Most experts agree that an education system which provides high-quality instruction to all children, regardless of their background or place of residence, is an essential goal. But from there, opinions diverge about which are the most important dimensions of education that help to make a system equitable.

Today, policymakers lack a common language to discuss these issues, let alone a measurement framework that enables monitoring over time or comparisons across countries. Therefore, the UNESCO Institute for Statistics (UIS) has commissioned a study intended to contribute towards a more systematic approach to conceptualising and monitoring educational equity. A framework used to measure disparity in terms of education access and resources across geographic areas has been applied to 16 countries – the largest or most populous countries in the world.

This working paper analyses the results of the study. It is especially timely as governments undertake the mid-decade review of progress towards Education for All. With appropriate tools in hand, policymakers can better assess the equity of their education systems while developing and implementing effective programmes to reach the most vulnerable groups of students.

The UNESCO Institute for Statistics (UIS) is the statistical office of the United Nations Educational, Scientific and Cultural Organization (UNESCO) and is the UN repository for international statistics in the field of education, science and technology, and culture and communication.

UNESCO Institute for Statistics
P.O. Box 6128, Succursale Centre-Ville
Montreal, Quebec H3C 3J7
Canada

Tel: (1 514) 343-6880
Fax: (1 514) 343-5740
Email: publications@uis.unesco.org
http://www.uis.unesco.org

Educational Equity and Public Policy: Comparing Results from 16 Countries

UNESCO INSTITUTE *for* STATISTICS

UNESCO INSTITUTE *for* STATISTICS

UIS Working Paper No. 6

Educational Equity and Public Policy: Comparing Results from 16 Countries

EDUCATIONAL EQUITY AND PUBLIC POLICY: COMPARING RESULTS FROM 16 COUNTRIES

By Joel D. Sherman and Jeffrey M. Poirier

UNESCO Institute for Statistics, Montreal, 2007

UNESCO

The constitution of the United Nations Educational, Scientific and Cultural Organization (UNESCO) was adopted by 20 countries at the London Conference in November 1945 and entered into effect on 4 November 1946. The Organization currently has 191 Member States and six Associate Members.

The main objective of UNESCO is to contribute to peace and security in the world by promoting collaboration among nations through education, science, culture and communication in order to foster universal respect for justice, the rule of law, and the human rights and fundamental freedoms that are affirmed for the peoples of the world, without distinction of race, sex, language or religion, by the Charter of the United Nations.

To fulfil its mandate, UNESCO performs five principal functions: 1) prospective studies on education, science, culture and communication for tomorrow's world; 2) the advancement, transfer and sharing of knowledge through research, training and teaching activities; 3) standard-setting actions for the preparation and adoption of internal instruments and statutory recommendations; 4) expertise through technical co-operation to Member States for their development policies and projects; and 5) the exchange of specialized information.

UNESCO is headquartered in Paris, France.

UNESCO Institute for Statistics

The UNESCO Institute for Statistics (UIS) is the statistical office of UNESCO and is the UN depository for global statistics in the fields of education, science and technology, culture and communication.

UIS was established in 1999. It was created to improve UNESCO's statistical programme and to develop and deliver the timely, accurate and policy-relevant statistics needed in today's increasingly complex and rapidly changing social, political and economic environments.
UIS is based in Montreal, Canada.

American Institutes for Research (AIR)

Since its founding in 1946 as an independent, non-profit and non-partisan organization, the American Institutes for Research (AIR) has conducted more than 3,500 projects providing basic and applied research, technical support and management services to government agencies, non-profit organizations and private companies. AIR's work in education spans both the domestic and international areas, with the latter including extensive work in comparative education and international development.

1000 Thomas Jefferson Street NW; Washington, DC 20007-3835; United States; www.air.org.

UNESCO Institute for Statistics
P.O. Box 6128, Succursale Centre-Ville
Montreal, Quebec H3C 3J7
Canada

Tel: (1 514) 343-6880
Fax: (1 514) 343-5740
Email: publications@uis.unesco.org
http://www.uis.unesco.org

ISBN 92-9189-041-3

Ref: UIS/WP/06-03
Cover design: JCNicholls Design
Printed by: ICAO

Executive summary

The right to education has been recognised by the international community for the last half century and has led to increasing interest in the equity of countries' education systems. However, the term "equity" is subject to a variety of interpretations. Most would agree that education systems that are "equitable" provide high-quality education to all children, regardless of their background or where they live. But from there, opinions diverge about what aspect of education should be distributed "equitably" to whom and about what levels of disparity are "equitable" or "inequitable".

Recognising the lack of a common language for discussing the issue of equity in education, the UNESCO Institute for Statistics (UIS) undertook a study to bring together some of the diverse approaches to equity and to provide a more systematic approach to conceptualising and measuring the equity of countries' education systems. This study comes at an important time for policymakers, particularly in developing countries that are striving to attain the goal of Education for All. With appropriate tools in hand, policymakers will be in a better position to assess the equity of their education systems and to develop and implement policies and programmes to address the most critical related issues.

This report presents the results of the study in three components. First, it provides a context for understanding the current interest in educational equity through a review of the evolution of international concerns about equity and previous efforts to define and measure equity more systematically. Second, it presents a framework for measuring educational equity, along with methods for comparing the equity of countries' education systems using a set of standard statistical measures. Finally, it demonstrates the application of the framework in 16 of the largest, most-populous countries around the world. These include three countries in Africa (Egypt, Nigeria and South Africa), five in Asia (Bangladesh, China, India, Indonesia and Pakistan), five in Latin America (Argentina, Brazil, Ecuador, Mexico and Peru), along with Canada, the Russian Federation and the United States.

The empirical analysis conducted in this report centers on three specific "objects" of equity. One is a measure of access (enrolment ratios) and two are measures of resources allocated to education (expenditure per pupil and pupil-teacher ratios). The framework is applied using two main principles of equity – horizontal equity and equal educational opportunity. Horizontal equity examines disparities in access to education and resources for education within countries, using selected measures of dispersion that reflect different concerns of education policy. Equal educational opportunity examines the relationship between wealth and the three objects of equity, as well as urban/rural differences in the provision of access to education and educational resources.

In presenting the application of the equity framework, geographic regions within countries are used as the unit of analysis. In federal countries, these units are generally states, provinces and other political jurisdictions with authority over education; in non-federal countries, the units are usually the first administrative entity below the national level. The analysis of horizontal equity focuses on disparities across these units in access and resources; the analysis of equal educational opportunity relates regions' wealth (measured as regional product per capita) and population density (a proxy for urban/rural location) with the objects of equity. Coefficients of correlation are used to measure the direction and size of these relationships.

We recognise that regional disparities are not the primary concern of policymakers in all countries and that disparities based on gender, race/ethnicity and socioeconomic status may be more significant than geographic disparities. We, therefore, suggest that the analyses presented in the report should not be used as the sole basis for judging whether a country's education system is "equitable" or "inequitable;" other analyses are needed to fully inform this issue.

However, it is also important to note that geographic disparities are of great importance in many countries, particularly large federal countries, and that there is a long tradition of research on this topic in both developing and developed countries. In the former, the focus has frequently been on access to education, with urban/rural disparities at the core of policy debates. In the latter, the focus has historically been on disparities in resources provided for public education; in recent years, the emphasis has shifted to education outcomes, particularly student achievement. We view the empirical work presented in this report as an extension of that stream of research.

Selected findings from the study

This study attempted to compare countries on key aspects of educational policy and to assess the relative equity of their education systems, based on differences in access to education and the provision of educational resources in major geographical divisions. Before presenting some of the key findings, a few caveats are in order.

First, the findings presented represent a single but important dimension of equity in education. Second, even within the analyses presented here, there is not complete consistency in countries' rankings on all access and resource measures. Countries may rank highly on one measure of educational resources and not so well on another. Third, countries' comparative rankings on educational equity may depend on the group of countries used in the comparisons. A different mix of countries could produce different determinations in our equity assessment. Finally, disparities within countries may often result from intended acts of policy (e.g. the provision of greater resources in poorer areas to compensate for their lack) that are producing the desired results. It is therefore important not to "over-interpret" the findings regarding geographical disparities and to conclude categorically that one country's education system is more equitable than another's.

Horizontal equity: Regional disparities

Table A provides an overview of countries' relative standing on horizontal equity, based on the three objects of equity examined in this study: enrolment ratios, expenditure per pupil and pupil-teacher ratios. Countries that fall at the "top" of the rankings tend to have relatively small disparities across regions; countries in the "bottom" tend to have relatively large disparities; while countries in the "middle" tend to have moderate disparities relative to other countries. Based on these findings, we find the following:

Access to education: Enrolment ratios

- Among the nine countries reporting enrolment ratios for both primary and secondary education, only Mexico has relatively small disparities at both education levels. Egypt and the Russian Federation have moderate disparities in access to primary and secondary education, while India and Brazil tend to have large regional disparities.

- Argentina and Peru have relatively small regional disparities in access to primary education and moderate disparities in secondary education, while the reverse is the case in South Africa. Indonesia has moderate disparities in access to primary education and relatively large disparities at the secondary level.

- Among countries only reporting primary enrolment ratios, disparities are relatively small in China and relatively large in Bangladesh and Pakistan. At the secondary level, disparities in enrolment ratios are relatively small in Canada and the United States.

Educational resources: Expenditure per pupil and pupil-teacher ratios

- Canada, Peru, South Africa and the United States show the smallest inter-regional disparities in expenditure per pupil for primary and secondary education. Argentina, Brazil, Mexico and the Russian Federation fall in the middle range, while China, Egypt and India have the largest disparities in expenditure per pupil across their regions.

- Overall, there is a strong correspondence between countries' rankings on regional disparities in expenditure per pupil and pupil-teacher ratios in primary and secondary education. Canada, Peru, South Africa and the United States are at or near the top of the rankings on both measures, Brazil and the Russian Federation are in the middle, with Egypt and India at the bottom of the rankings.

- Disparities in pupil-teacher ratios in primary education are smallest in Argentina, Brazil, Indonesia, Mexico and Peru; in the moderate range in Bangladesh, China, Ecuador and the United States; and largest in Egypt, India, Nigeria and Pakistan.

- Disparities in pupil-teacher ratios at the secondary level show some similarities and some differences with primary education: disparities are smallest in China, Indonesia, Mexico and Peru; in the moderate range in Brazil, Ecuador, Egypt, Nigeria and the United States; and largest in Argentina, India and Pakistan.

Table A. Country placements on horizontal equity analyses of enrolment ratios, expenditure per pupil and pupil-teacher ratios

Country	Primary enrolment ratio	Secondary enrolment ratio	Primary and secondary expenditure per pupil	Primary pupil-teacher ratio	Secondary pupil-teacher ratio	Primary and secondary pupil-teacher ratio
Argentina	top	middle	middle	top	bottom	bottom
Bangladesh	bottom	*	*	middle	*	*
Brazil	bottom	bottom	middle	top	middle	middle
Canada	*	top	top	*	*	top
China	top	*	bottom	middle	top	middle
Ecuador	*	*	*	middle	middle	middle
Egypt	middle	middle	bottom	bottom	middle	bottom
India	bottom	bottom	bottom	bottom	bottom	bottom
Indonesia	middle	bottom	*	top	top	middle
Mexico	top	top	middle	top	top	top
Nigeria	*	*	*	bottom	middle	bottom
Pakistan	bottom	*	*	bottom	bottom	middle
Peru	top	middle	top	top	top	top
Russian Federation	middle	middle	middle	*	*	middle
South Africa	middle	top	top	*	*	top
United States	*	top	top	middle	middle	top

* Not available.

Equal educational opportunity

Table B provides a summary of findings from the analysis of educational opportunity using the relationship between regional wealth and regional enrolment ratios, expenditure per pupil and pupil-teacher ratios. In the table, a dash ("-") signifies that countries tend to have lower enrolment ratios, lower expenditure per pupil or lower pupil-teacher ratios in wealthier regions; and a plus sign ("+") signifies that countries tend to have higher enrolment ratios, higher expenditure per pupil or higher pupil-teacher ratios in wealthier regions. An asterisk ("*") is used in instances where a country does not have a consistent relationship between regional wealth and a given measure. Where the relationships are strongly positive or negative (greater than +0.50 or less than -0.50), there are no additions to the designated signs. However, parentheses are used to indicate relationships that are statistically weak (between -0.50 and -0.25 or between 0.25 and 0.50).

Access to education: Enrolment ratios

- Egypt, Mexico and Peru perform most poorly on this dimension of equity, with moderate to strong positive relationships between regional wealth and enrolments ratios in both primary and secondary education. In Argentina, Brazil, Canada, India, Indonesia, South Africa and the United States, wealthier regions also tend to have higher enrolment ratios in secondary education.

- Poorer regions tend to have higher enrolment ratios in primary education in four countries: Argentina, Brazil, India and South Africa. However, India is the only country where the relationship is strong.

Educational resources: Expenditure per pupil and pupil-teacher ratios

- Wealthy regions tend to provide greater expenditure per pupil for primary and secondary education in the 10 countries with available data. The relationships are strong in Argentina, Brazil, Canada, China, South Africa and the United States, and moderate in Egypt, Mexico, Peru and the Russian Federation.

- Higher expenditure results in lower primary and secondary pupil-teacher ratios in wealthier regions in seven of these countries – Argentina, Brazil, Canada, China, Egypt, India and Peru.

- Wealthier regions also tend to have lower pupil-teacher ratios in primary education in Argentina, Brazil, China, Egypt, India and Peru. The same pattern is found in secondary education in these six countries, as well as in Mexico.

Table B. Findings from the analysis of equal educational opportunity – The relationship between regional wealth and regional enrolment ratios, expenditure per pupil and pupil-teacher ratios

Country	Primary enrolment ratio	Secondary enrolment ratio	Primary and secondary expenditure per pupil	Primary pupil-teacher ratio	Secondary pupil-teacher ratio	Primary and secondary pupil-teacher ratio
Argentina	(-)	**+**	**+**	**-**	(-)	**-**
Brazil	**-**	**+**	**+**	(-)	(-)	(-)
Canada	n/a	**+**	**+**	n/a	n/a	**-**
China	(+)	n/a	**+**	(-)	(-)	(-)
Egypt	(+)	(+)	(+)	(-)	(-)	(-)
India	**-**	(+)	*	(-)	(-)	(-)
Indonesia	*	(+)	n/a	*	*	*
Mexico	(+)	(+)	(+)	(+)	(-)	*
Nigeria	n/a	n/a	n/a	*	*	*
Peru	(+)	**+**	(+)	(-)	(-)	**-**
Russian Federation	*	*	(+)	n/a	n/a	*
South Africa	(-)	(+)	**+**	n/a	n/a	*
United States	n/a	**+**	**+**	*	*	*

n/a: Data not available.
* Not a statistically significant relationship (correlation between -0.25 and +0.25).

Table of contents

Page

Executive summary iii

Acknowledgements 13

1. Introduction 15

2. Contextualising and defining educational equity 17
   - I. Efforts to support educational rights and equity 17
     - A. The United Nations 17
     - B. Other international efforts 18
     - C. Efforts to measure equity 19
   - II. Developing a framework to measure equity in education 20

3. The equity framework 22
   - I. Targets of equity concerns 22
   - II. Objects 22
     - A. Access and progression 23
     - B. Resources 23
     - C. Results 23
   - III. Equity principles 24
     - A. Horizontal equity 24
     - B. Vertical equity 24
     - C. Equal educational opportunity (EEO) 25
   - IV. Measuring equity 26
     - A. Measures of horizontal equity 26
       - 1. Range ratio 27
       - 2. McLoone Index/adjusted McLoone Index 27
       - 3. Coefficient of variation 28
       - 4. Gini coefficient 28
     - B. Measures of vertical equity 30
     - C. Measures of equal educational opportunity 30
   - V. Overview 31

4. Application of the equity framework: enrolment ratios 32
   - I. Introduction to the analysis 32
     - A. Countries selected for analysis 32
     - B. Presentation of the analyses 36
   - II. Enrolment ratios 37
     - A. Horizontal equity analysis 38
       - 1. Primary education 38
       - 2. Secondary education 40
     - B. Equal educational opportunity 43
       - 1. Regional wealth and enrolment ratios 43
       - 2. Regional population density and enrolment ratios 44
     - C. Horizontal equity and equal educational opportunity 45

5. Application of the equity framework: Expenditure per pupil 47
I. Horizontal equity analysis 47
A. Composite rankings 49
B. Consistency of rankings on equity measures 50
II. Equal educational opportunity 51
A. Regional wealth and expenditure per pupil 51
B. Regional population density and expenditure per pupil 52
III. Horizontal equity and equal educational opportunity 53
IV. Changes in horizontal equity 54
V. Changes in equal educational opportunity 56
A. Regional wealth and expenditure per pupil 56
B. Regional population density and expenditure per pupil 57

6. Application of the equity framework: Pupil-teacher ratios 58
I. Horizontal equity analysis 58
A. Primary education 60
1. Composite rankings 61
2. Consistency of rankings on equity measures 62
B. Secondary education 63
1. Composite rankings 63
2. Consistency of rankings on equity measures 65
C. Combined primary and secondary education 66
1. Composite rankings 67
2. Consistency of rankings on equity measures 68
D. Consistency of rankings on horizontal equity in primary, secondary and combined primary and secondary education 69
II. Equal educational opportunity 70
A. Regional wealth and pupil-teacher ratios 70
B. Regional population density and pupil-teacher ratios 72
III. Horizontal equity and equal educational opportunity 73
A. Primary education 73
B. Secondary education 74
C. Combined primary and secondary education 75
D. Summary of findings 76
IV. Changes in horizontal equity 78
A. Primary education 78
B. Secondary education 80
C. Primary and secondary education 81
D. Summary of findings 82
V. Changes in equal educational opportunity 84
A. Regional wealth and pupil-teacher ratios 84
B. Regional population density and pupil-teacher ratios 85

Appendix 1. Sources, methods and technical notes 87
Appendix 2. References 105
Appendix 3. Glossary 113
Appendix 4. Equity-related education laws, policies and research in core countries 118

Tables

		Page
3.1	Types of objects	22
3.2	Illustration of Gini coefficient – distribution of pupil-teacher ratios for country A	29
3.3	Illustration of Gini coefficient – distribution of pupil-teacher ratios for country B	30
4.1	Type of government, name of regions and number of regions in countries	33
4.2	Population and area of countries	33
4.3	Gross product per capita and population density	35
4.4	National primary enrolment ratios	38
4.5	Horizontal equity measures of primary enrolment ratios	39
4.6	Ranking order on horizontal equity measures of primary enrolment ratios	39
4.7	National secondary enrolment ratios	41
4.8	Horizontal equity measures of secondary enrolment ratios	41
4.9	Ranking order on horizontal equity measures of secondary enrolment ratios	42
5.1	National public combined primary and secondary expenditure per pupil	48
5.2	Horizontal equity measures of public combined primary and secondary expenditure per pupil	48
5.3	Ranking order on horizontal equity measures of public combined primary and secondary expenditure per pupil	49
5.4	Change in national average public primary and secondary expenditure per pupil	55
5.5	Horizontal equity measures of public primary and secondary expenditure per pupil, 1995 and 2002	55
5.6	Correlation between GRP per capita and public combined primary and secondary expenditure per pupil, 1995 and 2002	56
5.7	Correlation between regional population density and public combined primary and secondary expenditure per pupil, 1995 and 2002	57
6.1	National public primary pupil-teacher ratios	59
6.2	National public secondary pupil-teacher ratios	59
6.3	Horizontal equity measures of public primary pupil-teacher ratios	60
6.4	Ranking order on horizontal equity measures of public primary pupil-teacher ratios	60
6.5	Horizontal equity measures of public secondary pupil-teacher ratios	63
6.6	Ranking order on horizontal equity measures of public secondary pupil-teacher ratios	63
6.7	Horizontal equity measures of public combined primary and secondary pupil-teacher ratios	66
6.8	Ranking order on horizontal equity measures of public combined primary and secondary pupil-teacher ratios	66
6.9	Correlation between GRP per capita and public pupil-teacher ratios	71
6.10	Correlation between regional population density and public pupil-teacher ratios	72
6.11	Change in national average public primary pupil-teacher ratios	79
6.12	Horizontal equity measures of public primary pupil-teacher ratios, 1995 and 2002	79
6.13	Change in national average public secondary pupil-teacher ratios	80
6.14	Horizontal equity measures of public secondary pupil-teacher ratios, 1995 and 2002	81
6.15	Change in national average public combined primary and secondary pupil-teacher ratios	81
6.16	Horizontal equity measures of public combined primary and secondary pupil-teacher ratios, 1995 and 2002	82
6.17	Correlation between GRP per capita and public pupil-teacher ratios, 1995 and 2002	84
6.18	Correlation between regional population density and public pupil-teacher ratios, 1995 and 2002	86

Figures

		Page
3.1	Objects and targets of equity	23
3.2	Interpreting horizontal equity measures	27
3.3	Illustration of the Gini coefficient	29
3.4	Overview of the equity framework	31
4.1	Primary enrolment ratio ranking orders on horizontal equity measures	40
4.2	Secondary enrolment ratio ranking orders on horizontal equity measures	42
4.3	Correlation between GRP per capita and primary and secondary enrolment ratios	43
4.4	Correlation between population density and primary and secondary enrolment ratios	44
4.5	Country positions on horizontal equity and equal educational opportunity measures of enrolment ratios in primary (P) and secondary (S) education	45
5.1	Average rankings on horizontal equity measures of public combined primary and secondary expenditure per pupil	50
5.2	Public combined primary and secondary expenditure per pupil ranking orders on horizontal equity measures	51
5.3	Correlation between GRP per capita and public combined primary and secondary expenditure per pupil	52
5.4	Correlation between regional population density and public combined primary and secondary expenditure per pupil	53
5.5	Country positions on horizontal equity and equal educational opportunity measures of expenditure per pupil in public combined primary and secondary education	54
6.1	Average rankings on horizontal equity measures of public primary pupil-teacher ratios	61
6.2	Public primary pupil-teacher ratio ranking orders on horizontal equity measures	62
6.3	Average rankings on horizontal equity measures of public secondary pupil-teacher ratios	64
6.4	Public secondary pupil-teacher ratio rank orders on horizontal equity measures	65
6.5	Average rankings on horizontal equity measures of public combined primary and secondary pupil-teacher ratios	67
6.6	Public combined primary and secondary pupil-teacher ratio ranking orders on horizontal equity measures	68
6.7	Consistency of horizontal equity measures across levels of education	69
6.8	Country positions on horizontal equity measures by levels of education	70
6.9	Correlation between GRP per capita and public pupil-teacher ratios	71
6.10	Correlation between regional population density and public pupil-teacher ratios	73
6.11	Country positions on horizontal equity and equal educational opportunity measures in public primary education	74
6.12	Country positions on horizontal equity and equal educational opportunity measures in public secondary education	75
6.13	Country positions on horizontal equity and equal educational opportunity measures in public combined primary and secondary education	76
6.14	Country positions on horizontal equity and equal educational opportunity measures in public primary (P), secondary (S) and combined primary and secondary (P-S) education	77
6.15	Comparison of change in horizontal equity measures, by level of education	83

Acknowledgements

This paper was prepared as part of a contract with the American Institutes for Research (AIR). The authors gratefully acknowledge the UIS technical representative for this work, Albert Motivans, in addition to the various representatives from Ministries of Education and other organizations that shared data, policy-related publications and comments on the draft analyses. We also thank those who contributed to the production of the report. This includes four AIR research staff – Nicholas W. Read, Edward H. Stigletz, Jessica Thomas and Euhwa Tran – who were instrumental to the data collection effort and helped to develop the summaries in Appendix 4. Finally, we wish to thank UIS staff who assisted with formatting and publishing. The views expressed in this paper are our own and should not be associated with UNESCO.

1. Introduction

The right to education has been recognised by the international community for the last half century and has led to increasing interest in the equity of countries' education systems. However, the term "equity" is subject to a variety of interpretations. Most would agree that education systems that are "equitable" provide high-quality education to all children, regardless of their background or where they live. But from there, opinions diverge about what aspects of education should be distributed "equitably" to whom and about what levels of disparity are "equitable" or "inequitable".

Recognising the lack of a common language for discussing the issue of equity in education, the UNESCO Institute for Statistics (UIS) undertook this study to bring together some of the diverse approaches to equity and to provide a more systematic approach to conceptualising and measuring the equity of countries' education systems. The study comes at an important time for policymakers, particularly in developing countries that are striving to attain the goal of Education for All. With appropriate tools in hand, policymakers will be in a better position to assess the equity of their education systems and to develop and implement policies and programmes that address the most critical equity issues.

The study involved three main activities. The first was the collection and review of the research literature on educational equity, with a focus on conceptual and methodological approaches to measuring equity in education. From this literature, we developed a framework to guide the measurement of disparity in education access, resources and results across geographic areas within countries. The second activity was the selection of countries for the equity analysis and the collection of extant sub-national data on participation ratios, human and financial resources and educational outcomes from each of these countries. The third activity was the application of the equity framework and the development of equity measures for countries with available data. The measures for each country were brought together to provide an analysis of the way these countries compare on selected aspects of equity in education.

At the beginning of the project, 16 of the largest, most populous developing and developed countries around the globe were selected for inclusion in the study. These included three countries in Africa (Egypt, Nigeria and South Africa), five in Asia (Bangladesh, China, India, Indonesia and Pakistan), and five in Latin America (Argentina, Brazil, Ecuador, Mexico and Peru), along with Canada, the Russian Federation and the United States. We subsequently expanded the sample beyond the "core" 16, adding eight countries in Asia (Australia, Cambodia, Japan, Korea, Malaysia, the Philippines, Sri Lanka and Thailand) and five countries in Latin America (Bolivia, Chile, Colombia, Paraguay and Uruguay).

For the core countries, we conducted a review of national policies intended to promote equity in access to education, human and financial resources for education and educational outcomes. This review included materials on equity-related education laws and policy statements in addition to equity-related research and policy studies. Findings from this review are provided for 10 of the core countries (Bangladesh, Brazil, China, Egypt, India, Indonesia, Nigeria, Pakistan, the Russian Federation and South Africa). We also include overviews of the social context of education in these countries, including: demographics, economy, geography and government; the organization of primary and secondary education; and education governance.

Each of the reports contains the same organizational structure. Chapter 2 describes the context of educational equity, including the evolution of interest in equity at the international level. Chapter 3 presents the framework for the equity analysis, using three indicators as an illustration. These include one measure of access to education (enrolment ratios) and two measures of educational resources (expenditure per pupil and pupil-teacher ratios). Chapters 4, 5 and 6 demonstrate the application of the equity framework to each of these indicators and analyse countries' rankings on selected measures of disparity and equal educational opportunity (EEO). Annex 1 provides sources, methods and technical notes on the data analysed in the report. Annex 2 lists references and Annex 3 provides a glossary of key terms. Finally, Annex 4 of this report provides a summary of equity-related education laws, policies and research.

2. Contextualising and defining educational equity

Equity is a fundamentally important concept that can be used to characterise the fairness and effectiveness of education systems. Although it is not a new issue in both developing and developed countries, educational equity has received renewed interest because it is more widely recognised as a basic human right (Cavicchioni and Motivans, 2001). However, a rights-based approach, evident in a set of international accords discussed below, is but one reason countries have to pay attention to issues of educational equity.

A second reason for increased attention to educational equity is the emerging belief that providing all people with the skills to remain employable throughout their lives is essential to achieving satisfactory levels of individual and social well-being (Demeuse, Crahay and Monseur, 2001; Meuret, 2001) and to sustaining desirable levels of economic growth and development. In the words of Kofi Annan in a report to the UN, "education is the key to the new global economy...It is central to development, social progress and human freedom" (Annan, 2000), as well as to "sustained poverty reduction" (Cavicchioni and Motivans, 2001).

This chapter attempts to provide a framework for the empirical analysis that follows by highlighting some of the major events that led to the development of educational equity as a major international issue and by discussing some of the more important efforts to conceptualise and measure educational equity.

I. Efforts to support educational rights and equity

A. The United Nations

The United Nations was instrumental in making educational rights an important part of broader concerns about human rights over the last half century. International support for educational rights can be traced back to the adoption of the Universal Declaration of Human Rights by the General Assembly of the United Nations in 1948. Although this declaration was not legally binding, Article 26 proclaimed that all people have the right to education and that elementary education be compulsory and free (UN, 1948). This was followed by the Convention Against Discrimination in Education in 1960, which was adopted by the UN partly due to advocacy for greater educational equity by social groups (Cavicchioni and Motivans, 2001). This convention supported the right to education by defining discrimination as efforts to diminish equality of treatment in education, based on race, gender, language, religion, political or other beliefs, geographic location, national or social origin, or economic condition (UNESCO, 1960). The responsibility of countries to develop policies that promote equality of opportunity and equal treatment in education was an important tenet of this accord.

The right of children to equal educational opportunity was reinvigorated and expanded by The Convention on the Rights of the Child. Article 28 of this UN accord became legally binding after 192 countries of the General Assembly ratified and made it

international law in 1989 (UN, 1989). It recognises the right of all children to free, compulsory primary education; access to different forms of secondary education; and access to educational and vocational information and guidance (UN, 1989). It also points to the state role in encouraging regular attendance and reducing dropout rates. The convention is notable because it is the first time that standards of children's human rights were clearly defined and synthesised into one legal instrument (UNICEF, n.d.).

Beginning in the 1990s, concern over educational disparities in less-developed countries emerged as a key issue in development policy debates (Cavicchioni and Motivans, 2001). No doubt this was due to increased international support for educational opportunity for all, evidenced by the aforementioned declaration and conventions of the UN, as well as the continued need for all children in less-developed countries to have equal access to basic education. The World Conference on Education for All in 1990, which convened representatives from 155 countries in Jomtien, Thailand, led to an internationally supported approach to universalising primary education and reducing illiteracy – Framework for Action: Meeting Basic Learning Needs.

The preamble of this framework drew attention to the challenges confronting efforts to educate all: 100 million children without access to primary education, 100 million children failing to complete basic education programmes and high illiteracy rates (UNESCO, 2001b). Of particular significance, Article III of the framework focused on equity concerns by explicitly calling for reductions in educational disparities based on gender or minority group status (UNESCO, 2001b). These underserved groups include the poor; rural and remote populations; and ethnic, racial and linguistic minorities.

More recently, the 2000 World Education Forum in Dakar, Senegal, reaffirmed the goals of the Jomtien world conference. The 164 participating countries adopted the Dakar Framework for Action, reiterating the importance of equitable access to free primary education of good quality that all children complete. The framework also brought attention to the need for adequate, equitable and sustainable resources, which it pointed to as the greatest challenge to implementing education for all (UNESCO, 2001a). Also in 2000, the 55th session of the United Nations, referred to as the Millennium Summit, convened in New York and, at its conclusion, declared that governments have a collective responsibility to uphold educational equality and equity. Among the goals established during the summit were universal primary education and the elimination of gender disparities in education by 2015, if not by 2005 in the case of primary and secondary education (United Nations Development Programme, n.d.).

B. Other international efforts

Other international bodies also played important roles – supporting efforts to reduce educational inequity and improve access for all. In 1994, the Summit of the Americas, which is supported by nine partner institutions, including the Organization of American States and the World Bank, and which brings together the heads of state and government of countries in the western hemisphere, held its first summit in Miami.

During this meeting it developed a plan of action that included universal literacy and universal access to education at all levels and without regard to race, national origin or gender (Summit of the Americas Secretariat, 2004b). This plan called for primary completion ratios of 100% by 2010, secondary enrolment ratios of at least 75% and programmes to prevent truancy.

Two years later, as part of its findings at the conclusion of a meeting in Geneva, the Inter-Parliamentary Union and its 140 members recommended that prosperity and knowledge be more equitably shared so that all are able to receive an education (IPU, 1996). Then in 1999, the 53 member states of the African Union passed a charter agreeing that every child has a right to education and that special measures should be taken to ensure equal access for all members of the community, including girls as well as gifted and disadvantaged children (African Union, 1999).

International support of educational equity has continued into the 21st century. The third Summit of the Americas, held in Quebec City in 2001, reaffirmed the goals of previous summits to promote equity and quality at all levels of education. The summit's plan of action also emphasised the importance of providing education to girls, children in rural areas, children with disabilities and indigenous or other minority children (Summit of the Americas Secretariat, 2004a).

C. Efforts to measure equity

The advancement of educational equity by international bodies has been joined by efforts to study and measure educational equity. For example, in 2001 the Partnership for Educational Revitalization in the Americas (PREAL), a joint effort of the Inter-American Dialogue in Washington, D.C. and the Corporation for Development Research in Santiago, Chile, released the first report card on Latin American education. Its work was intended to increase accountability and increase awareness of the results of Latin American education systems. PREAL rated the equity of Latin American education systems as "very poor" because poor, rural and indigenous children rarely receive quality education. Using data compiled from diverse sources, it found significant inequities in education levels and enrolment ratios based on income and urbanicity across the countries.

In addition, the European Union recently commissioned a study that developed a theoretical framework composed of 29 qualitative or quantitative educational equity indicators (European Commission, 2003). These indicators are built into a framework composed of four dimensions of educational equality: context (e.g. economic and social inequalities, cultural resources), process (e.g. quantity or quality of education received), internal results (e.g. skills, personal development), and social and political effects.

Equity is also prominent on the policy agendas of member countries of the Organisation for Economic Co-operation and Development (OECD), and a wide array of policy measures seek to prevent, redress or reduce existing inequalities (Cochran, 2001; Healy and Istance, 2001). The OECD itself has been significantly involved in issues

related to educational equity and is currently building on its prior work through a comparative study focusing on the relative equality of outcomes of OECD education systems. This important work is intended to support countries' efforts to develop and implement policies designed to promote educational equity, with a focus on regional disparities as well as other dimensions of equity.

II. Developing a framework to measure equity in education

Defining educational equity is a difficult undertaking. The European Commission (2003) recently stated that "anyone who talks about equity rather than equality is generally suspected of having abandoned a safe territory and a clear concept for a minefield and a fuzzy concept". In its simplest terms, however, equity is about "fairness" (Berne and Stiefel, 1984). But for the concept of equity to be meaningful, it needs to be defined in a way that permits empirical analysis.

In our review of the literature, we identified a number of different frameworks that could provide the basis for an empirical analysis of equity in education at the international level. These include the framework of the European Commission referenced above, the one developed by Demeuse, Crahay and Monseur (2001), as well as the more general research on educational equity in the United States and other countries. However, for this study we selected a framework developed in the early 1980s by Berne and Stiefel to measure the equity of state school finance systems in the United States, since it provides a very comprehensive approach to the general issue of educational equity.

In the next chapter, we present the framework developed by Berne and Stiefel for conceptualising and measuring empirically equity in education. We note here that the framework establishes some key principles about equity, including "horizontal equity" which defines equity as "no difference" in observed values across units of observation and inequity as deviation from this "no difference" standard. The further the divergence from "no difference" on each of the statistical measures, the greater the "inequity" on the indicator of interest.

In the chapters that follow, we illustrate the use of this framework by applying a set of statistical measures to assess the degree of dispersion on selected education indicators across geographical regions within and across countries. In our comments on the results of the analyses, we observe how much countries diverge from the "no difference" standard and characterise countries as being closer to or further from the standard of horizontal equity. But we state here, and state again as part of each of our analyses, that this disparity from the "no difference" standard does not necessarily mean that a country's education system is "inequitable" – largely because these disparities may result from different circumstances.

