberalization, as well as SDT, bearing in mind their limited economic capacity, negotiating resources and ongoing Doha negotiations.

economies successfully shift to increasingly sophisticated manufacturing activities, remains a relevant ideal for regional cooperation. Such a process can also help countries avoid the low and declining value-added trap. Mapping regional divisions of labour along value chains could help countries in their diversification strategies. South-South trade through the Global System of Trade Preferences Among Developing Countries (GSTP) provides a potential complementary avenue for developing countries to increase and expand their interregional market access opportunities.

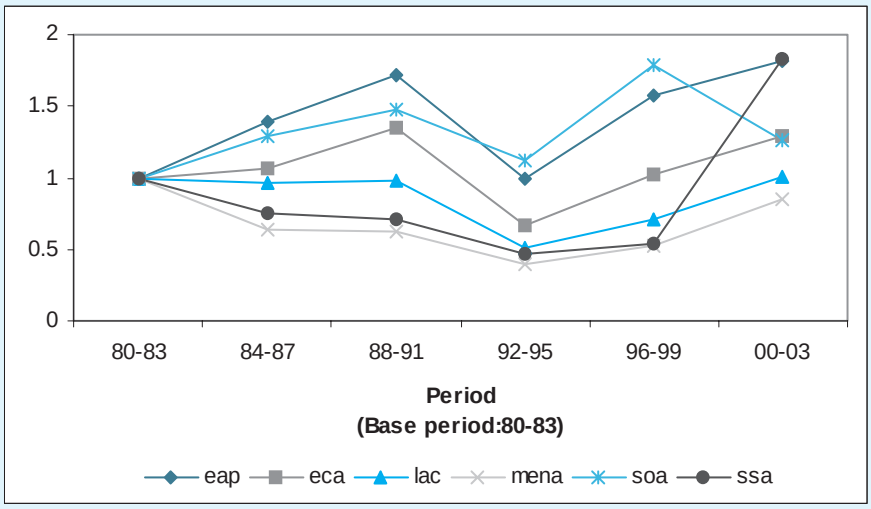
3. SUPPLY-SIDE FACTORS

3.1 Trends

Supply-side constraints are receiving increasing attention as a constraint on lifting the trade performance of many developing countries. This is one of the reasons why developing countries, especially the LDCs, are often unable to take up opportunities for trade under preferential trading regimes, such as the generalized system of preferences (GSP).[9] The main components of supply capacity are internal transport costs and factors affecting cost of production. The latter are strongly related to domestic market structure and the institutional framework. The macroeconomic environment also has an important role in shaping supply capacity.

The relative evolution of supply capacity is slightly more differentiated than that of foreign market access (figure 2.3). Asian economies show the largest relative increase in their supply capacity in the 1980s and the lowest relative fall at the beginning of the 1990s. The best performers over the two decades were Taiwan Province of China and Singapore. Figures reported in table 2.2 indicate that the bulk of the growth in supply capacity occurred in the 1980s. The Chinese and the Philippines' supply capacities grew outstandingly in the period 1992-99. Asian countries were also the best performers in relative terms over the two decades.

Figure 2.3. Evolution of supply capacity in developing countries (1980-2003)



Note: Vertical axis represents the ratio between the considered period and the base period. For explanation of abbreviations, see table A 2.4.

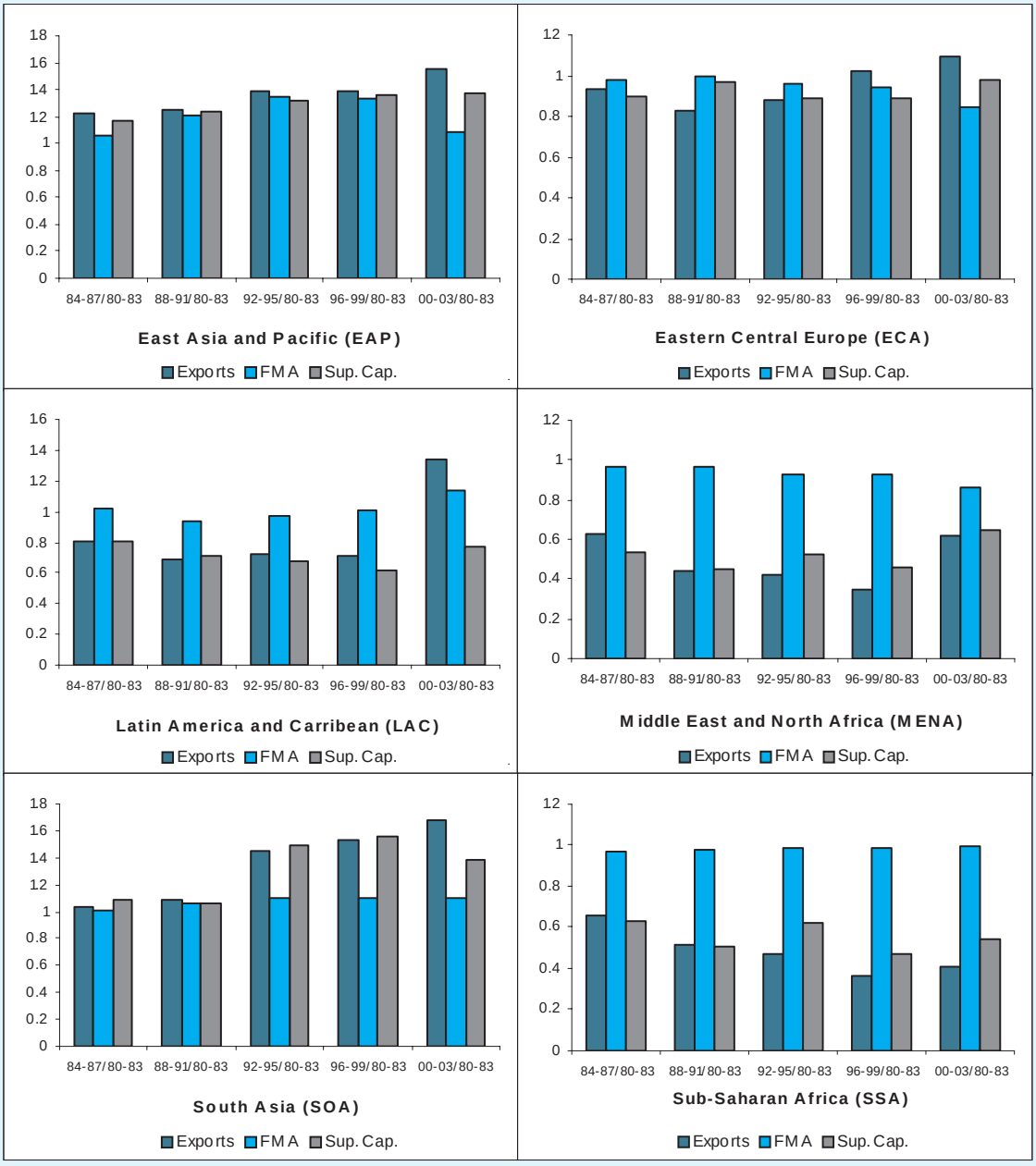
The African and the Middle Eastern countries mostly experienced negative growth in their supply capacities up to the mid-1990s. But growth rates turned positive in the second half of the 1990s as shown in table 2.1. This may reflect to a large extent the negative impact of conflicts on infrastructure and related investment. However, relatively high growth rates have been observed since then.

As shown in table 2.1, a decline in supply capacity was also experienced by most Latin American countries up to the first half of the 1990s. Export performance, if not negative, remained very low in that period, most likely as a result of the impact of economic turmoil that characterized the region. It then increased substantially and strongly contributed to relatively high growth rates in exports.

However, the issue of export performance constraints becomes more nuanced when one looks at the relative significance of supply capacity and foreign market access. For example, the Asia and Pacific regions are the only regions that have improved their export performance relative to the whole sample of countries in all periods (figure 2.4). They experienced a relative improvement in their foreign market access in all periods but the very last one. This indicates that their export performance has been driven by an outstanding relative improvement in their supply capacity. This is likely to reflect a policy orientation aiming to support and stimulate exporting firms' productive capacities. This policy consisted not only in levelling the playing field for exporters, but also in boosting it in their favour by employing proactive policies such as the coordination of investment plans, directed credits and, initially, infant-industry protection.[10]

The relative export performance of the African and Middle Eastern countries tended to deteriorate over the 1980s and 1990s (figure 2.4). This was driven by a relatively poor performance in supply capacity, rather than a deterioration of foreign market access. However, supply capacity started picking up in the period 2000-2003 pushing upward relative export performance. On the other hand, foreign market access has driven the export performance of the Latin American and Caribbean countries, while supply capacity has tended to deteriorate over the last 20 years. However, supply capacity appears to improve relatively in the period 2000-2003.

Figure 2.4. Benchmarked export performance and components



Note: Bars represent ratios of regional values over sample values. They are computed for each period and then normalized to the ratio prevailing in the first period. For instance the bar plotted in graph 1 for Exports 84-87/80-83 in region *eap* correspond to (Exports$_{eap}$ 84-87/ Exports$_{sample}$ 84-87)/ (Exports$_{eap}$ 80-83/ Exports$_{sample}$ 80-83). This makes it possible to qualify the evolution of export performance for each region across periods and with respect to world export performance for each period. Export performance has been defined theoretically as the product of foreign market access and supply capacity. That is, the exports ratio is equal to the product of the foreign market access and the supply capacity ratios up to an error term related to estimation. For explanation of abbreviations, see text.

3.2 Key determinants of supply capacity[11]

Determinants are discussed in the context of export performance. Most of them have been cited in the previous chapter in the more general context of the trade and development index.

(i) Domestic transport infrastructure

The size and the growth of the supply capacity of a country depend critically on the availability of physical infrastructure, ranging from roads and ports to energy and telecommunications. The UNCTAD study used internal transport infrastructure as a proxy for infrastructure as a whole. It found that the importance and the significance of internal transport structure vary from period to period and from one group of countries to another. It appears that internal transport costs had a significant negative impact on export performance over the 1988-1991 period among the weakest performers.[12] Internal transport facilitation played an important role across all regions in explaining export performance in later periods. Its significance appears to be more marked among the better performing exporters.

The analysis therefore suggests that internal transport infrastructures are likely to play an important role at the early stage of export sector development. Most African countries, many of which are LDCs, are characterized by poor transport infrastructure, and are found in all periods to be poor export performers. This appears to indicate that African countries could do much to raise their supply capacity by investing in transport infrastructure. This conclusion is supported by other recent studies: for example, Limão and Venables (2001) present some empirical analysis indicating that levels of trade flows observed for African countries are relatively low, essentially because of poor transport infrastructures. This could be more acute in the case of landlocked countries because of their geographical handicaps. The fact that there has not been a substantial investment in infrastructure in these countries in the last two decades could explain their very low upward mobility in export performance.

(ii) Macroeconomic environment

The real exchange rate, which reflects the underlying relative movement of prices at home and abroad, proves to have a significant effect on the export performance of the lowest performers. Results for all periods indicate, for example, that an overvalued real exchange rate is seriously detrimental to export performance, while on average a 1 per cent real depreciation could increase exports by 6 to 10 per cent. This is not an argument for competitive devaluations of nominal exchange rates, but rather it points to the importance of the pursuit of productive gains to maintain external competitiveness.

An overvalued currency, sometimes as a result of fixed exchange rates that are used as a nominal anchor to control inflationary pressures,[13] translates into a direct loss of price competitiveness for exporting firms. This is of particular importance for commodities and manufactured products that are labour-intensive. Both types of goods are essential components of the export baskets of weak export performers, indicating the likely overvaluation of their real exchange rates. Good export performers, on the other hand, have relied on more capital-intensive production relative to weak performers. The former may suffer less than the latter from export price competitiveness, measured by the real exchange rate, while exporters in more labour-intensive activities may suffer less from high capital rents.

In other words, good export performers are more likely to have a stronger position in more capital-intensive or differentiated product markets and may face less aggressive competitors than exporters in more labour-intensive product markets. As a consequence, their competitiveness might be expected to be less sensitive

to small movements in the real exchange rate, and relatively more dependent on the technological content of their product and thus to a large extent on capital. This is not likely to be the case for producers exporting low-skill-intensive products, which are highly substitutable and whose demand is very volatile and price-sensitive. Real interest rates, an element in the relative price movements that drive the real exchange rate, are found to affect significantly the export performance of good performers, with high rates increasing producer costs and hence impacting negatively on export competitiveness.

(iii) Foreign direct investment

The results indicate that FDI is likely to affect export performance positively (UNCTAD, 2002b). This is true for most levels of export performance and for every period under consideration. The experience in a number of countries suggests that FDI strongly contributes to the transformation of the composition of exports. For instance, it has been well documented that FDI inflows into Singapore or, more recently China, have helped to increase significantly the technological content of exports by supporting strongly the development of export supply capacity, including knowledge-based industries.

Consistent with these experiences, a positive and significant relationship between export performance and FDI contribution to capital formation is found at all levels of export performance in this analysis. In all periods except 1988-1991, the strongest impact is obtained for the lowest two groups of export performers. In the first two periods, the impact of FDI contribution to capital formation is non-linear. Thus, there appears to be a U-shaped relationship between export performance and the FDI: they relate closely at early stages of export development, but the relationship becomes weaker as export development advances, only to become stronger again at later stages of export development.

The results also reveal that where FDI does contribute to the technological upgrading and structural evolution of the export sector, the structure of the sector is an important ingredient of export performance both at the early stage of development of the export sector and at a later stage. A possible qualification of the argument would be to say that export performance is positively affected by inter sectoral diversification among poor performers and intra sectoral diversification among better performers, where FDI would seem to be directed towards innovative activities within an already existing sector. Results for the last period only indicate a decreasing pattern of the impact of FDI across all country groups. This could indicate that good performers in earlier periods have a maturity turning point in intra-sectoral development, but the results in this period again may be influenced by the Asian crisis.

Overall, the analysis points to the conclusion that supply capacity constraints could also be addressed by improving the technological content of the export sector as indicated by the positive influence of FDI contribution to capital formation on export performance.

(iv) Institutions

An important distinguishing aspect of the UNCTAD study is that it takes into account institutional factors. A significant role for institutional quality could have been expected at an early stage of export sector development, but, in the UNCTAD analysis, this is the case only for the 1988-1991 period. This might be explained by the difficulties in isolating the contribution of institutional factors at such a stage, because of the likelihood of their being closely related to the general macroeconomic environment and the contribution of FDI, although there is no strong statistical evidence of multicollinearity among explanatory variables. However, the analysis also seems to indicate that institutions matter more at a higher level of export per-

formance. This result suggests that what appears to be essential in the overall growth process as suggested by recent research[14] is only partially true for export performance. It might also suggest that institutions and macroeconomic variables are substitutable along the export development process. While the real exchange rate is an essential price competitiveness component for low performers, once macroeconomic stability has been achieved and the composition of exports is more oriented towards more capital-intensive or differentiated goods, as is most likely the case for high performers, the institutional framework comes in as an essential competitiveness ingredient. Better institutions are expected to guarantee better protection of property rights, which becomes essential as production becomes more and more capital-intensive. Better institutions are also likely to be associated with more efficient administration and in particular regulation, which could prove to be important price components in industrialized countries.

3.3 Strengthening supply capacity

The analysis of supply-side factors points to the importance of three basic policy thrusts–namely, the creation of a sound macroeconomic and investment environment; building supply capacity and competitiveness, and the effective and controlled management of integration with the global economy. Sectorally focused policy instruments employed by successful countries included selective measures, specific exemptions from taxes and duties, controls over interest rates and credit allocation, and managed competition, while external sector policies included phased liberalization and managed exchange rates. Measures were taken to facilitate local R&D, including financial subsidies, particularly for large and risky projects, and the creation of science parks and special industrial estates. These policies were applied in a time-limited and targeted manner with clear performance standards. Application of such policies and instruments requires adequate policy space and flexibility to respond to structural deficiencies and to effectively manage external integration. The burden of this should not rest on national policies alone, since donor conditionalities and "inside border" provisions in multilateral and North-South regional trade agreements have much to do in defining the degree of policy freedom allowed to developing countries at the national level.

As suggested by the empirical analysis, inter sectoral diversification should be promoted at the early stage of development of the external sector, which could be done via the promotion of foreign direct investment. This could also support a stance in favour of more neutral sectoral policies. However, the lowering of trade barriers by developing countries on intermediate inputs into their own production could also be useful as a step towards enhancing their value added and hence export performance and the benefits they derive from trade. However, this process would also benefit from further reductions in tariff escalation in major markets, permitting developing countries to advance the processing of their own basic commodities.

In a more dynamic context, diversification should also be promoted within sectors. As the developing countries move into more diverse and differentiated products, ties with developed countries may help to foster intra-industry trade and avoid a protectionist reaction as their exports expand. An important way for accomplishing this is the promotion of technological improvement, which requires adequate human capital. This implies that public investment should also be devoted to increasing the availability and quality of human capital (e.g. through education) and the "technological competency" of the labour force (e.g. through training). However, technological improvement is also critical and this can either be imported via FDI or nationally generated via R&D. Then, in the process of external sector development, inter-sectoral diversification should be associated with the accumulation of competencies that will be able to lead to intra sectoral diversification, which appears at later stages of development.