On the positive side, the observed regional disparities may be the result of countries' policies to focus attention or concentrate resources in selected geographical areas in order to broaden access or improve school quality. This concentration of activity or resources could produce very high values on the indicator of interest in regions that are

the targets of this policy and, therefore, result in greater disparity on the key measures of variation. In this case, the greater disparity may be an intended consequence of a policy intended to promote “equity” and not an indicator of greater “inequity” in the education system.

Alternatively, high levels of disparity on an education measure may reflect a fundamental problem in the country’s education system and the lack of attention to this problem at the policy level. Differences in participation ratios in primary education in different regions of a country, for example, could very well be considered an equity issue if large proportions of children in some geographic areas of the country are not provided with access to education. Similarly, low levels of financial investment in some geographic regions could inhibit the ability of children living in those areas from getting a high-quality education. In these cases, greater disparity on measures of access to and resources invested in education could constitute an equity issue.

Finally, there are situations where large disparities on measures of variation may result from unusual situations. This could be the case where a substantial proportion of the units of observation have exceptionally high or low values on the indicator of interest because of unique circumstances. For example, in countries with a large number of small, sparsely-populated areas that cannot provide a standard programme of education, the values on the indicator of interest may be extremely high or extremely low and the result could be relatively high-disparity measures. Although this “disparity” could create the appearance of “inequity,” it may not reflect the situation accurately: exclusion of the unique values could provide a very different picture of the country’s education system.

In summary, large disparities on education indicators may create the appearance of “inequity” in education systems. But disparities on indicator measures should not always be interpreted as inequities. Just as with international indicator systems which compare countries based on national averages, the equity measures provide a starting point for understanding differences across countries. Where disparity measures suggest potential equity problems, policymakers and researchers should look more closely at the country’s unique demographic and economic characteristics, as well as its education policies to get a more complete picture of the situation.

3. The equity framework

The preceding chapter highlighted the diverse approaches to conceptualising and measuring educational equity. In this chapter, we draw heavily on the seminal work of Berne and Stiefel (1984), whose framework for measuring the equity of school finance systems can be applied readily to broader analyses of educational equity. In their framework, they ask four guiding questions about equity: for whom, what, how and how much? In the following paragraphs each of these components of the equity framework is discussed further.

I. Targets of equity concerns

Children are often the targets of equity concerns because they spend a great deal of time in educational settings and many believe that their educational experiences should be equitably distributed. Taxpayers have sometimes been the focus of equity concerns related to school finance if taxpayers share the burden of supporting education. For the purposes of this equity study, sub-national administrative divisions within countries (i.e. regions) are the target of equity concerns. The equity framework could easily be applied at the individual level when data are available.

II. Objects

The second component of this framework identifies the broader categories of indicators that should be distributed equitably. Berne and Stiefel identified inputs, outputs and outcomes. Education access and progression is another important category of objects. **Table 3.1** lists examples of objects that might be of interest when applying the current framework. **Figure 3.1** displays the various potential combinations of targets and objects that an equity analysis might comprise; the approach used for this study's analyses is highlighted.

Table 3.1. Types of objects

Access/progression	Resources	Results
Rates/ratios of: Enrolment Entry Progression Repetition	Average class size Course availability Expenditure per pupil Pupil-teacher ratios Quality of school facilities Quality of textbooks Teacher education level Teacher experience and certification	Achievement test scores Graduation ratios Income Occupational status

Figure 3.1. Objects and targets of equity

Targets of equity concerns		Objects of equity		
		Access/progression	Resources	Results
Student characteristics	Gender			
	Socioeconomic status (SES)			
	Race/ethnicity			
	Disability status			
Regional characteristics	Type (e.g. province, municipality)			
	Urbanicity			
	Wealth			

A. Access and progression

Education access is the most basic equity concern because learning, regardless of the quality, cannot occur without access. Progression is another concern because students must continue through the education system in order to maximise the educational benefits they experience. Hence, "access and progression" is one of the three objects that this framework comprises.

B. Resources

Inputs are the educational resources used to educate children. In the context of school finance equity, financial resources often measured as expenditure per pupil are valuable, common input measures. Inputs can also be measured in terms of physical resource levels, such as classrooms, teachers or even teachers with higher levels of educational attainment. One benefit of using physical resource levels as input measures is that they are in real terms; a disadvantage is the difficulty of combining different physical resources.

Resources are important because they are the means through which educational experiences are enriched; further, they are of particular interest in instances where they may affect future outputs or outcomes. Regions with relatively fewer resources may be at a disadvantage in providing high-quality education compared to regions with greater resources. The equity analyses in this study use public primary, secondary and combined primary and secondary expenditure per pupil and pupil-teacher ratios as the primary resource measures. Other potential resources of interest are displayed in Table 3.1.

C. Results

Outputs relate to the short-term results of schooling. Measures of equity in terms of outputs may include completion ratios, graduation ratios or scores on achievement and

competency tests. Outputs may be considered equitable if they are equal (e.g. if students from different regions have similar graduation ratios) or if students who do not begin schooling at the same level of competency in a subject area, as one example, complete their education with similar levels of competence. Outcomes consist of the long-term results of schooling, such as income, occupational status or personal satisfaction. As one might expect, measuring outcomes poses significant difficulty due to the effects of intervening variables over time and because of inadequate data. We refer to outputs and outcomes collectively as results. Due to limited regional data, the analyses in this study do not include measures of results.

III. Equity principles

The third component of the Berne and Stiefel equity framework requires a decision about how to determine whether distributions of educational resources are equitable. Specifically, what principles should be applied to analyse equity across regions? The three principles embodied by the framework – horizontal equity, vertical equity, equal opportunity – are highlighted in the previous chapter and are discussed here in greater detail.

A. Horizontal equity

Horizontal equity requires equal treatment of those who are equally situated. A horizontally equitable education system would treat students who are alike equally and ensure that they experience similar levels of educational resources and achieve similar results. Horizontal equity requires little or no variation in the dispersion of access, resources and results – no dispersion suggests perfect equity.

This study applies the standard of horizontal equity to regions within countries to analyse education access and resources. Relative to resources, the study assumes that all regions have similar characteristics (e.g. equal levels of urbanicity, equal proportions of wealthy/poor populations) and, therefore, should be treated equally. The following equity principle, vertical equity, could be applied to the resource indicators if more data were available at the regional level.

B. Vertical equity

Vertical equity recognises that students are not all the same and that their starting points relative to other students should be considered in an analysis of equity. In this case, providing children who (or regions that) are differently situated with different levels of resources may be considered fair. In this regard, an education system is made fairer because unique resources (e.g. specialised support staff or after-school programmes) are provided to achieve similar results (e.g. school completion) for a particular group of children or a specific region.

Individual or group characteristics that may necessitate differential educational treatment include gender, race/ethnicity and social status; the fiscal capacity of regions

or school administrative units; or other local characteristics such as household income and poverty levels. However, in some cases differential treatment based on these characteristics may be necessary to make an education system more equitable. For example, if regions with high poverty tend to have poor educational results, increased resources targeting these regions may be seen as an improvement to educational equity because the intention is to make results more equal across the regions. A vertical equity standard should not be applied in the case of access/progression or results because there should not be differences across units on these types of measures.

C. Equal educational opportunity (EEO)

The third principle of equity, EEO, is based on the notion that all children should have an equal chance to succeed, with this success based on personal characteristics such as motivation and effort (Berne and Stiefel, 1999). Equal educational opportunity should result in no difference in educational success based on student characteristics or place of residence. For there to be equal opportunity, students should have access to resources that put them at "a fair starting line" and "conditions should be set up to allow the possibility for all to 'succeed'" (Berne and Stiefel, 1999). In the United States, wealth neutrality is a form of equal opportunity requiring that the quality of education not have a relationship with the property wealth of school districts. This is because local property wealth is a significant source of school district revenues in the United States.

This study uses equal educational opportunity to address two main questions. First, do children who live in wealthier regions consistently have greater access to education or educational resources? Second, do children who live in urban areas have greater access to education or educational resources than those in rural areas? Gross regional product (GRP) per capita is used as the measure of regional wealth; regional population density (RPD) is used as a proxy for the urban or rural character of regional divisions in countries because the definitions of "urban" and "rural" are not consistent across countries. A second reason is that, even if there were standard definitions of these terms, many countries do not report data on pupils and teachers in these types of geographical areas. In this analysis, regions with greater population density are considered to be more "urban" than regions with smaller ratios of population to area.

It is important to note that the principles of vertical equity and equal educational opportunity are very much interrelated. In both cases there is a linkage between a specific target group (e.g. poor or disadvantaged children, children with disabilities) and an object of equity (e.g. enrolment in primary education, pupil-teacher ratio). The main difference is in the application of the two principles in an empirical analysis.

Vertical equity is determined in the same way that horizontal equity is determined, i.e. by applying a measure of variation to the object of equity of interest. However, the object of interest is adjusted to take into account the incidence of pupils that are the targets of equity. In an analysis where expenditure per pupil is the object of equity, for example, variation in per pupil expenditure would be based on a measure of expenditure that is obtained by dividing total education expenditure by a *weighted* count

of pupils that takes into account the additional cost of providing appropriate services to children with this condition. Children with disabilities might count as two pupils when measuring expenditure per pupil, rather than as one pupil in an analysis based on horizontal equity.

Equal educational opportunity, in contrast, is determined through an analysis of the relationship between the target of equity and the object of equity, using statistical measures that relate these two components of the equity analysis. In an analysis based on data for individuals, equal educational opportunity might be determined by examining the correlation between a child's family income and the amount of money the state spends on that child's education. In analysis based on schools or geographical units, it might be determined by examining the relationship between the proportion of poor children in a school or community with the average expenditure per student in that school or community or with a weighted average expenditure per student derived in the manner described above.

It might be expected that there would be a strong congruence in a country's measures of vertical equity and equal educational opportunity, since they are both approaching the issue of equity in a way that takes into account different student characteristics and educational needs. However, there are still distinctions between the two concepts that would lead to different approaches to measuring equity within and across countries.

IV. Measuring equity

The final component of the equity framework consists of the quantitative measures that are used to evaluate the extent to which an education system is either horizontally or vertically equitable and the extent to which there is equal educational opportunity. The work of Berne and Stiefel (1984) includes many empirical measures that would be useful for a more technical equity analysis. For the purposes of the current framework, more widely-used, practical measures were selected. These measures cover the core dimensions of equity while minimising complexity and burden of the framework for policymakers and other potential users.

A. Measures of horizontal equity

Measures of horizontal equity are statistics that capture the dispersion of an object's distribution across regions – they capture how far distributions are from perfect equity. In the case of equal dispersion, each region has the same level of education access, resources or results. The Berne and Stiefel framework includes 11 measures that quantify various dimensions of dispersion that could be useful in judging different aspects of horizontal equity within a country. Four measures were selected to capture the different dimensions of horizontal equity. Each of these is described in the following paragraphs; their interpretation is displayed in **Figure 3.2**.

Figure 3.2. Interpreting horizontal equity measures

Horizontal equity measures	Indicators		
	Enrolment ratios	**Expenditure per pupil**	**Pupil-teacher ratios**
Range ratio	1.00 = no disparity; higher values signify greater disparity		
Coefficient of variation	0.00 = no disparity; 1.00 = large disparity; higher coefficients signify greater disparity		
Gini coefficient	*	0.00 = no disparity; 1.00 = large disparity; higher coefficients signify greater disparity	
Adjusted McLoone Index	*	*	1.00 = no disparity; index values greater than 1.00 signify disparity
McLoone Index	*	1.00 = no disparity; index values lower than 1.00 signify disparity	*

* Not applicable.

1. Range ratio

The range ratio is calculated by dividing the highest value by the lowest value in a country's distribution for a given indicator. A ratio of 1.0 would indicate perfect equity, whereas increasing values for the ratio suggest increasing disparity between regions at the ends of the distribution. The range ratio is the simplest of the horizontal equity measures and does not take into account how access, resources or results are distributed among the regions between the ends of the distribution. Further, regions at these ends may be outliers that are anomalies relative to the other regions.

2. McLoone Index/adjusted McLoone Index

The McLoone Index is frequently used to examine the distribution of expenditure per pupil and is calculated by taking the sum of expenditure per pupil for each region below the median and dividing this by the sum that would exist if each region below the median had expenditure per pupil equal to the median. The index ranges from 0 to 1, with "1" indicating perfect equity. In the case of expenditure per pupil, the index increases as expenditure per pupil in regions below the 50th percentile approaches the median expenditure; it decreases as expenditure per pupil in these regions falls further from the median. Whereas other measures increase as inequality increases, the McLoone Index focuses on equality and becomes larger as the distribution becomes more equal (Peternick, Smerdon, Fowler and Monk, 1998).

In the equity framework for this study, it was necessary to also use an adjusted McLoone Index because, in the case of pupil-teacher ratios, the regions of interest are those above the median. This is because higher pupil-teacher ratios mean fewer educational resources relative to regions with lower ratios. An index value of 1.00 indicates perfect equity while higher index values suggest greater divergence from horizontal equity.

Both versions of the McLoone Index are less complicated than other measures but also lack some of their strengths and should not be used alone to interpret the level of educational equity in a country. In particular, the index does not account for the value of the mean or the distribution of expenditure per pupil in regions above the median; the adapted index does not take into account pupil-teacher ratios in regions below the median. Hence, countries with an index value close to 1.00 may still be relatively inequitable.

3. Coefficient of variation

The third measure of horizontal equity, the coefficient of variation, measures the variability of an indicator around the mean value. It is calculated by taking the standard deviation and dividing by the mean. Perfect equity would result in a coefficient of 0.00; higher values would signify greater dispersion or inequity.

Unlike the range ratio and both versions of the McLoone Index, the coefficient of variation takes into account all regions in a distribution. The coefficient will not change if all regions experience similar proportional increases in an object. This measure is valuable for resources measured in monetary values such as expenditure per pupil that are likely to experience inflation over time.

4. Gini coefficient

The final horizontal equity measure included in the framework of this study is the Gini coefficient. It is based on a Lorenz curve and, in the case of pupil-teacher ratios, shows the cumulative proportion of students relative to the cumulative proportion of teachers across regions. Put differently, the Gini coefficient measures how far a country's distribution of teachers is from providing a particular percentage of students with an equal percentage of teachers.

If all students have equal proportions of teachers, then the curve would be a straight line with a positive 45-degree slope (i.e. a line of perfect equity). The Gini coefficient measures the difference between the line of perfect equity and the Lorenz curve. A coefficient of 1.00 indicates maximum variation among the regions, whereas a coefficient of 0.00 indicates perfect equity.

Figure 3.3 illustrates the Gini coefficient. **Tables 3.2** and **3.3** display the data used in this figure. In this example, country B has a larger Gini coefficient. This is evident by the distance of its Lorenz curve from the 45-degree line and the raw data. As shown in Table 3.3, regions 1 to 5 each have 10% of the total number of students but each only have 4% of teachers in the country. In contrast, regions 9 and 10 have the same percentage of students, but 19% and 26% of teachers in the country, respectively. Because these differences are not as great in country A, its Lorenz curve is closer to the 45-degree line and it has a lower Gini coefficient.

Figure 3.3. Illustration of the Gini coefficient

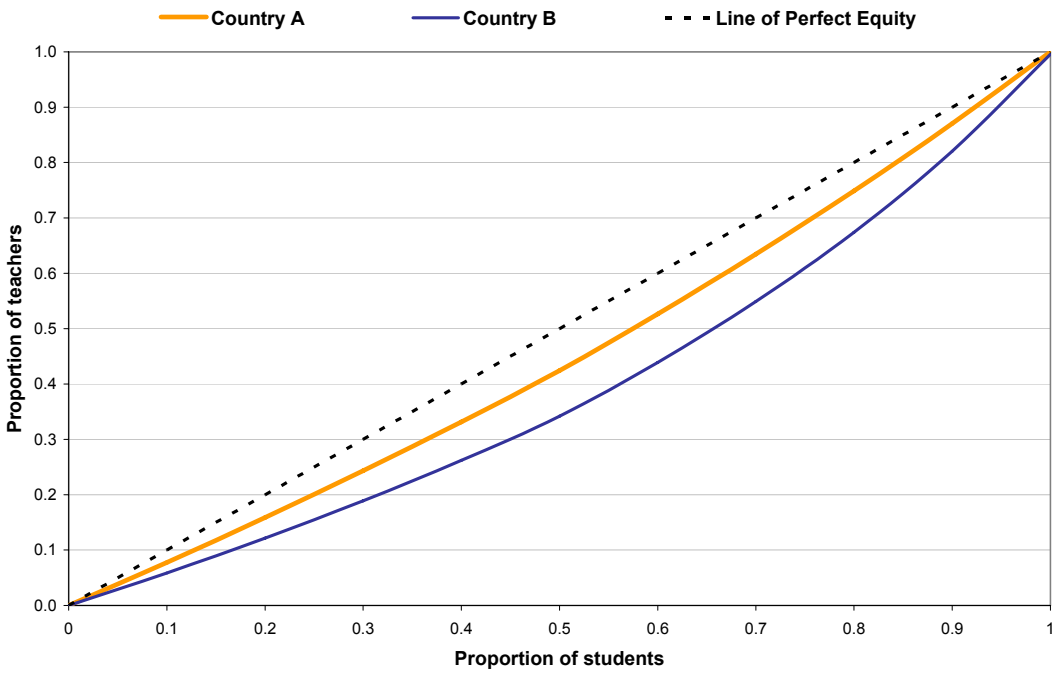


Table 3.2. Illustration of Gini coefficient – distribution of pupil-teacher ratios for country A

Region	Pupil-teacher ratios	Number of pupils	Percentage of pupils	Number of teachers	Percentage of teachers
1	30	200	10	7	6
2	28	200	10	7	6
3	26	200	10	8	7
4	24	200	10	8	7
5	22	200	10	9	8
6	18	200	10	11	10
7	16	200	10	13	11
8	14	200	10	14	13
9	12	200	10	17	15
10	10	200	10	20	18

Table 3.3. Illustration of Gini coefficient – distribution of pupil-teacher ratios for country B

Region	Pupil-teacher ratios	Number of pupils	Percentage of pupils	Number of teachers	Percentage of teachers
1	35	200	10	6	4
2	33	200	10	6	4
3	31	200	10	6	4
4	29	200	10	7	4
5	27	200	10	7	4
6	13	200	10	15	10
7	11	200	10	18	11
8	9	200	10	22	14
9	7	200	10	29	19
10	5	200	10	40	26

B. Measures of vertical equity

This study does not apply a vertical equity standard to the analysis of regional differences in education access, resources or results. The equity framework can be used, though, to examine vertical equity. Dispersion measures similar to those used to measure horizontal equity are weighted based on the expected distribution of educational objects across the groups of interest.

To use weighted measures, we must have at least two groups for whom it is fair to have unequal treatment based on their characteristics. We must also know specifically how these groups should be treated differently. For example, students with disabilities may require greater resources in terms of expenditure and teaching or support staff in order to receive the same quality of education as students without disabilities. After the appropriate level of resources for these students is determined and reflected in the weights, the same dispersion measures used in a horizontal equity analysis would then be calculated. Because the appropriate differences are taken into account by the weights, any disparities could be interpreted as equity concerns.

C. Measures of equal educational opportunity

Measures of equal educational opportunity estimate the extent to which there are relationships between education access, resources or results and certain characteristics of students, school administrative units or regions. To the extent that a characteristic, such as regional wealth, is considered an illegitimate reason for a relationship, equal educational opportunity is affected. The Berne and Stiefel framework identifies 11 relational measures of equal opportunity. Three of these are included in this framework: correlation coefficients, the slope and elasticity of simple regressions.

Correlation coefficients are used to measure the strength and direction of the linear relationship between characteristics of the regions (regional wealth, population density) and measures of access and resources. The coefficients range from -1.00, a perfect

negative relationship, to +1.00, a perfect positive relationship. A value of 0.00 indicates that there is either no relationship or that if there is one, it is non-linear. Correlation coefficients are valuable measures but do not reflect equal changes in either objects or the characteristics of interest.

The slope from the simple regression is used to measure the magnitude of the relationship or the change in the dependent variable (e.g. expenditure per pupil) associated with a one-unit change in the independent variable (e.g. population density). The final measure of equal educational opportunity, the elasticity, is also based on the simple regression and helps to quantify the magnitude of the relationship in percentage terms. The elasticity is defined as the percentage change in the dependent variable associated with a one-unit change in the independent variable.

V. Overview

An overview of the equity framework is displayed in **Figure 3.4**. The two equity principles and their associated guiding questions, indicators and measures are included. Measures of elasticity and slope are not included in this report in an effort to avoid overly technical analyses.

Figure 3.4. Overview of the equity framework

	Guiding questions	Indicators	Equity measures
Horizontal equity	Is there little or no variation in the dispersion of indicators across regions?	Enrolment ratios Expenditure per pupil Pupil–teacher ratios	Range ratio Coefficient of variation Adjusted McLoone Index Gini coefficient
Equal educational opportunity	Do wealthier regions tend to have better access or greater resources than poorer regions? Do regions that are more urban tend to have better access or greater resources than more rural regions?	Population density Regional wealth (in combination with the indicators above)	Correlation coefficient Slope Elasticity

4. Application of the equity framework: Enrolment ratios

I. Introduction to the analysis

In the three chapters that follow, we demonstrate the application of the equity framework to three important components of education systems. One is a measure of access to education (enrolment ratios) and two are measures of educational resources (expenditure per pupil and pupil-teacher ratios). We apply the framework here using two of the three main principles of equity set out in the framework – horizontal equity and equal educational opportunity – using geographical regions within countries as the focus of the analysis.

In presenting the application of the equity framework, we recognise that regional disparities are not the primary concern of policymakers in all countries and that in some countries disparities based on gender, race/ethnicity and socioeconomic status may be more significant than geographic disparities. We therefore suggest that the analyses presented in the next three chapters should not be used as the sole basis for judging whether a country's education system is "equitable" or "inequitable;" other analyses are needed to fully inform this issue.

However, it is also important to recognise that geographic disparities are of great importance in many countries, particularly large federal countries, and that there is a long tradition of research on this topic in both developing and developed countries. In the former, the focus has frequently been on access to education, with urban/rural disparities at the core of policy debates. In the latter, the focus has historically been on disparities in the resources provided for public education; in recent years, the emphasis has shifted to education outcomes, particularly student achievement. We view the empirical work presented in this report as an extension of that stream of research.

Finally, we present a caveat that must be taken into account in all of the analyses presented in this report. In ranking countries on each of the individual equity measures, the ranking is based on divergence from a standard of absolute equality. In some cases, there may be very little difference in the absolute values of countries at the low and high ends of the distribution on a particular equity measure. We therefore attempt to take this into account when presenting countries' rankings on the equity measures and give more prominence to measures that vary more greatly across countries.

A. Countries selected for analysis

The equity analyses presented in these chapters examine regional disparities in 16 countries in Asia, Africa, Europe, North and South America. These 16 countries vary substantially in the size of their populations, geographical area and the number of regions *(see **Tables 4.1** and **4.2**)*. At one end are mega-countries, such as China and India, with populations over one billion[1]; at the other end are countries like Ecuador and Peru, with populations under 30 million. The number of regions ranges from 89 regions of various types in the Russian Federation to eight provinces and territories in Pakistan and six divisions in Bangladesh.

[1] In this report, "billion" is the equivalent to a thousand million.

Table 4.1. Type of government, name of regions and number of regions in countries

Country	Type of government	Name of regions	Number of regions
Argentina	Federal republic	Provinces, autonomous city	23, 1
Bangladesh[2]	Non-federal republic	Divisions	6
Brazil	Federal republic	States, federal district	26, 1
Canada	Confederation	Provinces, territories[3]	10, 3
China	Non-federal people's republic	Provinces, autonomous regions, municipalities	22, 5, 4
Ecuador	Non-federal republic	Provinces	22
Egypt	Non-federal republic	Governorates	27
India	Federal republic	States, union territories	28, 7
Indonesia	Non-federal republic	Provinces, union territories, special capital city district	27, 2, 1
Mexico	Federal republic	States, federal district	31, 1
Nigeria	Federal republic	States, federal capital territory	36, 1
Pakistan[4]	Federal republic	Provinces, territory, capital territory, FANA, FATA	4, 1, 1, 1, 1
Peru	Non-federal republic	Departments, constitutional province	24, 1
Russian Federation	Federal republic	Oblasts, republics, autonomous okrugs, krays, federal cities, autonomous oblast	49, 21, 10, 6, 2, 1
South Africa	Non-federal republic	Provinces	9
United States	Federal republic	States, district	50, 1

Table 4.2. Population and area of countries

Country	Population (2004)	Area (square kilometres)
Argentina	39,144,753	2,780,092
Bangladesh	141,340,476	160,288
Brazil	184,101,109	8,489,557
Canada	32,507,874	9,976,137
China	1,298,847,624	9,806,391
Ecuador	13,212,742	269,759
Egypt	76,117,421	997,739
India	1,065,070,607	3,166,944
Indonesia	238,452,952	1,904,443
Mexico	104,959,594	1,967,183
Nigeria	137,253,133	923,768
Pakistan	157,056,000	880,254
Peru	27,544,305	1,286,286
Russian Federation	143,782,338	17,173,300
South Africa	42,718,530	1,219,090
United States	293,027,571	9,518,323

[2] For the analysis of enrolment ratios, data at the district level are used. Bangladesh has 64 districts.
[3] Due to missing data, one territory is excluded from the analysis.
[4] For the analysis of enrolment ratios, data at the district level for the four provinces are used; the four provinces are composed of 103 districts.

Nine of the 16 countries have federal systems of government in which regional and/or local governments are authorised by the constitution or statute to play a role in the administration or financing of primary and secondary education. The other seven countries have a non-federal or unitary form of government in which central governments generally have primary authority over education and regional divisions are more often administrative units of the central government, with little independent authority over education.

The 16 countries include a mix of economically-developed countries (such as Canada and the United States), more-advanced developing countries (such as China) and less-developed countries (such as Bangladesh and Pakistan). They also vary substantially in the range of wealth of their regions, as measured by gross regional product per capita (GRP) *(see **Table 4.3**).* At one extreme are Indonesia and the Russian Federation, where the GRP per capita in the wealthiest regions is almost 21 and 28 times that in the poorest regions, respectively. Wealth differences are also very large in Argentina, China, Egypt, India and Nigeria, where the GRP per capita in the wealthiest region ranges from about 9 to 10 times the figure in the poorest region. At the other end of the spectrum are Canada, South Africa and the United States, where the ratios are less than five to one.

Population densities also vary quite widely across regions within the 16 countries. They include countries like Argentina, Egypt and Indonesia, which have capital regions whose population densities exceed 12,000 people per square kilometre, along with sparsely-populated regions with densities of fewer than 10 people per square kilometre. In other countries the differences are less extreme but still substantial.

Table 4.3. Gross product per capita and population density

Country	National GDP per capita in U.S. dollars (2003)	Currency	National average GDP per capita in national currency (year)	Regional maximum gross regional product per capita in national currency	Regional minimum gross regional product per capita in national currency	National average population density (year)	Regional maximum population density	Regional minimum population density
Argentina	11,200	Argentine Peso	6,658 (1993)	23,660	2,658	13 (2001)	13,881	0.8
Bangladesh	1,900	U.S. Dollar	1,900 (2003)	*	*	855.2 (2002)	1,257	621
Brazil	7,600	Real	5,740 (1999)	10,935	1,402	20 (2000)	353	1.4
Canada	29,800	Canadian Dollar	34,418** (2001)	77,115**	23,297**	3 (2001)	24	0.0
China	5,000	Yuan	7,701 (2001)	27,187	2,819	128.7 (2000)	2,640	2
Ecuador	3,300	U.S. Dollar	3,300 (2004)	*	*	45 (2001)	185	2
Egypt	4,000	Egyptian Pound	5,538 (2001)	12,099	1,158	65.2 (2001)	34,258	0.4
India	2,900	Rupees	17,947 (2001/2002)	49,673	5,445	324.3 (2001)	9,282	13
Indonesia	3,200	Rupiah	5,815,294 (2000)	34,446,911	1,655,558	108.3 (2000)	12,692	5
Mexico	9,000	Mexican Peso	51,908 (2001)	135,213	20,977	50 (2000)	5,741	6
Nigeria	900	Naira	5,150*** (1996/1997)	9,251***	1,009***	167.2 (2004)	3,111	49
Pakistan	2,100	U.S. Dollar	2,100 (2003)	*	*	178.4 (2004)	1,027	15
Peru	5,100	Sol	6,716 (2000)	12,303	1,803	20 (2000)	5,147	1.2
Russian Federation	8,900	Russian Ruble	43,306 (2001)	155,543	5,584	8.4 (2001)	8,257	0.02
South Africa	10,700	Rand	18,482 (2000)	34,935	9,136	36.8 (2001)	520	2
United States	37,800	U.S. Dollar	34,884 (2000)	104,820	22,632	30 (2000)	3,250	0.4

* Missing.
** In 1997 Canadian dollars.
*** Mean household income is used as a proxy for gross regional product per capita.

B. Presentation of the analyses

The equity analyses presented in these chapters follow a similar approach. The first section focuses on horizontal equity, looking specifically at regional disparities on the object of equity for a recent school year (generally 2001 or 2002). Here we present both the statistics for each country on the four dispersion measures (range ratio, coefficient of variation, Gini coefficient and McLoone Index), as well as its ranking on the measure. Countries are ranked from lowest to highest on each measure, with a ranking of "1" signifying the least disparity, and a ranking of "10", "11" or "12", the greatest disparity. We also present a composite measure, which is the average country ranking on the four disparity measures, in order to provide an overall assessment of the country's standing on this aspect of equity.

The second section presents an analysis of equal educational opportunity. This analysis is designed to address two main questions: (1) Do children who live in wealthier regions consistently have greater access to education and to educational resources? (2) Do children who live in urban areas have greater access to education and to educational resources than children in rural areas? In these analyses we use correlation coefficients to examine the relationship between two regional characteristics (wealth and level of urbanisation) and our measures of equity (enrolment ratios, expenditure per pupil and pupil-teacher ratios). In general, a positive correlation between regional wealth and the equity measure would suggest some divergence from equal educational opportunity, since access to education or resources provided for education would tend to be greater in wealthier regions. The same applies to population density, with a positive correlation associated with greater access to or resources for education in more urban regions. However, the opposite relationship applies in the analysis of pupil-teacher ratios, with negative correlations associated with lower pupil-teacher ratios in wealthier or more urban regions.

In all of the equity analyses, gross regional product (GRP) per capita is used as the measure of regional wealth, since gross product per capita is the most comparable measure of fiscal capacity and is the measure used in most international comparisons. Population density is used here as a proxy measure for level of urbanisation; first, because the definitions of "urban" and "rural" are not consistent across countries and, second, because many countries do not report educational data in these types of geographical areas. In this analysis, regions with greater population density are considered to be more "urban" than regions with smaller ratios of population to area.

The chapters on expenditure per pupil and pupil-teacher ratios conclude with a section that presents an analysis of changes in horizontal equity and equal educational opportunity in the 16 countries between the mid-1990s and the early 2000s. The equal educational opportunity analysis only examines the relationship between regional wealth and these two dimensions of equity. "Improvement" in horizontal equity is defined as a decrease in disparity on at least three of the four measures of variation over the period; "improvement" in equal educational opportunity is defined as a decrease in the positive correlation coefficient between regional wealth and expenditure

per pupil and as an increase in the negative relationship between regional wealth and pupil-teacher ratios. The results of these analyses should, however, be interpreted with caution since only a few countries were able to provide data to measure changes in equity between the mid-1990s and the early 2000s.

II. Enrolment ratios

In the sections that follow, we apply the equity framework to enrolment ratios, first for primary education and then for secondary education. In the case of five countries – Argentina, Canada, Indonesia, the Russian Federation and the United States – secondary enrolment ratios are for upper secondary education only. Secondary enrolment ratios for India are for lower secondary education only.

The analysis was originally designed with the idea of using the net enrolment rate as the measure of access to education, since this measure is generally recognised as the most accurate way to capture the concept of access to education within and across countries. Higher values on the net enrolment rate are unequivocally associated with greater access to education; increased values on the measure similarly indicate improvements on this aspect of education. However, the calculation of net enrolment rates requires data on school enrolments by individual age, as well as population figures by individual age.

As the data required to produce net enrolment rates were not available at the regional level in most countries, we selected gross enrolment ratios as the access measure for this analysis. The results of these analyses must therefore be interpreted with caution, since higher values on a gross enrolment ratio may not always reflect greater access to education. The main reason for this is that gross enrolment ratios do not take into consideration over-age enrolment, which may be a result of late entry or grade repetition or both. We nonetheless use gross enrolment ratios for illustrative purposes, since the methodology used in the analysis could be applied to net enrolment rates or other indicators that more accurately capture access to education.

In the analysis presented here, gross enrolment ratios are calculated by dividing the total number of students enrolled in primary or secondary education (regardless of their age) by the total population at the theoretical ages for that level of education (e.g. ages 6 to 11 for primary education or ages 12 to 17 for secondary education). In the case of three countries – China, Pakistan and Peru – net rather than gross enrolment ratios are used because gross ratios were not available. Net rates are calculated by dividing the number of students at the theoretical age enrolled in primary or secondary education by the total population at the theoretical age for that level of education.

Ecuador and Nigeria are excluded from the analysis of both primary and secondary enrolment ratios because enrolment and population data were not available at either level of education. Canada and the United States are excluded from the analysis of primary enrolment ratios because enrolment ratios in primary education are at or close to 100% in all regions in these countries. Three countries – Bangladesh, China and

Pakistan – are excluded from the analysis of secondary ratios because data were not available.

A. Horizontal equity analysis

The analysis of disparity in enrolment ratios includes the range ratio and coefficient of variation. The McLoone Index and Gini coefficient are excluded because it is difficult to apply these measures to gross enrolment ratios.

1. Primary education

Table 4.4 provides the context for the analysis with the following information for primary education: grades, national average enrolment ratios, regional maximum enrolment ratios and regional minimum enrolment ratios. The table highlights the broad range in enrolment ratios across regions and suggests the following key findings:

- Pakistan has the widest range in regional enrolment ratios across regions – from a high of 75 to a low of 4;
- Bangladesh, India and the Russian Federation also have large differences between maximum and minimum enrolment ratios across their regions; and
- Argentina and Peru stand out as countries with the narrowest ranges in enrolment ratios across regions.

Table 4.4. National primary enrolment ratios

Country (year)	Grades	Ages	National average enrolment ratio	Regional maximum enrolment ratio	Regional minimum enrolment ratio
Argentina (2001)	1-6	6-11	106.0	110.9	103.3
Bangladesh (2001)	1-5	6-10	97.5	134.2	78.2
Brazil (2002)	1-8	7-14	120.8	144.1	106.3
China (2001)	1-5	7-11	99.1	100.0	88.6
Egypt (2000/01)	1-5	6-10	91.7	105.2	80.7
India (2001/02)	1-6	6-11	96.3	124.4	55.3
Indonesia (2005)[5]	1-6	7-12	111.5	122.6	101.2
Mexico (2000)	1-7	6-12	93.8	96.9	86.6
Pakistan (1998)	1-5	5-9	76.0[6]	74.8	3.7
Peru (2003)	1-6	6-11	93.0	98.0	88.0
Russian Federation (2003/04)	1-4	6-9	94.0	104.8	73.4
South Africa (2001)	1-7	7-13	117.0	125.0	100.0

[5] Enrolment ratios for Indonesia are projected figures for 2005.

[6] The national average enrolment ratio for Pakistan is higher than the regional maximum ratio, because the regional analysis includes only districts in the four provinces. The national average also includes the capital territory.

Table 4.5 presents the range ratio and coefficient of variation for primary enrolment ratios and **Table 4.6** presents countries' ranking orders on these two measures for the 12 countries with available data.

Table 4.5. Horizontal equity measures of primary enrolment ratios

Country (year)	Range ratio	Coefficient of variation
Argentina (2001)	1.1	0.02
Bangladesh (2001)	1.7	0.10
Brazil (2002)	1.4	0.09
China (2001)	1.1	0.02
Egypt (2000/01)	1.3	0.05
India (2001/02)	2.2	0.18
Indonesia (2005)	1.2	0.05
Mexico (2000)	1.1	0.02
Pakistan (1998)	20.0	0.18
Peru (2003)	1.1	0.03
Russian Federation (2003/04)	1.4	0.06
South Africa (2001)	1.3	0.07

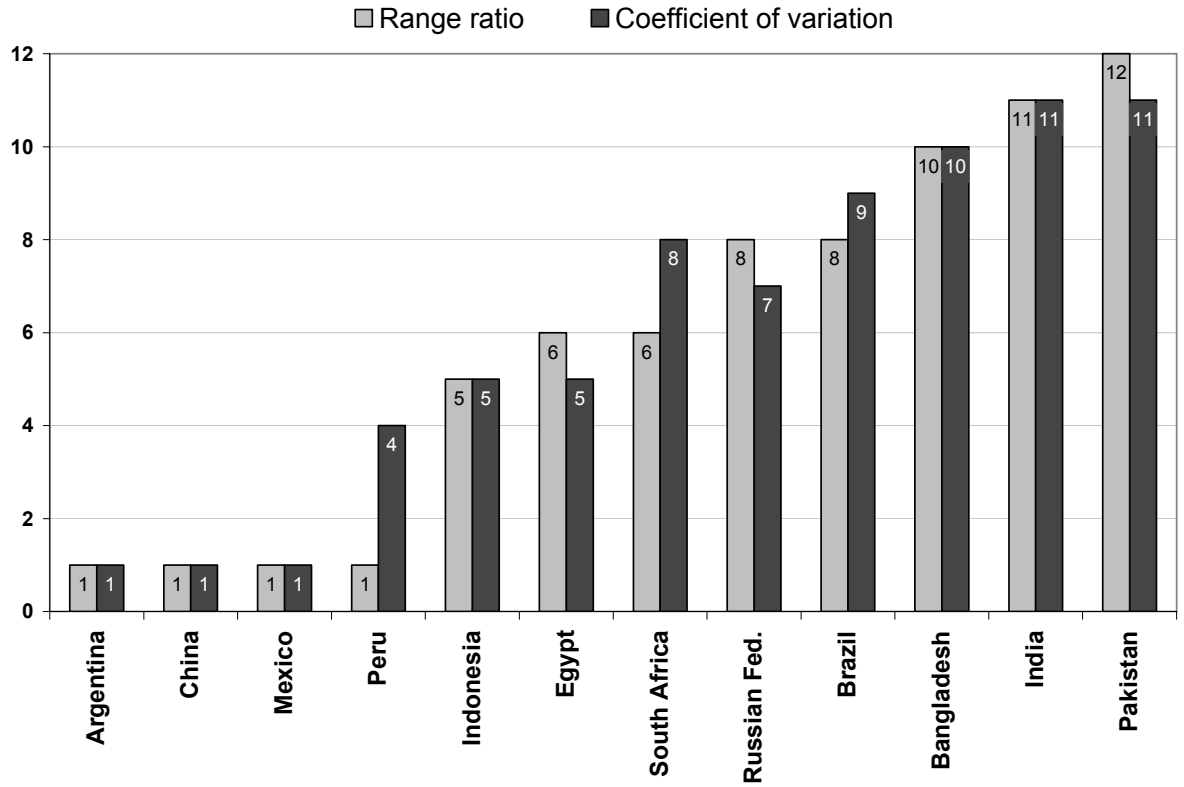
Table 4.6. Ranking order on horizontal equity measures of primary enrolment ratios

Country (year)	Range ratio	Coefficient of variation	Average ranking of measures
Argentina (2001)	1	1	1.0
Bangladesh (2001)	10	10	10.0
Brazil (2002)	8	9	8.5
China (2001)	1	1	1.0
Egypt (2000/01)	6	5	5.5
India (2001/02)	11	11	11.0
Indonesia (2005)	5	5	5.0
Mexico (2000)	1	1	1.0
Pakistan (1998)	12	11	11.5
Peru (2003)	1	4	2.5
Russian Federation (2003/04)	8	7	7.5
South Africa (2001)	6	8	7.0

Most countries tend to have range ratios that are between 1.1 and 1.5. Four countries – Argentina, China, Mexico and Peru – have the smallest range ratios. Disparities are greatest in Pakistan, where the enrolment ratio in the region with the highest ratio is more than 20 times that in the region with the lowest ratio. All but two countries have coefficients of variation that are 0.10 or lower. India and Pakistan have coefficients that are substantially higher, but they still fall below 0.20.

As shown in **Figure 4.1**, countries have very similar placement on rankings of the two equity measures. Three countries – Bangladesh, India and Pakistan – fall in the bottom one-third of countries with high range ratios and high coefficients of variation. Three other countries – Argentina, China and Mexico – have the lowest variation on the two measures, followed closely by Peru which also has the lowest range ratio.

Figure 4.1. Primary enrolment ratio ranking orders on horizontal equity measures



2. Secondary education

Table 4.7 provides the following information for secondary education: grades, national average enrolment ratios, regional maximum enrolment ratios and regional minimum enrolment ratios. The table highlights the broad range in enrolment ratios across regions and suggests the following key findings:

- All of the countries tend to have large ranges in enrolment ratios across regions. The range is greatest in Indonesia – from a high of 118 to a low of 36; and
- Mexico has the narrowest range in enrolment ratios across regions – just under 23 percentage points.

Table 4.7. National secondary enrolment ratios

Country (year)	Grades	Ages	National average enrolment ratio	Regional maximum enrolment ratio	Regional minimum enrolment ratio
Argentina (2001)	10-12	15-17	69.2	87.9	47.3
Brazil (2002)	9-11	15-17	75.9	104.0	36.9
Canada (2000/01)[7]	10-12	15-17	106.5	120.3	88.5
Egypt (2000/01)	9-11	14-16	71.1	92.6	48.8
India (2001/02)	6-9	11-14	86.8	97.8	30.1
Indonesia (2005)	10-12	16-18	53.0	118.0	35.5
Mexico (2000)	8-10	13-15	76.6	88.9	66.2
Peru (2003)	7-11	12-16	70.0	96.0	49.0
Russian Federation (2003/04)	10-11	15-16	55.0	77.5	35.6
South Africa (2001)	8-12	14-18	86.0	97.0	66.0
United States (2001)	10-12	15-19	77.1	108.1	68.0

Table 4.8 presents the range ratio and coefficient of variation for secondary enrolment ratios and **Table 4.9** presents countries' ranking orders on these two measures for the 11 countries with available data.

Using the range ratio as the equity measure, we find that disparities are smallest in four countries: Canada, Mexico, South Africa and the United States. Disparities fall in the middle range in four countries: Argentina, Egypt, Peru and the Russian Federation. Regional disparities are greatest in Indonesia and India and only slightly smaller in Brazil.

Table 4.8. Horizontal equity measures of secondary enrolment ratios

Country (year)	Range ratio	Coefficient of variation
Argentina (2001)	1.9	0.17
Brazil (2002)	2.8	0.22
Canada (2000/01)	1.4	0.09
Egypt (2000/01)	1.9	0.16
India (2001/02)	3.3	0.24
Indonesia (2005)	3.3	0.31
Mexico (2000)	1.3	0.07
Peru (2003)	2.0	0.18
Russian Federation (2003/04)	2.2	0.13
South Africa (2001)	1.5	0.13
United States (2001)	1.6	0.08

[7] Enrolment ratios for Canada include only the 10 provinces.

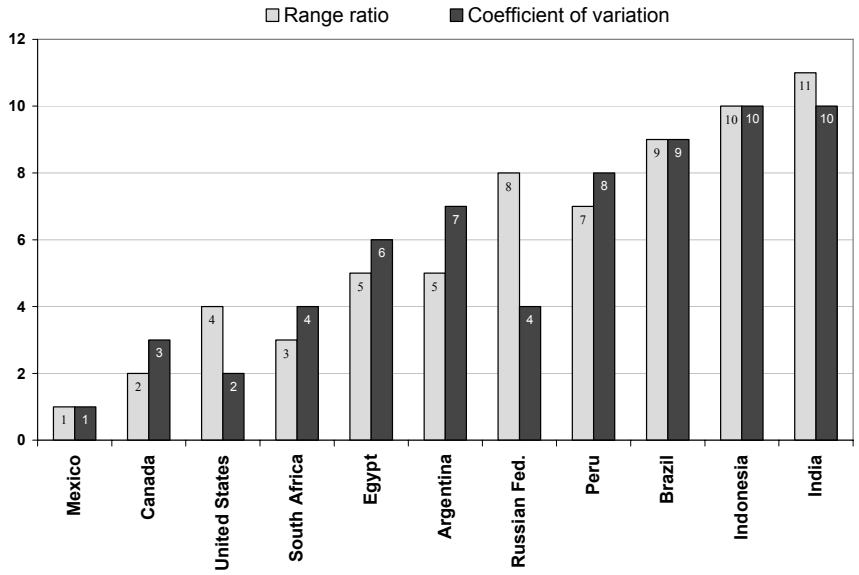
Table 4.9. Ranking order on horizontal equity measures of secondary enrolment ratios

Country (year)	Range ratio	Coefficient of variation	Average ranking of measures
Argentina (2001)	5	7	6.0
Brazil (2002)	9	9	9.0
Canada (2000/01)	2	3	2.5
Egypt (2000/01)	5	6	5.5
India (2001/02)	10	10	10.0
Indonesia (2005)	10	11	10.5
Mexico (2000)	1	1	1.0
Peru (2003)	7	8	7.5
Russian Federation (2003/04)	8	4	6.0
South Africa (2001)	3	4	3.5
United States (2001)	4	2	3.0

Using the coefficient of variation as the equity measure, we find that disparities are smallest in three countries: Canada, Mexico and the United States. Disparities fall in the middle range in four countries: Argentina, Egypt, the Russian Federation and South Africa. Regional disparities are greatest in Indonesia, which has the highest coefficient of variation, followed by India, Brazil and Peru.

As shown in **Figure 4.2**, countries tend to have similar placement on rankings of the two equity measures of secondary enrolment ratios. Three countries – Brazil, India and Indonesia – fall in the bottom one-third of countries with high range ratios and high coefficients of variation. Three other countries – Canada, Mexico and the United States – have the lowest variation on the two measures, followed closely by South Africa.

Figure 4.2. Secondary enrolment ratio ranking orders on horizontal equity measures



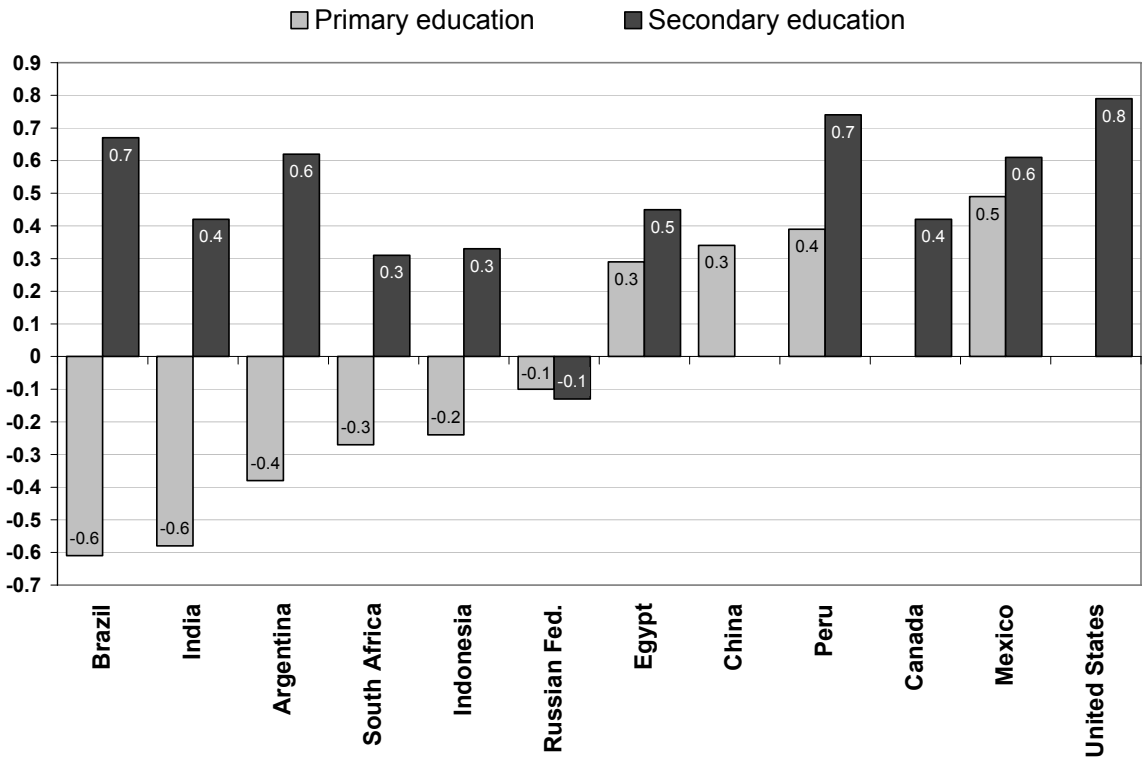
B. Equal educational opportunity

1. Regional wealth and enrolment ratios

Figure 4.3 shows the relationship between gross regional product (GRP) per capita and enrolment ratios in primary and secondary education. Regional wealth, as measured by GRP per capita, does not have a consistent relationship with enrolment ratios at the primary level. At the secondary level, the relationships between wealth and enrolment ratios are positive for most countries. The following conclusions can be made about the positions of countries on this measure:

- A large majority of countries perform poorly on this measure of equal educational opportunity, with higher enrolment ratios in wealthier regions. Egypt, Mexico and Peru perform poorly at both levels of education and eight countries – Argentina, Brazil, Canada, India, Indonesia, South Africa and the United States – do so at the secondary level. There is a strong relationship at the secondary level in five countries: Argentina, Brazil, Mexico, Peru and the United States; and
- At the primary level, four countries – Argentina, Brazil, India and South Africa – tend to have higher enrolment ratios in poorer regions; there is a strong relationship in Brazil and India.

Figure 4.3. Correlation between GRP per capita and primary and secondary enrolment ratios

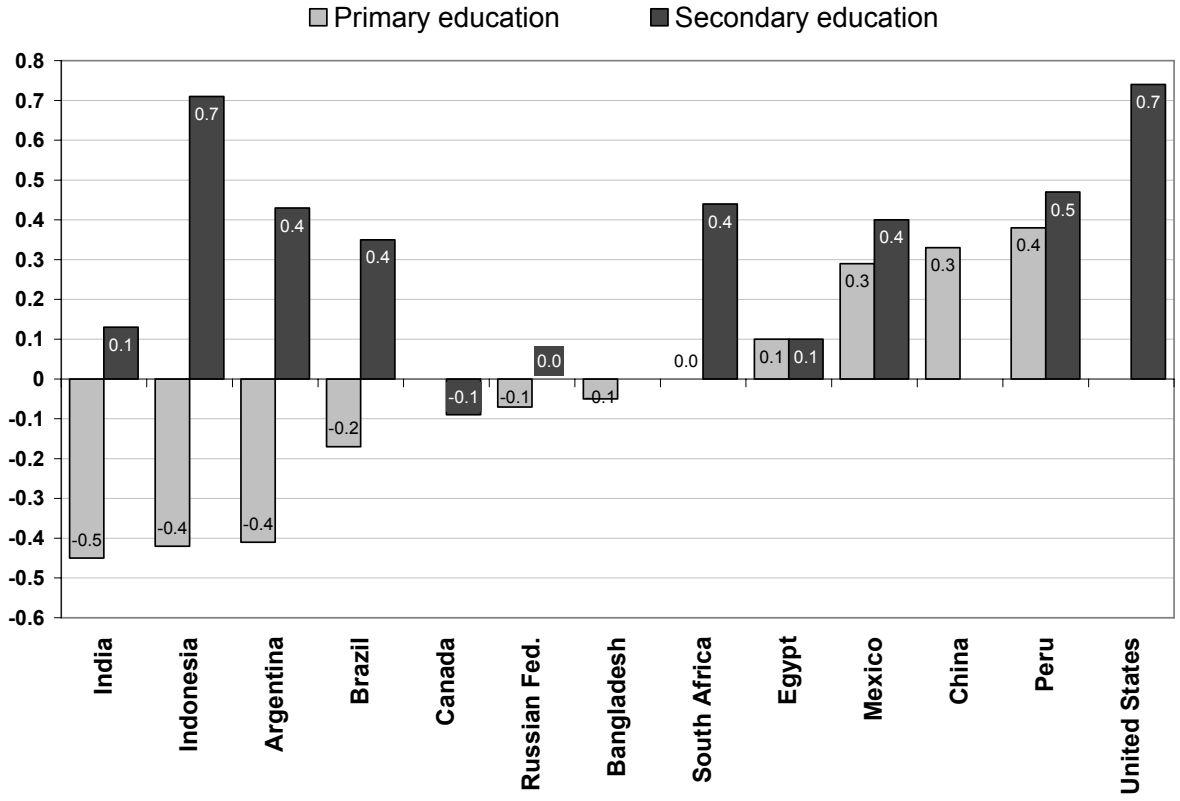


2. Regional population density and enrolment ratios

Figure 4.4 displays the correlations between regional population density (RPD) and enrolment ratios. Using population as a proxy for urban-rural location, the following relationships with enrolment ratios emerge:

- Eight countries perform poorly on this measure of equal educational opportunity, with higher enrolment ratios in more urban regions. Mexico and Peru perform poorly at both levels of education and five countries – Argentina, Brazil, Indonesia, South Africa and the United States – do so at the secondary level. There is a strong relationship at the secondary level in Indonesia and the United States;
- At the primary level, three countries – Argentina, India and Indonesia – tend to have higher enrolment ratios in more rural regions; these relationships are moderately strong; and
- Five countries do not have a consistent relationship between population density and enrolment ratios: Egypt and the Russian Federation in both primary and secondary education, Bangladesh and South Africa in primary education, and Canada in secondary education.

Figure 4.4. Correlation between population density and primary and secondary enrolment ratios



C. Horizontal equity and equal educational opportunity

In the previous discussion, we examined horizontal equity and equal educational opportunity separately. In this section, we use only the relationship between regional wealth and enrolment ratios as the measure of a country's equal educational opportunity to examine the positions of countries on both measures of equity.

Figure 4.5. Country positions on horizontal equity and equal educational opportunity measures of enrolment ratios in primary (P) and secondary (S) education

	Equal educational opportunity			
Horizontal equity ranking, by tier	**Higher enrolment ratios in wealthier regions***	**No relationship between enrolment ratios and regional wealth****	**Lower enrolment ratios in wealthier regions*****	**No data on regional wealth**
Top third	Canada (S) China (P) Mexico (P, S) Peru (P) South Africa (S) United States (S)		Argentina (P)	
Middle third	Argentina (S) Egypt (P, S) Peru (S)	Indonesia (P) Russian Federation (P, S)	South Africa (P)	
Bottom third	Brazil (S) India (S) Indonesia (S)		Brazil (P) India (P)	Bangladesh (P)

* Includes countries with moderate or strong positive relationships (0.25 to 1.00) between GRP per capita and expenditure per pupil.

** Includes countries with relationships between GRP per capita and enrolment ratios that fall between -0.25 and 0.25.

*** Includes countries with moderate or strong negative relationships (-1.00 to -0.25) between GRP per capita and enrolment ratios

Using **Figure 4.5**, the following observations can be made:

- Only one country – Argentina at the primary level – performs well on both dimensions of equity. Argentina tends to have lower enrolment ratios in wealthier regions and is among the countries with the least disparity in primary enrolment ratios. South Africa also performs relatively well, with small regional disparities in enrolment ratios and only a moderate negative relationship between regional wealth and primary enrolment ratios.
- Three countries – Brazil, India and Indonesia – perform poorly on both horizontal equity and equal educational opportunity at the secondary level: there are larger disparities in enrolment ratios and a tendency for wealthier regions to have higher enrolment ratios.
- Six countries – Mexico at both levels of education; China and Peru in primary education; and Canada, South Africa and the United States in secondary

education – perform poorly on equal educational opportunity, with wealthier regions tending to have higher enrolment ratios. However, in these countries regional disparities in enrolment ratios are quite small.

- Two countries – Indonesia at the primary level and the Russian Federation at the primary and secondary levels – fall in the middle range of countries on horizontal equity and have no relationship between regional wealth and enrolment ratios.
- Four countries – Argentina, Brazil, India and South Africa – stand out because they have negative relationships between regional wealth and enrolment ratios at the primary level but positive relationships at the secondary level. This inconsistency is most striking in Brazil, which has strong relationships between wealth and enrolment ratios at both levels of education.

5. Application of the equity framework: Expenditure per pupil

In this chapter, the equity framework is applied to expenditure per pupil in combined primary and secondary education, mainly because expenditure per pupil is not available separately for primary and secondary education for most core countries. Expenditure data for all countries only include expenditure in public schools. In the case of Argentina, combined primary and secondary expenditure per pupil also includes pre-primary education; in the case of Egypt, expenditure data are for primary education only. Five core countries – Bangladesh, Ecuador, Indonesia, Nigeria and Pakistan – are excluded due to inadequate or missing expenditure data.

I. Horizontal equity analysis

Table 5.1 provides the context for the analysis, with the following information for combined primary and secondary education: grades, national average expenditure per pupil, regional maximum expenditure per pupil and regional minimum expenditure per pupil. The table highlights the substantial range in expenditure per pupil across regions and suggests the following key findings:

- China stands out as the country with the widest range in regional expenditure per pupil. The region with the maximum expenditure per pupil spends about 16 times more than the region with the minimum expenditure per pupil. China is followed by Egypt, where the ratio is about 8:1, and the Russian Federation, where the ratio is more than 6:1.
- Peru and South Africa have the narrowest range in expenditure per pupil, with ratios of less than 2:1. Canada, Mexico and the United States have only slightly wider ranges, with ratios between 2 and 3:1.

Table 5.2 presents each country's statistical measures of horizontal equity for public combined primary and secondary education and **Table 5.3** presents countries' ranking orders on each of these measures for the 11 countries with data on expenditure per pupil.

Table 5.1. National public combined primary and secondary expenditure per pupil

Country (year)	Grades	National average expenditure per pupil (currency)	Regional maximum expenditure per pupil	Regional minimum expenditure per pupil
Argentina (2001)	Preprimary-12	1,128 (Argentine peso)	2,413	590
Brazil (1999)	1-12	683 (Real)	1,467	432
Canada (1999)	1-12	7,145 (Canadian dollar)	12,392	5,642
China (1999)	1-11	1,097 (Yuan)	8,559	538
Egypt (2003/04)	1-5	718 (Egyptian pound)	2,615	347
India (1996/97)	1-12	1,795 (Rupee)	6,091	1,346
Mexico (2002)	1-12	6,953 (Mexican peso)	12,501	4,551
Peru (2003)	1-11	891 (Sol)	1,274	639
Russian Federation (2001)	1-11 (or 12)	1,568 (Russian ruble)	3,559	563
South Africa (1998/99)	1-12	2,536 (Rand)	3,404	2,213
United States (2000/01)	1-12	7,376 (US dollar)	12,046	4,674

Source: See Annex 1 for notes.

Table 5.2. Horizontal equity measures of public combined primary and secondary expenditure per pupil

Country (year)	Range ratio	Coefficient of variation	Gini coefficient	McLoone Index
Argentina (2001)	4.1	0.35	0.14	0.80
Brazil (1999)	3.4	0.32	0.17	0.77
Canada (1999)[8]	2.2	0.29	0.04[9]	0.88
China (1999)	15.9	1.10	0.27	0.74
Egypt (2003/04)[10]	7.5	0.58	0.15	0.80
India (1996/97)[11]	4.5	0.42	0.12	0.72
Mexico (2002)	2.7	0.22	0.13	0.85
Peru (2003)	2.0	0.25	0.14	0.88
Russian Federation (2001)[12]	6.3	0.38	0.17	0.86
South Africa (1998/99)	1.5	0.18	0.08	0.89
United States (2000/01)	2.6	0.21	0.09	0.85

[8] Expenditure per pupil for one territory is missing and is not included in the analysis of equity.
[9] The Gini coefficient for Canada is calculated using public and private enrolment but public expenditure only. Private school expenditures were not available for 1999.
[10] Expenditure per pupil for one governorate is missing and is not included in the analysis of equity.
[11] Expenditure per pupil for four states is missing and is not included in the analysis of equity.
[12] Expenditure per pupil for one region is missing and is not included in the analysis of equity.

Table 5.3. Ranking order on horizontal equity measures of public combined primary and secondary expenditure per pupil

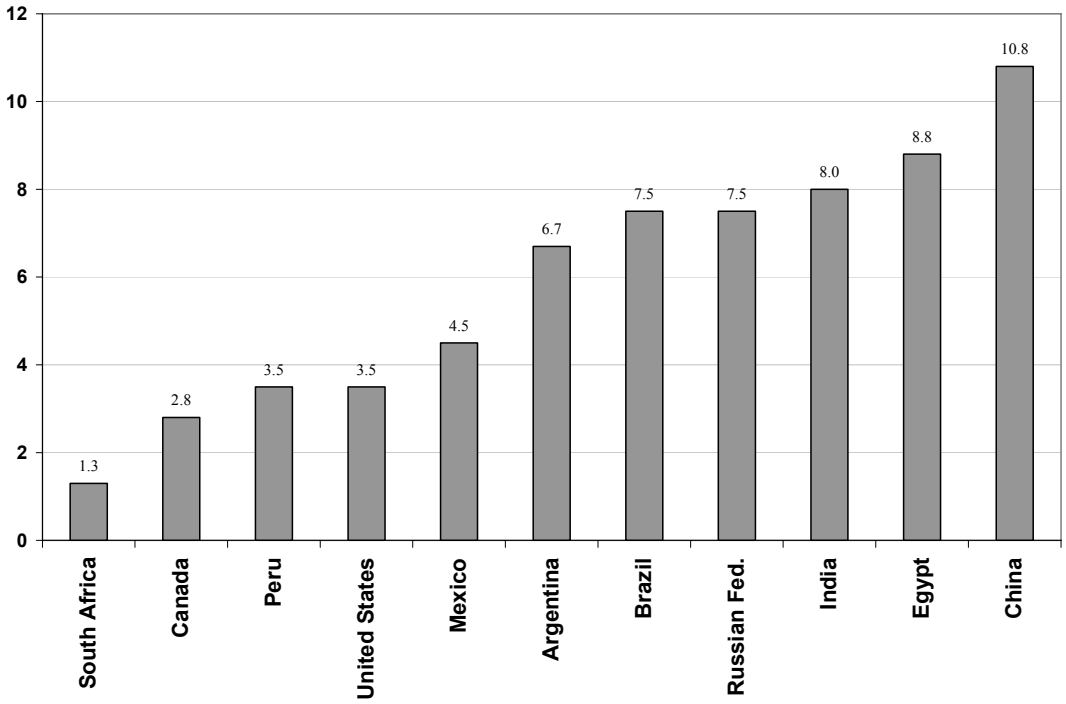
Country (year)	Range ratio	Coefficient of variation	Gini coefficient	McLoone Index	Average of rankings on measures
Argentina (2001)	7	7	6	7	6.7
Brazil (1999)	6	6	9	9	7.5
Canada (1999)	3	5	1	2	2.8
China (1999)	11	11	11	10	10.8
Egypt (2003/04)	10	10	8	7	8.8
India (1996/97)	8	9	4	11	8.0
Mexico (2002)	5	3	5	5	4.5
Peru (2003)	2	4	6	2	3.5
Russian Federation (2001)	9	8	9	4	7.5
South Africa (1998/99)	1	1	2	1	1.3
United States (2000/01)	4	2	3	5	3.5

A. Composite rankings

Based on the average ranking measure for expenditure per pupil, as shown in **Figure 5.1**, we find the following:

- China has the largest regional disparity in combined primary and secondary expenditure per pupil. Two other countries – Egypt and India – also have relatively large disparities.
- South Africa has the smallest disparity in regional expenditure per pupil in combined primary and secondary education, followed by Canada, Peru and the United States.
- Countries that fall in the middle range in disparity include Argentina, Brazil and the Russian Federation, which have average rankings of 6.7 to 7.5. Mexico also falls in the middle range with an average ranking of 4.5.

Figure 5.1. Average rankings on horizontal equity measures of public combined primary and secondary expenditure per pupil

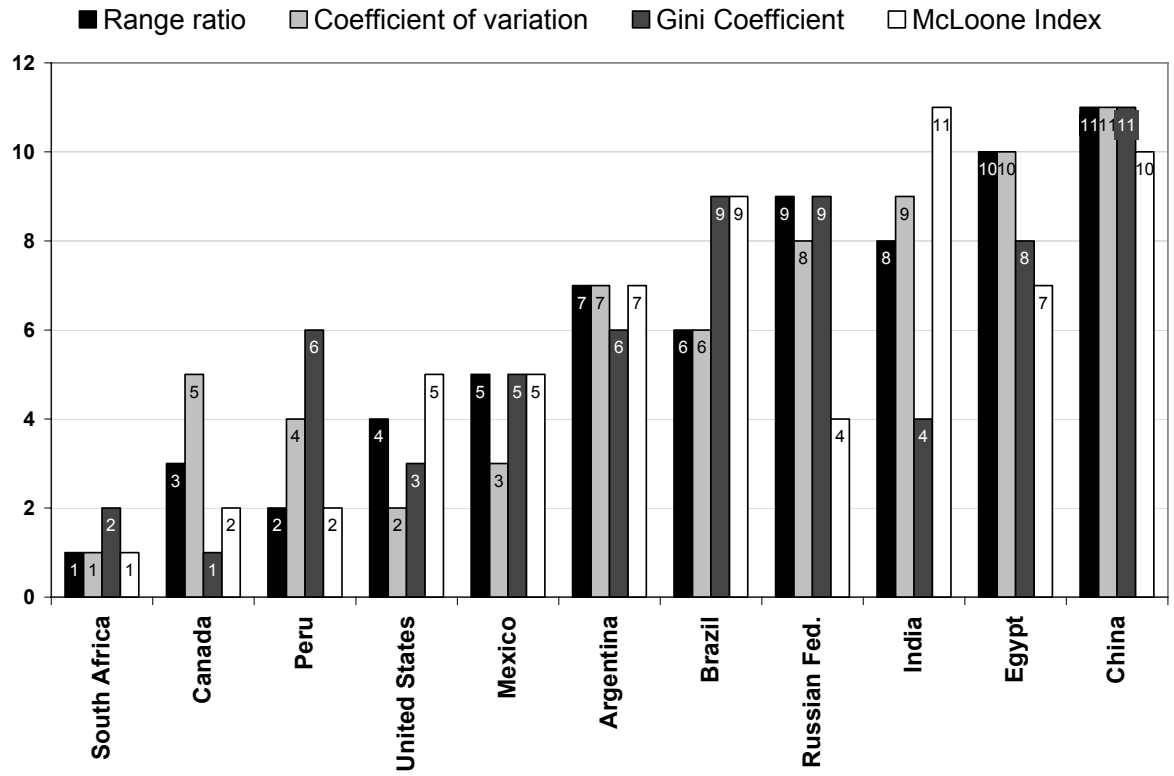


B. Consistency of rankings on equity measures

In **Figure 5.2** we present the rankings on each of the four measures of disparity in expenditure per pupil. Several observations can be made:

- Seven countries tend to show relative consistency on the four measures of horizontal equity at the combined primary and secondary level. South Africa consistently ranks in the top third, whereas Canada, Peru and the United States rank in the top third on three measures and in the middle third on a fourth measure. Argentina consistently ranks in the middle third, whereas Mexico follows a similar pattern but ranks in the top third on the coefficient of variation. China consistently ranks in the bottom third of countries, with the lowest ranking on three of the four rankings of disparity in combined primary and secondary expenditure per pupil.
- Two countries – Brazil and Egypt – fall in the middle third of countries on two measures, but Egypt falls in the bottom third on the range ratio and coefficient of variation while Brazil falls in the bottom third on the Gini coefficient and the McLoone Index.
- Two countries – India and the Russian Federation – stand out as less consistent in their rankings. India and the Russian Federation both show relatively low disparity on one measure – the Gini coefficient and McLoone Index, respectively – but fall in the middle third of countries on a second measure and in the bottom third on two measures.

Figure 5.2. Public combined primary and secondary expenditure per pupil ranking orders on horizontal equity measures



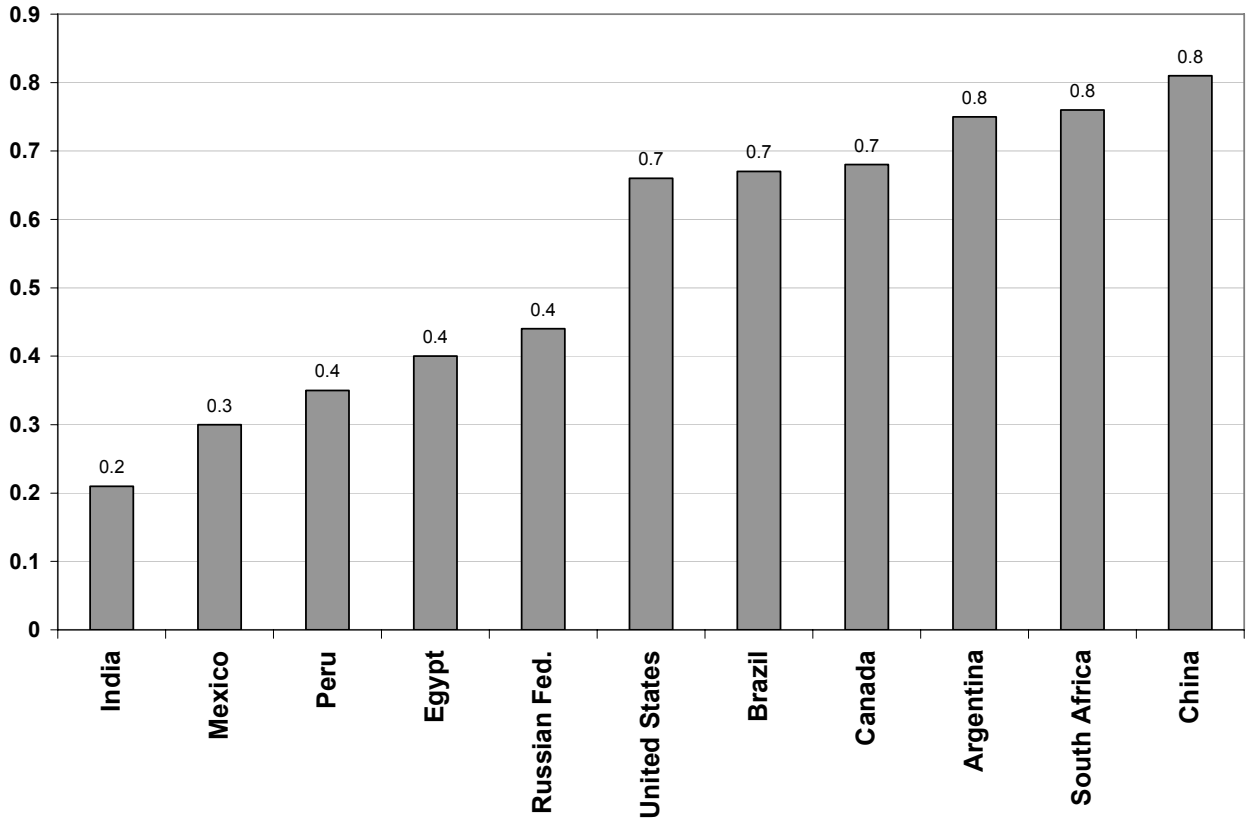
II. Equal educational opportunity

A. Regional wealth and expenditure per pupil

Figure 5.3 shows the relationship between GRP per capita and expenditure per pupil in combined primary and secondary education. Regional wealth, as measured by GRP per capita, has a positive relationship to expenditure per pupil in most countries. The following conclusions can be made about the positions of countries on this measure:

- Six countries – Argentina, Brazil, Canada, China, South Africa and the United States – perform poorly on this measure of EEO, with strong positive correlations between expenditure per pupil and regional wealth. This suggests that wealthier regions in these countries typically tend to have greater resources in the form of expenditure per pupil than do poorer regions.
- Four countries – Egypt, Mexico, Peru and the Russian Federation – have moderate positive relationships between GRP per capita and expenditure per pupil, with Mexico showing the weakest relationship of the four.
- India is the only country where regional wealth does not have a consistent relationship with expenditure per pupil.