Increasing domestic supply capacity and enhancing international competitiveness should rank high among the strategic objectives of policies at macro, sectoral and micro levels. Specific market failures and missing markets, the lack of an entrepreneurial base, imperfections in technology and capital markets, risks involved in starting up new activities and exporting, and linkages and externalities among different sectors should be adequately factored into policies and measures.

The extent of benefit from improved export performance depends, to a large degree, on the size of domestic value added. While the East Asian NIEs in particular managed to successfully combine diversification and trade expansion with growth in manufacturing value added and GDP, many other developing countries, on the other hand, often find themselves caught in a low and declining value-added trap arising from: (a) "export illusion" caused by the high import content of exports, wherein export earnings do not reflect the true domestic value added; and (b) "fallacy of composition", which arises when too many countries rush into the same sectors or products, thereby driving down terms of trade and export earnings, and thus denying themselves the achievement of the original objective of improving domestic value added through diversification. Addressing these twin problems should be a key policy priority.[15]

Another challenge facing the developing countries is to strategically tap TNC potential in order to improve export performance. As has been indicated by the analytical results above, the impact of FDI varies with the stage of development of the export sector. Consequently, the FDI policies should be calibrated to respond to particular circumstances. In general, such policies and measures should aim to ensure that the objectives and targets of FDI policies are consistent with, and an integral part of, their broader development objectives, policies and strategies. Incentives to attract FDI should aim at "racing to the top", rather than "racing to the bottom", as well as ensuring a sustainable upgrading of export-oriented activities, and help diffuse skills, knowledge and technology to domestic firms.

The empirical analysis also highlights the importance of transport infrastructure. Investment in transport infrastructure may be one of the most important ways of lifting the trade performance of African countries in particular, as well as other developing countries. Moreover, since many of these countries are landlocked, a regional approach to transport seems to be indicated. Finally, since the returns on infrastructure investment tend to be low or take a long time to come to fruition, this is a case for public works, supported by donors (since many of these countries are already heavily indebted) or at the very least soft loans from the international financial institutions.

4. CONCLUSION

An important lesson from successful experiences with export performance is that national policies and international actions should simultaneously address the twin issues of foreign market access and supply capacity. Fighting for better access to international markets without simultaneously paying attention to supply conditions is likely to be unproductive in terms of export performance, as suggested by the African and to some extent the Latin American experiences. However, policies should have a differentiated approach by taking into account the fact that the determinants of export capacity vary across countries.

Improved supply capacity has been the driving force behind the export performance of successful Asian countries. However, supply capacity appears to have limited the export performance in African, Middle Eastern and Latin American countries. Poor transport infrastructures and weak macroeconomic and institutional environments are the main explanatory factors behind poor performance (e.g. in

the African countries). Thus, recalibrating development cooperation programmes to provide greater focus on adequate and coherent financial and technical support for developing countries' efforts to improve supply capacity should be a key priority.

As might be expected, the UNCTAD analysis also shows that foreign market access is highly significant, particularly in explaining poor export performance for a number of countries whose exports are badly affected by trade barriers. High performers seemed able to surmount this constraint, possibly because of their more diverse and differentiated portfolio of goods on offer as well as intra-firm, intra-industry trade. FDI can play an important role here, as it does in lifting supply capacity. The ongoing Doha Round negotiations can also play a critical role in improving developing country foreign market access in areas such as agriculture, manufacturing, including textiles and clothing, and services. Development cooperation has an important role in capacity building in developing countries in effectively addressing evolving market entry conditions and technical standards.

Appendix 2

A 2.1. The methodology in brief

This study builds on the work of Redding and Venables (2004a). It uses the same theoretical model of bilateral trade flows and adopts a similar empirical strategy. The latter initially consists of building data series to capture both the internal and external components of export performance using *gravity techniques*. These series are then used to investigate the importance of foreign market access relative to supply capacity components. In other words, the exercise is to identify the possible main determinants of the supply-side conditions after having controlled for the external elements. However, this study has a different econometric approach from that used by Venables and Redding. In this study, regression techniques, which are able to account for unobserved heterogeneity across countries, namely *quantile regressions*, are used. Accounting for unobservable heterogeneity should allow the identification of any differences in the effect of and importance of export performance components, which are linked to the degree of development of the external sector itself. In other words, the techniques used here allow for the testing for non-linearities in the relationship between export performance and its components. Moreover, more emphasis is put on the determination and impact assessment of variables related to supply conditions. This is done with the aim of determining as clearly as possible the policy implications.[16]

A 2.2. The theoretical context: A heuristic description[17]

The theoretical framework is essentially a standard new trade theory model based on product differentiation derived from a constant elasticity of substitution demand structure.

The economy consists of a number N of countries. Only the manufacturing sector is considered. Firms in that sector operate under increasing returns to scale and produce symmetric differentiated goods, which are used in consumption. Preferences are represented by a CES utility function in which the elasticity of substitution s between any pair of products is the same.

In that framework, the demand in country j for each variety produced in country i is a function of country's j total expenditure on differentiated products, the price of the good and the price index defined over the prices of individual varieties produced in i and sold in j. Total expenditure is assumed to be exogenously given. The elasticity of demand is identical across varieties and larger than 1. The producer price is assumed to be the same for all varieties produced in country i. Transport frictions, which reflect the cost of getting a good from country i to country j, are set proportional to the producer's price. This cost is composed of three elements: the cost of getting the product to and from the border in countries i and j and the cost of getting the product across the border. Intra-country cost would reflect internal geography and infrastructure. Inter-country cost would reflect external geography and policy barriers.

Exports from country i to country j are equal to the product of supply capacity, transborder transport costs and the market capacity of country j. The supply capacity of the exporting country is the product of the number of varieties and their price competitiveness, which is measured by the product of the producer price and internal transport costs. The market capacity of country j depends positively on total expenditures in j, on the number of competing varieties and their prices expressed in the price index, and negatively on country j internal transport costs.

The total value of exports of country *i* is equal to the product of its supply capacity and the sum of the market capacity of all country *i* exports destination countries, weighted by bilateral trade costs. The latter represents country *i* foreign market access or equivalently country *i* market potential, which refers to the concept developed by Harris (1954).

The model presented above postulates that the effect of a rise in expenditure on traded goods in a given country would benefit relatively more than those of its trading partners that are relatively closer (the demand pecuniary effect). In this context, distance has to be interpreted not only as a pure geographical element but also as any element that possibly represents a barrier to trade, such as tariffs, non-tariff barriersand anti-competitive barriers.

The model also suggests that in order to capture fully the demand pecuniary effect just described, favourable supply conditions are expected to play an essential role. In addition, access to foreign markets may be reduced by poor supply capacity.

A 2.3. The Empirical Context

(a) The dataset

The bilateral trade flows of 84 countries for the period 1980-2003 are used to estimate the gravity equations. The list of countries is presented in table 2.A1. Bilateral trade flows are obtained from the UN COMTRADE database. Data are deflated by the United States GDP deflator (1995 is the base year) in order to obtain real values. Data on trade flows are combined with geographical characteristics and data on GDP. Sources are detailed below. To account for likely measurement error, data are weighted by the product of trade partners' GDP in all regressions based on bilateral trade flows.

As bilateral trade flows are usually characterized by high year-to-year fluctuations and this study is essentially concerned with medium- to long-term determinants of export performance, they are averaged over four-year periods. The study examines export performance over the period 1980-2003 l, which gives five periods of analysis.

In the second part of the paper, quantile regressions are applied to the above export data aggregated at the country level. Data availability for supply capacity variables is a major constraint. In order to keep analytical relevance and statistical coherence, empirical investigations are run for the three 4-year periods covering 1988-2003. Variables sources are detailed in table 2.A2.

(b) Estimation strategy[18]

Gravity equations

As suggested by the theoretical model, total export growth can be decomposed into supply capacity and foreign market access growth. The approach consists of estimating a gravity model equation where the dependent variable is exports (logarithm) from country *i* to country *j* and the dependent variables are bilateral distance (logarithm), an indicator of the existence of a common border, exporter-country dummies and importer-partner dummies.

$$\underbrace{\ln(X_{ij})}_{\text{Value of Exports from i to j}} = \alpha + \underbrace{\lambda partn_j}_{\text{Export partner Market Capacity}} + \underbrace{\beta count_i}_{\text{Supply Capacity}} + \underbrace{\gamma_1 \ln(dist_{ij}) + \gamma_2 bord_{ij}}_{\text{Bilateral Trade Costs}} + \underbrace{u_{ij}}_{\text{Stochastic error}}$$

Bilateral distance $dist_{ij}$ and the border dummy $bord_{ij}$ are assumed to capture geographical bilateral trade costs. Exporters' and importer partners' fixed effects, $count_i$ and $partn_j$ respectively are introduced to control for supplier capacity and market capacity. They can also be expected to control for institutions and policy-related bilateral trade costs. Tobit estimation is used to account for zero bilateral trade values. In addition, in order to allow for measurement error in bilateral trade flows that is correlated with the volume of trade, observations are weighted by the product of country and partner GDP.

Following Redding and Venables (2004b) the supply capacity estimate is given by the exponential of exporter country dummy times its coefficient. That is

$$SC_i = \exp(\hat{\beta} count_i)$$

Foreign market access estimate takes the form

$$FMA_i = \sum_{i \neq j} \exp(\hat{\lambda} partn_j) dist_{ij}^{\hat{\gamma}_1} \exp(\hat{\gamma}_2 bord_{ij})$$

Supply capacity determinants

The following regression equation is used to estimate the determinants of supply capacity:

$$\ln(X_i) = \alpha + \lambda \ln(GDP_i) + \beta \ln(POPU_i) + \gamma \ln(FMA_i) + \delta \ln(t_i) + \chi COMP_i + u_i$$

where POP_i is population, t_i is internal transport costs and related features and *COMPi* is a variable or set of variables affecting export sector competitiveness, either directly or indirectly.

Variables used to control for the competitiveness environment are assumed to be related to the institutional and macroeconomic frameworks. Two indicators are used for institutional quality. The first is the widely used index from the International Country Risk Guide database. It measures the risk of expropriation, which is associated with institutional quality. A higher value of the index is associated with better institutional quality.

The second indicator is specific to labour market institutions and as such is expected to reflect more precisely the labour cost dimension. Nevertheless, it remains a qualitative measure. The indicator is built using Forteza and Rama (2001) data and methodology. A higher value of the indicator corresponds to a less flexible market.

Macroeconomic conditions are proxied by the real exchange rate.

The technological environment is captured possibly by the contribution of FDI, in percentage, to capital formation.

Internal transport frictions are introduced via the percentage of paved roads in total road networks. Transport structure variables are likely to capture internal transport frictions more precisely than exclusively geographical variables.

To account for possible endogeneity issues both current and lagged values are used for GDP, FDI and infrastructure variables. Estimation results revealed no significant difference and results are presented with current values.

Taking into consideration the fact that unobserved heterogeneity might play an important role in determining export performance, but the set of available variables and indicators does not allow to control for it, quantile regression techniques are used,[19] following the seminal work of Koenker and Bassett (1978). Quantile techniques permit the study to allow for the existence of unobservable heterogeneity not only through differences in the constant term, as is the case when introducing dummies, but also through differences in coefficients. The strength of the estimation relies very much on the fact that these differences are obtained within the same sample and not across samples. Quantile regression allows the characterization of an entire conditional distribution rather than only the mean of that distribution as in the case of standard OLS. In that sense, quantile regression is robust even in the presence of outliers, which is not the case for traditional conditional mean estimation procedures.

In the present context, the distribution of the real value of countries' total exports is dealt with. Quantile regression allows the identification of different responses of exports value to FMA and supply capacity variables associated with different points on exports value conditional distribution. Nonetheless, quantile regression coefficients measure the determinants of export performance for under- and over- performing countries only in terms of export performance. As estimation could modify the position of a given country, it may become hazardous to attribute export performance determinants to over- and under- performing countries per se. Quantile regression results represent the basis for policy-oriented experiments aimed at qualifying possible export performance constraints.

A.2.4 List of countries in the sample

Western Europe (we)
- Austria
- Belgium-Luxembourg
- Switzerland
- Cyprus
- Germany
- Denmark
- Spain
- Finland
- France
- United Kingdom
- Ireland
- Italy
- Netherlands
- Norway
- Sweden
- Greece
- Portugal

Sub-Sahara (ssa)
- Burkina Faso
- Côte d'Ivoire
- Ghana
- Kenya
- Madagascar
- Mali
- Mauritania
- Mauritius
- Niger
- Nigeria
- Rwanda
- Senegal
- Uganda
- United Rep. of Tanzania
- South Africa
- Zambia
- Zimbabwe

Middle East and North Africa (mena)
- Algeria
- Arab Republic of Egypt
- Islamic Republic of Iran
- Israel
- Jordan
- Kuwait
- Morocco
- Syrian Arab Republic
- Tunisia

Latin America and Caribbean (lac)
- Argentina
- Bolivia
- Brazil
- Chile
- Colombia
- Costa Rica
- Domican Republic
- Ecuador
- Guatemala
- Honduras
- Jamaica
- Nicaragua
- Panama
- Peru
- Paraguay
- El Salvador
- Trinidad and Tobago
- Uruguay
- Venezuela

South-Asia (soa)
- Bangladesh
- India
- Sri Lanka
- Nepal
- Pakistan

Eastern Europe and Central Asia (eca)
- Bulgaria
- Hungary
- Poland
- Romania
- Turkey

East Asia and the Pacific (eap)
- Australia
- China
- Hong Kong (China)
- Indonesia
- Japan
- Republic of Korea
- Malaysia
- New Zealand
- Philippines
- Singapore
- Thailand
- Taiwan, Province of China

A 2.5 Variables and sources

Variables	Source
Bilateral trade flows	United Nations COMTRADE database
GDP, population, infrastructures	World Bank World Development Indicators 2005
United States GDP deflator	IFS from the IMF
Internal geography	Gallup, Sachs and Mellinger (1998)/ (www2.cid.harvard.edu/ciddata)
Miscellaneous	CIA World Fact Book, various years
Labour market indicators	Forteza and Rama (2001)
Real exchange rate	World Bank Development Indicators 2005 and author's computations
FDI contribution to capital formation	UNCTAD Handbook of Statistics/(www.unctad.org/statistics)
Institutions	Expropriation risk form International Country Risk Guide database / Hall and Jones (1998) / (www.standford.edu/~chadj/datasets.html)