Figure 5.3. Correlation between GRP per capita and public combined primary and secondary expenditure per pupil

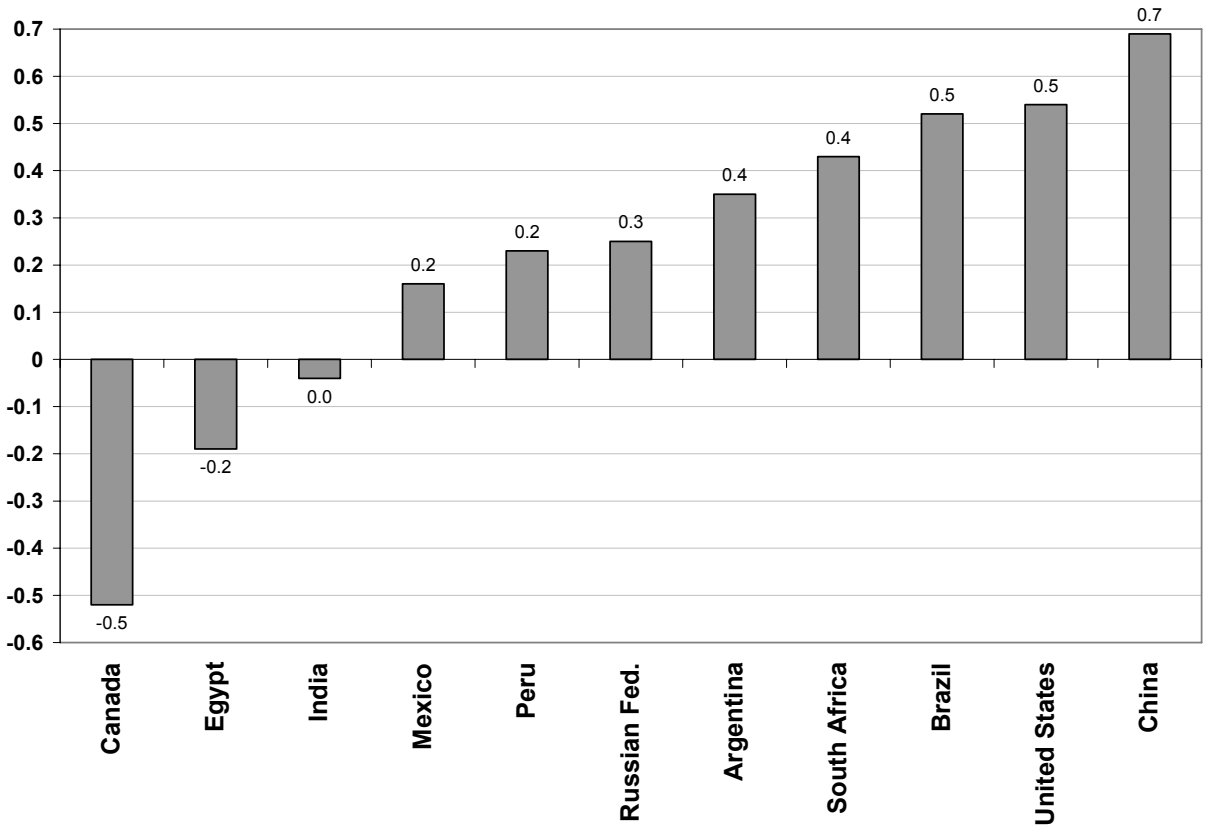


B. Regional population density and expenditure per pupil

Figure 5.4 displays the correlations between regional population density and expenditure per pupil. Using population as a proxy for urban-rural location, the following relationships with disparities in expenditure per pupil emerge:

- Regions that are more urban tend to have higher expenditure per pupil in Brazil, China and the United States, where the relationship between regional population density and expenditure per pupil is strong. This relationship is also positive, but weaker, in Argentina, the Russian Federation and South Africa.
- Canada stands out as the only country where more-urban regions tend to have lower expenditure per pupil. There is no consistent relationship between regional population density and expenditure per pupil in four countries: Egypt, India, Mexico and Peru.

Figure 5.4. Correlation between regional population density and public combined primary and secondary expenditure per pupil



III. Horizontal equity and equal educational opportunity

In the previous discussion, we examined horizontal equity and equal educational opportunity separately. In this section, we use only the relationship between regional wealth and expenditure per pupil as the measure of a country's equal educational opportunity to look at the positions of countries on both measures of equity.

In reviewing **Figure 5.5**, the following observations can be made:

- No country performs well on both dimensions of equity, although Peru has relatively small regional disparities in expenditure per pupil and only a moderate positive relationship between regional wealth and expenditure per pupil.
- Two countries – China and Egypt – perform poorly on both horizontal equity and equal educational opportunity. There are large disparities in expenditure per pupil and a tendency for wealthier regions to have higher expenditure per pupil. India also

has relatively large regional disparities in expenditure per pupil, but there is no relationship between regional wealth and expenditure per pupil.[13]

- Canada, South Africa and the United States perform poorly on equal educational opportunity, with wealthier regions tending to have lower pupil-teacher ratios. However, in these countries regional disparities tend to be relatively small.
- Four countries – Argentina, Brazil, Mexico and the Russian Federation – fall in the middle range of countries on horizontal equity and perform poorly on equal educational opportunity, although Mexico has the weakest relationship between regional wealth and expenditure per pupil of these countries.

Figure 5.5. Country positions on horizontal equity and equal educational opportunity measures of expenditure per pupil in public combined primary and secondary education

Horizontal equity ranking, by tier	Equal educational opportunity		
	Higher expenditure per pupil in wealthier regions*	No relationship between expenditure per pupil and regional wealth**	Lower expenditure per pupil in wealthier regions***
Top third	Canada Peru South Africa United States		
Middle third	Argentina Brazil Mexico Russian Federation		
Bottom third	China Egypt	India	

* Includes countries with moderate or strong positive relationships (0.25 to 1.00) between GRP per capita and expenditure per pupil.

** Includes countries with relationships between GRP per capita and expenditure per pupil that fall between -0.25 and 0.25.

*** Includes countries with moderate or strong negative relationships (-1.00 to -0.25) between GRP per capita and expenditure per pupil.

IV. Changes in horizontal equity

In **Table 5.4** we provide the national context for changes in expenditure per pupil at the combined primary and secondary level, and in **Table 5.5** we show trends in the four measures of horizontal equity for the 1995 to 2002 time period. Each table is followed by a brief discussion of key findings, which focus on the five countries with available data for 1995 and 2002 (or similar years), namely Argentina, Brazil, Canada, South Africa and the United States.

[13] The correlation between regional wealth and expenditure per pupil excludes seven regions due to missing expenditure or regional wealth data.

Table 5.4. Change in national average public combined primary and secondary expenditure per pupil

Country (year)	1995 expenditure per pupil	2002 expenditure per pupil	Change between 1995 and 2002	Percent change between 1995 and 2002
Argentina (1996, 2001)	915	1,128	213	23.3
Brazil (1995, 1999)	524	683	159	30.3
Canada (1995, 1999)	6,853	7,145	292	4.2
China (1999)	*	1,097	*	*
Egypt (2003/04)	*	718	*	*
India (1996/97)	*	1,795	*	*
Mexico (2002)	*	6,953	*	*
Peru (2003)	*	880	*	*
Russian Federation (2001)	*	1,568	*	*
South Africa (1995/96, 1998/99)	2,082	2,536	454	21.8
United States (1994/95, 2000/01)	6,548	7,376	828	12.6

* Not available.
Source: See Annex 1 for notes.

Table 5.5. Horizontal equity measures of public combined primary and secondary expenditure per pupil, 1995 and 2002

Country (year)	Range ratio		Coefficient of variation		Gini coefficient		McLoone Index	
	1995	2002	1995	2002	1995	2002	1995	2002
Argentina (1996, 2001)	3.4	4.1	0.36	0.35	0.14	0.14	0.82	0.80
Brazil (1995, 1999)	3.9	3.4	0.34	0.32	0.15	0.17	0.69	0.77
Canada (1995, 1999)	2.8	2.2	0.38	0.29	0.05	0.04	0.86	0.88
China (1999)	*	15.9	*	1.10	*	0.27	*	0.74
Egypt (2003/04)	*	7.5	*	0.58	*	0.15	*	0.80
India (1996/1997)	*	4.5	*	0.42	*	0.12	*	0.72
Mexico (2002)	*	2.7	*	0.22	*	0.13	*	0.85
Peru (2003)	*	2.0	*	0.25	*	0.14	*	0.88
Russian Federation (2001)	*	6.3	*	0.38	*	0.17	*	0.86
South Africa (1995/96, 1998/99)	3.0	1.5	0.36	0.18	0.15	0.08	0.82	0.89
United States (1994/95, 2000/01)	2.3	2.6	0.21	0.21	0.12	0.09	0.85	0.85

* Not available.

- Between 1995 and 2002, national combined primary and secondary expenditure per pupil increased in the five countries with available data. In terms of percentage change, Brazil experienced the largest increase (30.3%), followed by Argentina (23.3%).
- Canada is the only country that experienced a small increase in expenditure per pupil over the period (4.2%).

- South Africa showed a large improvement on all four equity measures between 1995/1996 and 1998/1999. Canada also improved on the four measures over a similar period, although these changes were smaller.
- Brazil tended to improve over the period, with improvements on three of the disparity measures but a decline on the Gini coefficient.
- Two countries – Argentina and the United States – tended to have mixed but small changes in the four equity measures for combined primary and secondary education. Argentina declined on two disparity measures but improved on a third; the United States improved on one measure and declined on another.

V. Changes in equal educational opportunity

A. Regional wealth and expenditure per pupil

In **Table 5.6** we show the correlations between GRP per capita and expenditure per pupil at the combined primary and secondary level for both 1995 and 2002. Following the table, trends are discussed for those countries where expenditure per pupil for both years is available.

Table 5.6. Correlation between GRP per capita and public combined primary and secondary expenditure per pupil, 1995 and 2002

Country	Correlation coefficient	
	1995	2002
Argentina	0.72[14]	0.75
Brazil	0.70	0.67
Canada	0.77	0.68
China	*	0.81
Egypt	*	0.40
India	*	0.21
Mexico	*	0.30
Peru	*	0.35
Russian Federation	*	0.44
South Africa	0.65	0.76
United States	0.55	0.66

* Not available.

- Between the mid-1990s and the most current year, the positive relationship between regional wealth and expenditure per pupil increased in three countries: Argentina, South Africa and the United States. However, the movement toward greater inequality of educational opportunity was smallest in Argentina.

[14] Expenditure per pupil is correlated with 2001 GRP per capita.

- In Brazil and Canada, equal educational opportunity improved slightly over the period, as shown by the small decrease in the positive relationship between regional wealth and expenditure per pupil. However, both countries continued to show a strong relationship between regional wealth and expenditure per pupil.

B. Regional population density and expenditure per pupil

In **Table 5.7** we show the correlations between regional population density and expenditure per pupil at the combined primary and secondary level for both 1995 and 2002. Following the table, trends in urban-rural disparity are discussed for those countries for which expenditure per pupil for both years is available.

Table 5.7. Correlation between regional population density and public combined primary and secondary expenditure per pupil, 1995 and 2002

Country	Correlation coefficient	
	1995	2002
Argentina	0.22	0.35
Brazil	0.55	0.52
Canada	–0.51	–0.52
China	*	0.69
Egypt	*	–0.19
India	*	–0.04
Mexico	*	0.16
Peru	*	0.23
Russian Federation	*	0.25
South Africa	0.13	0.43
United States	0.36	0.54

* Not available.

- In the United States, there was an increase in the positive relationship between regional population density and expenditure per pupil between 1995 and 2002. Argentina and South Africa also saw an increased tendency for more urban regions to have higher expenditure per pupil over the period.
- There was little change in the relationship between regional population density and expenditure per pupil between the mid-1990s and the most current year in Canada, which continued to be the only country in which more urban regions tend to have lower expenditure per pupil, and Brazil, which saw only a small decrease in the positive relationship between regional population density and expenditure per pupil.

6. Application of the equity framework: Pupil-teacher ratios

In this chapter, the application of the equity framework is illustrated using pupil-teacher ratios in primary, secondary and combined primary and secondary education. For a majority of countries, the pupil-teacher ratios analysed are for public schools only. However, for three countries – Canada, India and Nigeria – the analyses examine pupil-teacher ratios in public and private schools, as available data only include both types of schools.

Canada, the Russian Federation and South Africa are excluded from the analysis of primary and secondary pupil-teacher ratios, because enrolment and teacher data were not available at either level of education. Bangladesh is excluded from the analysis of both secondary and combined primary and secondary pupil-teacher ratios because data were not available.

I. Horizontal equity analysis

Tables 6.1 and **6.2** provide the context for the analysis with the following information for primary education and secondary education, respectively: grades, national average pupil-teacher ratio, regional maximum ratio and regional minimum ratio. The following bullets present key findings:

- National average pupil-teacher ratios in public primary schools range from 15.1 in Argentina to 67.0 in Bangladesh. Ratios below 25 are also found in Brazil, China, Egypt, Indonesia and the United States. Ratios above 35 are found in India, Nigeria and Pakistan.
- Primary pupil-teacher ratios fall between 25 and 35 in Ecuador, Mexico and Peru.
- National average pupil-teacher ratios are lower in secondary than in primary education in all countries with available data except Argentina.
- Secondary ratios are lowest in the United States, which has 12.8 pupils per teacher, but also fall below 20 per teacher in nine additional countries – Argentina, Brazil, China, Ecuador, Egypt, Indonesia, Mexico, Pakistan and Peru.
- Secondary pupil-teacher ratios are above 30 in only India and Nigeria, but the secondary ratio for India is about 21% lower than the primary ratio.

Table 6.1. National public primary pupil-teacher ratios

Country (year)	Grades	National average pupil-teacher ratio	Regional maximum pupil-teacher ratio	Regional minimum pupil-teacher ratio
Argentina (2001)	1-6	15.1	18.9	7.4
Bangladesh (2001)	1-5	67.0	109.1	23.6
Brazil (2001)	1-8	22.7	29.5	17.1
Canada	1-8*	**	**	**
China (2001)	1-5	21.6	28.3	12.1
Ecuador (2000/01)	1-6	27.2	36.8	14.4
Egypt (2001)	1-5	22.4	31.0	6.5
India (2000/01)	1-5	43.1	73.5	16.1
Indonesia (2001/02)	1-6	22.2	32.5	12.4
Mexico (2002/03)	1-6	26.8	31.8	21.7
Nigeria (2001)	1-6	39.8	110.7	19.2
Pakistan (2001)	1-5	39.4	91.2	22.9
Peru (2002)	1-6	26.8	31.5	15.0
Russian Federation	1-4	**	**	**
South Africa	1-7	**	**	**
United States (2000/01)[15]	1-8	20.1	31.5	13.0

* Grade levels for primary and secondary education vary by province.
** Not available.
Source: See Annex 1 for notes.

Table 6.2. National public secondary pupil-teacher ratios

Country (year)	Grades	National average pupil-teacher ratio	Regional maximum pupil-teacher ratio	Regional minimum pupil-teacher ratio
Argentina (2001)	7-12	19.1	38.0	11.5
Bangladesh (2001)	6-12 (or 13)	**	**	**
Brazil (2001)	9-12	18.7	26.7	14.6
Canada	9-12*	**	**	**
China (2001)	6-11	18.5	22.4	14.1
Ecuador (2000/01)	7-12	13.9	18.3	7.9
Egypt (2001)	6-11	19.1	27.5	7.7
India (2000/01)	6-12	34.1	49.0	11.6
Indonesia (2001/02)	7-12	15.5	19.3	11.4
Mexico (2002/03)	7-12	19.0	26.0	14.8
Nigeria (2001)	7-12	32.1	54.2	21.0
Pakistan (2001)	6-12	14.7	54.3	4.6
Peru (2002)	7-11	19.0	23.1	11.8
Russian Federation	5-11(or 12)	**	**	**
South Africa	8-12	**	**	**
United States (2000/01)	9-12	12.8	22.9	8.0

* Grade levels for primary and secondary education vary by province.
** Not available.
Source: See Annex 1 for notes.

[15] For the United States, pupil-teacher ratios at the combined primary and secondary level include unclassified teachers; ratios at the primary and secondary levels include only teachers specifically classified as primary or secondary teachers and exclude unclassified teachers.

A. Primary education

Table 6.3 presents each country's statistical measures of horizontal equity for public primary education and **Table 6.4** presents countries' ranking orders on each of these measures and average ranking on the four measures. The analysis includes the 13 countries for which regional data were available separately for primary education. It excludes Canada, the Russian Federation and South Africa.

Table 6.3. Horizontal equity measures of public primary pupil-teacher ratios

Country (year)	Range ratio	Coefficient of variation	Gini coefficient	Adjusted McLoone Index
Argentina (2001)	2.6	0.18	0.09	1.10
Bangladesh (2001)	4.6	0.24	0.13	1.16
Brazil (2001)	1.7	0.14	0.14	1.11
China (2001)	2.3	0.20	0.10	1.18
Ecuador (2000/01)	2.6	0.23	0.11	1.15
Egypt (2001)	4.8	0.30	0.12	1.17
India (2000/01)	4.6	0.39	0.13	1.42
Indonesia (2001/02)	2.6	0.18	0.09	1.13
Mexico (2002/03)	1.5	0.11	0.06	1.10
Nigeria (2001)	5.8	0.47	0.24	1.44
Pakistan (2001)	4.0	0.42	0.18	1.39
Peru (2002)	2.1	0.15	0.06	1.12
United States (2000/01)	2.4	0.22	0.11	1.21

Table 6.4. Ranking order on horizontal equity measures of public primary pupil-teacher ratios

Country (year)	Range ratio	Coefficient of variation	Gini coefficient	Adjusted McLoone Index	Average of rankings on measures
Argentina (2001)	6	4	3	1	3.5
Bangladesh (2001)	10	9	9	7	8.8
Brazil (2001)	2	2	11	3	4.5
China (2001)	4	6	5	9	6.0
Ecuador (2000/01)	6	8	6	6	6.5
Egypt (2001)	12	10	8	8	9.5
India (2000/01)	10	11	9	12	10.5
Indonesia (2001/02)	6	4	3	5	4.5
Mexico (2002/03)	1	1	1	1	1.0
Nigeria (2001)	13	13	13	13	13.0
Pakistan (2001)	9	12	12	11	11.0
Peru (2002)	3	3	1	4	2.8
United States (2000/01)	5	7	6	10	7.0

1. Composite rankings

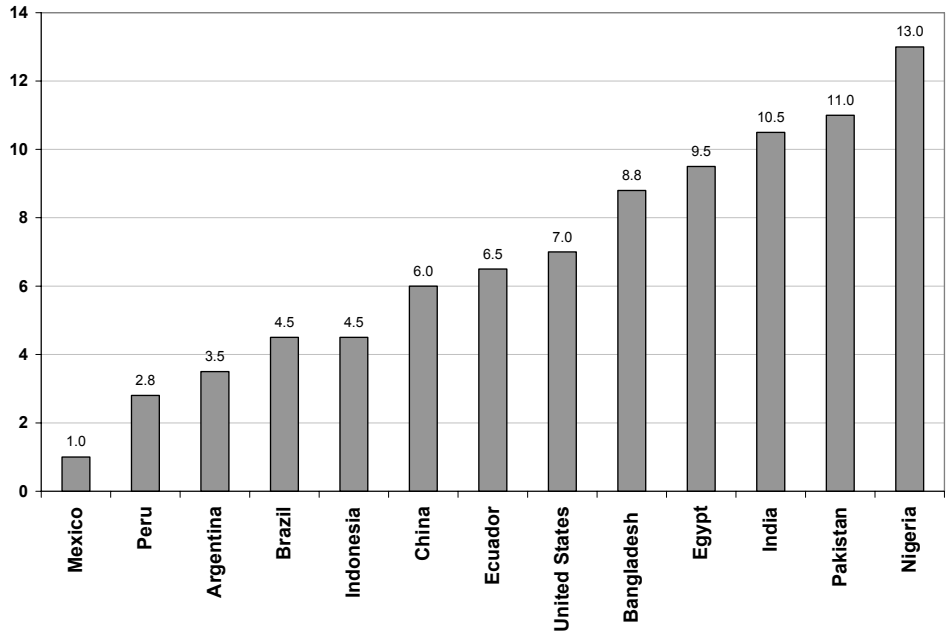
Based on the average ranking measure for public primary education, which is displayed in **Figure 6.1**, we find the following:

- Mexico stands out as the country with the smallest disparity in primary pupil-teacher ratios. It is followed by Peru and Argentina and then two countries – Brazil and Indonesia – which have the same average ranking.
- Regional disparities fall in the middle range in Bangladesh, China, Ecuador and the United States.
- Nigeria has the largest disparity in primary pupil-teacher ratios, followed by Pakistan, India and Egypt.

For most countries, national average pupil-teacher ratios show a consistent relationship with regional disparities in ratios.

- Two of the four countries with the smallest regional disparities (Argentina and Brazil) also have low average pupil-teacher ratios. China and the United States are also among the four countries with the lowest national ratios but fall in the middle third of countries in their disparity measures.
- Two of the four countries that fall in the middle range in regional disparities (Ecuador and Indonesia) also fall in the middle range in national pupil-teacher ratios.
- Four countries – Bangladesh, India, Nigeria and Pakistan – have both high levels of regional disparity and high national average pupil-teacher ratios.

Figure 6.1. Average rankings on horizontal equity measures of public primary pupil-teacher ratios

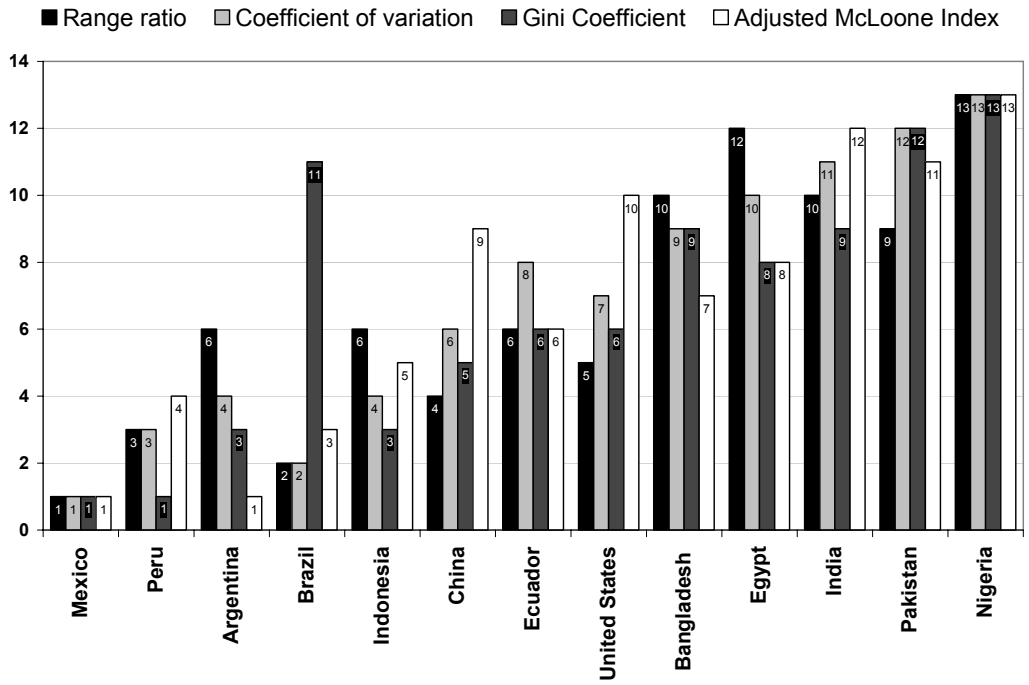


2. Consistency of rankings on equity measures

Comparing countries across the four equity measures reveals several findings, which are discussed below and displayed in **Figure 6.2**.

- Nine of the 13 countries with available primary pupil-teacher ratios show a high degree of consistency on the four measures of horizontal equity. Mexico and Peru rank in the top third of countries on all four measures, with Mexico having the least disparity on the four measures. Two countries – Argentina and Indonesia – also fall toward the top of the rankings, although Argentina falls in the middle third of countries on the range ratio and Indonesia falls in the middle third on two measures.
- Ecuador consistently ranks in the middle third of countries across the measures. Three countries – India, Nigeria and Pakistan – consistently fall toward the bottom of the rankings, with Nigeria having the greatest disparity on all four measures. Bangladesh and Egypt also tend to fall toward the bottom of the rankings, although Bangladesh falls in the middle third on the adjusted McLoone Index and Egypt falls in the middle third on two measures.
- Three countries – Brazil, China and the United States – are less consistent in their rankings. Brazil falls in the top third of countries on three measures but has a high Gini coefficient that places it in the bottom third of countries for this measure. China shows a relatively low level of disparity on the range ratio but ranks in the middle third of countries on two measures and falls toward the bottom of the rankings on the adjusted McLoone Index. The United States shows a similar pattern but ranks fifth on the range ratio.

Figure 6.2. Public primary pupil-teacher ratio ranking orders on horizontal equity measures



B. Secondary education

Table 6.5 presents each country's statistical measures of horizontal equity for public secondary education and **Table 6.6** presents countries' ranking orders on each of these measures.

Table 6.5. Horizontal equity measures of public secondary pupil-teacher ratios

Country (year)	Range ratio	Coefficient of variation	Gini coefficient	Adjusted McLoone Index
Argentina (2001)	3.3	0.33	0.22	1.29
Brazil (2001)	1.8	0.17	0.24	1.15
China (2001)	1.6	0.12	0.05	1.08
Ecuador (2000/01)	2.3	0.20	0.11	1.18
Egypt (2001)	3.6	0.28	0.12	1.22
India (2000/01)	4.2	0.32	0.11	1.39
Indonesia (2001/02)	1.7	0.12	0.06	1.10
Mexico (2002/03)	1.8	0.16	0.09	1.17
Nigeria (2001)	2.6	0.23	0.13	1.20
Pakistan (2001)	11.8	0.86	0.23	1.95
Peru (2002)	2.0	0.16	0.07	1.10
United States (2000/01)	2.9	0.25	0.15	1.26

Table 6.6. Ranking order on horizontal equity measures of public secondary pupil-teacher ratios

Country (year)	Range ratio	Coefficient of variation	Gini coefficient	Adjusted McLoone Index	Average of rankings on measures
Argentina (2001)	9	11	10	10	10.0
Brazil (2001)	3	5	12	4	6.0
China (2001)	1	1	1	1	1.0
Ecuador (2000/01)	6	6	5	6	5.8
Egypt (2001)	10	9	7	8	8.5
India (2000/01)	11	10	5	11	9.3
Indonesia (2001/02)	2	1	2	2	1.8
Mexico (2002/03)	3	3	4	5	3.8
Nigeria (2001)	7	7	8	7	7.3
Pakistan (2001)	12	12	11	12	11.8
Peru (2002)	5	3	3	2	3.3
United States (2000/01)	8	8	9	9	8.5

1. Composite rankings

Based on the average ranking measure for public secondary education, which is displayed in **Figure 6.3**, we find the following:

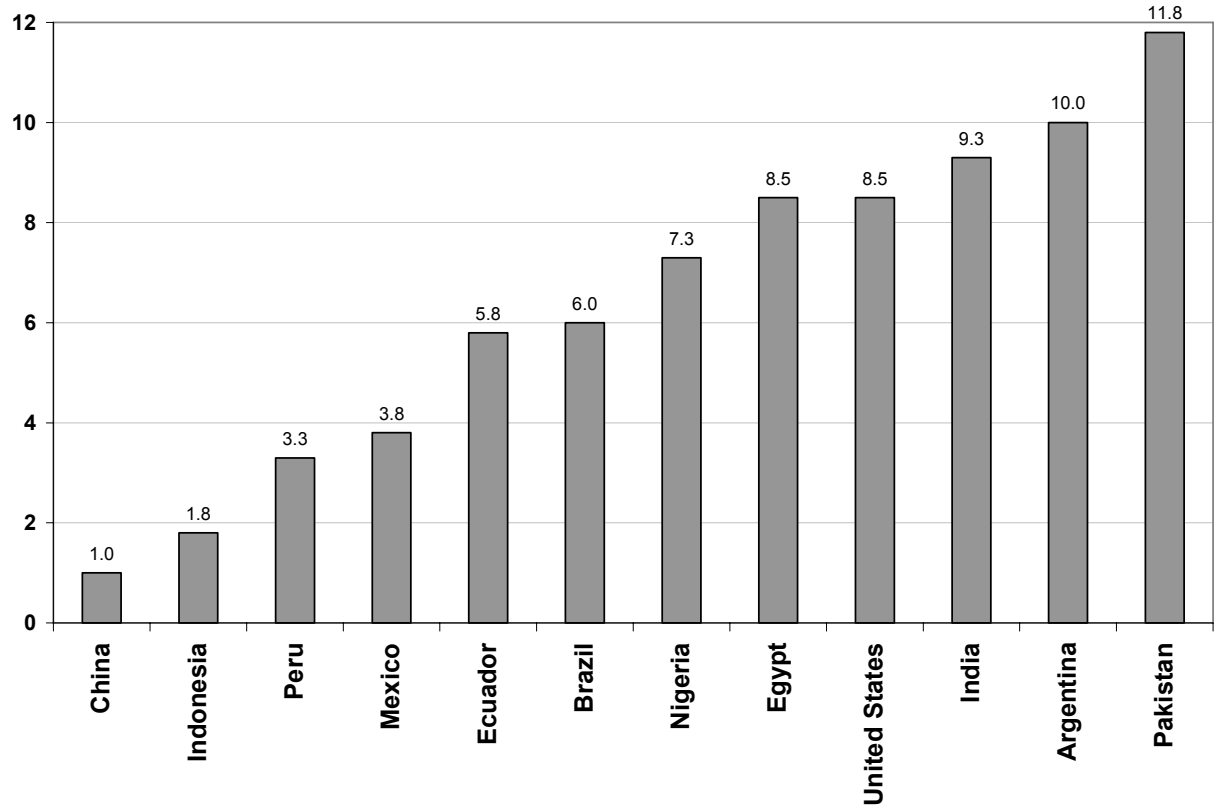
- China joins Indonesia, Mexico and Peru as the countries with the smallest disparities in regional pupil-teacher ratios in secondary education.

- Regional disparity falls in the middle range in three countries – Brazil, Ecuador and Nigeria.
- Disparity in secondary ratios is largest in Pakistan, followed by Argentina and India. Two countries – Egypt and the United States – have the same average ranking, which places them on the border with the bottom third of countries.

At the secondary level, regional disparities are not consistently related to national average pupil-teacher ratios.

- Pakistan and the United States both show relatively large regional disparities but have low average pupil-teacher ratios.
- Ecuador and Nigeria fall in the middle range in disparity but Ecuador has the second-lowest national average ratio and Nigeria has the second-highest average pupil-teacher ratio. Peru also has a relatively high ratio but is in the top third of countries in regional disparity.

Figure 6.3. Average rankings on horizontal equity measures of public secondary pupil-teacher ratios

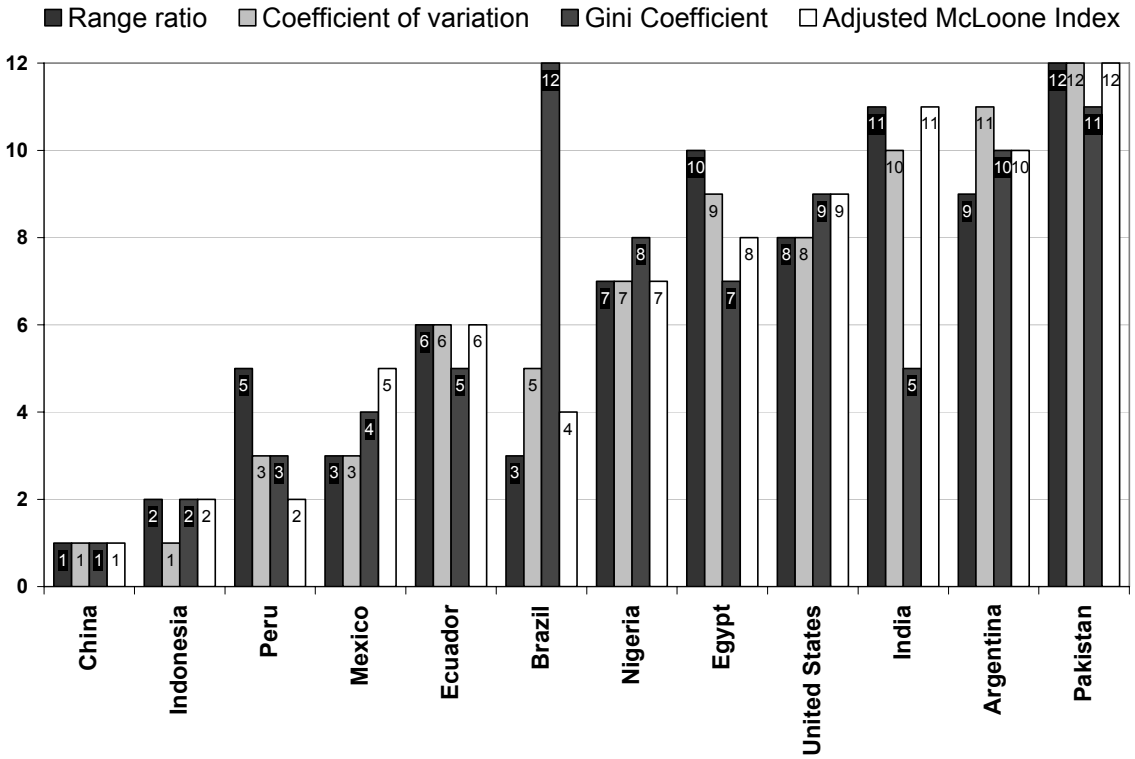


2. Consistency of rankings on equity measures

In **Figure 6.4** we present the rankings across the four equity measures for each of the countries with available secondary education pupil-teacher ratio data.