A.2.6 Quantile regressions results

Dependent variable : Ln(Exports)	# Observations :84

	1988-1991		1992-1995		1996-1999		2000-2003	
10								
ln(GDPt-1)	0.754*	*0.155*	0.755*	*0.193*	0.869*	*0.201*	0.739*	*0.176*
ln(POPU)	0.228	*0.163*	0.27	*0.226*	0.154	*0.198*	0.343***	*0.205*
ln(FMA)	0.985*	*0.341*	0.848**	*0.402*	0.983***	*0.526*	1.174**	*0.571*
Lab Institutions	-1.709**	*0.884*	-0.886	*0.936*	-1.306	*0.897*	0.378	*0.53*
Institutions	0.136***	*0.082*	-0.033	*0.106*	-0.024	*0.09*	0.04	*0.793*
FDI in capital formation %	4.130**	*1.909*	3.154***	*1.674*	3.269*	*1.298*	0.93	*0.699*
ln (Real Exchange rate)	0.043	*0.044*	0.045	*0.04*	0.129*	*0.05*	0.407	*0.608*
Paved roads %	0.886	*0.634*	0.673	*0.604*	1.214***	*0.71*	0.926	*0.578*
Constant	-20.274*	*7.723*	-19.638**	*9.094*	-23.721**	*11.881*	0.664**	*0.727*
25								
ln(GDPt-1)	0.831*	*0.155*	0.904*	*0.161*	0.930*	*0.16*	0.774*	*0.147*
ln(POPU)	0.097	*0.174*	0.108	*0.178*	0.081	*0.166*	0.092	*0.168*
ln(FMA)	0.807**	*0.359*	0.862**	*0.372*	0.762***	*0.45*	0.664	*0.457*
Lab Institutions	-0.726	*0.931*	-1.038	*0.753*	-1.084	*0.721*	0.444	*0.405*
Institutions	-0.007	*0.076*	-0.013	*0.085*	-0.035	*0.078*	0.777	*0.717*
FDI in capital formation %	5.359*	*1.708*	2.857	*1.541*	2.672*	*1.036*	0.496	*0.597*
ln (Real Exchange rate)	0.086**	*0.038*	0.029	*0.038*	0.066***	*0.041*	0.327	*0.543*
Paved roads %	1.004***	*0.571*	0.391	*0.561*	0.603	*0.657*	1.017	*0.609*
Constant	-17.369**	*8.147*	-20.704**	*8.988*	-18.410***	*10.405*	0.171	*0.71*
50								
ln(GDPt-1)	0.865*	*0.138*	1.014*	*0.155*	0.870*	*0.152*	0.810*	*0.152*
ln(POPU)	-0.013	*0.166*	-0.141	*0.174*	0.078	*0.186*	0.002	*0.199*
ln(FMA)	0.573	*0.408*	0.6	*0.395*	0.66	*0.44*	0.684	*0.444*
Lab Institutions	-0.82	*0.845*	-0.885	*0.755*	-0.921	*0.88*	0.265	*0.37*
Institutions	0.001	*0.068*	0.097	*0.082*	-0.036	*0.09*	0.305	*0.596*
FDI in capital formation %	4.123*	*1.66*	3.725**	*1.705*	2.597*	*0.962*	0.554	*0.708*
ln (Real Exchange rate)	0.04	*0.034*	0.033	*0.036*	0.023	*0.042*	0.09	*0.566*
Paved roads %	0.483	*0.521*	0.321	*0.54*	0.295	*0.625*	0.125	*0.635*
Constant	-10.901	*9.323*	-13.856	*9.302*	-14.098	*10.286*	0.14	*0.631*
75								
ln(GDPt-1)	0.825*	*0.138*	0.975*	*0.14*	0.977*	*0.156*	0.958*	*0.165*
ln(POPU)	-0.023	*0.165*	-0.192	*0.161*	-0.181	*0.192*	0.241	*0.231*
ln(FMA)	0.241	*0.403*	0.436	*0.421*	0.980**	*0.433*	1.204**	*0.604*
Lab Institutions	-0.455	*0.776*	-0.568	*0.827*	0.127	*0.976*	0.004	*0.429*
Institutions	0.016	*0.068*	0.114	*0.078*	0.033	*0.085*	0.475	*0.65*
FDI in capital formation %	4.094**	*2.095*	3.533**	*1.505*	1.973***	*1.106*	0.951	*0.747*
ln (Real Exchange rate)	0.048	*0.036*	0.021	*0.034*	0.043	*0.039*	0.542	*0.645*
Paved roads %	0.879***	*0.538*	0.771	*0.499*	0.511	*0.524*	0.08	*0.564*
Constant	-3.133	*8.893*	-8.593	*9.325*	-19.720**	*10.11*	0.795	*0.622*
90								
ln(GDPt-1)	0.784*	*0.152*	1.020*	*0.136*	0.996*	*0.161*	0.749*	*0.232*
ln(POPU)	-0.021	*0.186*	-0.224	*0.165*	-0.149	*0.186*	0.157	*0.292*
ln(FMA)	0.325	*0.362*	0.207	*0.424*	0.774***	*0.44*	1.428***	*0.768*
Lab Institutions	-0.396	*0.833*	-0.863	*0.907*	0.718	*1.027*	0.213	*0.489*
Institutions	0.073	*0.075*	0.122***	*0.073*	0.042	*0.09*	0.414	*0.834*
FDI in capital formation %	4.768**	*2.144*	4.508*	*1.339*	1.697	*1.147*	1.34	*0.887*
ln (Real Exchange rate)	0.537	*0.575*	0.659	*0.529*	0.292	*0.527*	0.022	*0.643*
Paved roads %	0.049	*0.04*	0.041	*0.039*	0.001	*0.044*	0.447	*0.832*
Constant	-3.999	*7.98*	-3.89	*9.162*	-16.088	*10.038*	0.562	*0.79*
Regions Dummies	Yes		Yes		Yes		Yes	
	.1 Pseudo R2=.7981		.1 Pseudo R2=.7925		.1 Pseudo R2=.7915		.1 Pseudo R2=.7299	
	.25 Pseudo R2=.7848		.25 Pseudo R2=.7904		.25 Pseudo R2=.7899		.25 Pseudo R2=.7443	
	.5 Pseudo R2=.7932		.5 Pseudo R2=.7946		.5 Pseudo R2=.7790		.5 Pseudo R2=.7390	
	.75 Pseudo R2=.7919		.75 Pseudo R2=.8047		.75 Pseudo R2=.7857		.75 Pseudo R2=.7094	
	.9 Pseudo R2=.8229		.9 Pseudo R2=.8276		.9 Pseudo R2=.7978		.9 Pseudo R2=.6464	

Note: Standard errors are reported in *italics*. * significant at 1% and ** significant at 5%.

NOTES

1 This chapter draws on empirical results from Fugazza (2004).

2 The study covers 84 countries 20 developed and 64 developing or SEE and CIS countries over the period 1980-2003. The full list of countries is given in table A2.1 of the annex. The annex also briefly describes the theoretical framework and empirical methodology used.

3 This argument is inferred by empirical results obtained using quantile regressions over the 1988-2003 period as described in the annex. Results are presented in table 2.A3 of the annex.

4 The greater sophistication in their production also permits them to engage more in intra-industry trade – two-way trade in products of the same industry. Earlier UNCTAD studies in this area suggest that foreign market interests in such two-way trade, which is often also intra-firm trade, tend to counter potential protectionist pressures. An example is the export of textiles to be processed into clothing.

5 The model used by the authors includes assumptions of economies of scale and imperfect competition, which tends to inflate the gains from trade. Most importantly, the analysis assumes liberalization in the services sector that accounts for the major part of the gains. In turn, this depends on some estimates of the trade effects of measures used in the services sector that are estimated by econometric techniques. A more conservative approach is to assume constant returns to scale, and perfect competition, which gives much lower estimates.

6 Fernandez de Cordoba, Laird and Vanzetti (2004).

7 See for instance Finger and Schuler (2000).

8 See UNCTAD (2003).

9 Other factors include restrictive rules of origin, burdensome documentation and procedural requirements, etc.

10 See World Bank (1993) and Rodrik (2003) for a comprehensive argumentation.

11 Empirical results are reported in table A2.3 of the annex.

12 The percentage of paved roads has been used as a proxy for the transport sectors as a whole.

13 This policy approach was used extensively by Latin American countries to control hyperinflation. However, a number of Asian countries also adopted this approach, which was a major trigger for the crisis of 1997-1998.

14 See Rodrik, Subramanian and Trebbi (2002) for empirical assessment and for a critical review of empirical work.

15 See UNCTAD (2002a) and Mayer (2002) for an extensive discussion.

16 In his comments on Redding and Venables (2004a), Maskus (2004) insists on the used to better identify supply conditions variables in order to retrieve specific policy implications.

17 We refer the reader to Redding and Venables (2004a) for a technical presentation of the model.

18 We refer the reader to Fugazza (2004) for a detailed description of the estimation strategy.

19 Quantile regression is an extension of the classical least squares estimation of the conditional mean to estimation of different conditional quantile functions. The conditional mean function is estimated by minimizing the symmetrically weighted sum of absolute errors, where the weight is equal to 0.5. Other quantile functions are estimated by minimizing an asymmetrically weighted sum of absolute errors, where the weights are functions of the quantile of interest. We refer the reader to Buchinsky (1998) for a survey and general discussion of relevance of the use of quantile techniques in economic analysis.

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Adjusting to Trade Reforms

3

1. INTRODUCTION

In chapter 1, trade liberalization, represented by openness to the trade indicator of the TDI, was found to be the most significant driver of trade and development performance, especially in the case of developing countries. That gains from trade liberalization come about in the long run is widely accepted, at least in the absence of externalities, but there are often short- to medium-term adjustment implications. This is because as economies open up, imports use existing channels while new exports often come from different sectors that have to gear up production and find new markets. The structural unemployment that occurs as this transition takes place is perhaps the major social cost of adjusting to trade reforms. Other adjustments include the need to replace tariff revenues as protection is reduced; the likely losses of preferences in overseas markets as MFN rates are lowered under multilateral liberalization; and intra- and intersectoral reallocation of resources in response to changes in the levels of protection.

All these and other possible changes, by producing winners and losers, ultimately affect the level of well-being of people through altering their access to goods, services and opportunities. Particularly at risk are those that are least able to cope with the changes induced by trade reforms, including the poor, women, elderly, and unskilled and low-skilled workers. Unfortunately, most developing countries do not have well-developed social safety nets—unemployment benefits, retraining programmes, portable pensions, etc.—to address these problems. From this perspective, liberalization can pose some serious short- to medium-term implications for human development in developing countries, and these countries may need adjustment assistance going beyond implementation support to see them through this process.

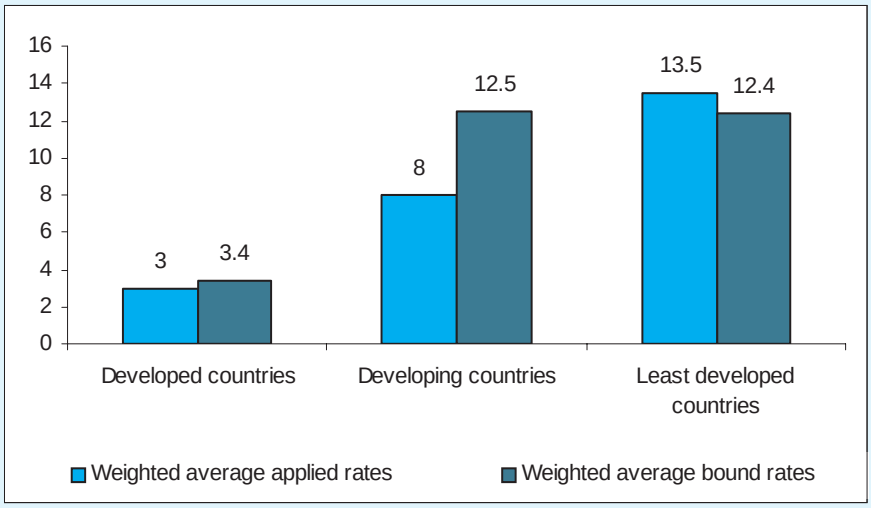
To gauge the possible developmental implications of trade reforms, an essential first step is to examine the kind and extent of their economic impact. To that end, this chapter looks at the experience of a number of developing countries that have undergone important trade reforms as well as the possible magnitude of further adjustments under the current WTO negotiations, drawing upon a number of country studies,[1] and CGE modelling of various proposals in the current WTO negotiations, supplemented by a review of a number of other studies on the adjustment process. This study on adjustments to trade reforms will be useful also in the further development of the trade and development index, especially by helping to design shocks in trade and trade-related processes and simulate resulting changes in development outcomes.

2. EXPERIENCES OF ADJUSTMENT TO TRADE REFORM

Developing countries have undergone major trade reforms in the last 10-15 years, often under World Bank/IMF lending programmes, regional trade agreements (RTAS)—mainly in the 1990s—commitments undertaken in the Uruguay Round, and in accessions to the WTO.[2] Tariffs are now low to moderate in most countries (figures 3.1 and 3.2), and the main question asked in this section is how these countries fared under the reform process.

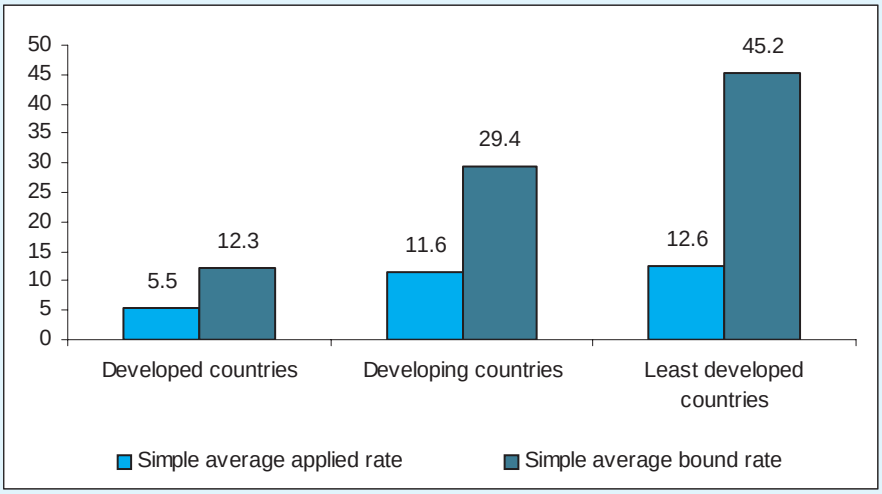
It is important to note that a number of countries had difficulties in generating a supply response in terms of alternative production process and exports. However, in a number of sectors, tariff peaks and escalation provide greater protection for sensitive sectors and for domestic processing, and these tend to be biased against developing countries' main exports (table 3.1, figure 3.3), making it harder for them

Figure 3.1. Trade-weighted bound and applied average industrial tariffs (per cent)



Source: Fernandez de Córdoba, Laird and Vanzetti (2004a).

Figure 3.2. Simple bound and applied average industrial tariffs (per cent)



Source: Fernandez de Córdoba, Laird and Vanzetti (2004a).

to expand into areas where they have comparative advantage when import-competing sectors face the challenge of increased competition under liberalization programmes. In addition, where markets were opened, additional problems of entry occurred, for example, because of the use of SPS/TBT measures, or developing countries were unable to capture the gains from trade because of the control of marketing channels by a few large intermediaries.

The country studies commissioned by UNCTAD covered Bangladesh, Brazil, Bulgaria, India, Jamaica, Malawi, the Philippines and Zambia – chosen to provide a sample from different regions, different sizes, and different stages of development

as well as data availability.[3] As in the case of developing countries more generally, these countries undertook substantial trade reforms, of which tariff reductions were a major component, although the extent of the reductions varied widely (figure 3.4).

The overall results in terms of real economic growth in the period since the reforms varied widely, with strong growth in a number of cases, while growth faltered in other cases, and a number of countries saw an economic decline at the time of the Asian, Russian and Brazilian crises of 1997/98 (figure 3.5). Jamaica showed the most sluggish growth over the period, scarcely passing 2 per cent in any year. Malawi's growth rate declined almost steadily from 1995 to minus 4 per cent in 2001, but there was a weak recovery in 2002. In the sample, the most consistent results were growth of around 5 per cent for India and Bangladesh. The most remarkable reversal was that of Bulgaria, which went from minus 9 per cent in 1996 to over 4 per cent in 2002.

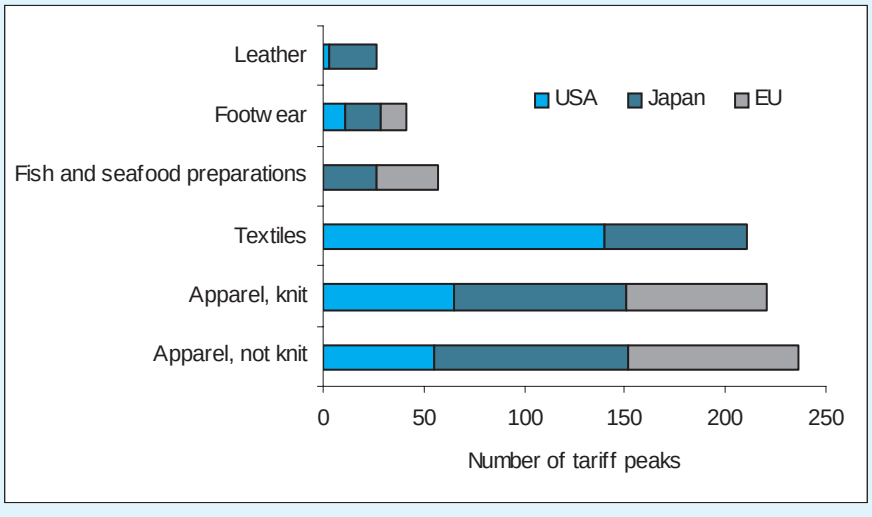
Obviously, economic growth depends on many factors, some of which are related to demand conditions in the rest of the world, and so it is difficult to explain the variations in growth entirely as a result of the reforms. Moreover, the range of possible explanations is so great in relation to the availability of data that obtaining a more precise explanation and identifying the role of specific factors by econo-

Table 3.1. Average applied tariff rates by country groups (per cent)

	Exporter		
	Developed countries	Developing countries	Least developed countries
Importer			
Developed country	1.31	2.12	3.05
Developing country	9.00	6.26	6.33
LDCs	10.88	14.79	9.95

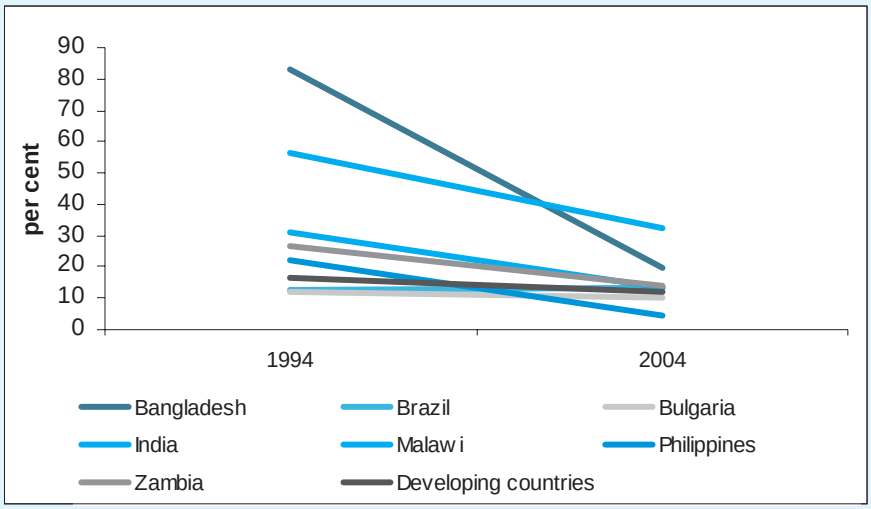
Source: Fernandez de Córdoba, Laird and Vanzetti (2004a).

Figure 3.3. Number of tariff peaks among selected developed countries



Source: Fernandez de Córdoba, Laird and Vanzetti (2004a).

Figure 3.4. Trade-weighted bound and applied average industrial tariffs



Source: Fernandez de Córdoba, Laird and Vanzetti (2004b).

metric means is practically impossible. The purpose of the case studies then was to try to apply a standard approach, using descriptive statistics and local knowledge to try to distinguish the important elements, positive and negative, in each case.

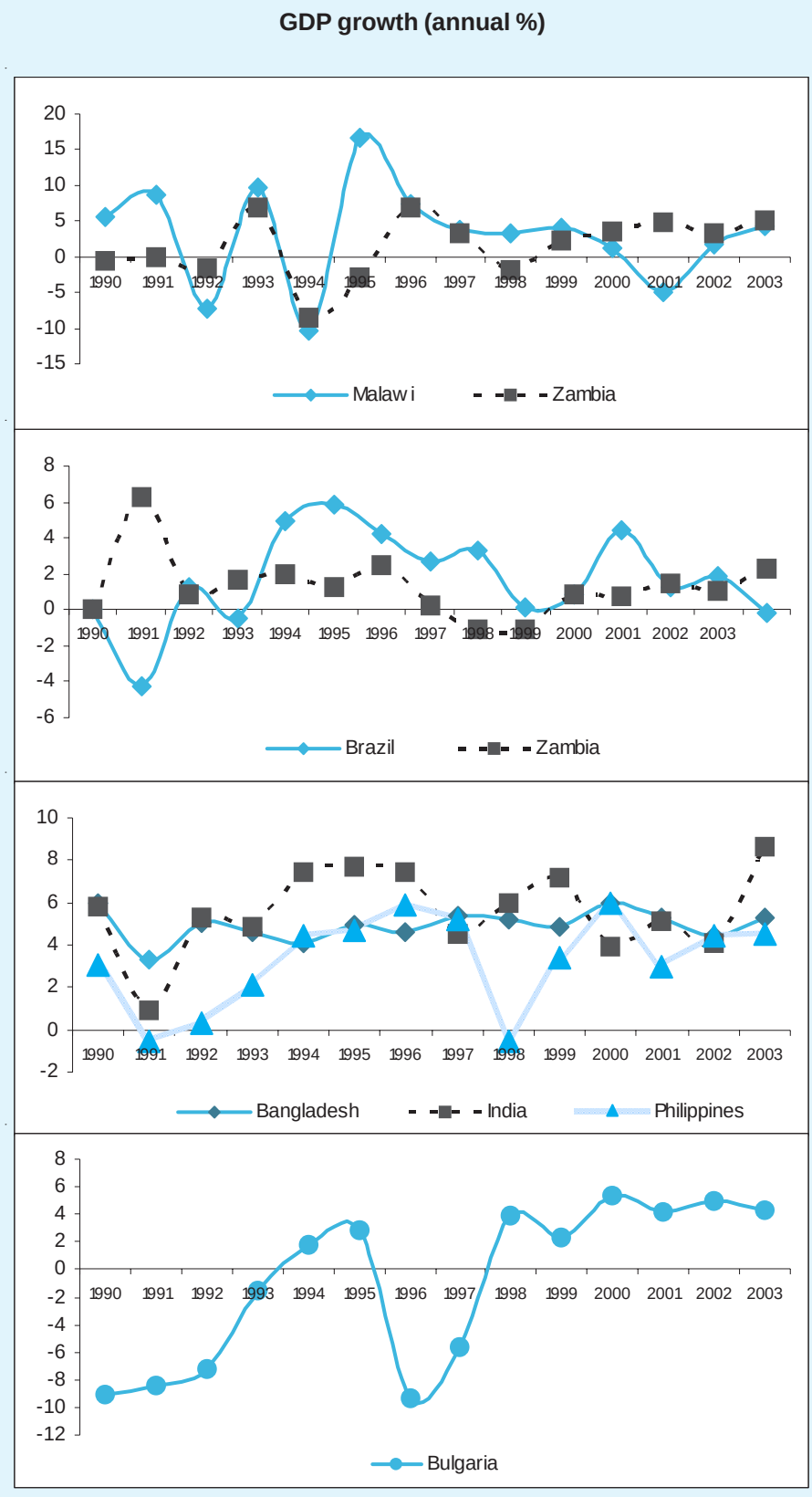
It is possible to draw some conclusions as to the lessons:

- Despite years of experience in reform programmes, there is no "cookbook" to ensure monotonically increasing levels of welfare as reforms are implemented, and serious mistakes are still being made on timing, sequencing, implementation and inclusion of all essential elements that are relevant in each case. Little account seems to have been taken of adjustment costs in the design of liberalization programmes.
- Many countries in the studies embarked on a process of switching from import-substitution industrialization towards more open economies. As they started import liberalization, there was initially more rapid growth of imports than exports, and, in the majority of cases in the studies, this had severe negative effects on domestic production and employment in import-competing sectors. In some cases, these negative effects have persisted for a number of years.
- Countries that opened first to investment[4] or obtained significant FDI inflows achieved a boost in economic growth that created new jobs for those displaced under the import liberalization.

  • Conditions for investment were not explored in detail but appear to include exchange rate liberalization, macroeconomic stability, and some trade liberalization in the form of easing import restrictions, including licensing, as well as tariff reductions or waivers for investment goods, and duty waiver or drawback schemes for imported materials and components for re-exports of finished goods.

  • The studies point to the importance of political stability, good institutions and labour supply.
- The functioning of capital markets is very important, especially for small and medium-sized enterprises that cannot easily tap international capital markets when domestic borrowing rates are high, as was often the case in the countries

Figure 3.5. GDP growth rate for country case studies



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

under study. (Some form of development bank, such as Brazil's Development Bank (BNDES), which borrows at sovereign rates and re-lends with a margin to cover costs, may be a key option to consider).

- The studies point to the importance of the real effective exchange rate (REER), which is relative movements of prices at home and overseas, adjusted by the nominal exchange rate. If the REER is allowed to appreciate, export competitiveness is reduced. Some countries, with high rates of inflation, have used exchange rate policy to help control domestic inflation, but with negative consequences for domestic production and exports, unless productivity can be increased more rapidly than overseas.
- Trade reforms are usually proceeded by the reduction and elimination of non-tariff measures (NTMs), followed by the rationalization of tariff structures and reduced tariff rates. In some cases, the new tariff structures are still characterized by tariff escalation—adoption of a uniform tariff structure was not observed in the countries under study - and tariff peaks remain in sensitive areas. In the first phase, when NTMs were reduced, tariff revenues increased in some cases, but fell as tariffs were later reduced.
- In the case of Bulgaria, where reforms proceed relatively quickly partly because of preparations for WTO (1996) and eventual EU accession, considerable financial support was provided by the EU. That level of budgetary support was considerably less, but nonetheless very important, under Bank-Fund programmes.
- The larger countries in the studies (Brazil, India and the Philippines) had considerable options for diversification into alternative lines of production and were able to develop some intra-industry trade. In the smaller countries, it was more difficult to develop alternatives, for example when some industries disappeared (e.g. the textiles industry in Malawi).
- Overall income growth does not necessarily lead to a more even distribution of income.
- The larger countries had better institutions to cope with reforms, but are still lagging behind compared with industrial countries. Labour market rigidities tend to encourage the growth of the informal sector. (Other studies point to the importance of institutions as a key factor explaining performance–Rodrik, 1999).
- The larger countries became important users of anti-dumping measures, as they liberalized.
- Several studies underlined the need for complementary domestic policies, including industrial, educational, labour market and social policies.
- Brazil and India had some support policies, including subsidies, but in the countries under studies, such positive policies were lacking, for example such as those reportedly used by the Republic of Korea, Ireland and Singapore, to encourage certain industries or to facilitate cluster group formation. Export processing zones were important in the Philippines.
- The importance of physical infrastructure, especially in the transport area, was noted in a number of cases. This was particularly important in Africa, where two landlocked countries were examined. The need for complementary action on competition policy in the transport sector was noted in one study.
- The reduction of preferences as MFN rates are being reduced seems to be an issue for ACP countries, and was highlighted in the Jamaica study.
- Regional trade agreements, partly to negotiate improved access to foreign markets, have played an important role in further liberalization following autonomous reforms, and, particularly in the case of Bulgaria, in modifying a number of "behind the border" measures.

- The studies highlighted the importance of involving stakeholders in obtaining public support for reform programmes. The sense of ownership of the reforms, which were intended to increase efficiency and competitiveness, could overcome current difficulties, for example hyperinflation in Brazil in the early 1990s.

3. KEY ISSUES IN ADJUSTMENT

While the various studies often take different views of the nature of adjustment costs and use different methodologies, many studies conclude that the gains from trade liberalization are often less than the adjustment costs, particularly in the presence of rigid labour markets. The difference in treatment of social and private adjustment costs helps to explain some of the variations in the findings of some empirical studies, and highlights the importance of being prepared to face the adjustment process. However, it is also clear that there are a number of questions about definition and methodology. There is also the fundamentally political question about whether those negatively affected by changes in prior protection merit assistance or compensation (e.g. entrepreneurs, workers, etc.), and, if so, there remains the practical question of how to achieve this. Most authors are united in identifying changes in the labour market as the main area of concern.

An important issue raised in the literature is that adjustment arises not just from changes in trade policy at home (or abroad) but also from a wide range of causes, such as technological change, changes in demand/tastes, changes in national law, weather/natural conditions, political (in)stability or international agreements, including trade agreements. There is no agreement in the literature as to whether it is feasible or desirable to try to separate the causes of adjustment costs. Bacchetta and Jansen (2003) underline the importance of separating adjustment costs produced by trade agreements from other costs of adjustment, while they also recognize the difficulty of this objective. Rama (2003) says that it is neither desirable nor feasible to disentangle adjustment costs, arguing that globalization as a whole and not trade agreements *per se,* causes adjustment. That is, together with trade liberalization there is a myriad of phenomena such as changes in tastes and in demand (cultural homogenization) or movements in production inputs such as labour and financial capital, and thus it is not easy, nor perhaps necessary, to determine the cause of the process of adjustment. The key issue is to put in place policies and institutions that facilitate structural adjustment, whatever the source (other than negotiating for the elimination of measures by other countries that force adjustments at home, e.g. export subsidies that threaten the home or third country markets).

Unfortunately, there is a scarcity of literature on the costs of adjustment. *Ex-post* literature varies in approach, variously attempting to measure job loss, duration of unemployment, the wage changes of those that become unemployed and eventually find new jobs, and the total costs of adjustment. Magee (1972), focusing only on labour markets, estimated adjustment costs at 12 per cent of gains from trade during the first years after liberalization. Baldwin, Mutti and Richardson (1980), unlike Magee, do not restrict themselves to labour markets and take into account problems related to capital, although they use a similar approach to compute labour adjustment costs, which are estimated at some 4 per cent in the longer run.

These moderate results are mirrored in the *ex-ante* literature, which uses CGE models to estimate the likely effects of changes to trade reform. However, most CGE models until recently are comparative static in nature, and do not take account of the adjustment process, and there are also important assumptions about the opera-

tion of the labour market. More recently, Fernandez de Córdoba, Laird and Vanzetti (2004b) showed that, while the aggregate gains from a variety of scenarios being proposed in the WTO negotiations are moderate, these aggregate results conceal large sectoral variations, both positive and negative. This is discussed further in the next section.

The implication of the main body of studies is that the phasing-in of liberalization is strongly recommended. This may seem obvious, but the experiences in Chile with autonomous reforms and Greece prior to EU accession were often used as examples of highly successfully rapid reforms (Papageorgiou, Choksi and Michaely, 1992). Today, the main thrust of the literature is that it is important to determine an appropriate transition speed based on knowledge of the demographics of the population, distribution of skills, degree of government support for unemployed workers, and laws restricting involuntary separations (Matsutz and Tarr, 1999).

It is also widely accepted in the economic literature on adjustment to reform that trade liberalization policies have to be accompanied by social safety nets and other support measures. These measures are intended to help face the undesirable consequences of trade liberalization, which are concentrated in short periods of time and on concrete groups of people. Both equity and efficiency concerns require appropriate measures. However, most studies point out that achieving macroeconomic stability is a key policy. The emphasis on labour market issues (structural unemployment) highlights the key social issue surrounding trade reform, and clearly needs to be addressed if workers are to be persuaded of the long-term benefits of the reforms.

4. HOW CAN THE WTO PROCESS HELP?

4.1 Opportunities and challenges

The current negotiations in the WTO pose challenges and opportunities with respect to adjustment issues in the developed and developing countries. First, there are challenges in that the more ambitious scenarios seem to offer greater export possibilities and greater welfare, but also imply greater imports, greater intersectoral shifts in production and employment, and greater tariff revenue losses. Second, there are also opportunities in the negotiations to correct imbalances that result from the uneven evolution of rules and the removal of measures in previous negotiations that have left both a systemic bias in the system and higher barriers against developing countries' key exports.

4.2 Sectoral negotiations

First, as noted earlier, it is generally accepted that, at least in the long term, trade liberalization improves the efficiency in the allocation of scarce resources in an economy, lifts economic welfare and contributes to economic growth.[5] However, this relationship between openness and growth is essentially an empirical matter, as economic theory provides no formal linkage. Thus, other economists criticize the econometric evidence, and emphasize the importance of governance rather than openness *per se*.[6] It should be noted that "liberalization" does not necessarily mean free trade, even in tariffs, as there can be an economic case based on externalities for long-term intervention, as noted earlier, but rather a process of allowing the play of dynamic comparative advantage by making an economy more responsive to economic forces.

The various formulae proposals now tabled remove some of the latitude for the use of tariffs for development purposes, as envisaged by GATT Article XVIII: A (and as was practised by the major developed countries at the early stages of their own industrialisation).[7] However, some of the proposals presented imply a more rapid or deeper reform in trade policy than others.

Reductions in bound rates that also reduce applied rates (and non-zero preferential rates) will lead to changes in preference margins with possible consequent effects on trade flows (trade diversion). Developing countries whose margin of preference is eroded may face negative trade diversion (on a comparative static analysis) unless their exports are regulated by import quotas. On the other hand, they may gain from the erosion of preferences within RTAs and preference schemes of which they are not beneficiaries. LDCs and ACP countries with deep preferences most likely face negative trade diversion, but much depends on their utilization of such preferences. Where utilization ratios are low, possibly associated with the application of rules of origin, the gains from trade creation would be more important.

It is also important to take account of a number of other factors that can influence the outcome either way. First, if there is a general stimulus to trade and investment as a result of the current WTO negotiations, the dynamic effect on general economic growth may offset any possible negative effects from trade diversion. Second, much depends on the supply capabilities of developing countries to take advantage of preferences: it is widely accepted that more needs to be done to improve the supply capabilities of the developing countries, particularly the LDCs, to allow them to take advantage of trade opportunities. Third, the benefits received depend on rules of origin and other formalities, which are often restrictive, so that even LDCs, which often face zero preferential tariffs, may gain from MFN liberalization on many items. Fourth, the potential advantages of preferences are often offset by conditionalities imposed by the donors in relation to other social or economic conditions in the beneficiary countries. Fifth, most least developed countries are not participants in regional trade agreements and could likely gain from MFN liberalization in other developing country markets. Sixth, taking account of the above points, it may be preferable for most developing countries to obtain more secure MFN reductions on their key exports, rather than the preservation of preference margins on high MFN rates. To some extent, developing countries have been relatively quiescent about the barriers that the face, because they fear the possible loss of preferences. Finally, the large majority of preferences have been captured by relative few players and their overall value for many developing countries is quite small.

Tariff revenues are an important source of government revenue for many developing countries. IMF data indicate that the contribution of tariff revenues ranges greatly from virtually nothing in Italy to 75 per cent in Guinea. Less extreme examples are Cameroon and India, where tariff revenues represent 28 and 20 per cent of government revenues, respectively; these are still substantial shares in revenues to be replaced by alternative forms of taxation. Eliminating tariffs altogether implies that tariff revenues would be reduced to zero. However, while tariff reductions, short of elimination, reduce revenues from existing imports, these reductions may be wholly or partly offset by the increased demand for imports, creating a higher revenue base. Any revenue losses would need to be replaced with taxes on income, profits, capital gains, property, labour, consumption or non-tax revenues. This is a long-term process that can be expensive to implement. In small countries where most goods are imported, a sales or consumption tax could replace tariff revenues, but such important changes to fiscal systems are costly and take time to implement.

This gap between applied and bound tariffs that exists in many developing countries is, as noted earlier, a result of autonomous reforms, and varies widely, with Latin America typically having a tariff overhang larger than that other re-

gions. One question regarding the various formulae being discussed is the extent to which the proposals will lead to reductions in applied rates. If developing countries are obliged to reduce MFN bound rates to levels that are below their applied rates, this would eliminate any flexibility that developing countries have to use tariffs for development purposes, as discussed earlier. Moreover, there would be an increased likelihood of resort to anti-dumping actions and other contingency measures that can be costly to apply and tend to be captured by protectionist interests.