- Overall, 10 of the 12 countries show relatively high consistency on the four measures of horizontal equity at the secondary level. China ranks at the top of countries on all four measures, followed closely by Indonesia. Mexico and Peru also tend to fall toward the top of the rankings although they each rank in the middle third of countries on one measure.
- Two countries – Ecuador and Nigeria – consistently fall in the middle third of countries. Egypt and the United States also rank in the middle third on two measures but fall in the bottom third on two measures. Argentina and Pakistan consistently rank in the bottom third of the countries, with Pakistan having the highest disparity in secondary pupil-teacher ratios on three of the four equity measures.
- Brazil and India are less consistent in their rankings. Brazil falls in the top third of countries on three of the four equity measures but has the second-highest Gini coefficient, placing it in the bottom third of countries. In contrast, India ranks in the bottom third of countries on three measures, but ranks fifth on the Gini coefficient.

Figure 6.4. Public secondary pupil-teacher ratio rank orders on horizontal equity measures



C. Combined primary and secondary education

Table 6.7 presents each country's statistical measures of horizontal equity for public combined primary and secondary education and **Table 6.8** presents countries' ranking orders on each of these measures.

Table 6.7. Horizontal equity measures of public combined primary and secondary pupil-teacher ratios

Country (year)	Range ratio	Coefficient of variation	Gini coefficient	Adjusted McLoone Index
Argentina (2001)	2.5	0.18	0.11	1.14
Brazil (2001)	1.7	0.14	0.20	1.13
Canada (1999/00)	1.4	0.13	*	1.03
China (2001)	2.0	0.16	0.08	1.12
Ecuador (2000/01)	2.2	0.20	0.10	1.15
Egypt (2001)	4.2	0.28	0.11	1.15
India (2000/01)	3.8	0.33	0.11	1.33
Indonesia (2001/02)	2.2	0.16	0.08	1.11
Mexico (2002/03)	1.5	0.11	0.06	1.09
Nigeria (2001)	4.6	0.41	0.21	1.36
Pakistan (2001)	1.9	0.22	0.10	1.19
Peru (2002)	2.1	0.16	0.06	1.10
Russian Federation (2001/02)	2.2	0.17	0.12	1.12
South Africa (2001)	1.2	0.07	0.04	1.06
United States (2000/01)	1.8	0.14	0.08	1.14

* Missing raw data – unable to calculate.

Table 6.8. Ranking order on horizontal equity measures of public combined primary and secondary pupil-teacher ratios

Country (year)	Range ratio	Coefficient of variation	Gini coefficient	Adjusted McLoone Index	Average of rankings on measures
Argentina (2001)	12	10	9	9	10.0
Brazil (2001)	4	4	13	8	7.3
Canada (1999/00)	2	3	*	1	2.0
China (2001)	7	6	4	6	5.8
Ecuador (2000/01)	9	11	7	11	9.5
Egypt (2001)	14	13	9	11	11.8
India (2000/01)	13	14	9	14	12.5
Indonesia (2001/02)	9	6	4	5	6.0
Mexico (2002/03)	3	2	2	3	2.5
Nigeria (2001)	15	15	14	15	14.8
Pakistan (2001)	6	12	7	13	9.5
Peru (2002)	8	6	2	4	5.0
Russian Federation (2001/02)	9	9	12	6	9.0
South Africa (2001)	1	1	1	2	1.3
United States (2000/01)	5	4	4	9	5.5

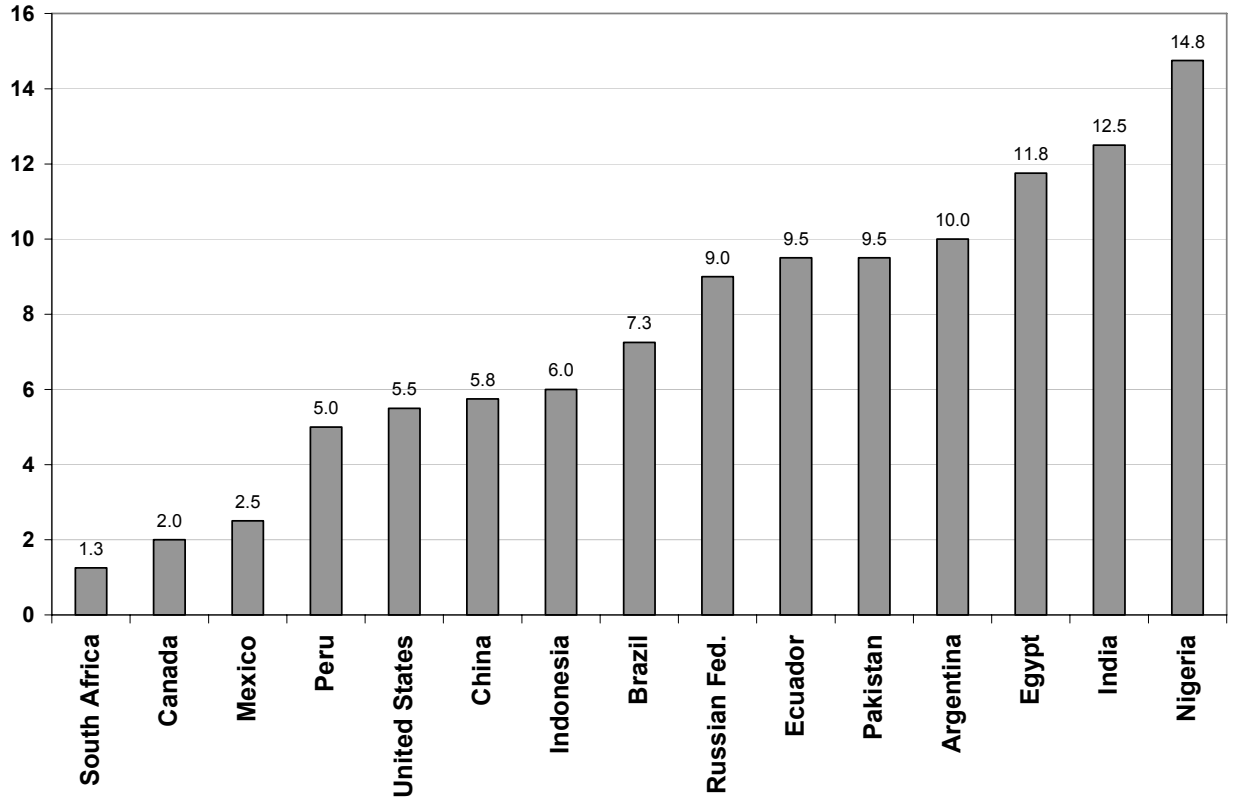
* Missing raw data – unable to calculate.

1. Composite rankings

Based on the average ranking measure for public combined primary and secondary education, as shown in **Figure 6.5**, we find the following:

- South Africa is joined by Canada and Mexico as the countries with the smallest disparities in regional pupil-teacher ratios in combined primary and secondary education.
- Nigeria has the largest regional disparity in combined primary and secondary pupil-teacher ratios, followed by Egypt and India. Brazil falls in the middle third of countries with an average ranking of 7.3.
- Eight other countries tend to form two clusters with similar rankings. Four countries – China, Indonesia, Peru and the United States – have average rankings in the 5.0 to 6.0 range, with Peru and the United States in the top third of countries. Another four countries – Argentina, Ecuador, the Russian Federation and Pakistan – have average rankings in the 9.0 to 10.0 range. Argentina, Ecuador and Pakistan fall in the bottom third of countries.

Figure 6.5. Average rankings on horizontal equity measures of public combined primary and secondary pupil-teacher ratios

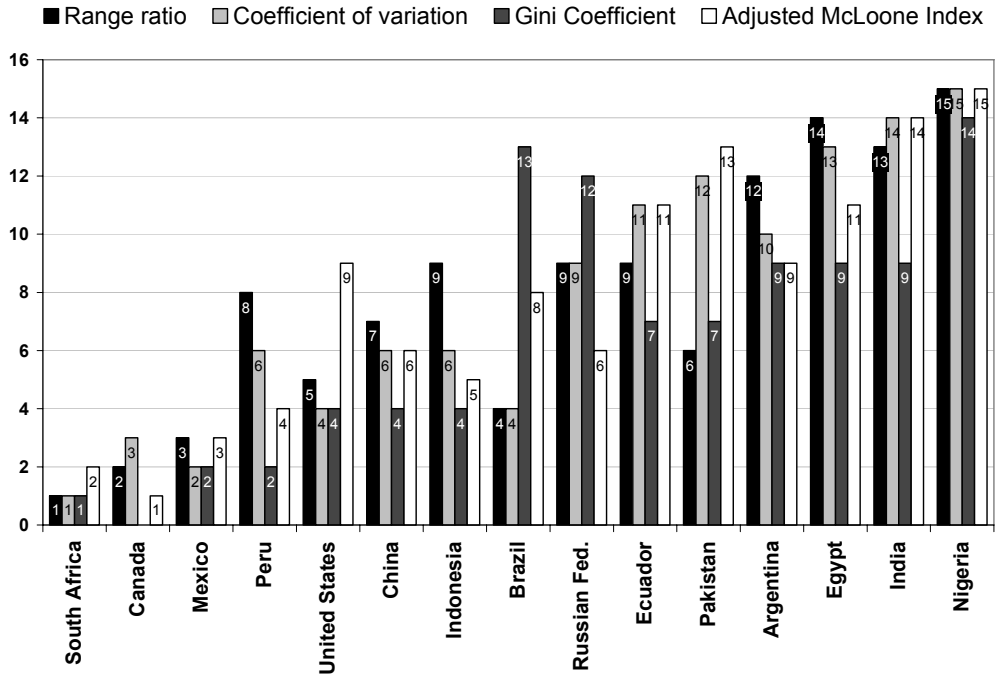


2. Consistency of rankings on equity measures

In **Figure 6.6** we present the rankings across the four equity measures for the 15 countries with available combined primary and secondary education pupil-teacher ratio data. Several observations can be made:

- Overall, 11 countries show relative consistency on the four measures of horizontal equity at the combined primary and secondary level. Canada, Mexico and South Africa consistently rank in the top third, while the United States ranks in the top third on three measures and in the middle third on the adjusted McLoone Index.
- China tends to rank in the middle third of countries, while Ecuador and Indonesia fall in the middle third of countries on two measures. Ecuador falls in the bottom third on the coefficient of variation and adjusted McLoone Index; in contrast, Indonesia ranks in the top third on the index measure and the Gini coefficient.
- Three countries – Egypt, India and Nigeria – consistently rank in the bottom third of countries on regional disparity. Argentina also tends to rank toward the bottom of the rankings on all four measures.
- Four countries – Brazil, Pakistan, Peru and the Russian Federation – are less consistent in their rankings. Brazil shows a relatively small level of disparity on two of the four equity measures, but falls in the middle third of countries on the adjusted McLoone Index and has the second highest Gini coefficient. Similarly, Peru ranks in the top third on two measures and in the middle third on the range ratio and coefficient of variation. Pakistan and the Russian Federation fall in the middle third of countries on two and three measures, respectively, but have much higher rankings on the other measures.

Figure 6.6. Public combined primary and secondary pupil-teacher ratio ranking orders on horizontal equity measures



D. Consistency of rankings on horizontal equity in primary, secondary and combined primary and secondary education

Figure 6.7 displays country average rankings on the horizontal equity measures for primary, secondary and combined primary and secondary education. **Figure 6.8** provides a matrix showing country placements across the three levels by tier. Only countries with available pupil-teacher ratios for primary, secondary and combined primary and secondary education are included in Figure 6.8 and the following discussion. At the primary level, Bangladesh is excluded; at the combined primary and secondary level, three countries – Canada, the Russian Federation and South Africa – are excluded.

- Two countries – Argentina and the United States – stand out as especially inconsistent in their placement across the three levels. Argentina ranks in the top third at the primary level, but in the bottom third in secondary and combined primary and secondary education. The United States also ranks in the bottom third of countries at the secondary level but ranks in the middle and top third at the primary and combined primary and secondary levels, respectively.
- Five additional countries – Brazil, China, Indonesia, Nigeria and Pakistan – are also less consistent in their standings. Brazil and Indonesia rank in the top third at the primary and secondary levels, respectively, but fall in the middle third of countries at the other two levels of education. Nigeria and Pakistan each fall in the middle third of countries on disparity at one level of education but in the bottom third at the other two. In contrast, China falls in the middle third at the primary level but in the top third at the other two levels.
- Five countries have similar standings in horizontal equity across the three levels of education: Mexico and Peru consistently have the smallest disparity, Ecuador falls in the middle third at all three levels, and Egypt and India have greater disparity across all three levels.

Figure 6.7. Consistency of horizontal equity measures across levels of education

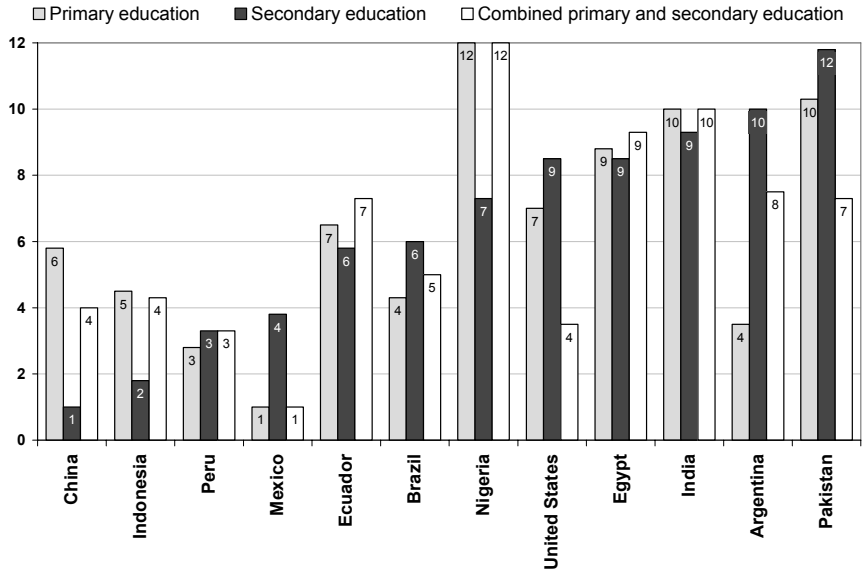


Figure 6.8. Country positions on horizontal equity measures by levels of education

Horizontal equity ranking, by tier	Level of education		
	Primary education	Secondary education	Combined primary and secondary education
Top third	Argentina Brazil Mexico Peru	China Indonesia Mexico Peru	China Mexico Peru United States
Middle third	China Ecuador Indonesia United States	Brazil Ecuador Nigeria	Brazil Ecuador Indonesia Pakistan
Bottom third	Egypt India Nigeria Pakistan	Argentina Egypt India Pakistan United States	Argentina Egypt India Nigeria

II. Equal educational opportunity

A. Regional wealth and pupil-teacher ratios

In **Table 6.9** and **Figure 6.9**, we provide the relationship between GRP per capita and pupil-teacher ratios in primary education, secondary education and combined primary and secondary education. The correlations between GRP per capita and pupil-teacher ratios at each education level are included.

Regional wealth, as measured by GRP per capita, tends to have a negative relationship to pupil-teacher ratios at all three levels of education among the core countries; wealthier regions tend to have lower pupil-teacher ratios. The following conclusions can be made:

- Seven countries – Argentina, Brazil, Canada, China, Egypt, India and Peru – perform poorly on this measure of equal educational opportunity at all three levels, as does Mexico at the secondary level. This suggests that wealthier regions tend to have lower pupil-teacher ratios than poorer regions.
- These negative relationships are strong in three countries: Argentina at the primary and combined primary and secondary levels, and Canada and Peru at the combined primary and secondary level.
- Only one country tends to have lower pupil-teacher ratios in poorer regions: Mexico at the primary level of education. However, three countries – Indonesia, Nigeria and the United States – consistently have no relationship between regional wealth and ratios at all three levels of education. This also holds true in Mexico, the Russian Federation and South Africa at the combined primary and secondary level (this is the only level with available data in the Russian Federation and South Africa).

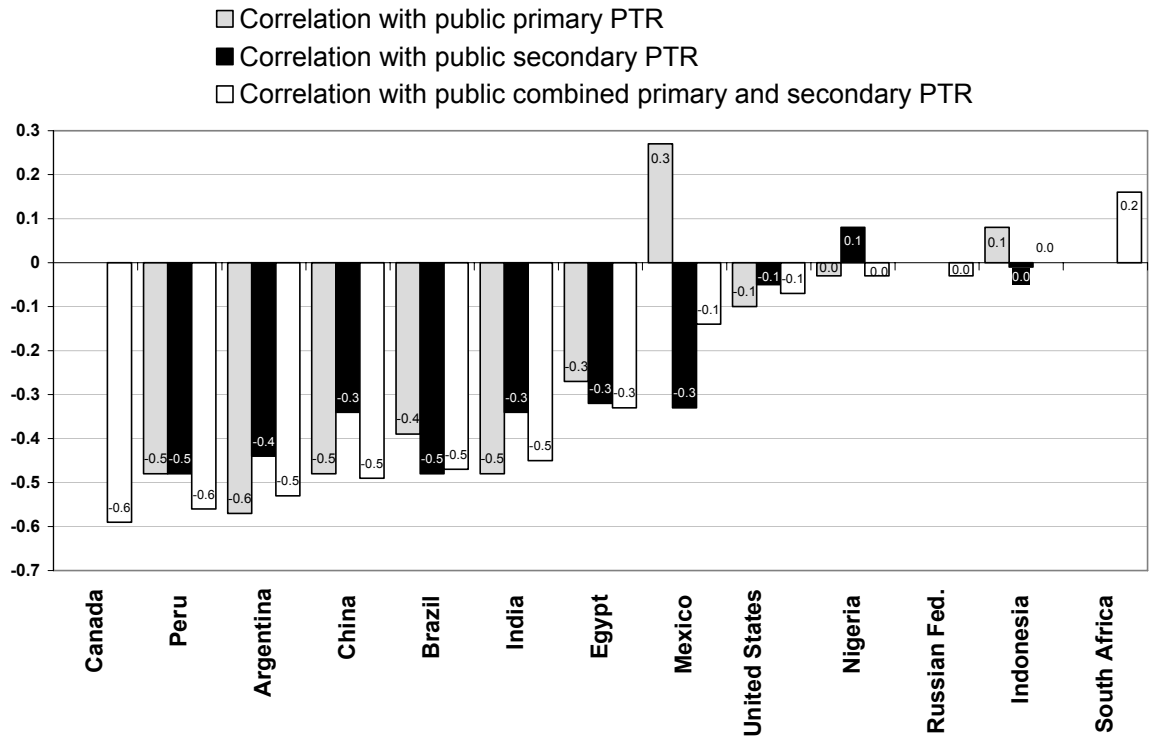
- Countries with relationships between regional wealth and pupil-teacher ratios tend to have consistently positive or negative relationships across the three levels of education. In contrast, Mexico has a positive relationship at the primary level but a negative relationship at the secondary level.

Table 6.9. Correlation between GRP per capita and public pupil-teacher ratios

Country	Primary education	Secondary education	Combined primary and secondary education
Argentina (2001)	-0.57	-0.44	-0.53
Brazil (2001)	-0.39	-0.48	-0.47
Canada (1999/00)	*	*	-0.59
China (2001)	-0.48	-0.34	-0.49
Egypt (2001)	-0.27	-0.32	-0.33
India (2000/01)	-0.48	-0.34	-0.45
Indonesia (2001/02)	0.04	0.03	-0.04
Mexico (2002/03)	0.27	-0.33	-0.14
Nigeria (2001)**	-0.03	0.08	-0.03
Peru (2002)	-0.48	-0.48	-0.56
Russian Federation (2001/02)	*	*	-0.03
South Africa (2001)	*	*	0.16
United States (2000/01)	-0.10	-0.05	-0.07

* Not available.
** Mean household income is used as a proxy for GRP per capita.

Figure 6.9. Correlation between GRP per capita and public pupil-teacher ratios



B. Regional population density and pupil-teacher ratios

Table 6.10 and **Figure 6.10** present the correlations between regional population density and pupil-teacher ratios. Using population as a proxy for urban/rural location, the following relationships with disparities in pupil-teacher ratios emerge.

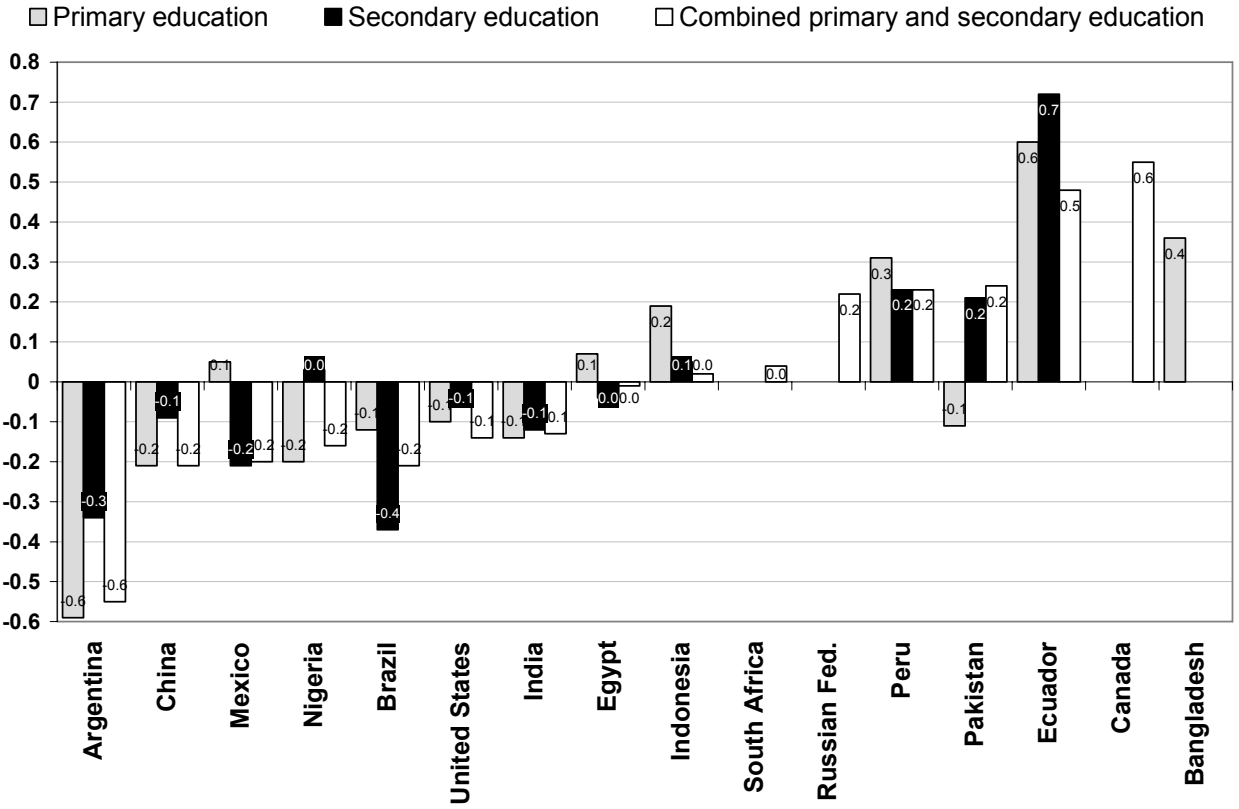
- More urban regions tend to have higher pupil-teacher ratios in five countries: Ecuador at all three levels, Bangladesh and Peru in primary education, and Canada and Pakistan in combined primary and secondary education. These relationships could, however, be a function of economies of scale: regions with larger numbers of pupils may require fewer teachers to teach the full range of subjects and courses.
- In two countries, more urban regions tend to have lower pupil-teacher ratios: Argentina at all three levels and Brazil in secondary education. In these cases, it could mean that children in more urban areas have greater access to education resources than children in rural areas.
- In eight countries – China, Egypt, India, Indonesia, Mexico, Nigeria, Pakistan and the United States – there is no relationship between regional population density and pupil-teacher ratios at any level of education. This also holds true in the Russian Federation and South Africa at the combined primary and secondary level, the only level with available data; in Brazil at the primary and combined primary and secondary levels; and in Peru at the secondary and combined primary and secondary levels.

Table 6.10. Correlation between regional population density and public pupil-teacher ratios

Country	Primary education	Secondary education	Combined primary and secondary education
Argentina (2001)	–0.59	–0.34	–0.55
Bangladesh	0.36	*	*
Brazil (2001)	–0.12	–0.37	–0.21
Canada (1999/00)	*	*	0.55
China (2001)	–0.21	–0.09	–0.21
Ecuador (2000/01)	0.60	0.72	0.48
Egypt (2001)	0.07	–0.04	–0.01
India (2000/01)	–0.14	–0.11	–0.13
Indonesia (2001/02)	0.19	0.05	0.02
Mexico (2002/03)	0.05	–0.21	–0.20
Nigeria (2001)	–0.20	0.03	–0.16
Pakistan (2001)	–0.20	0.23	0.25
Peru (2002)	0.31	0.23	0.23
Russian Federation (2001/02)	*	*	0.22
South Africa (2001)	*	*	0.04
United States (2000/01)	–0.10	–0.05	–0.14

* Not available.

Figure 6.10. Correlation between regional population density and public pupil-teacher ratios



III. Horizontal equity and equal educational opportunity

In the previous discussion, we examined horizontal equity and equal educational opportunity separately. We turn now to the correspondence between the two aspects of equity. In this section, we use only the relationship between regional wealth and pupil-teacher ratios as the measure of a country's equal educational opportunity.

A. Primary education

Looking first at primary education, displayed in **Figure 6.11**, we see that, regardless of the level of regional disparity, countries tend to have either a negative relationship or no relationship between pupil-teacher ratios and regional wealth. Primary comparisons are not available for Canada, the Russian Federation and South Africa.

- Mexico is the only country that appears to do well on both dimensions of equity: regional disparities in pupil-teacher ratios are on the better end of the distribution and pupil-teacher ratios tend to be higher in wealthier regions. However, in Indonesia disparities in pupil-teacher ratios at the primary level also tend to be small and there is no relationship between regional wealth and ratios.

- Two countries – Egypt and India – demonstrate evidence of inequity on both dimensions of equity in primary education. These countries tend to have both high levels of regional disparity and moderate to strong negative relationships between regional wealth and pupil-teacher ratios (i.e. wealthier regions tend to have lower pupil-teacher ratios).
- Argentina, Brazil and Peru demonstrate evidence of inequity on equal educational opportunity – showing a moderate to strong negative relationship between regional wealth and pupil-teacher ratios – but are among the countries with the smallest regional disparities.
- Nigeria and the United States are in the middle to bottom range on horizontal equity with moderate regional disparities in pupil-teacher ratios, but no relationship between regional wealth and pupil-teacher ratios. China is also in the middle range of countries on horizontal equity, but tends to have lower ratios in wealthier regions.

Figure 6.11. Country positions on horizontal equity and equal educational opportunity measures in public primary education

	Equal educational opportunity			
Horizontal equity ranking, by tier	**Higher pupil-teacher ratios in wealthier regions***	**No relationship between pupil-teacher ratios and regional wealth****	**Lower pupil-teacher ratios in wealthier regions*****	**No data on regional wealth**
Top third	Mexico	Indonesia	Argentina Brazil Peru	
Middle third		United States	China	Bangladesh Ecuador
Bottom third		Nigeria	Egypt India	Pakistan

* Includes countries with moderate or strong positive relationships (0.25 to 1.00) between GRP per capita and pupil-teacher ratios.

** Includes countries with relationships between GRP per capita and pupil-teacher ratios that fall between -0.25 and 0.25.

*** Includes countries with moderate or strong negative relationships (-1.00 to -0.25) between GRP per capita and pupil-teacher ratios.

B. Secondary education

Secondary comparisons are not available for Bangladesh, Canada, the Russian Federation and South Africa. The following observations can be made using **Figure 6.12**:

- No country appears to perform well on both dimensions of equity, although Indonesia has relatively small regional disparities in pupil-teacher ratios and no relationship between ratios and regional wealth.

- Argentina and India perform poorly on both horizontal equity and equal educational opportunity: there are large disparities in pupil-teacher ratios and a tendency for wealthier regions to have lower ratios. Egypt also falls toward the bottom of countries on equal opportunity with the strongest relationship between regional wealth and ratios but tends to fall in the middle range of countries on the horizontal equity measures; this is also true in Brazil, but there is only a moderately strong relationship between wealth and ratios.
- China, Mexico and Peru perform poorly on equal educational opportunity, with wealthier regions tending to have lower pupil-teacher ratios. However, in these countries regional disparities tend to be relatively small.
- Nigeria and the United States fall in the middle to bottom range of countries on horizontal equity but do not have a consistent relationship between regional wealth and pupil-teacher ratios.

Figure 6.12. Country positions on horizontal equity and equal educational opportunity measures in public secondary education

	Equal educational opportunity			
Horizontal equity ranking, by tier	**Higher pupil-teacher ratios in wealthier regions***	**No relationship between pupil-teacher ratios and regional wealth****	**Lower pupil-teacher ratios in wealthier regions*****	**No data on regional wealth**
Top third		Indonesia	China Mexico Peru	
Middle third		Nigeria United States	Brazil Egypt	Ecuador
Bottom third			Argentina India	Pakistan

* Includes countries with moderate or strong positive relationships (0.25 to 1.00) between GRP per capita and pupil-teacher ratios.

** Includes countries with relationships between GRP per capita and pupil-teacher ratios that fall between -0.25 and 0.25.

*** Includes countries with moderate or strong negative relationships (-1.00 to -0.25) between GRP per capita and pupil-teacher ratios.

C. Combined primary and secondary education

Combined primary and secondary comparisons are possible for all countries except Bangladesh. At the combined primary and secondary level, countries have a negative relationship or no relationship between pupil-teacher ratios and regional wealth, irrespective of their degree of regional disparity. Using **Figure 6.13**, the following observations can be made:

- No country performs well on both dimensions of equity, although Mexico, South Africa and the United States have relatively small regional disparities in pupil-teacher ratios and no relationship between ratios and regional wealth.

- Three countries – Argentina, Egypt and India – perform poorly on both horizontal equity and equal educational opportunity: There are large disparities in pupil-teacher ratios and a tendency for wealthier regions to have lower ratios. Brazil and China also fall toward the bottom of countries on equal opportunity but tend to fall in the middle range of countries on the horizontal equity measures.
- Canada and Peru perform poorly on equal educational opportunity, with wealthier regions tending to have lower pupil-teacher ratios. However, in these countries regional disparities tend to be relatively small.
- Indonesia, Nigeria, and the Russian Federation fall in the middle to bottom range of countries on horizontal equity but do not have a consistent relationship between regional wealth and pupil-teacher ratios.

Figure 6.13. Country positions on horizontal equity and equal educational opportunity measures in public combined primary and secondary education

	Equal educational opportunity			
Horizontal equity ranking, by tier	**Higher pupil-teacher ratios in wealthier regions***	**No relationship between pupil-teacher ratios and regional wealth****	**Lower pupil-teacher ratios in wealthier regions*****	**No data on regional wealth**
Top third		Mexico South Africa United States	Canada Peru	
Middle third		Indonesia Russian Federation	Brazil China	
Bottom third		Nigeria	Argentina Egypt India	Ecuador Pakistan

* Includes countries with moderate or strong positive relationships (0.25 to 1.00) between GRP per capita and pupil-teacher ratios.

** Includes countries with relationships between GRP per capita and pupil-teacher ratios that fall between -0.25 and 0.25.

*** Includes countries with moderate or strong negative relationships (-1.00 to -0.25) between GRP per capita and pupil-teacher ratios.

D. Summary of findings

As displayed in **Figure 6.14** looking across the three education levels, the following conclusions about country positions on horizontal equity and equal educational opportunity emerge:

- Mexico is the only country that performs well on both dimensions of equity at any level of education: at the primary level regional disparity is small and there tend to be higher pupil-teacher ratios in wealthier regions. In addition, at the combined primary and secondary level in four countries – Indonesia, Mexico, South Africa and the United States – disparities are small and there is no relationship between regional wealth and ratios.

- In contrast, Egypt and India consistently perform poorly on both horizontal equity and equal educational opportunity at all three levels. Likewise, Argentina does not fare well on both dimensions of equity in secondary and combined primary and secondary education, but on only one dimension – equal educational opportunity – in primary education.
- Six countries perform poorly on equal educational opportunity but have small regional disparities in one or more levels of education: Peru at all three levels, Argentina and Brazil in primary education, Canada in combined primary and secondary education, and China and Mexico in secondary education.
- Four countries tend to fall in the middle range of countries on regional disparity and have no relationship between regional wealth and pupil-teacher ratios: Indonesia at the primary and combined primary and secondary levels, the United States at the primary level, Nigeria at the secondary level and the Russian Federation at the combined primary and secondary level.

Figure 6.14. Country positions on horizontal equity and equal educational opportunity measures in public primary (P), secondary (S) and combined primary and secondary (P-S) education

Horizontal equity ranking, by tier	Equal educational opportunity			
	Higher pupil-teacher ratios in wealthier regions*	**No relationship between pupil-teacher ratios and regional wealth****	**Lower pupil-teacher ratios in wealthier regions*****	**No data on regional wealth**
Top third	Mexico (P)	Indonesia (P, S) Mexico (P-S) South Africa (P-S) United States (P-S)	Argentina (P) Brazil (P) Canada (P-S) China (S) Mexico (S) Peru (P, S, P-S)	
Middle third		Indonesia (P-S) Nigeria (S) Russian Federation (P-S) United States (P)	Brazil (S, P-S) China (P, P-S)	Bangladesh (P) Ecuador (P, S)
Bottom third		Nigeria (P, P-S) United States (S)	Argentina (S, P-S) Egypt (P, S, P-S) India (P, S, P-S)	Ecuador (P-S) Pakistan (P, S, P-S)

* Includes countries with moderate or strong positive relationships (0.25 to 1.00) between GRP per capita and pupil-teacher ratios.

** Includes countries with relationships between GRP per capita and pupil-teacher ratios that fall between -0.25 and 0.25.

*** Includes countries with moderate or strong negative relationships (-1.00 to -0.25) between GRP per capita and pupil-teacher ratios.

IV. Changes in horizontal equity

In **Tables 6.11**, **6.13** and **6.15**, we provide the national context for changes in pupil-teacher ratios at the primary, secondary and combined primary and secondary levels. In **Tables 6.12**, **6.14** and **6.16**, we show trends in the three measures of horizontal equity for the 1995 to 2002 time period. Each table is followed by a brief discussion of key findings, which focus on the countries with available data for 1995 and 2002 (or similar years). These countries are Brazil, China, Ecuador, Egypt, India, Indonesia, Mexico, Nigeria, Peru and the United States for the primary and secondary levels; the combined primary and secondary findings also include Canada and South Africa.