On the other hand, if after the current negotiations, developing countries cut MFN bound rates, leaving applied rates as they are or only partly reduced, such MFN reductions should still be seen as affording increased security of access to their market. This would itself be considered a valid legal commitment in the negotiations in non-agricultural products, even where rates are set at ceiling levels, higher than applied rates, as was done in the Uruguay Round agriculture negotiations by many developed and developing countries.[8]

Assessing the impacts of across-the-board global liberalization is best undertaken with an applied general equilibrium model that captures both intersectoral and trade linkages. One study, cited in the US proposal, has estimated that developing countries could see welfare gains of more than USD 500 billion from duty-free trade.[9] Anderson (2003) computes welfare gains from complete liberalization in goods of the order of USD 250 billion of which USD 108 billion would go to low-income economies.

While these results, expressed in billions of dollars, seem impressive, the percentage changes in aggregate welfare and trade are relatively minor–often less than 1 per cent. However, these modest results in the aggregate conceal potentially important sectoral variations, as noted in some recent UNCTAD work (Laird, Fernandez de Córdoba and Vanzetti, 2003; Fernandez de Córdoba and Vanzetti, 2005). These recent studies, focusing on the negotiations on industrial tariffs, compute global annual welfare gains of the order of USD70 billion to USD110 billion–similar in order of magnitude to those in a number of other more conservative studies, including at the World Bank. However, these UNCTAD studies also examine more closely the likely effects on individual sectors, and these results indicate that, while some sectors are estimated to expand considerably in exports and production, others are likely to suffer large contractions of output and employment as imports increase. Estimates of the potential percentage changes in output in some key sectors are given in annex table A 3.1.[10] In absolute terms, the largest falls over the partial liberalization scenarios are in iron and steel (USD 2-4 billion) and petroleum and coal products (USD 5 billion).[11] Among the more significant increases is that in the output of services (USD 7-9 billion). If the tariff cuts are large enough to significantly reduce applied rates in developing countries, as in the so-called free trade scenario, there will be a big shift out of motor vehicles into services. The most significant reductions are estimated to occur in China (USD 2-3 billion).

Perhaps of greater interest are the regional changes in sectoral output. In the capping mechanism scenario, the largest fall in output is in excess of 20 per cent in the leather and petroleum and coal products sectors in Japan. The rest of the world (including the Russian Federation and Central Asia) and the rest of South Asia (i.e. excluding India) are projected to suffer a decline in the motor vehicles sector of 12 and 13 per cent, respectively. For the rest of South Asia (i.e. other than India), this erosion of output rises to 55 per cent under the WTO "Hard scenario" but falls back a little to 48 per cent under the free trade scenario (see annex table A 3.1), where reductions are spread more evenly. Indeed, the percentage cuts do not increase regularly across scenarios as the level of ambition rises, because the cuts in applied tariffs take effect unevenly, depending on the gap between bound and applied rates and the inclusion or exclusion of specific sectors under different scenarios.

On the plus side, the greatest changes in output following the capping mechanism scenario are around 30 per cent in Indonesian leather, and 25 and 13 per cent in the rest of Asia (mainly, the Republic of Korea and Taiwan Province of China) in lumber and petroleum and coal products, respectively. These changes are similar under a free trade scenario. In absolute terms, the largest positive effect is felt in the Japanese motor vehicles and chemicals, rubber and plastics sectors. The sector needing to make the most adjustment is the Japanese petroleum and coal products sector. This sector has high duties on these products, imported from the Middle East and the rest of Asia.

Among developing countries, the sectors likely to suffer most dislocation following the capping mechanism scenario are motor vehicles, chemicals, rubber and plastics and other manufactures in China, amounting to USD13 billion in forgone output. Of these sectors, the motor vehicles sector faces the most significant losses—16 per cent overall. In the sub-Saharan African region the changes are modest under the capping mechanism scenario, not exceeding 4 per cent in any sector. Under the Hard WTO scenario the percentage changes would rise to -22 per cent for leather and -8 per cent for textiles and apparel. The largest dollar value falls are in processed agriculture and petroleum and coal products. Almost all the gains are expected to be in services and transport equipment other than motor vehicles.

Perceived high adjustment costs may be one of the reasons for the hesitation of some developing countries to take on board some of the more ambitious liberalization proposals. However, as discussed in the previous section, there is relatively little documented evidence about the scale and nature of these costs or the adjustment process of local economies in the aftermath of trade liberalization, despite nearly two decades of unilateral reforms in developing and transitional economies. For informed policymaking, governments need a better understanding of the costs to their economies following changes in their tariffs.

Conceptually, adjustment costs may be defined as the cost of moving resources from one sector to another that occurs in the immediate period after changes in policies. Changes in relative prices, or regulations, make some firms or sectors uncompetitive, leading to a decline in output and, inevitably, use of inputs. In most sectors, labour is the major input, either directly or indirectly through its embodiment in intermediate inputs, which is output from other sectors. The problems in moving labour from one sector to another involve: (i) job search and relocation costs; (ii) retraining to provide the necessary skills; and (iii) temporary loss of income. These costs are mainly a function of the length of unemployment, which may be longer or shorter depending on the capacity of the local economy to adapt to trade liberalization and the ability of workers to find a new job. It is generally accepted, although evidence is indicative rather than conclusive, that adjustment costs are higher where intra-industry trade is relatively low because in these circumstances labour cannot merely switch within firms or industries (Azhar and Elliott, 2001). Moving capital from one sector to another is more problematic, and it is inevitable that some or all assets will be revalued downwards or written off altogether. It may also be easier to shift capital equipment from one unprofitable line of production to another in the same sector rather than between sectors.

4.3 Systemic issues

Apart from the specific sectoral negotiations aimed at removing market access barriers, domestic support, export subsidies and other restrictions on the trade of the developing countries, the second broad area where the WTO process can help arises from the opportunities in the current negotiations to correct a number of biases against the interests of developing countries as a result of past negotiations and past policies. In the past the GATT moved faster on areas that were relatively easy to tackle, liberalizing areas of export interest to the developed countries and

tightening rules or the application of rules on subsidies, BOP measures, infant industry support, TRIPS and TRIMS, and so forth. While providing lacunae or exemptions of one form or another on agriculture, textiles and clothing, and making the provision of differential and more favourable treatment for developing countries into "best endeavours" clauses.

By creating new opportunities for the developing countries ahead of any new commitments that they may have to undertake, the economies of these countries should start to attract new investment and generate a supply-side response that should help them cope with the expected negative effect of the challenges posed by the conclusion of the current negotiations, whether through their own liberalization or the loss of preferences.

The developing countries need to be provided with flexible timetables for the implementation of new commitments. Pushing too hard, too fast could generate the kind of negative effect that has been identified in a number of countries as a result of prior episodes of liberalization. Any backlash from such effects could have negative consequences for longer-term liberalization.

Among the issues that need to be addressed include:

- Prioritized, improved access for developing countries' key exports in agriculture, manufactures and services;
- Policy space for developing countries consistent with received economic views on the importance of externalities and taking account of market imperfections;
- Realistic time frames and financial and technical support for implementation of any new commitments and support for structural adjustment (e.g. "Aid for Trade"). Such assistance should ideally be provided by the donor community, especially to the highly indebted countries, perhaps with technical support by the international financial institutions in their respective areas of expertise under the coherence arrangements without further conditionalities;
- Compensation for losses due to preference erosion, similar to that available within the EU CAP compensatory payments scheme;
- Assistance and adequate time for developing countries to restructure their fiscal systems to offset revenue losses where tariffs are reduced as a result of new commitments
- Special and differential treatment, including less than full reciprocity, in all areas of the negotiations, as identified in the Doha Ministerial Declaration.

These issues need to be resolved prior to the conclusion of the current WTO negotiations, in keeping with normal business practice that proposals should be costed, implementations should be realistically programmed and provision be made for financing. The failure to take account of similar issues, and the subsequent unexpected and often high costs, may well have led to the disillusion with the results of the Uruguay Round and to the failed WTO meeting in Seattle. Although it may take longer to strike a deal that takes account of such issues, such a deal would be more likely to retain the confidence of all WTO members in the multilateral system.

5. CONCLUSIONS

The developing countries have undertaken major trade reforms in the last 20 years and are facing further adjustments as a result of current negotiations in the WTO. These adjustments, positive and negative, are a consequence of their own liberalization affecting sectoral production and employment as well as aggregate revenues. The developing countries may also face adjustments as a result of changes in access to overseas markets, positive as barriers are brought down and negative as preference margins are eroded. All this has implications for their trade and development performance.

While some countries have done well from trade liberalization, the experience has been quite negative for a number of countries, and it is evident that there is as yet no standardized approach that guarantees success in all cases. Further work needs to be done in this area, but it is clear that both the stage of development the pre-existing institutional and policy framework are crucial. The pace and sequencing of reforms are also vital, and it would seem that while there remains uncertainty about the precise formulation of the entire package to ensure success, some caution needs to be exercised. Pushing too hard, too fast can even endanger the domestic support for reform. Much more work needs to be done on the human development dimension of adjustment, as well as on social safety nets and appropriate support policies.

Preliminary analysis from case studies and reviews of other experiences suggest that it would be desirable to anticipate such adjustment in a number of ways: encouraging domestic and foreign investment, including through legislation and institutions that are business-friendly; developing capital markets to provide access to finance especially by SMEs; providing social safety nets; introducing labour retraining and extending other skills-oriented education programmes; providing physical infrastructure, especially in the transport sector; trade facilitation; debureaucratization, helping developing countries meet SPS/TTB entry barriers in major markets; and encouraging cluster group formation. These measures should be pursued within a coherent strategy to improve trade and development performance.

The IFIs, with their considerable technical expertise in a wide range of projects, can play an important role in helping developing countries to implement or extend programmes in many of the ways outlined, and have already indicated their willingness to help, for example the IMFs' TAM. However, there is also a key role for the donor community, particularly where the affected countries are already heavily indebted.

The WTO process can also help by providing for meaningful liberalization by developed countries in areas where the developing countries have comparative advantage, ahead of the liberalization by the latter group of countries, so that jobs start to be created ahead of job losses in sectors that are likely to suffer from increased competition as their own barriers are lowered. The WTO could also usefully address systemic and rules-related issues to provide some policy space to allow the use of trade and trade-related policies for development purposes. This was partly envisaged in the original GATT, but it appears that such options, including the use of support policies in the presence of externalities, are increasingly being called into question.

APPENDIX 3

A 3.1. Change in output following the four scenarios (per cent)

	USA	Canada	Central America	Andean Pact	MERCOSUR	European Union	Other West Europe	Central and Eastern Europe	Middle East	North Africa	Sub-Saharan Africa	South Africa	China	Japan	India	Other South Asia	Indonesia	Other South-East Asia	Rest of Asia	Oceania	All other region	World
Free trade																						
Textiles	-1	-4	3	-1	-1	-1	-2	-4	-4	-6	-7	-1	2	3	3	1	5	3	6	-3	1	0.36
Wearing apparel	-2	-6	0	4	-1	-3	-2	-3	-3	2	-6	11	7	-2	15	23	12	15	2	-7	3	0.58
Leather	-1	-5	-3	-4	1	1	0	0	-13	-5	-14	-7	11	-13	10	2	21	14	5	2	-3	1.86
Chemicals, rubber and plastics	0	0	-2	-2	-1	0	0	-2	0	-4	-5	-1	-3	4	-2	-5	0	0	0	-1	-1	0.13
Motor vehicles	0	0	7	-23	1	0	0	2	-4	-25	21	-10	-18	5	-6	-47	-11	-12	3	-5	-11	0.05
Transport other than motor vehicles	-1	0	6	0	0	-2	-4	-1	0	1	20	1	2	6	-1	-19	4	1	2	0	-1	0.30
WTO Hard Formula																						
Textiles	-3	-10	3	-3	-2	-2	-5	-7	-5	-6	-8	-2	4	4	4	3	6	7	13	-8	3	0.61
Wearing apparel	-6	-19	1	2	-2	-8	-10	-8	-5	7	-9	30	18	-5	23	15	19	25	6	-15	10	-0.12
Leather	-7	-22	-6	-7	0	-1	-6	-1	-19	-11	-22	-24	17	-32	10	-8	49	18	16	3	-8	1.50
Chemicals, rubber and plastics	0	-1	0	0	0	0	0	-2	0	-1	-1	-1	-4	5	-1	-2	-1	-1	0	0	0	0.12
Motor vehicles	0	0	2	-21	-1	0	0	5	-4	-32	12	-16	-24	7	-7	-55	-8	-9	2	-5	-14	0.07
Transport other than motor vehicles	-1	1	4	0	0	-2	-6	1	2	11	33	4	1	7	0	-10	-1	-2	1	-2	0	0.09
WTO Soft Formula																						
Textiles	-4	-10	9	2	0	-3	-3	-6	-4	-4	-2	0	4	2	3	3	6	9	9	-8	5	0.62
Wearing apparel	-8	-18	9	4	0	-7	-6	-6	-7	-4	-1	17	16	-6	16	14	16	18	10	-16	14	-0.34
Leather	-9	-22	1	-1	0	-2	-3	2	-9	-2	-8	-14	14	-31	4	-11	45	11	12	-3	0	1.66
Chemicals, rubber and plastics	0	-1	0	0	0	0	0	-2	0	0	0	-1	-3	4	-1	-1	-1	0	0	-1	0	0.09
Motor vehicles	1	1	-4	-9	0	0	0	2	0	-15	1	-4	-20	5	0	-15	-1	-1	1	-3	-12	0.05
Transport other than motor vehicles	1	2	-1	-1	-2	0	-3	1	0	7	3	2	0	0	-1	-5	-4	-2	-2	-2	-1	0.08
Capping Mechanism																						
Textiles	-2	-5	8	0	0	-1	-1	-4	-2	-1	-1	-1	0	3	1	1	0	1	4	-3	2	0.09
Wearing apparel	-4	-8	11	1	0	-3	-3	0	-4	-1	-1	3	7	-2	6	6	1	2	2	-1	1	-0.15
Leather	-5	-10	3	-1	-1	1	0	3	-7	-1	-3	-10	8	-24	6	-5	29	-4	6	-3	-2	0.89
Chemicals, rubber and plastics	0	-1	0	0	0	0	1	-2	0	0	0	-1	-2	4	0	-1	0	0	0	-1	0	0.10
Motor vehicles	0	0	-4	-5	0	1	0	2	0	-7	-1	0	-16	3	0	-13	0	-1	0	-2	-12	-0.01
Transport other than motor vehicles	0	2	-2	-1	-1	0	-2	0	1	3	3	2	1	1	0	-3	-2	0	-2	-3	0	0.07

Source: Fernandez de Córdoba and Vanzetti (2005).

NOTES

1 These country studies were commissioned as part of a project funded by the United Kingdom Department for International Development, and are due to be published later in 2005 by Palgrave Macmillan, Ltd.

2 On the whole, liberalization in the developed countries has taken place as a result of GATT negotiations and RTAs, although Australia and New Zealand also undertook major independent reforms.

3 The drafts are available on the UNCTAD website at www.unctad.org/tab.

4 This was the case of India in the study and, reportedly, of China which was not covered.

5 See, for example, Sachs and Warner (1995).

6 Rodrik (1999).

7 Rodrik (2001).

8 In the Uruguay Round negotiations on agriculture, where all tariffs had to be bound by all participants, many developing countries set their new bound rates at 50 per cent.

9 Brown, Deardorff and Stern (2001).

10 Four liberalization scenarios are shown to highlight the spread of policy options. These four scenarios we call "free trade" (full tariff liberalization in the non-agricultural sector), "Hard and soft WTO" and "capping mecchanism". The free trade proposal was presented in December 2002 by the United States in the WTO Working Group on Non-Agriculture Market Access as the second phase of a two-stage implementation process, and may be regarded in a sense as a "benchmark" scenario. The second and third scenarios represent two variations of the proposals included in the Framework for Establishing Modalities in Market Access for Non-Agricultural Products (Annex B of the draft Cancún Declaration, a text by the Chairman of the WTO General Council, not agreed by WTO Members), which in turn draws on the draft text by the Chairman of the Non-agricultural Market Access (NAMA) Group. This framework text places the emphasis on a non-linear formula approach to tariff-cutting, to be supplemented by sectoral tariff elimination on products of export interest to developing countries and possibly also by zero-for-zero, sectoral elimination and request-and-offer negotiations. However, the Framework text lacks specific numbers, and here we analyse some possible variations in the key coefficient (B) in the NAMA Chairman's Draft, including the possibility of different coefficients (and hence different depth of cuts) for different groups of countries. The Hard scenario represents a more ambitious ("liberalizing") approach to the negotiations, while the Soft scenario introduces important elements of special and differential treatment that are not present in the Hard scenario. The "capping mechanism" draws from a uniform cut formula with a cap for tariff peaks and escalation. This capping element harmonizes tariffs and has an effect similar to the Swiss formula. It is therefore particularly useful in reducing tariff peaks and tariff escalation. The capping formula specifies that no tariff will be higher than three times the national average. This scenario does not include sectoral elimination of tariffs.