A. Primary education

- Between 1995 and 2002, national primary pupil-teacher ratios decreased in nine of the countries with available data; decreases ranged from less than 1 pupil per teacher in Indonesia to 17.2 pupils per teacher in India. Ratios increased in Nigeria by 3.7 pupils per teacher.
- In terms of percentage change, India's large decrease of 28.5% was followed by the United States (11.1%), Peru (9.8%) and Brazil (8.8%). Ratios increased by about 10% in Nigeria.
- India showed a substantial improvement on all four equity measures between the mid-1990s and a more recent school year. However, even with these improvements, India ranks near the bottom of countries on regional disparities in pupil-teacher ratios during the most recent year.
- Peru is the only country that declined on each of the four measures over the period although the changes tended to be small. Two countries – Mexico and Nigeria – moved in the direction of greater disparity on three measures over the period but both improved on the adjusted McLoone Index; the change was small for Mexico. Ecuador shows a similar pattern, but improved on the range ratio. Indonesia increased in disparity on two measures, although the changes were small.
- Brazil had mixed change in the four equity measures for primary education over the period, with improvements on two of the measures but a large decline in equity on the Gini coefficient.
- In three countries – China, Egypt and the United States – the equity measures showed little or no change.

Table 6.11. Change in national average public primary pupil-teacher patios

Country (year)	1995 ratio	2002 ratio	Change between 1995 and 2002	Percent change between 1995 and 2002
Argentina (2001)	*	15.1	*	*
Bangladesh (2001)	*	67.0	*	*
Brazil (1996, 2001)	24.9	22.7	-2.2	-8.8%
China (1995, 2001)	23.3	21.6	-1.7	-7.3%
Ecuador (1995/96, 2000/01)	29.3	27.2	-2.1	-7.2%
Egypt (1996/97, 2001)	24.0[16]	22.4	-1.6	-7.1%
India (1996/97, 2000/01)	60.3	43.1	-17.2	-28.5%
Indonesia (1994/95, 2001/02)	22.3	22.2	-0.1	-0.4%
Mexico (1995/96, 2002/03)	28.5	26.8	-1.7	-6.0%
Nigeria (1997, 2001)	36.1	39.8	3.7	10.2%
Pakistan (2001)	*	39.4	*	*
Peru (1995, 2002)	29.7	26.8	-2.9	-9.8%
United States (1995, 2000/01)	22.6	20.1	-2.5	-11.1%

* Not available.
Source: See Annex 1 for notes.

Table 6.12. Horizontal equity measures of public primary pupil-teacher ratios, 1995 and 2002

	Range ratio		Coefficient of variation		Gini coefficient		Adjusted McLoone Index	
Country (year)	1995	2002	1995	2002	1995	2002	1995	2002
Argentina (2001)	*	2.6	*	0.18	*	0.09	*	1.10
Bangladesh (2001)	*	4.6	*	0.24	*	0.13	*	1.16
Brazil (1996, 2001)	1.9	1.7	0.14	0.14	0.03	0.20	1.14	1.11
China (1995, 2001)	2.2	2.3	0.20	0.20	0.10	0.10	1.17	1.18
Ecuador (1995/96, 2000/01)	2.9	2.6	0.22	0.23	0.10	0.11	1.13	1.15
Egypt (1996/97, 2001)	4.7	4.8	0.28	0.30	**	0.12	1.17	1.17
India (1996/97, 2000/01)	6.7	4.6	0.54	0.39	0.20	0.13	1.62	1.42
Indonesia (199495, 2001/02)	2.3	2.6	0.18	0.18	0.09	0.09	1.09	1.13
Mexico (1995/96, 2002/03)	1.4	1.5	0.09	0.11	0.05	0.06	1.11	1.10
Nigeria (1997, 2001)	5.0	5.8	0.45	0.47	0.18	0.24	1.54	1.44
Pakistan (2001)	*	4.0	*	0.42	*	0.18	*	1.39
Peru (1995,2002)	1.8	2.1	0.13	0.15	0.05	0.06	1.08	1.12
United States (1995, 2000/01)	2.4	2.4	0.21	0.22	0.11	0.11	1.21	1.21

* Not available.

[16] The 1996/1997 pupil-teacher ratios for Egypt include private education.

B. Secondary education

- Between 1995 and 2002, national secondary pupil-teacher ratios increased in six of the nine countries with available data; increases ranged from less than 1 pupil per teacher in three countries – Ecuador, Indonesia and Mexico – to 11.4 pupils per teacher in India. Secondary ratios decreased in three countries – Brazil, Peru and the United States – although these decreases were relatively small.
- In terms of percentage change, India experienced the largest increase (50.2%), followed by Nigeria (18.5%) and China (15.6%). Decreases ranged from about 2% in the United States to 5.5% in Peru.
- Overall, countries tended to improve with decreases in regional disparities in secondary pupil-teacher ratios between the mid-1990s and a more recent school year. China and Ecuador showed a substantial improvement on all four equity measures over the period; Nigeria and the United States improved on three measures. Brazil also improved substantially on two measures but had a large decline in equity on the Gini coefficient.
- India had mixed change in the four equity measures over the period, with a decline in equity on two measures but an improvement in equity on the coefficient of variation and the Gini coefficient. Peru also had mixed change with an improvement on the adjusted McLoone Index and declines on the range ratio and coefficient of variation.
- Over the period disparity increased in Mexico on all four measures, and in Indonesia on three measures. Changes in both countries were small and Indonesia had a small decrease in the Gini coefficient.

Table 6.13. Change in national average public secondary pupil-teacher ratios

Country (year)	1995 ratio	2002 ratio	Change between 1995 and 2002	Percent change between 1995 and 2002
Argentina (2001)	*	19.1	*	*
Brazil (2001)	19.5	18.7	-0.8	-4.1
China (2001)	16.0	18.5	2.5	15.6
Ecuador (2000/01)	13.7	13.9	0.2	1.5
Egypt (2001)	*	19.1	*	*
India (1996/97, 2000/01)	22.7	34.1	11.4	50.2
Indonesia (1994/95, 2001/02)	14.7	15.5	0.8	5.4
Mexico (1995/96, 2002/03)	18.8	19.0	0.2	1.1
Nigeria (1997, 2001)	27.1	32.1	5.0	18.5
Pakistan (2001)	*	14.7	*	*
Peru (1995, 2002)	20.1	19.0	-1.1	-5.5
United States (1995, 2000/01)	13.1	12.8	-0.3	-2.3

* Not available.
Source: See Annex 1 for notes.

Table 6.14. Horizontal equity measures of public secondary pupil-teacher ratios, 1995 and 2002

Country (year)	Range ratio		Coefficient of variation		Gini coefficient		Adjusted McLoone Index	
	1995	2002	1995	2002	1995	2002	1995	2002
Argentina (2001)	*	3.3	*	0.33	*	0.22	*	1.29
Brazil (2001)	5.7	1.8	0.23	0.17	0.05	0.24	1.15	1.15
China (2001)	1.7	1.6	0.14	0.12	0.07	0.05	1.13	1.08
Ecuador (2000/01)	2.7	2.3	0.27	0.20	0.13	0.11	1.33	1.18
Egypt (2001)	*	3.6	*	0.28	*	0.12	*	1.22
India (1996/1997, 2000/01)	3.9	4.2	0.36	0.32	0.14	0.11	1.34	1.39
Indonesia (1994/95, 2001/02)	1.5	1.7	0.11	0.12	0.07	0.06	1.08	1.10
Mexico (1995/96, 2002/03)	1.7	1.8	0.13	0.16	0.07	0.09	1.13	1.17
Nigeria (1997, 2001)	3.5	2.6	0.32	0.23	0.13	0.13	1.27	1.20
Pakistan (2001)	*	11.8	*	0.86	*	0.23	*	1.95
Peru (1995, 2002)	1.8	2.0	0.15	0.16	0.07	0.07	1.15	1.10
United States (1995, 2000/01)	3.2	2.9	0.27	0.25	0.15	0.15	1.31	1.26

* Not available.

C. Combined primary and secondary education

- Between 1995 and 2002, national combined primary and secondary pupil-teacher ratios decreased in 9 of the 11 countries with available data, did not change in Indonesia and increased in Nigeria by about four pupils per teacher. Decreases ranged from less than one pupil per teacher in Canada, China and India to about three pupils per teacher in Peru and South Africa.
- In terms of percentage change, Nigeria experienced the largest change in national average combined primary and secondary ratios (12.8%), followed by Peru (-9.6%) and Brazil (-9.2%).

Table 6.15. Change in national average public combined primary and secondary pupil-teacher ratios

Country (Year)	1995 ratio	2002 ratio	Change between 1995 and 2002	Percent change between 1995 and 2002
Argentina (2001)	*	16.6	*	*
Brazil (1996, 2001)	24.0	21.8	-2.2	-9.2%
Canada (1996/97, 1999/00)	16.9	16.3	-0.6	-3.6%
China (2001)	20.5	20.3	-0.2	-0.01%
Ecuador (1995/96, 2000/01)	22.1	20.9	-1.2	-5.4%
Egypt (2001)	*	20.8	*	*
India (1996/97, 2000/01)	37.6	37.5	-0.1	-0.3%
Indonesia (1994/95, 2001/02)	19.5	19.5	0	0%
Mexico (1995/96, 2002/03)	24.3	23.1	-1.2	-4.9%
Nigeria (1997, 2001)	33.7	38.0	4.3	12.8%
Pakistan (2001)	*	27.7	*	*
Peru (1995, 2002)	26.0	23.5	-2.5	-9.6%
Russian Federation (2001/02)	*	12.6	*	*
South Africa (1995, 2001)	36.8	33.9	-2.9	-7.9%
United States (1995, 2000/01)	17.3	16.0	-1.3	-7.5%

* Not available. *Source:* See Annex 1 for notes.

- South Africa is the only country that showed a large improvement on all four equity measures between the mid-1990s and a more recent school year. China improved on three of the measures and Ecuador improved on two measures but had a small increase in the adjusted McLoone Index over the period.
- Five countries – Brazil, India, Nigeria, Peru and the United States – moved in the direction of greater disparity on three measures over the period. Brazil had a large decline in equity on the Gini coefficient.
- Canada and Indonesia had mixed but small changes in the four equity measures for combined primary and secondary education while Mexico had only a small change on one measure.

Table 6.16. Horizontal equity measures of public combined primary and secondary pupil-teacher ratios, 1995 and 2002

Country (year)	Range ratio		Coefficient of variation		Gini coefficient		Adjusted McLoone Index	
	1995	2002	1995	2002	1995	2002	1995	2002
Argentina (2001)	*	2.5	*	0.18	*	0.11	*	1.14
Brazil (1996, 2001)	1.8	1.7	0.13	0.14	0.03	0.20	1.12	1.13
Canada (1996/97, 1999/00)	1.3	1.4	0.10	0.13	**	**	1.04	1.03
China (2001)	1.9	2.0	0.17	0.16	0.09	0.08	1.17	1.12
Ecuador (1995/96, 2000/01)	2.7	2.2	0.23	0.20	0.10	0.10	1.13	1.15
Egypt (2001)	*	4.2	*	0.28	*	0.11	*	1.15
India (1996/97, 2000/01)	3.3	3.8	0.32	0.33	0.11	0.11	1.29	1.33
Indonesia (1994/95, 2001/02)	2.0	2.2	0.15	0.16	0.08	0.08	1.12	1.11
Mexico (1995/96, 2002/03)	1.5	1.5	0.10	0.11	0.06	0.06	1.09	1.09
Nigeria (1997, 2001)	4.2	4.6	0.39	0.41	0.15	0.21	1.37	1.36
Pakistan (2001)	*	1.9	*	0.22	*	0.10	*	1.19
Peru (1995, 2002)	1.8	2.1	0.13	0.16	0.05	0.06	1.10	1.10
Russian Federation (2001/02)	*	2.2	*	0.17	*	0.12	*	1.12
South Africa (1995, 2001)	1.6	1.2	0.14	0.07	0.07	0.04	1.15	1.06
United States (1995, 2000/01)	1.7	1.8	0.13	0.14	0.08	0.08	1.10	1.14

* Not available.
** Missing raw data – unable to calculate.

D. Summary of findings

Figure 6.15 provides a comparison of changes in the four horizontal equity measures across the three levels of education for each country. An improvement in equity is noted where countries improved on at least two of the four equity measures; a decline in equity is noted for countries that declined on at least two measures. Mixed change indicates countries that tended to improve (or decline) on only two measures and decline (or improve) on at least one other measure.

- Improvements in equity varied across the three levels of education in three countries, with no country improving in horizontal equity at all three levels of education between 1995 and 2002.

- China improved at the secondary and the combined primary and secondary levels but had a small decline at the primary level; India improved in primary education, but became less equitable in combined primary and secondary education and had no clear movement in secondary education; and two countries – Ecuador and the United States – improved in equity at the secondary level but declined in equity at primary and combined primary and secondary levels, respectively; Peru had a similar pattern but with mixed change at the secondary level.
- Although Nigeria improved in equity at the secondary level, it had significant declines in equity over the period in primary and combined primary and secondary education.
- In contrast, Brazil had no clear movement, with mixed change in equity at the primary and secondary levels of education and a decline in equity at the combined primary and secondary level. At all three levels of education Brazil had large increases in the Gini coefficient over the period.
- Indonesia also tended to have no clear movement, with mixed change in combined primary and secondary education and only small declines in equity at the primary and secondary levels. Mexico had small declines in primary and secondary education and no change in combined primary and secondary education.

Figure 6.15. Comparison of change in horizontal equity measures, by level of education

	Improvement in equity	Mixed change in equity	Decline in equity
Primary	India	Brazil*	China* Ecuador* Indonesia* Mexico* Nigeria Peru
Secondary	China Ecuador Nigeria United States	Brazil* India Peru	Indonesia* Mexico
Combined primary and secondary	China South Africa	Canada* Ecuador* Indonesia*	Brazil India Nigeria Peru United States*

* Small change: change of 0.02 or less on the coefficient of variation, Gini coefficient or adapted McLoone Index; or a change of 0.20 or less on the range ratio.

V. Changes in equal educational opportunity

A. Regional wealth and pupil-teacher ratios

In **Table 6.17** we show the correlations between GRP per capita and pupil-teacher ratios at the primary, secondary and combined primary and secondary levels for both 1995 and 2002. Following the table, trends are discussed for those countries where pupil-teacher ratios for both years are available.

- Between the mid-1990s and the most current year, wealthier regions increasingly tended to have lower pupil-teacher ratios in four countries – Brazil, China, India and Peru – at all three levels of education; in Mexico at the secondary level; and in Canada at the combined primary and secondary level. In the case of Peru, this change is particularly striking because it shifted from having no relationship between regional wealth and ratios in 1995 to an almost strong negative relationship in 2002.
- In South Africa, equal educational opportunity improved substantially over the period at the combined primary and secondary level, the only level with available pupil-teacher ratios, with a shift from a strong negative relationship to no relationship between regional wealth and ratios. Equal educational opportunity improved in Mexico at the combined primary and secondary level, where there was no longer a tendency for wealthier regions to have lower ratios.
- In three countries – Indonesia, Nigeria and the United States – there continued to be no relationship between regional wealth and pupil-teacher ratios at all three levels in 2002. There was also no change in equal educational opportunity in Egypt at the primary level.

Table 6.17. Correlation between GRP per capita and public pupil-teacher ratios, 1995 and 2002

	Primary education		Secondary education		Combined primary and secondary education	
Country	1995	2002	1995	2002	1995	2002
Argentina	*	-0.57	*	-0.44	*	-0.53
Brazil	-0.14	-0.39	0.12	-0.48	-0.12	-0.47
Canada	*	*	*	*	-0.32	-0.59
China	-0.21	-0.48	0.06	-0.34	-0.21	-0.49
Egypt	-0.29	-0.27	*	-0.32	*	-0.33
India	0.15	-0.48	-0.08	-0.34	-0.17	-0.45
Indonesia	0.17	0.04	0.24	0.03	0.11	-0.04
Mexico	-0.05	0.27	-0.22	-0.33	-0.28	-0.14
Nigeria	-0.15	-0.03	0.08	0.08	-0.11	-0.03
Peru	-0.41	-0.48	-0.02	-0.48	-0.42	-0.56
Russian Federation	*	*	*	*	*	-0.03
South Africa	*	*	*	*	-0.66	0.16
United States	-0.04	-0.10	-0.19	-0.05	-0.12	-0.07

* Not available.

B. Regional population density and pupil-teacher ratios

In **Table 6.18** we show the correlations between regional population density and pupil-teacher ratios at the primary, secondary and combined primary and secondary levels for both 1995 and 2002. Following the table, trends in urban/rural disparity are discussed for those countries for which pupil-teacher ratios for both years are available.

- Overall, there tended to be small changes in the relationship between regional population density and pupil-teacher ratios in most countries between the mid-1990s and the most current school year. Peru stands out as the only country where this relationship changed significantly: at the primary level the tendency for more urban regions to have higher pupil-teacher ratios weakened over the period; at the secondary and combined primary and secondary levels this relationship became insignificant.
- Brazil is the only country where pupil-teacher ratios increasingly tended to be lower in more urban regions over the period and this occurred at the secondary level. More urban regions continued to have higher ratios in two additional countries: Canada in combined primary and secondary education, and Ecuador at all three levels – although in Ecuador the relationship changed from a strong to moderate one at the combined primary and secondary level.
- In Indonesia, the relationship between regional population density and pupil-teacher ratios in primary and secondary education shifted from being weak positive to insignificant. In Nigeria the relationships shifted from weak negative to insignificant at the primary level.
- Six countries continued to have no relationship between regional population density and pupil-teacher ratios in at least two levels of education: China, India and the United States at all three levels; Brazil in primary and combined primary and secondary education; Mexico in primary and secondary education; and Nigeria in secondary and combined primary and secondary education.

Table 6.18. Correlation between regional population density and public pupil-teacher ratios, 1995 and 2002

Country	Primary education		Secondary education		Combined primary and secondary education	
	1995	2002	1995	2002	1995	2002
Argentina	*	-0.59	*	-0.34	*	-0.55
Bangladesh	*	0.36	*	*	*	*
Brazil	-0.02	-0.12	-0.15	-0.37	-0.09	-0.21
Canada	*	*	*	*	0.52	0.55
China	-0.03	-0.21	0.23	-0.09	-0.02	-0.21
Ecuador	0.64	0.60	0.74	0.72	0.58	0.48
Egypt	0.08	0.07	*	-0.04	*	-0.01
India	0.03	-0.14	0.08	-0.11	-0.01	-0.13
Indonesia	0.29	0.19	0.34	0.05	0.16	0.02
Mexico	-0.02	0.05	-0.08	-0.23	-0.16	-0.25
Nigeria	-0.25	-0.20	0.02	0.03	-0.21	-0.16
Pakistan	*	-0.20	*	0.23	*	0.25
Peru	0.46	0.31	0.39	0.23	0.34	0.23
Russian Federation	*	*	*	*	*	0.22
South Africa	*	*	*	*	-0.08	0.04
United States	-0.06	-0.10	-0.17	-0.05	-0.16	-0.14

* Not available.

Appendix 1: Sources, methods and technical notes

Unless noted otherwise, data for the following administrative regions within countries are used in the analyses of horizontal equity and equal educational opportunity:

Argentina:	23 provinces, 1 autonomous city
Bangladesh:	64 districts
Brazil:	26 states, 1 federal district
Canada:	10 provinces, 3 territories
China:	5 autonomous regions, 4 municipalities, 22 provinces
Ecuador:	22 provinces
Egypt:	27 governorates
India:	28 states, 7 union territories
Indonesia:	27 provinces, 1 special capital city district, 2 union territories
Mexico:	31 states, 1 federal district
Nigeria	36 states, 1 territory
Pakistan:	1 capital territory, 2 centrally administered areas, 4 provinces, 1 territory
Peru:	24 departments, 1 constitutional province
Russian Federation:	49 oblasts, 21 republics, 10 autonomous okrugs, 6 krays, 2 federal cities, 1 autonomous oblast
South Africa:	9 provinces
United States:	50 states, 1 district

Gross Domestic Product (GDP) per capita in national currency

Definition:
Total value of goods and services produced in a country, in current prices, divided by the country's total population.

Notes:
For five countries (Argentina, Canada, China, Peru, the United States), GDP per capita in national currency is calculated using raw data (GDP and total population). For most of these countries, GDP per capita is calculated using domestic product and population figures for the same year. In the case of Canada, population data for 1996 are used with GDP for 1999 to calculate GDP per capita and both years of GDP are in 1997 chained Canadian dollars. In the case of China, population data from 1995 and 2000 are used with GDP for 1994 and 2001, respectively, to calculate GDP per capita.

For the remaining countries, GDP per capita in national currency was available in the form presented in the report. In the case of Nigeria, mean household income is used as a proxy for GDP per capita

For most countries GDP per capita is reported in current prices. In the case of Egypt, GDP per capita is in real (purchasing power parity) dollars.
Data are primarily taken from reports and databases that present final figures. In the case of Peru, 2000 data are preliminary figures.

Country	Source	Year(s) of data
Argentina	National Institute of Statistics and Censuses (www.indec.mecon.ar)	2001, 1993
Bangladesh	*	*
Brazil	Brazilian Institute of Geography and Statistics, Ministry of Planning, Budget and Management	1999, 1996
Canada	Statistics Canada (www.statcan.ca)	2001, 1999
China	2001: National Bureau of Statistics of China, statistical yearbook 2001 1994: China Data Center, University of Michigan (www.chinadatacenter.org), China statistical yearbook 1996	2001, 1994
Ecuador	The World Factbook (http://www.cia.gov/cia/publications/factbook/geos/no.html)	2004
Egypt	2000/01: United Nations Development Programme, Institute of National Planning, Egypt human development report 2003 1996/97: United Nations Development Programme, Institute of National Planning, Egypt human development report 1997/98	2000/01, 1996/97
India	Government of India Ministry of Statistics and Programme Implementation, National Accounts Division	2001/02, 1995/96
Indonesia	2000: Statistics Indonesia, Statistical yearbook of Indonesia 2002; 1995: Statistics Indonesia, Statistical yearbook of Indonesia 1995	2000, 1995
Mexico	National Institute of Statistics, Geography and Information (www.inegi.gob.mx), SCNM gross product for federal states	2001, 1995
Nigeria	Federal Office of Statistics, Annual abstract of statistics, 1999 edition	1996/97
Pakistan	*	*
Peru	National Institute of Statistics and Information, National Direction of National Accounts	2000, 1995
Russian Federation	Ministry of Education of the Russian Federation, Statistical information-analytical collection of “minobrazovaniya” of Russia: Problems and the trend of development of formation in the Russian Federation, 2002	2001
South Africa	National Treasury (www.treasury.gov.za), Intergovernmental fiscal review, Annexure H, 2003	1999, 1996
United States	U.S. Department of Commerce, Bureau of Economic Analysis, Regional economic accounts	2000, 1995

* Data not available.

Gross Regional Product (GRP) per capita

Definition:
Total value of goods and services produced in a region, in current prices, divided by the region’s population.

Notes:
For five countries (Argentina, Canada, China, Peru, the United States), GRP per capita is calculated using raw data (GRP and total population). For most of these countries, GRP per capita is calculated using regional product and population figures for the same year. In the case of Canada, regional population data for 1996 are used with GRP for 1999 to calculate GRP per capita and both years of GRP per capita are in 1997 chained Canadian dollars. In the case of China, population data from 1995 and 2000 are used with GRP for 1994 and 2001, respectively, to calculate GRP per capita.

For the remaining countries, GRP per capita was available in the form presented in the report. In the case of Nigeria, mean household income is used as a proxy for GDP per capita

For most countries GRP per capita is reported in current prices. In the case of Egypt, GRP per capita is in real (purchasing power parity) dollars.

Data are primarily taken from reports and databases that present final figures. In the case of Peru, 2000 data are preliminary figures.

Country	Source	Year(s) of data	Missing data
Argentina	National Institute of Statistics and Censuses, Ministry of Economics and Production (www.indec.mecon.ar)	2001, 1993	None
Bangladesh	*	*	*
Brazil	Brazilian Institute of Geography and Statistics, Ministry of Planning, Budget and Management	1999, 1996	None
Canada	Statistics Canada (www.statcan.ca)	2001, 1999	None
China	2001: National Bureau of Statistics of China, statistical yearbook 2001; 1994: China Data Center, University of Michigan (www.chinadatacenter.org), China statistical yearbook 1996	2001, 1994	1994: 1 municipality (Chongqing)
Ecuador	*	*	*
Egypt	2000/2001: United Nations Development Programme, Institute of National Planning, Egypt human development report 2003 1996/1997: United Nations Development Programme, Institute of National Planning, Egypt human development report 1997/1998	2000/01, 1996/97	1996/1997: 6 governorates (Luxor, Matrouh, New Valley, North Sinai, Red Sea, South Sinai)
India	Government of India Ministry of Statistics and Programme Implementation, National Accounts Division	2001/02, 1995/96	2001/2002: 2 states and 3 union territories (Dadra and Nagar Haveli, Daman and Diu, Jammu and Kashmir, Lakshadweep, Nagaland); 1995/1996: 3 union territories (Dadra and Nagar Haveli, Daman and Diu, Lakshadweep)
Indonesia	2000: Statistics Indonesia, Statistical yearbook of Indonesia 2002; 1995: Statistics Indonesia, Statistical yearbook of Indonesia 1995	2000, 1995	1995: 4 provinces (Banten, Gorontalo, Kep. Bangka Belitung, Maluku Utara)
Mexico	National Institute of Statistics, Geography and Information (www.inegi.gob.mx), SCNM gross product for federal states	2001, 1995	None
Nigeria	Federal Office of Statistics, Annual abstract of statistics, 1999 edition	1996/97	4 states (Bayelsa, Ebonyi, Ekiti, Nassarawa)

Country	Source	Year(s) of data	Missing data
Pakistan	*	*	*
Peru	National Institute of Statistics and Information, National Direction of National Accounts	2000, 1995	2000, 1995: 1 constitutional province (Callao)
Russian Federation	Ministry of Education of the Russian Federation, Statistical information-analytical collection of "minobrazovaniya" of Russia: Problems and the trend of development of formation in the Russian Federation, 2002	2001	9 autonomous okrugs (Aginskiy Buryatskiy, Evenkiyskiy, Khanty-Mansiyskiy, Komi-Permyatsky, Koryakskiy, Nenetskiy, Taimyr, Ust-Ordynsky Buriatsky, Yamalo-Nenetsky) and 1 republic (Chechnya)
South Africa	National Treasury (www.treasury.gov.za), Intergovernmental fiscal review, Annexure H, 2003	1999, 1996	None
United States	U.S. Department of Commerce, Bureau of Economic Analysis, Regional economic accounts	2000, 1995	None

* Data not available.

National and regional population density (RPD)

Definition of national population density:
Total population in a country divided by total area in square kilometers.

Definition of RPD:
Regional population divided by a region's area in square kilometers.

Notes:
For all countries, national population density and RPD are calculated using raw data (area, total population, population by region).

Population

Definition:
Total number of people living in an area.

Country	Source	Year(s) of data	Missing data
Argentina	National Institute of Statistics and Censuses, Ministry of Economics and Production (www.indec.mecon.ar)	2001, 1991	None
Bangladesh	Bangladesh Bureau of Statistics	2001	None
Brazil	Brazilian Institute of Geography and Statistics, Ministry of Planning, Budget and Management	2000, 1996	None
Canada	Statistics Canada (www.statcan.ca), Population and dwelling counts	2001, 1996	None
China	2001: National Bureau of Statistics of China, statistical yearbook 2001 1994: China Data Center, University of Michigan (www.chinadatacenter.org), China statistical yearbook 1996	2000, 1995	1995: 1 municipality (Chongqing)
Ecuador	Utrecht University Library, Population statistics (www.library.uu.nl)	2001	None
Egypt	2000/2001: United Nations Development Programme, Institute of National Planning, Egypt human development report 2003 1996/1997: United Nations Development Programme, Institute of National Planning, Egypt human development report 1997/1998	2001, 1996	1996: 1 governorate (Luxor)
India	Statoids (www.statoids.com/statoids.html)	2001	None
Indonesia	Statistics Indonesia	2000, 1995	1995: 4 provinces (Banten, Gorontalo, Kep. Bangka Belitung, Maluku Utara)
Mexico	National Institute of Statistics, Geography and Information (www.inegi.gob.mx)	2000, 1995	None
Nigeria	2004: World Gazetteer (www.world-gazetteer.com) 1995: Federal Office of Statistics, Annual abstract of statistics, 1999 edition	2004, 1995	1995: 6 states (Bayelsa, Ebonyi, Ekiti, Gombi, Nassarawa, Zamfara)
Pakistan	1998: GeoHIVE Global Statistics (www.geohive.com)	1998	None
Peru	Institute of National Statistics and Information, Office of Technical Administration, Peru: Population projections for calendar years according to departments, provinces and districts (Period 1990-2005)	2000, 1995	None
South Africa	2001: Statistics South Africa, Census 2001 (http://www.statssa.gov.za/) 1995: Central Statistical Service, RSA statistics in brief	2001, 1995	None
Russian Federation	Ministry of Education of the Russian Federation, Statistical information-analytical collection of “minobrazovaniya” of Russia: Problems and the trend of development of formation in the Russian Federation, 2002	2001, 1996	None
United States	U.S. Department of Commerce, Census Bureau, Population estimates (www.census.gov)	2000, 1995	None

Primary enrolment ratios

Definition:
For most countries, gross enrolment ratios are used in the analysis. Gross enrolment ratios are calculated by dividing the total number of students enrolled in primary or secondary education (regardless of their age) by the total population at the theoretical ages for that level of education (e.g. 6 to 11 years for primary education or 12 to 17 years for secondary education). In instances where gross ratios were not available, net enrolment rates are used in the analysis. Net rates are calculated by dividing the number of students at the theoretical age enrolled in primary or secondary education by the total population at the theoretical age for that level of education.

Notes:
For most countries, primary enrolment ratios were available in the form presented in the report. In the case of Brazil, ratios were calculated using data on enrolment and population.

In the case of Pakistan, the administrative regions used for the analysis of primary enrolment ratios differ from those used for expenditure per pupil and pupil-teacher ratios: primary enrolment ratios are examined at the district level within the four provinces (there are 103 districts).

Two countries – Canada and the United States – are excluded from the analysis of primary enrolment ratios because enrolment ratios in primary education are at or close to 100% in all regions in these countries.

Country	Method of calculation	Source	Year(s) of data	Missing data
Argentina	Gross enrolment ratio in primary and lower secondary education (ISCED 1 + 2A)	Ministry of Education, Science and Technology; National census of population, homes and dwellings 2001	2001	None
Bangladesh	Gross enrolment ratios in primary education (ISCED 1)	Bangladesh Bureau of Educational Information and Statistics, Primary education statistics in Bangladesh, 2002	2001	None
Brazil	Gross enrolment ratios in primary education (ISCED 1)	Ministry of Education, National Institute of Studies and Educational Research	2002	None
Canada	*	*	*	*
China	Net enrolment rates in primary education (ISCED 1)	Ministry of Education, Department of Development & Planning, China, Essential statistics of education in China 2001	2001	None
Ecuador	**	**	**	**

Country	Method of calculation	Source	Year(s) of data	Missing data
Egypt	Gross enrolment ratios in primary education (ISCED 1)	United Nations Development Programme, Institute of National Planning, Egypt human development report 2003	2000/01	None
India	Gross enrolment ratios in primary education (ISCED 1)	Ministry of Human Resource Development, India	2001/02	None
Indonesia	Gross enrolment ratios in primary education (ISCED 1)	Ministry of National Education, Indonesia	2005	1 province (Papua)
Mexico	Gross enrolment ratio of 6-12 year olds	National Institute of Statistics, Geography and Information; XII general census of population and dwellings, 2000	2000	None
Nigeria	**	**	**	**
Pakistan	Participation of school-going children ages 5 to 9 years	Ministry of Education, Pakistan, District information and provincial projections	1998	None
Peru	Net enrolment rate in primary education (ISCED 1)	National Institute of Statistics, National survey of homes 2003	2003	None
Russian Federation	Gross enrolment ratios in primary education (ISCED 1)	Ministry of Education	2003/04	1 oblast (Sverdlovskaya)
South Africa	Gross enrolment ratios in primary education (ISCED 1)	Department of Education, Education statistics in South Africa at a glance in 2001, 2003	2001	None
United States	*	*	*	*

* Excluded from the analysis.
** Data not available.

Primary pupil-teacher ratios

Definition:
The number of teachers in public primary education in a country or region divided by the public school enrolment in that area.

Notes:
Primary pupil-teacher ratios are calculated using raw data (primary enrolment and teacher counts) in the case of 11 countries: Argentina, Bangladesh, Brazil (1996 only), Ecuador, Egypt (2001 only), India, Indonesia, Mexico, Nigeria, Peru and the United States. For the remaining countries, primary pupil-teacher ratios were available in the form presented in the report.

All primary pupil-teacher ratios are assumed to be for public schools only except for four countries for which private schools are also included in the ratios: Egypt (1996 only), India, Mexico and Nigeria.

In the case of the United States, some schools are not classified as either primary or secondary schools. These "unclassified" teachers are excluded from the calculation of primary pupil-teacher ratios because this category also includes those teaching secondary grades in unclassified schools. Consequently, this inflates primary pupil-teacher ratios for 35 of the 50 states.

Country	Method of calculation	Source	Year(s) of data	Missing data
Argentina	Student enrolment in primary education (ISCED 1) divided by the number of primary teachers	Ministry of Education, Science and Technology	2001	None
Bangladesh	Student enrolment in government primary education (ISCED 1) divided by the number of government primary teachers	Bangladesh Bureau of Educational Information and Statistics, Primary education statistics in Bangladesh, 2002	2001	None
Brazil	Student enrolment in primary education (ISCED 1) divided by the number of primary teachers	2001: Ministry of Education, National Institute of Studies and Educational Research, School census 2001 and Brazilian Institute of Geography and Statistics; 1996: Ministry of Education, National Institute of Studies and Educational Research	2001, 1996	None
Canada	*	*	*	*
China	Student enrolment in primary education (ISCED 1) divided by the number of primary teachers	Ministry of Education, Department of Development & Planning, China, Essential statistics of education in China 2001	2001, 1995	1995: 1 municipality (Chongqing)
Ecuador	Student enrolment in primary education (ISCED 1) divided by the number of full-time primary teachers	Ministry of Education and Culture	2000/01, 1995/96	1995/96: data for 1 province that was not created until 1998 (Orellana)
Egypt	2001: student enrolment in primary education (ISCED 1) divided by the number of primary teachers 1996/1997: primary pupil-teacher ratios (ISCED 1)	Central Agency for Public Mobilisation and Statistics, The statistical yearbook 1994-2001, June 2002 1996/1997: United Nations Development Programme, Institute of National Planning, Egypt human development report 1997/1998	2001, 1996/97	1996/97: 1 governorate (Luxor)
India	Student enrolment in primary/junior basic schools (ISCED 1) divided by the number of primary teachers	Government of India Department of Education	2001/02, 1996/97	1996/97: 3 states (Chhattisgarh, Jharkhand, Uttaranchal)

Country	Method of calculation	Source	Year(s) of data	Missing data
Indonesia	Student enrolment in primary schools (ISCED 1) divided by the number of primary teachers	2000: Statistics Indonesia, Statistical yearbook of Indonesia 2002; 1995: Statistics Indonesia, Statistical yearbook of Indonesia 1995	2001/02, 1994/95	1994/95: 5 provinces (Banten, Gorontalo, Kep. Bangka Belitung, Maluku Utara, Papua)
Mexico	Student enrolment in primary school (ISCED 1) divided by the number of primary teachers	Office of the Secretary of Public Education	2002/03, 1995/96	None
Nigeria	Student enrolment in primary education (ISCED 1) divided by the number of primary teachers	Federal Ministry of Education, Baseline 2001: A handbook of information on basic education in Nigeria, 2003	2001, 1997	None
Pakistan	Student enrolment in primary stage (ISCED 1), divided by the number of primary teachers	Ministry of Education, Academy of Educational Planning and Management, Pakistan school education statistics 2000-2001	2000/01	None
Peru	Student enrolment in primary stage (ISCED 1) divided by the number of primary teachers; for 2002, "escolarizada" student and teacher counts are used	2002: Ministry of Education, Education Statistics Unit, Basic statistics 2002 1995: Ministry of Education and Culture	2002, 1995	None
Russian Federation	*	*	*	*
South Africa	*	*	*	*
United States	Student enrolment in preprimary and primary education (ISCED 0 + 1) divided by the number of elementary teachers	U.S. Department of Education, National Center for Education Statistics, Common core of data surveys	2000/01, 1995	None

* Data not available.