11 Absolute values depend on the degree of aggregation, which is necessarily somewhat arbitrary. The greater the disaggregation, the greater the likelihood of large percentage changes.

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Annex Tables

Annex Table 1. TDI and structural and institutional dimension

Components of Structural and Institutional Dimension								
			Human capital		Physical infrastructure			Financial environment
TDI Rank	Country	TDI Score	Health expenditure per capita (% of GDP)	Education expenditure per capita (% of GDP)	Paved roads (% of total roads)	Air transport freight (million tonnes/ km)	Telephone mainlines per 1000 population	Domestic credit to private sector (% of GDP)
1	Denmark	874	7.00	8.30	100.00	189.40	708.33	142.38
2	United States	854	6.20	5.60	58.80	29 051.97	660.30	144.06
3	United Kingdom	825	6.30	4.60	100.00	4 883.30	591.20	137.93
4	Sweden	811	7.40	7.60	78.37	273.30	749.07	43.64
5	Norway	806	6.80	6.80	76.17	190.30	733.40	81.24
6	Japan	806	6.20	3.60	76.35	8 129.30	573.37	184.58
7	Switzerland	805	6.40	5.60	84.58	1 547.17	737.87	161.10
8	Germany	804	8.10	4.60	84.58	7 116.57	631.87	119.97
9	Austria	791	5.50	5.90	100.00	387.27	490.57	105.31
10	Canada	790	6.80	5.20	84.58	1 660.83	650.00	80.35
11	France	774	7.30	5.70	100.00	5 015.50	573.17	87.54
12	Belgium-Luxembourg	773	5.90	4.95	89.12	2 329.08	641.55	97.02
13	Australia	772	6.20	4.60	84.58	1 635.10	539.90	89.08
14	New Zealand	770	6.40	6.60	62.60	755.87	470.07	115.11
15	Singapore	762	1.30	5.73	100.00	6 183.60	472.93	118.65
16	Finland	761	5.30	6.30	64.50	221.60	538.03	57.10
17	Ireland	758	4.90	4.30	94.10	147.50	490.23	110.20
18	Portugal	756	6.30	5.80	86.00	211.10	425.27	144.30
19	Spain	744	5.40	4.40	99.00	855.27	455.37	105.94
20	Italy	729	6.30	5.00	100.00	1 554.40	475.37	79.89
21	Cyprus	721	3.90	5.60	58.77	41.17	655.63	155.28
22	Malta	688	6.00	4.90	93.43	13.37	525.67	119.23
23	Slovenia	678	6.30	4.32	99.97	4.17	434.23	38.07
24	Greece	661	5.20	3.80	91.80	102.53	518.73	65.35
25	Rep. of Korea	646	2.60	3.60	74.50	7 463.77	483.73	107.78
26	Hungary	643	5.10	5.10	43.55	38.60	372.00	33.79
27	Croatia	632	7.30	4.20	84.60	2.67	403.07	44.02
28	Malaysia	631	2.00	7.90	75.80	1 854.07	195.57	145.28
29	Estonia	621	4.30	7.40	20.37	1.33	356.00	27.16
30	Poland	612	4.60	5.40	67.40	71.00	289.15	28.27
31	Lithuania	609	4.20	4.73	91.30	1.53	301.60	12.52
32	Slovakia	590	5.10	4.10	86.90	0.33	290.60	43.91
33	Uruguay	580	5.10	2.50	90.00	13.17	280.30	57.18
34	Bahamas	578	3.20	4.32	57.40	1.67	394.07	75.11
35	Costa Rica	572	4.90	4.70	22.00	38.13	234.53	27.28
36	Latvia	569	3.40	5.90	38.60	0.80	303.73	23.46
37	Panama	564	4.80	4.30	34.60	23.13	134.33	101.03
38	Thailand	563	2.10	5.00	98.00	1 735.23	98.70	102.56
39	Kuwait	561	3.50	4.32	80.60	241.23	208.27	64.42
40	Chile	558	3.10	3.90	19.50	1 229.10	224.43	65.60
41	South Africa	557	3.60	5.70	20.30	741.87	110.23	139.31
42	Bulgaria	556	3.90	4.48	93.00	3.47	360.23	14.76
43	Argentina	554	5.10	4.60	29.40	165.70	220.93	20.02
44	Belarus	545	4.80	6.00	90.93	1.47	287.50	8.74
45	Jordan	545	4.50	4.60	100.00	193.03	125.77	75.13
46	Bahrain	541	2.90	4.32	78.20	228.93	266.57	60.83
47	Mauritius	525	2.00	3.30	97.00	182.10	253.73	62.07
48	Trinidad and Tobago	513	1.70	4.00	51.10	33.87	244.80	40.85
49	Mexico	505	2.70	5.10	32.80	305.63	136.20	12.32
50	Lebanon	505	2.98	2.90	84.90	80.27	187.00	91.23
51	China	505	2.00	3.69	91.00	4 381.97	138.70	128.80
52	Russian Federation	493	3.70	3.10	67.40	992.70	229.10	15.74
53	Jamaica	490	2.90	6.30	70.10	37.40	186.77	20.72
54	Brazil	488	3.20	4.00	5.55	1 513.87	207.70	34.79
55	Romania	484	5.20	3.50	51.25	10.23	184.00	7.75

.../...

Annex Table 1. TDI and structural and institutional dimension (continued)

Components of Structural and Institutional Dimension								
			Human capital		Physical infrastructure			Financial environment
TDI Rank	Country	TDI Score	Health expenditure per capita (% of GDP)	Education expenditure per capita (% of GDP)	Paved roads (% of total roads)	Air transport freight (million tonnes/ km)	Telephone mainlines per 1000 population	Domestic credit to private sector (% of GDP)
56	Ukraine	483	2.90	4.20	96.67	11.73	211.57	14.07
57	Colombia	483	3.60	4.40	14.40	584.30	173.87	25.72
58	Philippines	478	1.50	3.20	20.50	273.43	41.37	39.97
59	Sri Lanka	477	1.80	1.30	95.00	225.47	44.17	28.49
60	Namibia	476	4.70	7.90	13.25	57.27	63.67	46.57
61	Saudi Arabia	465	3.40	4.32	29.90	887.17	141.97	55.53
62	Tunisia	462	4.90	6.80	64.67	20.03	108.90	67.56
63	Iran(Islamic Rep.)	458	2.70	5.00	46.78	77.53	168.10	31.97
64	Oman	454	2.40	4.20	30.00	141.87	86.40	38.17
65	El Salvador	454	3.70	2.50	19.80	29.90	101.50	40.30
66	Botswana	450	4.40	2.10	55.00	0.30	84.90	16.78
67	Bolivia	449	3.50	6.00	6.45	14.60	64.40	54.78
68	Peru	449	2.60	3.30	12.80	90.50	70.13	24.57
69	Dominican Republic	444	2.20	2.40	49.40	91.37	108.37	37.72
70	Venezuela, BR	440	3.70	5.04	33.60	32.13	109.00	11.25
71	Nicaragua	435	3.80	3.71	10.35	0.50	31.53	31.09
72	Honduras	433	3.20	2.99	20.40	128.74	47.70	40.43
73	Ecuador	431	2.30	1.00	18.90	9.43	103.57	28.67
74	Albania	425	2.40	3.69	39.00	0.10	61.57	5.71
75	Rep. of Moldova	421	2.80	4.00	86.55	0.37	146.53	15.02
76	Algeria	419	3.10	5.04	68.90	16.27	60.00	6.48
77	Guyana	414	4.20	4.10	7.40	1.77	87.60	57.25
78	Indonesia	413	0.60	1.30	46.30	414.07	34.43	21.73
79	Egypt	409	1.90	2.99	78.10	255.03	100.13	60.35
80	Armenia	409	3.20	3.20	96.27	7.50	140.97	8.25
81	Paraguay	405	3.00	4.70	50.80	0.00	50.00	25.52
82	Guatemala	404	2.30	1.70	34.50	128.74	64.87	19.64
83	Morocco	370	2.00	5.10	56.23	58.93	42.80	55.86
84	Kenya	359	1.70	6.20	12.10	96.03	10.40	26.05
85	VietNam	355	1.50	3.71	25.10	134.67	39.30	39.22
86	Uganda	340	3.40	2.50	6.70	21.03	2.43	6.38
87	Senegal	332	2.80	3.20	29.30	7.20	22.70	19.66
88	Syrian Arab Republic	331	2.40	4.00	21.15	22.07	112.03	8.21
89	Ghana	330	2.80	4.10	24.00	30.60	12.00	12.62
90	India	306	0.90	4.10	45.70	538.70	36.43	30.22
91	Madagascar	295	1.30	2.50	11.60	29.90	3.70	9.27
92	Yemen	295	1.50	10.00	11.50	33.57	23.03	5.70
93	Bangladesh	294	1.50	2.30	9.50	178.60	4.37	26.77
94	Papua New Guinea	290	3.90	2.30	3.50	22.73	12.00	15.85
95	Pakistan	275	1.00	1.80	52.67	352.80	23.27	28.65
96	Malawi	272	2.70	4.10	18.50	0.93	5.53	6.44
97	Zambia	262	3.00	1.90	42.15	0.75	8.13	7.32
98	Nepal	255	1.50	3.40	30.80	17.07	13.07	30.67
99	Côte d'Ivoire	254	1.00	4.60	9.70	9.85	18.73	15.17
100	Cameroon	248	1.20	5.40	12.50	45.17	6.73	9.70
101	Mozambique	238	4.00	2.40	18.70	7.07	4.90	8.01
102	Togo	230	1.50	4.80	31.60	9.85	9.97	15.06
103	Tanzania	229	2.00	3.95	4.20	2.97	4.80	5.27
104	Benin	225	2.10	3.30	20.00	9.85	8.77	11.67
105	Sudan	206	0.60	3.71	36.30	33.97	15.73	3.57
106	Burkina Faso	195	2.00	3.82	16.00	8.90	5.00	12.49
107	Ethiopia	186	1.40	4.80	12.65	80.33	4.43	27.14
108	Nigeria	172	0.80	3.95	30.90	6.77	4.93	16.22
109	Mali	161	1.70	2.80	12.10	9.85	4.67	17.34
110	Niger	136	1.40	2.30	7.90	9.85	1.90	4.81

Note: See Appendix A 1.3.

Annex Table 1. TDI and structural and institutional dimension (continued)

Components of Structural and Institutional Dimension								
			Institutional quality		Economic structure	Environmental sustainability		
TDI Rank	Country	TDI Score	Bureaucratic quality (0-4 scale)	Corruption (0-6 scale)	Agriculture value added (% of GDP)	Access to improved sanitation (%)	Access to imporved water (%)	Energy use per PPP GDP
1	Denmark	874	4.00	5.67	2.79	99.83	100.00	0.10
2	United States	854	4.00	4.17	1.61	100.00	100.00	0.30
3	United Kingdom	825	4.00	4.67	1.00	100.00	100.00	0.20
4	Sweden	811	4.00	5.67	1.88	100.00	100.00	0.20
5	Norway	806	4.00	5.00	2.04	100.00	100.00	0.20
6	Japan	806	4.00	3.33	1.38	100.00	100.00	0.20
7	Switzerland	805	4.00	4.67	1.22	100.00	100.00	0.10
8	Germany	804	4.00	4.00	1.21	99.83	100.00	0.20
9	Austria	791	4.00	4.67	2.32	100.00	100.00	0.10
10	Canada	790	4.00	5.00	2.14	99.00	99.00	0.30
11	France	774	3.33	3.00	2.75	100.00	100.00	0.20
12	Belgium-Luxembourg	773	4.00	4.50	1.06	99.92	99.94	0.20
13	Australia	772	4.00	4.67	3.68	100.00	100.00	0.20
14	New Zealand	770	4.00	5.33	2.42	100.00	100.00	0.25
15	Singapore	762	4.00	4.33	0.12	100.00	100.00	0.30
16	Finland	761	4.00	6.00	3.55	100.00	100.00	0.30
17	Ireland	758	4.00	3.00	3.61	99.83	99.88	0.10
18	Portugal	756	3.00	4.00	3.70	100.00	100.00	0.20
19	Spain	744	4.00	3.67	3.54	100.00	100.00	0.20
20	Italy	729	2.67	2.67	2.81	100.00	100.00	0.10
21	Cyprus	721	4.00	4.00	2.42	100.00	100.00	0.20
22	Malta	688	3.00	3.33	4.88	82.00	100.00	0.10
23	Slovenia	678	3.00	3.33	3.29	82.00	85.40	0.20
24	Greece	661	3.00	3.33	7.40	82.00	85.40	0.20
25	Rep. of Korea	646	2.67	2.93	4.33	82.00	71.00	0.30
26	Hungary	643	4.00	3.33	4.30	85.00	98.00	0.20
27	Croatia	632	3.00	3.00	8.76	81.40	84.00	0.20
28	Malaysia	631	3.00	2.67	8.58	98.00	94.00	0.30
29	Estonia	621	2.67	3.67	5.81	81.40	84.00	0.40
30	Poland	612	3.00	2.33	3.50	81.40	84.00	0.30
31	Lithuania	609	2.33	2.67	7.44	81.40	84.00	0.30
32	Slovakia	590	3.00	3.00	4.18	100.00	100.00	0.30
33	Uruguay	580	2.00	3.00	7.33	85.00	93.00	0.10
34	Bahamas	578	3.00	4.00	4.88	100.00	86.00	0.34
35	Costa Rica	572	2.00	3.50	8.85	97.00	92.00	0.10
36	Latvia	569	2.33	2.33	4.79	72.11	85.22	0.20
37	Panama	564	2.33	2.00	5.72	51.00	79.00	0.20
38	Thailand	563	2.00	1.67	9.17	100.00	80.00	0.20
39	Kuwait	561	2.00	2.00	4.88	82.00	85.40	0.55
40	Chile	558	3.00	4.00	8.72	64.00	59.00	0.20
41	South Africa	557	2.00	2.67	3.49	44.00	73.00	0.30
42	Bulgaria	556	2.00	2.00	13.54	100.00	100.00	0.40
43	Argentina	554	3.00	2.50	6.82	81.40	84.00	0.10
44	Belarus	545	1.00	2.33	12.31	54.00	100.00	0.55
45	Jordan	545	2.00	3.00	2.20	85.00	91.00	0.30
46	Bahrain	541	2.00	2.33	4.88	82.00	85.40	0.70
47	Mauritius	525	2.78	2.94	6.50	99.00	100.00	0.32
48	Trinidad and Tobago	513	3.00	2.67	1.50	100.00	88.00	0.80
49	Mexico	505	3.00	2.67	4.08	39.00	72.00	0.20
50	Lebanon	505	2.00	1.00	11.89	87.00	100.00	0.30
51	China	505	2.00	1.00	15.86	29.00	68.00	0.25
52	Russian Federation	493	1.00	1.00	6.23	70.00	88.00	0.60
53	Jamaica	490	3.00	1.83	6.41	68.00	87.00	0.50
54	Brazil	488	2.00	3.00	6.47	35.00	58.00	0.20
55	Romania	484	1.00	2.33	13.48	54.00	77.78	0.3

.../...