Combined primary and secondary expenditure per pupil

Definition:
The total value of all government expenditure on public combined primary and secondary education in a country or region, divided by the number of public combined primary and secondary school students in that area.

Notes:
Combined primary and secondary expenditure per pupil is calculated using raw data (combined primary and secondary enrolment and education expenditure) in the case of four countries: China, India, Mexico and South Africa. In the case of Argentina and Brazil, actual expenditure per student for primary and secondary education was used along with student enrolment to calculate combined primary and secondary expenditure per pupil.

Appendix 1

Country	Method of calculation	Source	Year(s) of data	Missing data
Argentina	Educational public expenditure per student (ISCED 0 + 1 + 2A + 3A)	Ministry of Education, Science and Technology; "Relevamientos Anuales 1996-2001, REDFIED, MECyT"	2001, 1996	None
Bangladesh	*	*	*	*
Brazil	Average public education expenditure per student enrolled in primary–secondary education (ISCED 1 + 2A + 3A)	Ministry of Education, National Institute of Studies and Educational Research, "Revista Brasileira de estudos pedagógicos (RBEP)"	1999, 1995	None
Canada	Elementary-secondary (ISCED 1 + 2A + 3A) expenditure per full-time equivalent student (including school board expenditures, less adult education expenses, plus spending by the departments of education on contributions to teachers' pension plans and services to school boards)	Statistics Canada (www.statcan.ca)	1999, 1996	1999, 1996: Nunavut is combined with the Northwest territories
China	Government appropriation for education divided by student enrolment in primary (ISCED 1) and secondary (ISCED 2A + 3A + 3C) education	China Data Center, University of Michigan (www.chinadatacenter.org), China statistical yearbook 2001	1999	None
Ecuador	*	*	*	*
Egypt	Regional expenditure per student enrolled in primary (ISCED 1) education	Dr. Mohammmed Ragheb, Mansoura University	2003/04	1 governorate (Behera)
India	The combined percentage of budgeted educational expenditure on primary and secondary education (ISCED 1 + 2 + 3) multiplied by the total expenditure on education, and then divided by student enrolment in primary–secondary education; expenditure per pupil are assumed to be in rupees	Ministry of Human Resource Development, Analysis of Budgeted Expenditure on Education 1994/95 to 1996/97	1996/97	3 states (Chhattisgarh, Jharkhand, Uttaranchal)
Indonesia	*	*	*	*
Mexico	Primary–secondary education expenditure divided by student enrolment in primary–secondary education (ISCED 1 + 2A + 3A)	Office of the Secretary of Public Education	2002	None
Nigeria	*	*	*	*
Pakistan	*	*	*	*

Country	Method of calculation	Source	Year(s) of data	Missing data
Peru	Educational public expenditure per student	Ministry of Economics and Finance, Integrated System of Finance Administration 2003	2003	None
Russian Federation	Regional and consolidated educational budget per capita (ISCED 1 + 2A + 3A)	Ministry of Education of the Russian Federation, Statistical information-analytical collection of "minobrazovaniya" of Russia: Problems and the trend of development of formation in the Russian Federation, 2002	2001	1 republic (Chechnya)
South Africa	Expenditure of provincial education departments on public ordinary primary and secondary education divided by student enrolment in primary–secondary education (ISCED 1 + 2A + 3A + 3B + 3C)	Department of Education, Expenditure of provincial education departments for 1998/99 (including expenditure for 1995/96 to 1997/98), March 2000	1998/99, 1995/96	None
United States	Total and current expenditure per pupil (including capital expenditure and interest on school debt) in public elementary and secondary education (ISCED 1 + 2A + 3A)	U.S. Department of Education, National Center for Education Statistics, Common core of data surveys	2000/01, 1994/95	None

* Data not available.

Combined primary and secondary pupil-teacher ratios

Definition:
The number of teachers in public combined primary and secondary education in a country or region divided by the respective public school enrolment in that area.

Notes:
All combined primary and secondary pupil-teacher ratios are assumed to be for public schools only except for four countries for which private schools are also included in the ratios: Canada, India, Mexico and Nigeria.

Combined primary and secondary pupil-teacher ratios are calculated using raw data (combined primary and secondary enrolment and teacher counts) in the case of 12 countries: Argentina, Brazil (1996 only), China, Ecuador, Egypt, India, Indonesia, Mexico, Nigeria, Peru, South Africa and the United States. For the remaining countries, combined primary and secondary pupil-teacher ratios were available in the form presented in the report. In the case of Canada, the country ratio excludes Quebec, and the 1999/00 ratio for the Northwest Territories is an estimate.

Country	Method of calculation	Source	Year(s) of data	Missing data
Argentina	Student enrolment in primary and secondary (ISCED 1 + 2A + 3A) education divided by the number of teachers at these levels of education	Ministry of Education, Science and Technology	2001	None
Bangladesh	*	*	*	*
Brazil	Student enrolment in primary and secondary education (ISCED 1 + 2A + 3A) divided by the number of teachers at these levels of education	2001: Ministry of Education, National Institute of Studies and Educational Research, School census 2001; and Brazilian Institute of Geography and Statistics 1996: Ministry of Education, National Institute of Studies and Educational Research	2001, 1996	None
Canada	Pupil-educator ratio in elementary-secondary education (ISCED 1 + 2 + 3)	Statistics Canada (www.statcan.ca), Elementary-secondary educational staff survey and elementary-secondary school enrolment survey	1999/00, 1996/97	1999/00, 1996/97: 1 territory (Nunavut)
China	Student enrolment in primary (ISCED 1), junior secondary (ISCED 2A), senior secondary (ISCED 3A) and vocational senior secondary (ISCED 3C) education, divided by the number of teachers at these levels of education	Ministry of Education, Department of Development & Planning, Essential statistics of education in China 2001	2001, 1995	1995: 1 municipality (Chongqing)
Ecuador	Student enrolment in primary and secondary education (ISCED 1 + 2A + 3A) divided by the number of teachers at these levels of education	Ministry of Education and Culture	2000/01, 1995/96	1995/96: data for 1 province that was not created until 1998 (Orellana)
Egypt	Student enrolment in primary, preparatory and secondary education (ISCED 1+ 2A + 3A) divided by the number of teachers at these levels of education	Central Agency for Public Mobilisation and Statistics, The statistical yearbook 1994-2001, June 2002	2001	None
India	Student enrolment in primary/junior basic school, middle senior/ basic school, high post basic schools and higher secondary education (ISCED 2 + 3) divided by the number of teachers at these levels of education	Government of India Department of Education	2001/02, 1996/97	1996/97: 3 states (Chhattisgarh, Jharkhand, Uttaranchal)

Country	Method of calculation	Source	Year(s) of data	Missing data
Indonesia	Student enrolment in primary (ISCED 1), junior high schools (ISCED 2A), general senior high schools (ISCED 3A) and vocational senior high schools (ISCED 3B), divided by the number of teachers at these levels of education	2000: Statistics Indonesia, Statistical yearbook of Indonesia 2002. 1995: Statistics Indonesia, Statistical yearbook of Indonesia 1995	2001/02, 1994/95	1994/95: 5 provinces (Banten, Gorontalo, Kep. Bangka Belitung, Maluku Utara, Papua)
Mexico	Student enrolment in primary and secondary education (ISCED 1 + 2A + 3A) divided by the number of teachers at these levels of education	Office of the Secretary of Public Education	2002/03, 1995/96	None
Nigeria	Student enrolment in primary and secondary education (ISCED 1 + 2A + 2C + 3A + 3B + 3C) divided by the number of primary and post-primary teachers	Federal Ministry of Education, Baseline 2001: A handbook of information on basic education in Nigeria, 2003	2001, 1997	None
Pakistan	Student enrolment in primary stage, middle stage, high stage and high secondary divided by the number of teachers at these levels of education; these levels of education are assumed to be ISCED 1, 2A and 3A	Ministry of Education, Academy of Educational Planning and Management, Pakistan school education statistics 2000-2001	2000/01	None
Peru	Student enrolment in primary and secondary education (ISCED 1 + 2A + 3A + 3B) divided by the number of teachers at these levels of education; for 2002, “escolarizada” student and teacher counts are used	2002: Ministry of Education, Education Statistics Unit, Basic statistics 2002 1995: Ministry of Education and Culture	2002, 1995	None
Russian Federation	Pupil-teacher ratio in day-time general education institutions (ISCED 1 + 2A + 3A)	Ministry of Education of the Russian Federation, Statistical information-analytical collection of “minobrazovaniya” of Russia: Problems and the trend of development of formation in the Russian Federation, 2002	2001/02	None
South Africa	Student enrolment in primary and secondary education (ISCED 1 + 2A + 3A + 3B + 3C) divided by the number of teachers at these levels of education	2001: Department of Education, Education statistics in South Africa at a glance in 2001, 2003 1995: Department of Education, Directorate: Information systems	2001, 1995	None
United States	Student enrolment in preprimary, primary and secondary education (ISCED 0 + 1 + 2 + 3) divided by the number of elementary, secondary teachers and unclassified teachers	U.S. Department of Education, National Center for Education Statistics, Common core of data surveys	2000/01, 1995	None

* Data not available.

Secondary enrolment ratios

Definition:
For most countries, gross enrolment ratios are used in the analysis. Gross enrolment ratios are calculated by dividing the total number of students enrolled in primary or secondary education (regardless of their age) by the total population at the theoretical ages for that level of education (e.g. 6 to 11 years for primary education or 12 to 17 years for secondary education). In instances where gross ratios were not available, net enrolment rates are used in the analysis. Net rates are calculated by dividing the number of students at the theoretical age enrolled in primary or secondary education by the total population at the theoretical age for that level of education.

Notes:
For most countries, secondary enrolment ratios were available in the form presented in the report. In the case of three countries – Brazil, Canada and the United States – secondary enrolment ratios are calculated using raw data (secondary enrolment and total population at the theoretical ages for secondary education).

Country	Method of calculation	Source	Year(s) of data	Missing data
Argentina	Gross enrolment ratio in upper secondary education (ISCED 3A)	Ministry of Education, Science and Technology; National census of population, homes and dwellings 2001	2001	None
Bangladesh	*	*	*	*
Brazil	Gross enrolment ratios in secondary education (ISCED 2A + 3A)	Ministry of Education, National Institute of Studies and Educational Research	2002	None
Canada	Population age 15-17 divided by the number of students enrolled in grades 10-12 in public and private schools	Statistics Canada (www.statcan.ca) for census population data; enrolment counts were obtained from individual provincial ministry of education websites	2000/01	3 territories: Northwest, Nunavut, Yukon
China	*	*	*	*
Ecuador	*	*	*	*
Egypt	Gross enrolment ratios in secondary education (ISCED 3A)	United Nations Development Programme, Institute of National Planning, Egypt human development report 2003	2000/01	None
India	Gross enrolment ratios in upper secondary education (ISCED 3A)	Ministry of Human Resource Development, India	2001/02	None
Indonesia	Gross enrolment ratios in senior secondary education (ISCED 3A + 3B)	Ministry of National Education, Indonesia	2005	1 province (Papua)
Mexico	Gross enrolment ratios for 13-15 year olds	National Institute of Statistics, Geography and Information; XII general census of population and dwellings,	2000	None

Country	Method of calculation	Source	Year(s) of data	Missing data
		2000		
Nigeria	*	*	*	*
Pakistan	*	*	*	*
Peru	Net enrolment rate in secondary education (ISCED 2A + 3A + 3B)	National Institute of Statistics, National survey of homes 2003	2003	None
Russian Federation	Gross enrolment ratios in upper secondary education (ISCED 3A + 3B + 3C)	Ministry of Education	2003/04	1 oblast (Sverdlovskaya)
South Africa	Gross enrolment ratios in secondary education (ISCED 2A + 3A + 3B + 3C)	Department of Education, Education statistics in South Africa at a glance in 2001, 2003	2001	None
United States	Population age 15-19 divided by the number of students enrolled in public and private secondary schools (ISCED 2 + 3)	U.S. Department of Education, National Center for Education Statistics, Common core of data surveys; U.S. Department of Commerce, Census Bureau	2001	None

* Data not available.

Secondary pupil-teacher ratios

Definition:
The number of teachers in public secondary education in a country or region divided by the respective public school enrolment in that area.

Notes:
Secondary pupil-teacher ratios are calculated using raw data (secondary enrolment and teacher counts) in the case of 10 countries: Argentina, Brazil (1996 only), China, Egypt, India, Indonesia, Mexico, Nigeria, Peru and the United States. For the remaining countries, secondary pupil-teacher ratios were available in the form presented in the report.

All secondary pupil-teacher ratios are assumed to be for public schools only except for three countries for which private schools are also included in the ratios: India, Mexico and Nigeria.

In the case of the United States, some schools are not classified as either primary or secondary schools. These “unclassified” teachers are excluded from the calculation of secondary pupil-teacher ratios because this category also includes those teaching primary grades in unclassified schools. Consequently, this inflates secondary pupil-teacher ratios in 35 of the 50 states.

Country	Method of calculation	Source	Year(s) of data	Missing data
Argentina	Student enrolment in secondary education (ISCED 2A + 3A) divided by the number of secondary teachers	Ministry of Education, Science and Technology	2001	None
Bangladesh	*	*	*	*
Brazil	Student enrolment in secondary education (ISCED 2A + 3A) divided by the number of secondary teachers	2001: Ministry of Education, National Institute of Studies and Educational Research, School census 2001 and Brazilian Institute of Geography and Statistics; 1996: Ministry of Education, National Institute of Studies and Educational Research	2001, 1996	None
Canada	*	*	*	*
China	Student enrolment in junior secondary (ISCED 2A), senior secondary (ISCED 3A) and vocational senior secondary (ISCED 3C) education, divided by the number of teachers at these levels of education	Ministry of Education, Department of Development & Planning, Essential statistics of education in China 2001	2001, 1995	1995: 1 municipality (Chongqing)
Ecuador	Student enrolment in secondary education (ISCED 2A + 3A) divided by the number of secondary teachers	Ministry of Education and Culture	2000/01, 1995/96	1995/96: data for 1 province that was not created until 1998 (Orellana)
Egypt	Student enrolment in preparatory and secondary education (ISCED 2A + 3A) divided by the number of teachers at these levels of education	Central Agency for Public Mobilisation and Statistics, The statistical yearbook 1994-2001, June 2002	2001	None
India	Student enrolment in middle senior/basic school, high post basic schools and higher secondary education (ISCED 2 + 3) divided by the number of teachers at these levels of education	Government of India Department of Education	2001/02, 1996/97	1996/97: 3 states (Chhattisgarh, Jharkhand, Uttaranchal)
Indonesia	Student enrolment in junior high schools (ISCED 2A), general senior high schools (ISCED 3A) and vocational senior high schools (ISCED 3B) divided by the number of teachers at these levels of education	2000: Statistics Indonesia, Statistical yearbook of Indonesia 2002 1995: Statistics Indonesia, Statistical yearbook of Indonesia 1995	2001/02, 1994/95	1994/95: 5 provinces (Banten, Gorontalo, Kep. Bangka Belitung, Maluku Utara, Papua)
Mexico	Student enrolment in secondary education (ISCED 2A + 3A) divided by the number of secondary teachers	Office of the Secretary of Public Education	2002/03, 1995/96	None

Country	Method of calculation	Source	Year(s) of data	Missing data
Nigeria	Student enrolment in secondary education (ISCED 2A + 2C + 3A + 3B + 3C) divided by the number of post-primary teachers	Federal Ministry of Education, Baseline 2001: A handbook of information on basic education in Nigeria, 2003	2001, 1997	None
Pakistan	Student enrolment in middle stage, high stage and high secondary divided by the number of teachers at these levels of education; these levels of education are assumed to be ISCED 2A and 3A	Ministry of Education, Academy of Educational Planning and Management, Pakistan school education statistics 2000-2001	2000/01	None
Peru	Student enrolment in secondary education (ISCED 2A + 3A + 3B) divided by the number of secondary teachers; for 2002, "escolarizada" student and teacher counts are used	2002: Ministry of Education, Education Statistics Unit, Basic statistics 2002 1995: Ministry of Education and Culture	2002, 1995	None
Russian Federation	*	*	*	*
South Africa	*	*	*	*
United States	Student enrolment in secondary education (ISCED 2 + 3) divided by the number of secondary teachers	U.S. Department of Education, National Center for Education Statistics, Common core of data surveys	2000/01, 1995	None

* Data not available.

Area

Definition:
Total area in square kilometers.

Notes:
Sources of data on area are not consistently clear about whether the information provided is for total land area or total area including land and water. Data on the area of administrative regions were available for all regions in the 16 countries except for the Russian Federation – area is missing for four oblasts (Astrakhanskaya, Chelyabinskaya, Rostovskaya, Ulyanovskaya) and three autonomous okrugs (Aginskiy Buryatskiy, Chukotskiy, Nenetskiy).

Country	Source
Argentina	Utrecht University Library, Population statistics (www.library.uu.nl)
Bangladesh	Bangladesh Bureau of Educational Information and Statistics, Primary education statistics in Bangladesh, 2002
Brazil	Utrecht University Library, Population statistics (www.library.uu.nl)
Canada	Utrecht University Library, Population statistics (www.library.uu.nl)
China	GeoHIVE Global Statistics (www.geohive.com)
Ecuador	Utrecht University Library, Population statistics (www.library.uu.nl)
Egypt	1996/97: United Nations Development Programme, Institute of National Planning, Egypt human development report 1997/98
India	Statoids (www.statoids.com/statoids.html)
Indonesia	Utrecht University Library, Population statistics (www.library.uu.nl)
Mexico	Office of the Secretary of Public Education
Nigeria	Utrecht University Library, Population statistics (www.library.uu.nl)
Pakistan	GeoHIVE Global Statistics (www.geohive.com)
Peru	Utrecht University Library, Population statistics (www.library.uu.nl)
Russian Federation	Utrecht University Library, Population statistics (www.library.uu.nl)
South Africa	Central Statistical Service, RSA statistics in brief
United States	Utrecht University Library, Population statistics (www.library.uu.nl)

Appendix 2: References

The Academy of Educational Planning and Management (AEPM), Ministry of Education, Pakistan (2000). *The development of education: National report of Pakistan*. Retrieved 20 July 2004 from http://www.ibe.unesco.org/International/ICE/46english/46natrape.htm.

African Union (1999). *African charter on the rights and welfare of the child*. Retrieved 15 August 2004 from www.africa-union.org.

Aluede, R.O.A., L.I. Aguele and O. Aluede (2003). "Causes of inequalities in educational development among nationalities in Nigeria". In: *Educational Research Quarterly, 26*(4), 3-12.

The American University in Cairo Social Research Center (2000). *Female education in Egypt*. Retrieved 11 February 2004 from http://www.aucegypt.edu/academic/src/ girsleducation/statistics_edhs2000.htm.

Annan, K. (2000). *'We the peoples': The role of the United Nations in the 21st century* (Millennium Report of the Secretary-General of the United Nations). Retrieved 23 June 2004 from http://www.un.org/millennium.

Beckett, P. and J. O'Connel (1977). *Education and power in Nigeria*. London: Hodder and Stovghton.

Berne, R. and L. Stiefel (1984). *The measurement of equity in school finance: Conceptual, methodological, and empirical dimensions*. Baltimore: The Johns Hopkins University Press.

— (1999). *Concepts of school finance equity: 1970 to the present*. In: M.F. Ladd, R. Chalk, J.S. Hansen (Eds.), *Equity and adequacy in evaluation finance: Issues and perspectives* (pp. 7-33). Washington, DC: National Academy Press.

Brazil Constitutional Amendment No. 14 Article 211 (1996). Retrieved 4 June 2004 from http://www.georgetown.edu/pdba/Constitutions/Brazil/amend.html#14.

Cavicchioni, V. and A. Motivans (2001). Monitoring educational disparities in less developed countries. In: W. Hutmatcher, D. Cochrane, N. Bottani. (Eds.), *In pursuit of equity in education: Using international indicators to compare equity policies* (pp. 217-240). The Netherlands: Kluwer Academic Publishers.

China Internet Information Center (n.d). *China's population mix*. Retrieved 14 July 2004 from http://www.china.org.cn/e-groups/shaoshu/mix.htm.

China Online (n.d). *Equal rights and special protection for ethnic minorities*. Retrieved 14 July 2004, from http://chineseculture.about.com/library/china/whitepaper/ hr/blshr50yrs05.htm.

China Online: The Information Network for China (2000). *Ministry of Education*. Retrieved 16 June 2004 from http://www.chinaonline.com/refer/ministry_profiles/MOE.asp.

Chinese Culture Center of San Francisco (n.d). *Ethnic minorities in China*. Retrieved 14 July 2004 from http://www.c-c-c.org/chineseculture/minority.

Cochrane, D. (2001). Economics and demographics in metropolitan communities: An argument for international equity indicators. In: W. Hutmatcher, D. Cochrane, N. Bottani. (Eds.), *In pursuit of equity in education: Using international indicators to compare equity policies* (pp. 343-372). The Netherlands: Kluwer Academic Publishers.

The Constitution of the Islamic Republic of Pakistan (1973). Retrieved 20 July 2004 from http://www.pakistanconstitution-law.com.

Demeuse, M., M. Crahay and C. Monseur (2001). Efficiency and equity. In: W. Hutmatcher, D. Cochrane, N. Bottani. (Eds.), *In pursuit of equity in education: Using international indicators to compare equity policies* (pp. 65-91). The Netherlands: Kluwer Academic Publishers.

Denes, C. A. (2003). Bolsa Escola: Redefining poverty and development in Brazil. In: *International Education, 4*(2), 137-147.

Department of Education, Republic of South Africa (DERSA) (1996). *President's Office: No. 84 of 1996: South African Schools Act, 1996*. Retrieved 17 May 2004 from http://education.pwv.gov.za.

— (1998). *South African Schools Act, 1996 (Act no. 84 of 1996) and National Education Policy Act, 1996 (no. 27 of 1996): National norms and standards for school funding*. Retrieved 17 May 2004 from http://education.pwv.gov.za.

— (1999). *Annual report 1999.* Pretoria, South Africa: Author.

— (2002). *Education for all status report 2002.* Pretoria, South Africa: Author.

— (2003). *Plan of action: Improving access to free and quality basic education for all*. Retrieved 17 May 2004 from http://education.pwv.gov.za.

"Education still reaches too few girls and women in India" (1992). In: *Women's International Network News*, *18*(2), 1.

Embassy of the Islamic Republic of Pakistan (n.d. *a*) *Brief on education sector reforms (ESR) 2001-2005*. Retrieved 20 July 2004 from http://www.embassyofpakistan.org/pb6.php.

— (n.d. *b*) *Madrasa reforms (Teaching of formal subjects in Deeni Madaris)*. Retrieved 20 July 2004 from http://www.embassyofpakistan.org/pb7.php.

European Commission (2003). *Equity of the European educational systems: A set of indicators*. (Project Socrates SO2-61OBGE). Liège, Belgium: Author.

Federal Republic of Nigeria (1999). *Constitution of the Federal Republic of Nigeria*. Retrieved 28 May 2004 from http://www.nigeria-law.org.

Filmer, D. and S.S. Lieberman (2002). *Indonesia and EFA*.

Filmer, D., H. Sayed, B. Jiyono, N. Suwaryani and B. Indriyanto (1999). *Impact of economic crisis on basic education in Indonesia*. (East Asia and the Pacific Region Watching Brief). Retrieved 30 July 2004 from http://www.worldbank.org.

Fiske, E.B. and H.F. Ladd (2002). *Financing schools in post apartheid South Africa: Initial steps toward fiscal equity*. Paper presented at the International Conference on Education and Decentralisation: African Experiences and Comparative Analysis, Johannesburg, South Africa, 2002.

— (2003). *Balancing public and private resources for basic education: School fees in post-apartheid South Africa* (Working Paper No. SAN03-03). Durham, NC: Sanford Institute of Public Policy, Duke University.

Galal, A. (2002). *The paradox of education and unemployment in Egypt*. Cairo, Egypt: The Egyptian Center for Economic Studies.

Government of Punjab. (n.d.) *Punjab education sector reform programme*. Retrieved 20 July 2004, from http://www.punjab.gov.pk/education/pesrp.htm.

Guimarães de Castro, M.H. (2002). *Brazil's national education plan.* Paper presented at Accelerating Action Toward Education for All, Amsterdam, The Netherlands, April, 2002.

Hargreaves, E. (2001). "Profiles of educational assessment systems world-wide: Assessment in Egypt". In: *Assessment in Education, 8*(2), 247-260.

Healy, T. and D. Istance (2001). International equity indicators in education and learning in industrialized democracies: Some recent results and avenues for the future. In: W. Hutmatcher, D. Cochrane, N. Bottani. (Eds.), *In pursuit of equity in education: Using international indicators to compare equity policies* (pp. 195-215). The Netherlands: Kluwer Academic Publishers.

Hossain, S. (1997). August. *Making education in China equitable and efficient*. World Bank: China and Mongolia Department, Rural and Social Development Division.

Hussain, A. (with A.R. Kemal, A.I. Hamid, I. Ali, K. Mumtaz and A. Qutub) (2003). *Pakistan: National human development report 2003: Poverty, growth, and governance*. United Nations Development Programmeme. Retrieved 20 July 2004 from http://www.un.org.pk/nhdr.

India (1950). *Constitution of India*. Retrieved 13 July 2004 from http://indiacode.nic.in.

— (1951). *1st Five Year Plan*. Retrieved 15 July 2004 from http://shikshanic.nic.in/cd50years/15/8P82/8P820Z01.htm.

— (1985). *7th Five Year Plan (Vol-2)*. Retrieved 19 July 2004 from http://planningcommission.nic.in.

— (1992). *8th Five Year Plan (Vol-2)*. Retrieved 15 July 2004 from http://planningcommission.nic.in.

— (1997). *9th Five Year Plan (Vol-2)*. Retrieved 15 July 2004 from http://planningcommission.nic.in/plans/planrel/fiveyr/9th/vol2/v2c3-3.htm.

— (2002). *10th Five Year Plan*. Retrieved 15 July 2004 from http://planningcommission.nic.in/plans.

India Department of Education (1998). *National Policy on Education 1986*.

— (2003). *Annual Report 2003-2003*. Retrieved 12 July 2004 from http://www.education.nic.in.

— (2004). *The Free and Compulsory Education Bill, 2004*. Retrieved 14 July 2004 from http://www.education.nic.in.

— (n.d.*a*) *District Primary Education Programmeme (DPEP)*. Retrieved 13 July 2004 from http://www.education.nic.in.

— (n.d.*b*) *Education for all: The Indian scene (2nd Edition)*. Retrieved 12 July 2004 from http://shikshanic.nic.in.

— (n.d.*c*) *Guidelines for implementation of the 'National Programmeme for Education of Girls at Elementary Level (NPEGEL)' as a component of the scheme of Sarva Shiksha Abhiyan (SSA)*. Retrieved 16 July 2004 from http://www.education.nic.in.

— (n.d.*d*) *Mahila Samakhya: Education for women's equality*. Retrieved 9 July 2004 from http://shikshanic.nic.in.

— (n.d.*e*) *Nationwide debate on vital issues of education, background papers*. Retrieved 12 July 2004 from http://shikshanic.nic.in.

— (n.d.*f*) *Political and social mobilisation for education for all: The Indian experience country paper*. Retrieved 12 July 2004 from http://shikshanic.nic.in.

— (n.d.*g*) *Report of the task force on education for women's equality*. Retrieved 9 July 2004 from http://shikshanic.nic.in.

— (n.d.*h*) *Towards the next millennium India-status report*. Retrieved 12 July 2004 from http://shikshanic.nic.in.

— (n.d.*i*) *Universalisation of elementary education (a status paper)*. Retrieved 12 July 2004 from http://shikshanic.nic.in.

India Department of Elementary Education & Literacy (n.d). *Sarva Shiksha Abhiyan: A Programmeme for Universal Elementary Education*.

Indonesia (1945). *The 1945 Constitution of the Republic of Indonesia*. Retrieved on 29 July 2004 from http://www.indonesia-phnompenh.org/isi/isiabaut_the%201945.htm.

— (2003*a*). *Act of Education System*.

— (2003*b*). *National Plan of Action: Indonesia's Education for All 2003-2015*.

International Bank for Reconstruction and Development (IBRD) (1999). Washington, DC: World Bank.

International Crisis Group (2002). *Pakistan: Madrasas, extremism and the military*. Retrieved 20 July 2004 from http://www.crisisweb.org.

— (2004). *Devolution in Pakistan: Reform or regression*? Retrieved 20 July 2004 from http://www.crisisweb.org.

International Monetary Fund (1998). *World economy in transition: Currency crises the role of monetary policy*. Retrieved 29 July 2004 from http://www.worldbank.org.

Inter-Parliamentary Union (IPU) (1996). *Final document of the inter-parliamentary conference on education, science, culture and communications on the eve of the 21st century*. Retrieved 16 August 2004 from http://www.ipu.org.

Larach, L. (2001). *Brazil: Secondary education profile*. Washington, DC: World Bank.

Legal Informatics Division, National Informatics Center (2002). *The Constitution (Eighty-Sixth Amendment) Act, 2002.* Retrieved from http://indiacode.nic.in/coiweb/fullact1.asp?tfnm=86.

Library of Congress (1995). *India: Education administration and funding*. Retrieved 29 July 2004 from http://lcweb2.loc.gov.

Maitra, P. (2003). **"**Schooling and educational attainment: Evidence from Bangladesh". In: *Education Economics, 11*(2), 129-153.

Menezes-Filho, N. and E. Pazello (2004). *Does money in schools matter? Evaluating the effects of FUNEF on wages and test scores in Brazil*. Retrieved 4 June 2004 from http://www.econ.puc-rio.br.

Meuret, D. (2001). A system of equity indicators for educational systems. In: W. Hutmatcher, D. Cochrane, N. Bottani. (Eds.), *In pursuit of equity in education: Using international indicators to compare equity policies* (pp. 134-164). The Netherlands: Kluwer Academic Publishers.

Morrisson, C. (2002). *Education and health expenditure, and development: The cases of Indonesia and Peru*. Paris: OECD Publications.

Nath, S.R. and M. Chowdhury (2002). "Level and trend of basic education of children in Bangladesh: 1993-1998". In: *Educational Studies, 28*(1), 79-92.

Nath, S.R., K. Sylva and J. Grimes (1999). "Raising basic education levels in rural Bangladesh: The impact of a non-formal education programmeme". In: *International Review of Education, 45*(1), 5-26.

National Centre for Educational Research and Development (NCERD) (1996). *Development of education in Arab republic of Egypt 1994/95-1995/96*. (International Conference on Education, Geneva). Retrieved 11 February 2004 from http://www.unesco.org.

— (1999). *Egypt national report: Education for all 2000 assessment*. Retrieved 11 June 2004 from http://www.unesco.org.

— (2001). *Educational development: National report of Arab Republic of Egypt from 1990 to 2000*.

National Strategic Framework for education in Egypt (June 2004-June 2010) (2003).

Pakistan Ministry of Education (n.d.*a*). Retrieved 20 July 2004 from http://www.pakistan.gov.pk/education-ministry/highlights/Downloads/5-Preface%20.doc.

— (n.d.*b*). Retrieved 20 July 2004 from http://www.pakistan.gov.pk/education-ministry/highlights/NEP-private-sector.jsp.

— (n.d.*c*). Retrieved 20 July 2004 from http://www.pakistan.gov.pk/education-ministry/highlights/NEP-elementary-edu.jsp.

— (n.d.*d*). Retrieved 20 July 2004 from http://www.pakistan.gov.pk/education-ministry/highlights/NEP-secondary-edu.jsp.

— (n.d.*e*). *ESR thrust areas and innovative programmes*. Retrieved 20 July 2004 from http://www.pakistan.gov.pk/education-division/publications/ch114.pdf.

Partnership for Educational Revitalization in the Americas (PREAL) (2001). *Lagging behind: A report card on education in Latin America*. Santiago, Chile: Corporation for Development Research.

People's Republic of China (1949). *The Common Programme of the Chinese People's Political Consultative Conference, 1949*. Retrieved 21 June 2004 from http://www.fordham.edu/halsall/mod/1949-ccp-programme.html.

— (1986). *Compulsory Education Law of the People's Republic of China*. Retrieved 16 June 2004 from http://www.novexcn.com/cumpulsory_education.html.

Peternick, L., B.A. Smerdon, W.Jr Fowler and D.H. Monk (1998). Using cost and need adjustments to improve the measurement of school finance equity. In: *Developments in school finance 1997* (pp. 149-168). Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Public Administration Research and Consultation Center (PARC) (2002). *Reporting on the Millennium Development Goals at the country level: Egypt*. Cairo, Egypt: Author.

Rashid, A. (2000). Basic education: The struggle for universal primary education. In: A. Rashid (Ed.), *SAHE education watch report 2000: Engaging with basic education in Pakistan*. Lahore, Pakistan: Society for the Advancement of Education. Retrieved 20 July 2004 from http://web.mit.edu/bilal/www/education/sahereport2000.pdf.

Reschovsky, A. (2002). *Financing schools in the new South Africa*. Madison, WI: Robert M. La Follette School of Public Affairs, University of Wisconsin-Madison.

Saleem, M. (1999). *Education for all: The 2000-assessment: Pakistan country report.* Ministry of Education, Pakistan. Retrieved 20 July 2004 from http://www.unesco.org.
Singer, P.W. (2001). November. Pakistan's Madrassahs: Ensuring a system of education not Jihad. (Analysis Paper #14). Washington, DC: The Brookings Institution. Retrieved 20 July 2004 from: http://www.brookings.edu.

Summit of the Americas Secretariat (2004*a*). *Education mandates from the third Summit of the Americas.* Retrieved 15 August 2004 from http://www.summit-americas.org.

— (2004*b*). *Summit of the Americas plan of action*. Retrieved 15 August 2004 from http://www.summit-americas.org.