Annex Table 1. TDI and structural and institutional dimension (concluded)

Components of Structural and Institutional Dimension								
			Institutional quality		Economic structure	Environmental sustainability		
TDI Rank	Country	TDI Score	Bureaucratic quality (0-4 scale)	Corruption (0-6 scale)	Agriculture value added (% of GDP)	Access to improved sanitation (%)	Access to imporved water (%)	Energy use per PPP GDP
56	Ukraine	483	1.00	1.33	16.25	97.00	94.00	0.75
57	Colombia	483	2.00	2.33	13.98	54.00	71.00	0.10
58	Philippines	478	3.00	1.67	15.14	61.00	77.00	0.15
59	Sri Lanka	477	2.00	3.33	20.02	89.00	72.00	0.10
60	Namibia	476	2.00	2.17	10.53	14.00	72.00	0.10
61	Saudi Arabia	465	2.00	2.00	5.09	82.00	85.40	0.50
62	Tunisia	462	2.00	2.33	11.42	62.00	60.00	0.10
63	Iran(Islamic Rep.)	458	2.00	2.67	13.36	78.00	83.00	0.35
64	Oman	454	2.00	2.67	4.88	61.00	72.00	0.30
65	El Salvador	454	2.00	3.00	9.31	40.00	68.00	0.20
66	Botswana	450	2.00	3.00	2.54	25.00	90.00	0.26
67	Bolivia	449	2.00	2.33	14.90	23.00	68.00	0.25
68	Peru	449	2.00	2.67	8.15	33.00	66.00	0.10
69	Dominican Republic	444	1.00	2.67	11.46	43.00	85.00	0.20
70	Venezuela, BR	440	1.00	2.17	3.76	48.00	70.00	0.40
71	Nicaragua	435	1.00	2.83	18.09	51.00	65.00	0.24
72	Honduras	433	2.00	2.00	14.36	52.00	82.00	0.20
73	Ecuador	431	2.00	2.50	9.55	59.00	77.00	0.20
74	Albania	425	1.33	2.00	26.83	81.00	95.00	0.20
75	Rep. of Moldova	421	2.00	1.67	26.39	52.00	88.00	0.60
76	Algeria	419	2.00	1.67	9.82	82.00	80.00	0.20
77	Guyana	414	3.00	3.00	30.74	60.00	83.00	0.27
78	Indonesia	413	2.33	1.00	17.23	38.00	69.00	0.30
79	Egypt	409	2.00	1.67	16.76	56.00	97.00	0.20
80	Armenia	409	1.00	1.67	26.69	61.00	80.00	0.30
81	Paraguay	405	1.00	1.33	21.37	58.00	62.00	0.20
82	Guatemala	404	2.00	2.83	22.62	52.00	92.00	0.20
83	Morocco	370	2.00	3.00	15.17	31.00	56.00	0.10
84	Kenya	359	2.00	2.00	18.27	43.00	46.00	0.55
85	VietNam	355	2.00	1.67	23.59	26.00	67.00	0.30
86	Uganda	340	2.00	2.00	35.19	39.00	52.00	0.36
87	Senegal	332	1.00	2.83	18.02	34.00	54.00	0.20
88	Syrian Arab Republic	331	1.00	2.00	22.62	56.00	64.00	0.30
89	Ghana	330	2.00	2.33	34.78	46.00	68.00	0.20
90	India	306	3.00	2.00	24.08	18.00	82.00	0.20
91	Madagascar	295	1.00	3.67	29.91	27.00	34.00	0.61
92	Yemen	295	1.00	2.33	14.84	14.00	68.00	0.30
93	Bangladesh	294	2.00	1.33	24.11	39.00	72.00	0.10
94	Papua New Guinea	290	2.00	1.33	26.13	41.00	32.00	0.24
95	Pakistan	275	2.00	1.67	25.06	35.00	87.00	0.30
96	Malawi	272	2.00	2.50	36.54	42.00	62.00	0.61
97	Zambia	262	1.00	2.00	22.21	32.00	36.00	0.85
98	Nepal	255	1.04	2.15	40.41	20.00	82.00	0.30
99	Côte d'Ivoire	254	0.00	3.00	25.06	23.00	74.00	0.30
100	Cameroon	248	1.00	2.00	42.63	33.00	41.00	0.20
101	Mozambique	238	0.33	1.83	25.66	14.00	24.00	0.36
102	Togo	230	0.00	1.83	39.09	15.00	36.00	0.25
103	Tanzania	229	1.00	2.00	44.74	41.00	62.00	0.80
104	Benin	225	1.04	2.15	36.01	12.00	60.00	0.30
105	Sudan	206	1.00	1.00	39.74	24.00	64.00	0.35
106	Burkina Faso	195	1.00	2.00	33.00	5.00	44.00	0.36
107	Ethiopia	186	1.00	2.00	43.66	4.00	11.00	0.50
108	Nigeria	172	1.00	1.00	33.60	30.00	49.00	0.90
109	Mali	161	0.00	2.33	37.86	38.00	35.00	0.61
110	Niger	136	1.00	1.00	39.44	4.00	36.00	0.61

Note: See Appendix A 1.3.

Annex Table 2. TDI and trade policies and processes dimension

Components of Trade Policies and Processes Dimension						
			Openness to trade			
TDI Rank	Country	TDI Score	Applied trade-weighted average tariff (%)	Share of lines with national peaks (%)	Share of lines with international peaks (%)	Share of lines with specific peaks (%)
1	Denmark	874	10.64	0.19	0.26	22.26
2	United States	854	1.83	7.93	6.52	5.29
3	United Kingdom	825	10.64	0.19	0.26	22.26
4	Sweden	811	10.64	0.19	0.26	22.26
5	Norway	806	0.73	8.28	6.30	2.70
6	Japan	806	1.98	2.72	7.39	7.49
7	Switzerland	805	0.00	37.00	0.00	0.00
8	Germany	804	10.64	0.19	0.26	22.26
9	Austria	791	10.64	0.19	0.26	22.26
10	Canada	790	0.88	4.32	10.68	9.37
11	France	774	10.64	0.19	0.26	22.26
12	Belgium-Luxembourg	773	10.64	0.19	0.26	22.26
13	Australia	772	3.79	2.02	13.69	6.15
14	New Zealand	770	2.63	5.88	9.49	3.70
15	Singapore	762	0.00	0.24	0.00	0.00
16	Finland	761	10.64	0.19	0.26	22.26
17	Ireland	758	10.64	0.19	0.26	22.26
18	Portugal	756	10.64	0.19	0.26	22.26
19	Spain	744	10.64	0.19	0.26	22.26
20	Italy	729	10.64	0.19	0.26	22.26
21	Cyprus	721	6.06	11.07	4.68	5.68
22	Malta	688	6.98	0.22	4.63	7.04
23	Slovenia	678	5.77	0.76	0.60	16.74
24	Greece	661	10.64	0.19	0.26	22.26
25	Rep. of Korea	646	9.97	0.46	1.21	5.31
26	Hungary	643	7.91	0.02	4.48	11.00
27	Croatia	632	4.54	0.09	0.00	18.31
28	Malaysia	631	4.29	0.96	8.15	21.26
29	Estonia	621	0.97	0.00	7.07	5.36
30	Poland	612	2.10	7.60	1.73	7.78
31	Lithuania	609	0.62	0.00	2.74	2.74
32	Slovakia	590	21.21	0.00	5.51	51.39
33	Uruguay	580	7.77	2.30	0.00	41.03
34	Bahamas	578	25.60	0.96	0.23	79.18
35	Costa Rica	572	4.26	0.00	0.54	0.54
36	Latvia	569	2.59	0.04	18.61	2.89
37	Panama	564	7.03	0.16	0.63	1.20
38	Thailand	563	9.05	1.11	3.19	48.73
39	Kuwait	561	4.15	1.42	0.09	0.09
40	Chile	558	7.99	0.00	0.00	0.00
41	South Africa	557	5.54	2.14	5.19	32.36
42	Bulgaria	556	5.58	1.40	0.87	20.87
43	Argentina	554	10.50	0.00	0.02	45.01
44	Belarus	545	8.86	2.16	0.00	17.63
45	Jordan	545	14.56	0.28	0.53	51.30
46	Bahrain	541	8.53	0.04	0.40	4.09
47	Mauritius	525	13.26	0.07	15.47	42.24
48	Trinidad and Tobago	513	4.81	0.39	7.14	36.96
49	Mexico	505	11.87	0.47	0.12	48.10
50	Lebanon	505	10.59	0.81	9.01	22.62
51	China	505	14.43	0.24	0.96	41.52
52	Russian Federation	493	8.80	17.93	0.00	9.76
53	Jamaica	490	9.74	0.24	5.36	36.25
54	Brazil	488	11.03	0.00	0.01	49.45
55	Romania	484	8.31	0.00	0.69	28.56

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Annex Table 2. TDI and trade policies and processes dimension (continued)

Components of Trade Policies and Processes Dimension						
			Openness to trade			
TDI Rank	Country	TDI Score	Applied trade-weighted average tariff (%)	Share of lines with national peaks (%)	Share of lines with international peaks (%)	Share of lines with specific peaks (%)
56	Ukraine	483	3.86	10.21	7.95	11.43
57	Colombia	483	10.78	0.02	0.10	22.54
58	Philippines	478	3.54	0.00	1.57	5.23
59	Sri Lanka	477	6.18	0.58	0.34	22.36
60	Namibia	476	0.53	2.97	3.53	18.98
61	Saudi Arabia	465	10.39	4.11	0.00	8.19
62	Tunisia	462	26.40	0.03	1.08	83.03
63	Iran(Islamic Rep.)	458	3.08	0.00	0.13	0.59
64	Oman	454	13.99	2.59	0.64	0.66
65	El Salvador	454	7.22	0.00	5.77	9.52
66	Botswana	450	0.96	1.91	3.89	18.64
67	Bolivia	449	8.80	2.61	1.29	1.29
68	Peru	449	12.82	0.00	0.00	12.21
69	Dominican Republic	444	10.77	0.02	0.05	39.91
70	Venezuela, BR	440	13.54	0.00	0.00	26.33
71	Nicaragua	435	2.95	0.01	0.28	0.20
72	Honduras	433	9.04	0.66	0.52	11.86
73	Ecuador	431	10.64	0.19	0.26	22.26
74	Albania	425	11.30	0.00	0.00	37.97
75	Rep. of Moldova	421	2.52	0.68	15.78	0.10
76	Algeria	419	14.09	0.00	0.00	45.34
77	Guyana	414	13.00	13.76	2.67	38.16
78	Indonesia	413	4.96	0.05	1.19	6.06
79	Egypt	409	13.56	6.78	0.91	46.93
80	Armenia	409	2.15	0.00	33.22	0.00
81	Paraguay	405	10.52	0.98	0.00	30.88
82	Guatemala	404	6.12	0.00	5.15	9.83
83	Morocco	370	24.87	0.00	0.62	79.89
84	Kenya	359	12.76	5.42	0.04	39.31
85	VietNam	355	16.91	0.09	6.88	35.57
86	Uganda	340	6.06	0.02	0.00	0.00
87	Senegal	332	8.62	0.00	0.00	52.73
88	Syrian Arab Republic	331	15.60	0.10	3.40	23.20
89	Ghana	330	16.53	0.00	1.13	41.83
90	India	306	30.10	0.11	0.72	92.26
91	Madagascar	295	3.35	0.00	7.17	4.69
92	Yemen	295	11.70	0.00	0.03	11.58
93	Bangladesh	294	21.27	0.02	0.00	51.06
94	Papua New Guinea	290	3.01	0.87	24.68	24.68
95	Pakistan	275	17.37	0.98	0.83	56.16
96	Malawi	272	10.09	0.01	0.00	41.55
97	Zambia	262	9.53	2.65	0.00	37.80
98	Nepal	255	15.46	1.87	4.39	17.88
99	Côte d'Ivoire	254	10.63	0.00	0.00	46.42
100	Cameroon	248	14.66	0.05	0.00	50.92
101	Mozambique	238	10.19	0.00	0.00	37.50
102	Togo	230	10.51	0.00	0.00	52.31
103	Tanzania	229	12.91	0.00	0.00	69.97
104	Benin	225	12.63	0.00	0.00	54.47
105	Sudan	206	19.59	0.00	0.00	44.86
106	Burkina Faso	195	11.35	0.00	0.00	52.29
107	Ethiopia	186	12.87	0.19	0.00	56.52
108	Nigeria	172	18.94	0.34	1.55	58.41
109	Mali	161	10.52	0.00	0.00	48.28
110	Niger	136	12.93	0.00	0.00	52.67

Note: See Appendix A 1.3.

Annex Table 2. TDI and trade policies and processes dimension (continued)

Components of Trade Policies and Processes Dimension							
			Effective foreign market access				
TDI Rank	Country	TDI Score	Applied trade-weighted average imposed by trade partners (%)	Share of lines with domestic peaks in trade partners (%)	Share of lines with international peaks in trade partners (%)	Share of lines with tariffs by trade partners (%)	Merchandise exports concentration index
1	Denmark	874	1.17	2.09	1.43	3.04	0.08
2	United States	854	4.07	6.63	2.96	11.83	0.09
3	United Kingdom	825	1.37	2.48	1.87	3.80	0.09
4	Sweden	811	1.48	2.07	1.39	4.03	0.13
5	Norway	806	1.83	15.23	4.83	6.82	0.45
6	Japan	806	4.25	6.08	3.64	9.39	0.14
7	Switzerland	805	1.87	13.82	4.50	7.82	0.15
8	Germany	804	1.63	2.77	1.38	4.11	0.10
9	Austria	791	1.04	2.03	1.03	2.61	0.07
10	Canada	790	0.80	2.87	0.85	2.42	0.13
11	France	774	1.59	2.28	1.34	4.75	0.08
12	Belgium-Luxembourg	773	0.89	0.97	0.60	2.26	0.12
13	Australia	772	3.13	5.47	4.69	10.16	0.13
14	New Zealand	770	5.56	8.50	6.04	9.55	0.15
15	Singapore	762	2.10	3.80	2.28	6.99	0.26
16	Finland	761	1.38	1.28	1.25	4.10	0.23
17	Ireland	758	1.13	2.95	2.21	2.83	0.23
18	Portugal	756	0.99	1.37	1.12	2.63	0.11
19	Spain	744	1.88	1.22	0.81	4.71	0.12
20	Italy	729	2.08	2.62	1.55	4.79	0.06
21	Cyprus	721	3.83	20.33	2.43	7.03	0.25
22	Malta	688	1.88	8.13	2.64	8.27	0.55
23	Slovenia	678	3.51	15.75	4.12	8.17	0.11
24	Greece	661	2.25	2.06	1.64	4.87	0.11
25	Rep. of Korea	646	4.53	4.26	3.92	11.72	0.15
26	Hungary	643	2.44	16.12	3.62	5.84	0.12
27	Croatia	632	4.62	11.99	3.11	7.99	0.13
28	Malaysia	631	1.82	3.19	2.90	6.81	0.21
29	Estonia	621	1.84	13.10	3.35	3.81	0.17
30	Poland	612	2.99	17.58	4.38	7.26	0.08
31	Lithuania	609	3.46	14.53	3.72	5.20	0.17
32	Slovakia	590	3.73	13.01	2.87	4.59	0.14
33	Uruguay	580	10.97	11.70	2.86	24.42	0.18
34	Bahamas	578	1.77	15.23	1.91	5.10	0.26
35	Costa Rica	572	3.79	7.05	4.21	7.28	0.24
36	Latvia	569	2.69	11.95	4.16	6.62	0.18
37	Panama	564	7.77	3.33	3.21	16.68	0.28
38	Thailand	563	4.05	5.68	4.19	8.47	0.10
39	Kuwait	561	3.54	12.02	3.07	8.68	0.63
40	Chile	558	3.53	10.71	5.48	15.74	0.28
41	South Africa	557	2.41	8.92	2.98	7.65	0.15
42	Bulgaria	556	4.21	14.39	3.87	7.50	0.11
43	Argentina	554	9.17	7.08	2.38	18.37	0.14
44	Belarus	545	1.74	2.33	1.24	2.86	0.16
45	Jordan	545	5.56	4.69	3.48	13.46	0.14
46	Bahrain	541	5.60	5.57	4.15	12.47	0.62
47	Mauritius	525	6.71	12.32	4.23	6.19	0.29
48	Trinidad and Tobago	513	4.65	7.51	3.79	15.40	0.37
49	Mexico	505	0.61	3.57	0.89	1.63	0.13
50	Lebanon	505	5.20	14.25	2.43	11.51	0.12
51	China	505	3.29	5.77	3.19	5.00	0.08
52	Russian Federation	493	1.62	7.82	1.91	5.67	0.30
53	Jamaica	490	4.46	21.29	6.93	9.76	0.59
54	Brazil	488	5.05	8.37	3.19	9.57	0.09
55	Romania	484	3.80	13.26	3.50	6.38	0.12

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Annex Table 2. TDI and trade policies and processes dimension (concluded)

Trade Policies and Processes Dimension							
			Effective foreign market access component				
TDI Rank	Country	TDI Score	Applied trade-weighted average imposed by trade partners (%)	Share of lines with domestic peaks in trade partners (%)	Share of lines with international peaks in trade partners (%)	Share of lines with tariffs by trade partners (%)	Merchandise exports concentration index
56	Ukraine	483	4.34	7.07	1.83	7.92	0.13
57	Colombia	483	3.54	5.62	3.94	8.64	0.24
58	Philippines	478	2.06	4.85	5.00	8.60	0.41
59	Sri Lanka	477	9.63	10.03	8.74	11.93	0.23
60	Namibia	476	3.93	24.17	2.59	5.34	0.38
61	Saudi Arabia	465	2.45	8.62	2.64	8.10	0.80
62	Tunisia	462	3.98	16.55	1.77	5.50	0.19
63	Iran(Islamic Rep.)	458	1.81	9.21	5.41	11.84	0.83
64	Oman	454	2.55	4.34	4.32	19.24	0.71
65	El Salvador	454	11.65	6.65	9.08	10.88	0.15
66	Botswana	450	0.64	43.39	2.34	2.94	0.82
67	Bolivia	449	5.80	4.70	2.42	32.28	0.23
68	Peru	449	3.48	6.56	4.06	12.05	0.24
69	Dominican Republic	444	7.92	8.38	8.06	8.07	0.23
70	Venezuela, BR	440	1.50	4.71	2.97	8.77	0.66
71	Nicaragua	435	8.06	10.38	8.37	11.16	0.25
72	Honduras	433	10.05	7.82	8.37	8.61	0.27
73	Ecuador	431	5.32	7.95	3.71	9.08	0.41
74	Albania	425	8.76	12.82	2.20	3.04	0.27
75	Rep. of Moldova	421	13.31	26.84	5.90	13.24	0.28
76	Algeria	419	1.92	28.27	1.99	5.71	0.57
77	Guyana	414	6.93	21.21	7.69	15.68	0.33
78	Indonesia	413	4.03	3.79	4.38	9.20	0.12
79	Egypt	409	4.62	13.66	3.89	9.10	0.33
80	Armenia	409	5.50	25.63	5.89	14.04	0.39
81	Paraguay	405	5.65	7.79	1.53	29.49	0.36
82	Guatemala	404	7.75	5.23	6.69	8.89	0.19
83	Morocco	370	4.78	14.82	3.49	8.24	0.17
84	Kenya	359	5.04	7.27	1.86	8.82	0.30
85	VietNam	355	9.35	8.10	11.82	16.53	0.25
86	Uganda	340	2.25	2.43	1.27	5.29	0.30
87	Senegal	332	4.17	1.15	0.79	15.14	0.27
88	Syrian Arab Republic	331	1.85	22.80	4.20	8.89	0.66
89	Ghana	330	2.66	17.74	3.06	8.15	0.39
90	India	306	4.42	5.50	2.79	7.59	0.13
91	Madagascar	295	2.86	3.11	6.57	7.32	0.42
92	Yemen	295	5.46	5.86	4.24	35.93	0.90
93	Bangladesh	294	5.44	4.92	8.10	8.88	0.31
94	Papua New Guinea	290	1.78	8.74	4.42	6.10	0.50
95	Pakistan	275	7.09	6.83	5.56	10.19	0.22
96	Malawi	272	10.22	9.97	5.79	12.00	0.60
97	Zambia	262	3.74	0.92	1.29	9.06	0.49
98	Nepal	255	8.36	2.43	8.12	21.06	0.30
99	Côte d'Ivoire	254	4.08	14.12	2.07	12.25	0.37
100	Cameroon	248	2.33	15.95	1.40	4.81	0.47
101	Mozambique	238	1.50	5.87	0.67	6.01	0.42
102	Togo	230	15.10	1.33	1.25	30.80	0.33
103	Tanzania	229	3.55	1.00	1.02	8.31	0.28
104	Benin	225	11.69	1.17	1.36	38.94	0.59
105	Sudan	206	5.08	2.18	4.01	11.05	0.66
106	Burkina Faso	195	4.88	2.62	0.81	16.70	0.58
107	Ethiopia	186	1.19	5.49	2.55	6.45	0.44
108	Nigeria	172	1.23	11.33	2.87	6.90	1.00
109	Mali	161	3.69	0.80	1.45	23.65	0.74
110	Niger	136	1.79	0.25	0.40	3.17	0.46

Note: See Appendix A 1.3.

Annex Table 3. TDI and level of development dimension

Components of Level of Development Dimension						
			Economic development	Social development		
Rank	Country	TDI Score	GDP per capita, PPP constant 1995 dollar	Adult literacy rate (%)	Gross combined enrolment rate (%)	Life expectancy at birth (years)
1	Denmark	874	27096	99.00	96.00	76.60
2	United States	854	31376	99.00	92.00	77.00
3	United Kingdom	825	22904	99.00	113.00	78.10
4	Sweden	811	22760	99.00	114.00	80.00
5	Norway	806	32398	99.00	98.00	78.90
6	Japan	806	23830	99.00	84.00	81.50
7	Switzerland	805	26385	99.00	88.00	79.10
8	Germany	804	24001	99.00	88.00	78.20
9	Austria	791	25822	99.00	91.00	78.50
10	Canada	790	25722	99.00	95.00	79.30
11	France	774	23557	99.00	91.00	78.90
12	Belgium-Luxembourg	773	38598	99.00	93.00	78.50
13	Australia	772	24574	99.00	113.00	79.10
14	New Zealand	770	18823	99.00	101.00	78.20
15	Singapore	762	21238	92.50	87.00	78.00
16	Finland	761	23093	99.00	106.00	77.90
17	Ireland	758	29641	99.00	90.00	76.90
18	Portugal	756	16082	92.50	93.00	76.10
19	Spain	744	18692	97.70	92.00	79.20
20	Italy	729	23180	98.50	82.00	78.70
21	Cyprus	721	15978	96.80	74.00	78.20
22	Malta	688	15840	92.60	77.00	78.30
23	Slovenia	678	15811	99.70	90.00	76.20
24	Greece	661	15937	97.30	86.00	78.20
25	Rep. of Korea	646	14407	97.90	92.00	75.40
26	Hungary	643	11565	99.30	86.00	71.70
27	Croatia	632	8682	98.10	73.00	74.10
28	Malaysia	631	8096	88.70	70.00	73.00
29	Estonia	621	10158	99.80	96.00	71.60
30	Poland	612	9220	99.70	90.00	73.80
31	Lithuania	609	8567	99.60	90.00	72.50
32	Slovakia	590	10910	99.70	74.00	73.60
33	Uruguay	580	7634	97.70	85.00	75.20
34	Bahamas	578	15306	95.50	74.00	67.10
35	Costa Rica	572	7960	95.80	69.00	78.00
36	Latvia	569	7571	99.70	87.00	70.90
37	Panama	564	5628	92.30	73.00	74.60
38	Thailand	563	5996	92.60	73.00	69.10
39	Kuwait	561	14365	82.90	76.00	76.50
40	Chile	558	8562	95.70	79.00	76.00
41	South Africa	557	8805	86.00	77.00	48.80
42	Bulgaria	556	6023	98.60	76.00	70.90
43	Argentina	554	10446	97.00	94.00	74.10
44	Belarus	545	4640	99.70	88.00	69.90
45	Jordan	545	3653	90.90	77.00	70.90
46	Bahrain	541	14797	88.50	79.00	73.90
47	Mauritius	525	9228	84.30	69.00	71.90
48	Trinidad and Tobago	513	8268	98.50	64.00	71.40
49	Mexico	505	8048	90.50	74.00	73.30
50	Lebanon	505	3865	86.50	78.00	73.50
51	China	505	3799	90.90	68.00	70.90
52	Russian Federation	493	6951	99.60	88.00	66.70
53	Jamaica	490	3449	87.60	75.00	75.60
54	Brazil	488	6835	86.40	92.00	68.00
55	Romania	484	5524	97.30	68.00	70.50

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Annex Table 3. TDI and level of development dimension (continued)

Components of Level of Development Dimension						
			Economic development	Social development		
Rank	Country	TDI Score	GDP per capita, PPP constant 1995 dollar	Adult literacy rate (%)	Gross combined enrolment rate (%)	Life expectancy at birth (years)
56	Ukraine	483	4061	99.60	84.00	69.50
57	Colombia	483	5627	92.10	68.00	72.10
58	Philippines	478	3678	92.60	81.00	69.80
59	Sri Lanka	477	3141	92.10	65.00	72.50
60	Namibia	476	5414	83.30	71.00	45.30
61	Saudi Arabia	465	11398	77.90	57.00	72.10
62	Tunisia	462	5900	73.20	75.00	72.70
63	Iran(Islamic Rep.)	458	5691	77.10	69.00	70.10
64	Oman	454	11818	74.40	63.00	72.30
65	El Salvador	454	4316	79.70	66.00	70.60
66	Botswana	450	7014	78.90	70.00	41.40
67	Bolivia	449	2176	86.70	86.00	63.70
68	Peru	449	4356	85.00	88.00	69.70
69	Dominican Republic	444	5745	84.40	77.00	66.70
70	Venezuela, BR	440	5057	93.10	71.00	73.60
71	Nicaragua	435	2252	76.70	65.00	69.40
72	Honduras	433	2305	80.00	62.00	68.80
73	Ecuador	431	3118	91.00	72.00	70.70
74	Albania	425	4027	98.70	69.00	73.60
75	Rep. of Moldova	421	1240	99.00	62.00	68.80
76	Algeria	419	5004	68.90	70.00	69.50
77	Guyana	414	3785	96.50	75.00	63.20
78	Indonesia	413	2811	87.90	65.00	66.60
79	Egypt	409	3308	55.60	76.00	68.60
80	Armenia	409	2477	99.40	72.00	72.30
81	Paraguay	405	4191	91.60	72.00	70.70
82	Guatemala	404	3615	69.90	56.00	65.70
83	Morocco	370	3302	50.70	57.00	68.50
84	Kenya	359	913	84.30	53.00	45.20
85	VietNam	355	1950	90.30	64.00	69.00
86	Uganda	340	1194	68.90	71.00	45.70
87	Senegal	332	1390	39.30	38.00	52.70
88	Syrian Arab Republic	331	3152	82.90	59.00	71.70
89	Ghana	330	1839	73.80	46.00	57.80
90	India	306	2292	61.30	55.00	63.70
91	Madagascar	295	730	67.30	45.00	53.40
92	Yemen	295	765	49.00	53.00	59.80
93	Bangladesh	294	1469	41.10	54.00	61.10
94	Papua New Guinea	290	2086	64.60	41.00	57.40
95	Pakistan	275	1741	41.50	37.00	60.80
96	Malawi	272	528	61.80	74.00	37.80
97	Zambia	262	731	79.90	45.00	32.70
98	Nepal	255	1227	44.00	61.00	59.60
99	Côte d'Ivoire	254	1408	49.70	42.00	41.20
100	Cameroon	248	1749	67.90	56.00	46.80
101	Mozambique	238	882	46.50	41.00	38.50
102	Togo	230	1299	59.60	67.00	49.90
103	Tanzania	229	495	77.10	31.00	43.50
104	Benin	225	922	39.80	52.00	50.70
105	Sudan	206	1576	59.90	36.00	55.50
106	Burkina Faso	195	951	12.80	22.00	45.80
107	Ethiopia	186	677	41.50	34.00	45.50
108	Nigeria	172	780	66.80	45.00	51.60
109	Mali	161	766	19.00	26.00	48.50
110	Niger	136	702	17.10	19.00	46.00

Note: See Appendix A 1.3.

Annex Table 3. TDI and level of development dimension (continued)

Components of Level of Development Dimension						
			Gender development			
TDI Rank	Country	TDI Score	Share of GDP per capita, female to male	Share of adult literacy rate, female to male	Share of gross enrolment rate, female to male	Share of life expectancy, female to male
1	Denmark	874	0.72	1.00	1.08	1.07
2	United States	854	0.62	1.00	1.08	1.08
3	United Kingdom	825	0.60	1.00	1.11	1.07
4	Sweden	811	0.83	1.00	1.19	1.06
5	Norway	806	0.74	1.00	1.09	1.08
6	Japan	806	0.46	1.00	0.98	1.09
7	Switzerland	805	0.50	1.00	0.96	1.08
8	Germany	804	0.52	1.00	0.99	1.08
9	Austria	791	0.36	1.00	1.01	1.08
10	Canada	790	0.63	1.00	1.03	1.07
11	France	774	0.59	1.00	1.03	1.10
12	Belgium-Luxembourg	773	0.44	1.00	1.04	1.08
13	Australia	772	0.71	1.00	1.03	1.07
14	New Zealand	770	0.69	1.00	1.11	1.07
15	Singapore	762	0.50	0.92	0.99	1.06
16	Finland	761	0.70	1.00	1.09	1.10
17	Ireland	758	0.40	1.00	1.08	1.07
18	Portugal	756	0.54	0.95	1.08	1.10
19	Spain	744	0.44	0.98	1.07	1.09
20	Italy	729	0.45	0.99	1.04	1.08
21	Cyprus	721	0.47	0.96	1.01	1.06
22	Malta	688	0.37	1.02	1.00	1.06
23	Slovenia	678	0.62	1.00	1.09	1.10
24	Greece	661	0.43	0.97	1.05	1.07
25	Rep. of Korea	646	0.46	0.97	0.87	1.10
26	Hungary	643	0.59	1.00	1.06	1.12
27	Croatia	632	0.56	0.98	1.03	1.11
28	Malaysia	631	0.40	0.93	1.04	1.07
29	Estonia	621	0.63	1.00	1.10	1.16
30	Poland	612	0.62	1.00	1.07	1.12
31	Lithuania	609	0.67	1.00	1.07	1.15
32	Slovakia	590	0.65	1.00	1.03	1.11
33	Uruguay	580	0.52	1.01	1.11	1.10
34	Bahamas	578	0.65	1.02	1.07	1.10
35	Costa Rica	572	0.39	1.00	1.01	1.06
36	Latvia	569	0.69	1.00	1.11	1.16
37	Panama	564	0.50	0.99	1.06	1.07
38	Thailand	563	0.61	0.95	0.97	1.13
39	Kuwait	561	0.34	0.96	1.14	1.05
40	Chile	558	0.38	1.00	0.99	1.08
41	South Africa	557	0.45	0.98	0.99	1.13
42	Bulgaria	556	0.66	0.99	1.03	1.11
43	Argentina	554	0.37	1.00	1.09	1.10
44	Belarus	545	0.65	1.00	1.05	1.16
45	Jordan	545	0.31	0.90	1.01	1.04
46	Bahrain	541	0.34	0.92	1.06	1.05
47	Mauritius	525	0.37	0.91	0.97	1.11
48	Trinidad and Tobago	513	0.45	0.99	1.03	1.09
49	Mexico	505	0.38	0.96	1.01	1.09
50	Lebanon	505	0.31	0.88	1.03	1.04
51	China	505	0.66	0.91	0.93	1.06
52	Russian Federation	493	0.64	1.00	1.08	1.20
53	Jamaica	490	0.66	1.09	1.08	1.06
54	Brazil	488	0.42	1.00	1.04	1.13
55	Romania	484	0.58	0.98	1.04	1.11

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Annex Table 3. TDI and level of development dimension (concluded)

Components of Level of Development Dimension						
			Gender development			
TDI Rank	Country	TDI Score	Share of GDP per capita, female to male	Share of adult literacy rate, female to male	Share of gross enrolment rate, female to male	Share of life expectancy, female to male
56	Ukraine	483	0.53	1.00	1.04	1.16
57	Colombia	483	0.53	1.00	1.04	1.09
58	Philippines	478	0.59	1.00	1.01	1.06
59	Sri Lanka	477	0.57	0.95	1.03	1.09
60	Namibia	476	0.51	0.99	1.03	1.07
61	Saudi Arabia	465	0.21	0.83	0.98	1.04
62	Tunisia	462	0.36	0.76	1.01	1.06
63	Iran(Islamic Rep.)	458	0.29	0.84	0.90	1.04
64	Oman	454	0.22	0.80	1.02	1.05
65	El Salvador	454	0.36	0.94	0.98	1.09
66	Botswana	450	0.51	1.07	1.01	1.05
67	Bolivia	449	0.45	0.87	0.92	1.07
68	Peru	449	0.27	0.88	1.00	1.08
69	Dominican Republic	444	0.36	1.00	1.11	1.07
70	Venezuela, BR	440	0.41	0.99	1.07	1.08
71	Nicaragua	435	0.44	1.00	1.05	1.07
72	Honduras	433	0.37	1.01	0.95	1.07
73	Ecuador	431	0.30	0.97	0.97	1.08
74	Albania	425	0.56	0.99	1.04	1.08
75	Rep. of Moldova	421	0.65	0.99	1.05	1.10
76	Algeria	419	0.31	0.76	0.96	1.05
77	Guyana	414	0.39	0.99	1.00	1.10
78	Indonesia	413	0.51	0.90	0.97	1.06
79	Egypt	409	0.38	0.65	0.90	1.06
80	Armenia	409	0.69	0.99	1.09	1.10
81	Paraguay	405	0.33	0.97	1.00	1.07
82	Guatemala	404	0.33	0.81	0.88	1.09
83	Morocco	370	0.40	0.61	0.85	1.06
84	Kenya	359	0.90	0.87	0.96	1.05
85	VietNam	355	0.69	0.93	0.91	1.07
86	Uganda	340	0.66	0.75	0.93	1.03
87	Senegal	332	0.55	0.61	0.85	1.08
88	Syrian Arab Republic	331	0.28	0.82	0.92	1.04
89	Ghana	330	0.74	0.80	0.86	1.05
90	India	306	0.38	0.67	0.77	1.02
91	Madagascar	295	0.59	0.82	0.96	1.04
92	Yemen	295	0.30	0.41	0.56	1.04
93	Bangladesh	294	0.57	0.62	1.02	1.01
94	Papua New Guinea	290	0.58	0.81	0.95	1.03
95	Pakistan	275	0.33	0.53	0.72	1.00
96	Malawi	272	0.68	0.65	0.92	1.02
97	Zambia	262	0.55	0.86	0.91	0.99
98	Nepal	255	0.50	0.43	0.82	0.99
99	Côte d'Ivoire	254	0.37	0.64	0.68	1.01
100	Cameroon	248	0.44	0.78	0.84	1.05
101	Mozambique	238	0.66	0.50	0.76	1.08
102	Togo	230	0.47	0.61	0.71	1.06
103	Tanzania	229	0.71	0.81	0.97	1.04
104	Benin	225	0.69	0.47	0.64	1.09
105	Sudan	206	0.32	0.69	0.87	1.05
106	Burkina Faso	195	0.70	0.44	0.69	1.03
107	Ethiopia	186	0.51	0.69	0.68	1.04
108	Nigeria	172	0.43	0.80	0.84	1.02
109	Mali	161	0.61	0.45	0.68	1.02
110	Niger	136	0.57	0.37	0.70	1.01

Note: See Appendix A 1.3.

QUESTIONNAIRE

DEVELOPING COUNTRIES IN INTERNATIONAL TRADE 2005

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