Tahir, G. (2001). "Federal government intervention in universal basic education." In: *UBE Forum, A Journal of Basic Education in Nigeria, 1*(1), 1-12.

UNESCO (1960). *Convention Against Discrimination in Education*. Paris: Author.

— (2000*a*). *Dakar Framework for Action – Expanded commentary* (The World Education Forum, Dakar). Retrieved 6 April 2004 from http://www.unesco.org.

— (2000*b*). Education for All: An estimation 2000 – Russian Federation. Retrieved 11 June 2004 from http://www2.unesco.org/wef/countryreports/russia/contents.html.

— (2000*c*). *Education for all: Evaluation of the year 2000 national report – Brazil.* Retrieved 4 June 2004 from http://www.unesco.org.

— (2000*d*). *Education for all: The year 2000 assessment Bangladesh county report.* Retrieved 6 June 2004 from http://www.unesco.org.

— (2000*e*). *Education for all: The year 2000 assessment final country report of China*. Retrieved 6 June 2004 from http://www.unesco.org.

— (2000*f*). *Education for all: The year 2000 assessment, Indonesia Ministry of Education and Culture*. Retrieved 29 July 2004 from http://www.unesco.org.

— (2000*g*). *Education for all: The year 2000 assessment report India*. Retrieved 13 July 2004 from http://www.unesco.org.

— (2001*a*). *Dakar Framework for Action – Expanded Commentary*. Retrieved 6 April 2004 from http://www.unesco.org.

— (2001*b*). *World Declaration on Education for All*. Retrieved 6 April 2004 from http://www.unesco.org.

UNESCO Institute for Statistics (UIS) and UNICEF (2006). *Children Out of School: Measuring Exclusion from Primary Education.* Montreal: UIS.

UNICEF (n.d.) *The Convention on the Rights of the Child*. Retrieved 23 June 2004 from http://www.unicef.org.

United Nations (1948). *Universal Declaration of Human Rights* (Resolution 217 A (III)). Retrieved 23 June 2004 from http://www.un.org.

United Nations (2003). *Millennium development goals: China's progress 2003*. Beijing, China: United Nations Country Team in China.

United Nations Development Programme (n.d). *Millennium development goals: The global challenge*. Retrieved 23 June 2004 from http://www.undp.org.

United Nations Development Programme (1998). *China human development report*. Retrieved 6 June 2004 from http://www.undp.org.

United Nations Development Programmeme (2002). *Human Development Report 2001 – Russian Federation*. Moscow.

— (1989). *The Convention on the Rights of the Child* (Resolution 44/25). Retrieved 23 June 2004 from http://www.un.org.

United States Agency for International Development (USAID) (2002*a*). *Bangladesh education sector review report no. 1: Overview of the basic education sector*. Washington, DC: Ground Work Inc.

— (2002*b*). *Bangladesh education sector review report no. 2: The status of gender equity*. Washington, DC: Ground Work Inc.

Universal Basic Education Programmeme (UBE) (2002). *Annual report: Year 2001*. Abuja, Nigeria: Research and Publications Unit of the Department of Planning, Research and Statistics.

Unterhalter, E. and D. Shushmita (2001). "Gender, education and women's power: Indian state and civil society intersections in DPEP (District Primary Education Programmeme) and Mahila Samakhya". In: *Compare, 31*(1), 57-73.

Van der Berg, S. (1998). "Consolidating South African democracy: The political arithmetic of budgetary redistribution". In: *African Affairs, 97*(387), 251-264.

Van der Werf, G., B. Creemers, R. De Jong and E. Klaver (2000). "Evaluation of school improvement through an educational effectiveness model: The case of Indonesia's PEQIP project". In: *Comparative Education Review, 44*(3), 329-355.
Wei, Z., T. Zhang, W. Liu, M. Yuqin and J. Peng (2001). "Research into girls' education in four western provinces of China". In: *Chinese Education and Society*, *33*(5), 4-28.

WOMANKIND Worldwide (2001). *Egypt situational analysis*. Retrieved 26 July 2004 from http://www.ecwregypt.org.

World Bank (1999). November. *Education in Indonesia: The response*. Retrieved 30 July 2004 from http://www.worldbank.org.

— (2000). *Nigeria Primary Education Project* (Report No. 20073 UNI). Author: Human Development III Unit, Africa Regional Office.

— (2002). *Arab Republic of Egypt education sector review: Progress and priorities for the future* (Report No. 24905-EGT). Author: Human Development Group, Middle East and North Africa Region.

— (2003). May. *Big steps in a big country: Brazil makes fast progress toward EFA*. (Education Notes No. 26533). Retrieved 7 June 2004 from http://www.worldbank.org.

— (2003). *School education in Nigeria: Preparing for universal primary education*. Author: Human Development III Unit, Africa Regional Office.

— (2004). *India: World Bank to support India's goal of achieving elementary education*. Retrieved 15 July 2004 from http://web.worldbank.org.

The World Factbook (2004). *The world factbook 2004*. Retrieved in 2004 from http://www.cia.gov/cia/publications/factbook.

Demographic and Health Surveys (n.d.). *Demographic and health surveys.* Retrieved 11 June 2004 from www.measuredhs.com.

Zajda, J. (2003). "Educational reform and transformation in Russia: Why education reforms fail". In: *European Education, 35*(1), 58-88.

Appendix 3: Glossary

Administrative units: See *Regions*.

Adjusted McLoone Index: The adjusted McLoone Index is included in place of the McLoone Index in the case of pupil-teacher ratios because the regions of interest are those above the median. This is because higher pupil-teacher ratios mean fewer educational resources relative to regions with lower ratios. The McLoone Index is one of four statistical measures used to help capture the dispersion of expenditure across administrative units within countries. An adjusted index value of 1.00 indicates perfect equity while higher index values suggest greater deviation from equity. The McLoone Index is less complicated than other measures but also lacks some of their strengths and should not be used alone to interpret the level of educational equity in a country. In particular, the index does not account for the value of the mean or the distribution of pupil-teacher ratios in regions below the median.

Average ranking: See C*omposite ranking*.

Coefficient of variation: The coefficient of variation is one of four statistical measures included to help capture the dispersion of access and resources across administrative units within countries. The coefficient of variation measures the variability of access and resources around the mean value. It is calculated by taking the standard deviation and dividing by the mean. Perfect equity would result in a coefficient of 0.00; higher values would signify greater dispersion or inequity. Unlike the range ratio and both the McLoone Index and adjusted McLoone Index, the coefficient of variation takes into account all regions in a distribution.

Combined primary and secondary education: Combined primary and secondary education corresponds to basic education and schooling following the initial years of education (ISCED 1, 2 and 3). For countries in the analysis, combined primary and secondary education spans from Grade 1 to Grades 10, 11, 12 or 13. See Annex 1 for additional information by country.

Composite ranking: The composite ranking is a country's average ranking on the equity measures. The composite ranking is included to provide an overall assessment of a country's standing on horizontal equity at a given level of education.

Correlation: See *Correlation coefficients*.

Correlation coefficients: Correlation coefficients are included to measure the strength and direction of the linear relationship between characteristics of the regions (regional wealth, population density) and measures of access and resources. The coefficients range from -1.00, a perfect negative relationship, to +1.00, a perfect positive relationship. A value of 0.00 indicates that there is either no relationship or, if there is one, it is non-linear. Correlations ranging from -1.00 to -0.50 or 0.50 to 1.00 are considered strong, whereas correlations ranging from -0.49 to -0.25 and 0.25 to 0.49 are considered moderately strong. Correlations that fall between -0.25 and 0.25 are statistically insignificant.

Enrolment ratios: Enrolment ratios are a measure of access to education and are expressed as either gross or net rates. Enrolment ratios are used to illustrate the equity framework at both the primary and secondary levels of education. See also *gross enrolment ratio* and *net enrolment rate* as well as Annex 1 for additional information by country.

Equal educational opportunity (EEO): Equal educational opportunity is one of the three principles of educational equity. It is based on the notion that all children should have an equal chance to succeed with equal access to education and resources, and that there should be no difference in educational success based on student characteristics or place of residence. This study uses equal educational opportunity to address two main questions: Do children who live in wealthier regions consistently have greater access to education or education resources? Do children who live in urban areas have greater access to education or education resources than those in rural areas?

Equity measures: Equity measures are indicators of education access and resources that are used to analyse horizontal equity and equal educational opportunity within countries. The equity framework is applied to one measure of access, enrolment ratios and two measures of resources: expenditure per pupil and pupil-teacher ratios. See *Enrolment ratios*, *Expenditure per pupil* and *Pupil-teacher ratios*.

Expenditure per pupil: Expenditure per pupil is the total value of all government expenditure on public education in a country or region divided by the number of public school students in that area. Expenditure per pupil is a measure of resources and is used to illustrate the equity framework at the combined primary and secondary level of education. The method of calculating expenditure per pupil varies by country (see Annex 1 for additional information by country).

Federal form of government: A federal form of government is one in which regional and/or local governments are authorised by the constitution or statute to play a role in the administration or financing of primary and secondary education.

Gini coefficient: The Gini coefficient is one of four statistical measures included to help capture the dispersion of resources across administrative units within countries. It shows the cumulative proportion of students relative to the cumulative proportion of resources across regions. In other words, the Gini coefficient measures how far a country's distribution of teachers and expenditure is from providing a particular percentage of students with an equal percentage of resources.

Gross enrolment ratio: For most countries, gross enrolment ratios are used in the analysis. Gross enrolment ratios are calculated by dividing the total number of students enrolled in primary or secondary education (regardless of their age) by the total population at the theoretical ages for that level of education (e.g. 6 to 11 years for primary education or 12 to 17 years for secondary education).

Gross domestic product (GDP) per capita: GDP per capita is the total value of goods and services produced by a country divided by its population. GDP per capita is used as the measure of a country's wealth and is used in current prices unless otherwise noted.

Gross regional product (GRP) per capita: GRP per capita is the total value of goods and services produced by a region divided by its population. GRP per capita is used as the measure of regional wealth and is expressed in current prices unless otherwise noted. See *Regional wealth*.

Horizontal equity: Horizontal equity is one of the three principles of educational equity and requires equal treatment of those who are equally situated. A horizontally equitable education system would treat students who are alike equally and ensure that they experience similar levels of educational resources and achieve similar results. It requires little or no variation in the dispersion of access, resources and results: No dispersion suggests perfect equity. This study applies the standard of horizontal equity to regions within countries to analyse education access and resources. Relative to resources, the study assumes that all regions have similar characteristics (e.g. equal levels of urbanicity, equal proportions of wealthy/poor populations) and therefore should be treated equally.

International Standard Classification of Education (ISCED): The International Classification of Education is used to standardise national education systems for international comparisons. In ISCED, pre-primary education is ISCED 0, primary education is ISCED 1, lower secondary education is ISCED 2, upper secondary education is ISCED 3, post-secondary non-tertiary education is ISCED 4 and tertiary education is ISCED 5A, 5B and 6. Other divisions in ISCED distinguish between general and vocational programmes and between institutional paths leading to higher education levels.

McLoone Index: The McLoone Index is one of four statistical measures included to help capture the dispersion of expenditure across administrative units within countries. The McLoone Index is calculated by taking the sum of expenditure per pupil for each region below the median and dividing this by the sum that would exist if each region below the median had expenditure per pupil equal to the median. The index ranges from 0 to 1, with 1 indicating perfect equity, and increases as expenditure per pupil in regions below the 50^{th} percentile approaches the median expenditure; it decreases as expenditure per pupil in these regions falls further from the median. Whereas the other three measures of horizontal equity increase as inequality increases, the McLoone Index becomes larger as the distribution becomes more equal. The McLoone Index is less complicated than other measures but also lacks some of their strengths and should not be used alone to interpret the level of educational equity in a country. In particular, the index does not account for the value of the mean or the distribution of expenditure per pupil in regions above the median. Hence, countries with an index value close to 1.00 may still be relatively inequitable.

Net enrolment rates: Net enrolment rates are used to illustrate the equity framework in the case of countries without available gross enrolment ratios. Net rates are calculated by dividing the number of students at the theoretical age enrolled in primary or secondary education by the total population at the theoretical age for that level of education.

Non-federal form of government: A non-federal or unitary form of government is one in which the central government generally has primary authority over education. Regional divisions are more often administrative units of the central government, with little independent authority over education.

Primary education: Primary education corresponds to basic education in countries (ISCED 1). For countries in the analysis, primary education spans from Grade 1 to Grades 5, 6 or 7.

Pupil-teacher ratios: Pupil-teacher ratios are calculated as the number of teachers in public education in a country or region divided by the respective public school enrolment in that area. It is a measure of resources and is used to illustrate the equity framework at the primary, secondary and combined primary and secondary levels of education. The method of calculating pupil-teacher ratios varies by country (see Annex 1 for additional information by country).

Range ratio: The range ratio is one of four statistical measures included to help capture the dispersion of access and resources across administrative units within countries. The range ratio is calculated by dividing the highest value by the lowest value in a country's distribution of enrolment ratios, expenditure per pupil and pupil-teacher ratios. A ratio of 1.0 would indicate perfect equity, whereas increasing values for the ratio suggest increasing disparity between regions at the ends of the distribution. The range ratio is the simplest of the horizontal equity measures and does not take into account how access, resources or results are distributed among the regions between the ends of the distribution.

Regions: Regions are administrative units within countries. The regions used in the analysis tend to be the highest level of government below a country's central government and tend to be the most frequently cited administrative units in statistical databases, datasets and reports produced by countries.

Regional population density (RPD): Regional population density is calculated by dividing a region's total population by its area. It is used in the analysis as a proxy for the urban or rural character of regional divisions in countries for two reasons: (1) the definition of "urban" and "rural" is not consistent across countries; and (2) even if there were standard definitions of these terms, many countries do not report data on pupils and teachers in these types of geographical areas. In this analysis, regions with greater population density are considered to be more "urban" than regions with smaller ratios of population to area.

Regional wealth: Regional wealth is the estimated economic standing of a region in terms of the total value of goods and services produced per person within its area. Regional wealth is included in the analysis in order to examine the extent of equal educational opportunity within countries: Do children who live in wealthier regions consistently have greater access to education or education resources? See *Equal educational opportunity (EEO)* and *GRP per capita*.

Secondary education: Secondary education (ISCED 2 and 3) corresponds to the years of schooling that follow primary education (ISCED 1). For countries in the analysis, secondary education spans from Grade 6, 7 or 8 to Grade 10, 11, 12 or 13. In the case of some countries, equity measures for either lower secondary education (ISCED 2) or upper secondary education (ISCED 3) are used as a proxy for data at the secondary level. See Annex 1 for additional information by country.

Appendix 4: Equity-related education laws, policies and research in core countries

Bangladesh

Source: The World Gazetteer, http://www.world-gazetteer.com

Social context of education

Demographics, economics, geography and government
Bangladesh came into existence in 1971 when Bengali East Pakistan seceded from its union with West Pakistan. It has a land area of 144,000 square kilometres and is a parliamentary democracy divided into six primary administrative units, referred to as divisions. Based on 2003 estimates, it has a population of 138.4 million with a median age of 21.2 years. Most economic indicators point to underdevelopment: about one-third of the population is below the poverty line, unemployment and underemployment reach approximately 40%, and annual GDP per capita stands at about US $1,900. Economic development is affected by monsoon-related flooding in one-third of the country (The World Factbook, 2004).

Organization of primary and secondary education
Compulsory education extends from age 6 to 11 and covers the primary grades. Secondary education is divided into three cycles. Students who pass an examination are eligible to attend the three-year junior secondary cycle including Grades 6 to 8. On completion of this cycle, students qualify for an additional two years of secondary education and may select an academic or vocational track. After completing

Grade 10, students take the Secondary School Certificate examination (SSC) to qualify for higher secondary education.

Under the international classification system, academic students are in primary school (ISCED 1) for Grades 1 to 5, secondary school (ISCED 2A) for Grades 6 to 10 and higher secondary (ISCED 3A) for Grades 11 and 12. Vocational students enrol in vocational training (ISCED 2C) for Grades 9 and 10 and then commerce or textile higher training (ISCED 3C) or nursing training (ISCED 4A) for Grades 11 to 13.

Education governance and finance
The Primary and Mass Education Division of the central government is responsible for education in the primary grades. A separate organization, the Ministry of Education, is responsible for secondary and higher education, including technical and *madrassa* education.

Private education
At the primary level, 39% of students enrol in private schools. At the junior secondary level, 97% enrol in private schools; similarly, at the secondary and higher secondary levels, 98% or more enrol in private schools.

Education laws, policies, reports and research

Upon its establishment as an independent country, Bangladesh established a new constitution guaranteeing that all citizens have the right to be "equal before the law" and have "equal protection by the law" and that "women shall have equal rights with men in all spheres" of public life (USAID, 2002*a*). Though the constitution does not always govern everyday life in Bangladesh, the country is making efforts toward a more equitable society. Following the World Conference on Education for All (WCEFA) in 1990, educational reform became a major focus in Bangladesh. Among the country's goals is establishing a universal system of education, especially at the primary level, to improve the overall well-being of its people. Though Bangladesh has made some progress following WCEFA, obstacles to achieving education for all are still present.

Laws and policies
Bangladesh's education system is more valued today than it was in the early 1970s. Since that time, education has been considered an important area of intervention for both modernisation and development (UNESCO, 2000*d*). In fact, the country's constitution calls for the government to adopt "effective measures" for establishing a "uniform, mass-oriented and universal system of education and extending free and compulsory [basic] education to all children to such stage as may be determined by law" (UNESCO, 2000*d*). Additionally, the government is obligated to relate education to the needs of society in order to produce "properly trained and motivated citizens to serve these needs" (UNESCO, 2000*d*). Further, the constitution holds that the government shall remove illiteracy within a reasonable time (UNESCO, 2000*d*). Thus, the fundamental structure for universal primary education has been established in Bangladesh and the government is responsible for meeting these standards.

Since 1971, Bangladesh has enacted several pieces of legislation to provide administrative support for a universal education system. In 1974, the *Primary Education (Taking Over) Act* granted management of the system to the federal government (UNESCO, 2000*d*). Soon after in 1981, the government created the Programme of Universal Primary Education (UPE) and established a separate Directorate of Primary Education (DPE) (UNESCO, 2000*d*). Subsequent to WCEFA, the government created several education-related programmes. The goals of these programmes included improving the enrolment ratio and basic learning competencies of the population while reducing dropout and illiteracy rates (UNESCO, 2000*d*). The 1990s were marked by notable efforts by the government beyond its constitutional requirements, as well as efforts by non-governmental groups, toward reaching these goals (UNESCO, 2000*d*). The 1990 *Primary Education (Compulsory) Act* and accompanying Monitoring Unit (CPEIMU), which is in charge of programme assessment, provided administrative support to policies and programmes for universal primary education and reductions in illiteracy (UNESCO, 2000*d*). In 1992, Bangladesh established the Primary and Mass Education Division (PMED) to expand this support. Then, in 1995 the government created the Directorate of Non-Formal Education (DNFE) to manage the non-formal education system.

Despite some discrepancies in the gathering of statistical data within Bangladesh, there is marked improvement in the education system due to these programmes. As Pushkar Maitra noted in a 2003 *Education Economics* publication, "given the extreme poverty, high fertility rate and low literacy rates among the population of Bangladesh, increasing education attainment levels of the current school-age population is a particularly important issue" (p. 151).

Reports and research

Education reform and efforts toward universal education (i.e. horizontal equity) have focused on four major areas of concern: enrolment/participation, literacy, teaching and pupil-teacher ratios, and gender equity. Several entities, including UNESCO, USAID and private researchers, have studied these areas. Though results vary, a general trend of gradual improvement has emerged.

Despite significant pressure on its resources, trends in primary school enrolment ratios since the 1990s indicate that overall participation in primary education is high. Participation ratios account for enrolment in many types of primary education institutions, including the Primary Training Institute's experimental schools, *Ebtedayee Madrasah*, and satellite and community schools (UNESCO, 2000*d*). In addition to the overall increase in enrolment ratios, several noticeable trends have emerged. Foremost, there is some inequity between urban and rural enrolment, with enrolment in urban areas usually surpassing that in rural areas.[17] Urban schools are beginning to decline in quality, however, and this is most likely the result of large increases in urban populations that have not been met with expanded educational services in these areas (Nath and Chowdhury, 2002). Consequently, regional inequity exists in terms of enrolment ratios[18], but such differences are often not statistically significant. Even though many feel that all children should be enrolled in primary education at the age of 6, "the children of Bangladesh do not enrol in school at the right age" (Nath and Chowdhury, 2002). This results in many children not participating fully in primary education. In its 2000 EFA assessment, UNESCO notes that this phenomenon may be due to the lack of birth registration in the country, as well as limited accessibility to primary schools at the official entrance age. High dropout rates have also presented a challenge to addressing basic educational standards (2000*d*).

Increased national literacy remains a driving influence behind universal primary education in Bangladesh. Literacy rates for the country vary by study, but a general trend suggests a slow increase in literacy. As Nath and his colleagues suggest, Bangladesh's problems with illiteracy "reflect both the limited school enrolment of the children and the inconsistent quality of their education" (1999). In response to this issue, the government created the National Action Plan (NAP), which set literacy targets in accordance with EFA standards. Progress has been acceptable according to the UNESCO assessment, with the literacy rate for 15- to 24-year-olds surpassing that of the larger population (2000*d*). However, the fact remains that a "very low proportion of the total gross national product (GNP) is spent on education" and the rate of increase in literacy remains slower than expected (Maitra, 2003).

In an effort to improve education, the government has placed an emphasis on quality teachers and gender equity among teachers. The government (and private sector) is in charge of creating and providing facilities for education and is responsible for the recruitment of teachers (UNESCO, 2000*d*). The need for additional teachers, especially those who are well qualified, is of great importance. As UNESCO notes, "historically, [the] Bangladesh situation, particularly in public school, does not represent a pleasant scenario" as teachers face upwards of 60 plus students per class (2000*d*). Overall, the number of teachers more than doubled between 1990 and 2002, yet more teachers are still needed (USAID, 2002*a*). As of 1991, there was one teacher for every 61 pupils; currently, the overall pupil-teacher ratio is 59 (UNESCO, 2000*d*).

---

[17] The net enrolment rates for both male and female groups in urban areas, 81.8 and 84.0 respectively, are higher than the rates of rural students, 79.6 and 82.7 respectively. Total enrolment for all ages in urban areas was 3.7 million (20%), compared to 14.7 million in rural areas (80%). Urban and rural areas have the same gross enrolment ratio (96.5), but the net enrolment rate in urban areas (82.9) is higher than in rural areas (81.1) (UNESCO, 2000*d*).

[18] The regional variation in enrolment ratio ranges from 93.7 to 100, with Khulna having the highest ratio and Barisal the lowest. Yet, Barisal has the highest net enrolment rate (88.4), while Sylhet has the lowest rate (UNESCO, 2000*d*).

Relative to private schools, where the pupil-teacher ratio is 43, public schools face a dire teacher shortage with a pupil-teacher ratio of 76. In addition to this shortage, the standard of teaching "has not been satisfactory" and the quality of teachers is "not up to the mark" (UNESCO, 2000*d*). Because studies show that female teachers are often more qualified than male teachers,[19] the recruitment of additional female teachers remains a high priority of the Bangladeshi government. Regional differences in the number of female teachers exist, however: a 2002 study found that there were nearly twice as many female teachers in urban schools as in rural schools (USAID).

Gender inequity persists and continues to be a major focus throughout the country's culture. Islamic tradition dictates much of everyday life within the country and opportunities for women are limited. Yet, improvements have been made: gender equity programmes are greatly affecting enrolment ratios among girls. Interestingly, in some studies girls show "a significantly higher probability of continuing in school relative to boys," despite a culture largely centered on males (Maitra, 2003). In recent years, "landlessness and poverty have forced men and women to find jobs outside their homesteads," which has resulted in "new ways of thinking about the rights and responsibilities of men and women" (USAID, 2002*a*). These new views about the role and importance of women in the culture seemingly have pervaded the education system[20] as well, as girls continue to make vast improvements in school. Despite this improvement in gender equity, "cultural traditions, ignorance of religious and State laws and, especially, a lack of will among enforcement agents and the judiciary, obstruct the enforcement of many protective and promotional laws" provided by the constitution (USAID, 2002*a*).

Many NGOs have taken up the cause of women and girls in the society. Their initiatives include establishing community schools in areas closer to girls' homes in all areas of the country in an effort to increase their education access (USAID, 2002*a*). Studies show that such initiatives are having a positive affect on educational outcomes for girls as they often outperform their male counterparts. The situation seems to be heading in the right direction, but sustainable gender equity in the country will rely on "integrated approaches of community mobilisation, mass communication initiatives at [the] national and school level and teacher training" (USAID, 2002*a*). If the education system is to meet its goals, it must include all of its school-aged citizens. Achieving education access and efficiency "requires special efforts toward making the system equitable" (USAID, 2002*b*). This necessitates increasing enrolment among "children who are less likely to attend school, namely, girls and those from remote and disadvantaged communities" (USAID, 2002*b*).

The future of education

There is little doubt that WCEFA has had a positive impact on the education system in Bangladesh. "The WCEFA Declaration, however, emphasised equity," Nath and Chowdhury note, and Bangladesh has yet to achieve this in the areas of basic education and learning attainment (2002). Nonetheless, the government has taken it upon itself, through both legislation and administration, to create the infrastructure to provide quality education to all; further, it has established goals toward improving overall well-being. Such goal setting at times has been quite ambitious, as "a wide gap exists between the current level of basic education and the goal" (Nath and Chowdhury, 2002).

According to Nath and Chowdhury, what is necessary is a continuous revision of the goals and the education systems so that expectations can be met. They concluded in their study: "if the country has to wait so long to achieve such a minimum level of basic education, it will fall far behind other developing countries" (Nath and Chowdhury, 2002). Often times it is NGO schools that outperform government schools and Bangladesh must take this into account to ensure quality throughout the system (Nath and Chowdhury, 2002). The education system needs more teachers, better teacher training and spending

[19] Almost 100% of female teachers fulfill the minimum teaching requirements while only 53% of male teachers meet the required academic qualifications and only 56% have a certificate to teach (UNESCO, 2000*d*).

[20] Because many still hold fast to traditional beliefs about women's place in society, the promotion of women's and girl's rights in education is influenced by, and also influences, all other parts of Bangladeshi society (USAID, 2002*a*).

increases[21] to help align school performance with national goals. In addition, a unified effort between all government levels and through NGOs is necessary to continue the trend toward increased opportunities for females, especially for young girls. Bangladesh is on the road to quality universal education but continued success relies on a national effort from all sectors of society.

Brazil

Source: The World Gazetteer, http://www.world-gazetteer.com

Social context of education

Demographics, economy, geography and government

Brazil covers over 8.5 million square kilometres and borders 10 smaller South American countries and the Atlantic Ocean. It has an estimated population of 184.1 million, with a median age of about 27.4 years. Brazil's economy dominates the South American region with a yearly GDP per capita of $7,600. Still, about 22% of people live below the poverty line and the unemployment rate is approximately 12.2%. The government is a federal republic consisting of 26 states and a federal district (The World Factbook, 2004).

Organization of primary and secondary education

Compulsory education in Brazil extends from age 7 to 14 and includes eight years of basic education. Students may enrol in upper secondary school for up to three years.

Under the international classification system, students are in primary education (ISCED 1) from Grades 1 to 6 and lower secondary education (ISCED 2A) for Grades 7 and 8. Academic students enrol in senior secondary education (ISCED 3A) for Grades 9 to 11.

[21] Despite the fact that the government often claims that education receives high budgetary priority, the actual financial allocation for education is much less than what is expected. In fact, only 2.3% of the gross national product is invested in education (Nath and Chowdhury, 2002).

Education governance and finance
Brazil's education system reflects the federal constitution of the country. Most funding and curricular or programme initiatives come from the central government; however, educational implementation is, for the most part, left to the states and localities. Federal funding reaches schools through transfers to states and localities based on a per pupil basis.

Private education
At the primary level, roughly 5 to 10% of students enrol in private institutions; this figure is between 10% and 15% for secondary education (Menezes-Filho and Pazello, 2004).

Equity-related laws, policies, reports and research

Laws and policies
In the last decade, Brazil enacted three major policies, including a constitutional amendment, and implemented a range of programmes with the goal of providing universal and equitable education. The most notable policy reform is the *National Fund for Primary Education Development and for Enhancing the Value of the Teaching Profession (FUNDEF)*, which was created by Constitutional Amendment No. 14 in 1996. Two other important new education laws are the *Education Guidelines and Framework Law (LBD)*, also passed in 1996, and the *National Education Plan (NEP)*, approved in 2001. Some programmes emerging from these reforms include meal programmes, the National Textbook Programme and *Bolsa Escola*, which provides conditional grants to families of school-age children (UNESCO, 2000*c*).

Brazil's education system reflects the federal structure of its government. Although most funding and educational guidelines come through the central government, implementation is ultimately a state and local responsibility. Constitutional Amendment No. 14 (1996), of which FUNDEF is an outgrowth, says that the central government:

> …shall organise the federal education system and that of the Territories, shall finance the federal public educational institutions and shall have, in educational matters, a redistributive and supplementary function, so as to guarantee the equalization of the educational opportunities and a minimum standard of quality of education, through technical and financial assistance to the States, the Federal District and the Municipalities (Article 211, Paragraph 1).

As the name suggests, FUNDEF is largely an education finance law. It has three key provisions intended to support more equitable education: its funds are to be distributed to states and municipalities based on the number of students in each school system; 60% of its funds must support teachers' salaries; and schools are guaranteed to receive a minimum amount of funding per pupil per year (set at R$ 315 in 1998). These finance provisions supplement the constitutional mandate that states and municipalities must invest at least 25% of tax revenue in education.

The LBD supported FUNDEF by clarifying the term "education expenditures," providing curricular guidelines and setting educational targets that reflect the goals of Education for All. The National Education Plan appears to stem from LDB and endorses a wide range of goals that address issues from daycare to higher education and vocational training. At the primary and lower secondary levels, NEP seeks to reach universal coverage, extend compulsory education to nine years of schooling, provide more textbooks, support school transportation in rural areas, guarantee school meals and increase the school day and the number of "effective school work" hours. At the upper secondary level, there are four main goals: increasing performance on the National Basic Education Assessment System (SAEB); reducing the repetition and time-to-completion ratios; ensuring that teachers have a college degree; providing computers to schools; and expanding day and, for working students, night classes (Guimarães de Castro, 2002).

One of the most noteworthy programmes initiated in recent years is *Bolsa Escola*. In an effort to relieve the opportunity costs of sending a child to school, the programme offers parents a stipend for costs related to school attendance. Families are eligible for the programme if they have children between the ages of 6 and 15, have income less than or equal to half the minimum wage per month per capita and are registered with the National Employment System (UNESCO, 2000*c*). Benefits include R$ 15 per month per child up to R$ 45 per month (Denes, 2003).

Reports and research

By all accounts, Brazil has made impressive strides in its education system over the past decade. A World Bank (2003) briefing reports that, "Brazil is one of the few large countries in the world to make real progress toward EFA over the course of the 1990s," and the EFA 2000 Assessment (UNESCO, 2000c) cites "remarkable advances". The country almost reached universal primary enrolment in 1998 with a net rate of 95%. Further, secondary enrolment increased by 41.2% between 1994 and 1998, though net secondary enrolment rates remains low at 32%.[22] Regional equity also shows strong signs of improvement. Looking past access to primary education, most reports point to Brazil's future challenges in the quality of basic education and, generally, secondary education.[23]

The rates of improvement in Brazil's two most disadvantaged regions, the North and Northeast, were generally higher than the national rates. Between 1994 and 1998, the primary education system in the Northeast grew by 24% in contrast to 12%t growth for Brazil as a whole (UNESCO, 2000*c*). Further, enrolment in Grades 5 to 8 grew by 34% in the Northeast – about 13 percentage points higher than the rest of the country. A similar pattern is found in the growth of teachers' salaries. Teachers at municipal schools in the Northeast, which are responsible for roughly two-thirds of the region's students, experienced salary increases of almost 50%; in contrast, national increases averaged 13% (UNESCO, 2000*c*). Nevertheless, core education indicators for these two regions lag behind national indicators in absolute terms.

The percentage of students who are not in their appropriate grade level because of late entry or repetition is far higher in the North (61%) and Northeast (64%) than in the Southeast (34%), the South (26%) or the Midwest (46%). Teachers' salaries also reflect this regional imbalance: salaries in the Northeast are only 61% of the national average. At the same time, the average teacher in the Northeast is far less qualified than the average teacher in Brazil: 45% of teachers in the North and 53% of teachers in the Northeast completed higher education, whereas, on average 75% of teachers in Brazil as a whole completed higher education (UNESCO, 2000*c*).

Reports observe that the quality of education generally, as well as secondary education itself, are the most notable challenges facing Brazil's education system. The 2000 EFA Assessment remarks that improvement in the quality of education – including investment in classroom materials, programmes designed to improve the learning process in order to compensate for gender or age gaps and teacher education – is the primary challenge facing Brazil (UNESCO, 2000*c*). Access to the secondary education system and regional inequity in terms of this access are additional concerns. About 19 million youth in the 15 to 17 age bracket are enrolled in primary schools, but only one-third are attending secondary schools (UNESCO, 2000*c*). Larach (2001) observes that only one-half of students in Grade 8 and one-quarter of those in Grade 11 perform at grade level for Portuguese. Regional inequity is also more pronounced at the secondary level: whereas the net primary enrolment rate in the Northeast was only five percentage points below the national average in 1998 (90% versus 95%), the region's net secondary enrolment rate was less than one-half of the national average (14% versus 31%) (Larach, 2001).

---

[22] Larach observes that enrolment reports from states and municipalities may be inflated to exploit FUNDEF's per pupil funding scheme.

[23] It is also worth noting that between 1995 and 1999 federal spending on tertiary education declined from R$ 8.7 billion to R$ 7.3 billion. Critics of the national education policies point to this decline as evidence of possible trouble ahead. We do not address this issue because this report focuses on primary and secondary education.

China

Source: The World Gazetteer, http://www.world-gazetteer.com

Social context of education

Demographics, economy, geography and government

The People's Republic of China, founded in 1949, is the world's fourth-largest country by land area (9.6 million square kilometres) and the largest by population (almost 1.29 billion). It is comprised of 23 provinces, five autonomous regions and four municipalities. China has an annual GDP per capita of about $5,000 and an unemployment rate of about 10%t, while approximately 10% of people live below the poverty line (The World Factbook, 2004).

Organization of primary and secondary education

Compulsory education in China extends from ages 6 to 15. The school system is structured into six years of primary education (ages 6-12), three years of junior secondary education (ages 12-15) and three years of senior secondary education (ages 15-18). Entry to senior secondary education is based on performance on a competitive examination; successful completion results in the *Senior High School Graduation Diploma*. Vocational training is available from ages 15 to 19 at specialised secondary and vocational secondary schools.

Under the international classification system, students enrol in primary education (ISCED 1) for Grades 1 to 5, lower secondary education (ISCED 2A) for Grades 6 to 8 and upper secondary (ISCED 3A) or vocational senior secondary education (ISCED 3C) for Grades 9 to 11.

Education governance and finance

The Ministry of Education is the supreme education administration body in China. Its responsibilities include drafting education-related laws and policies, promoting education reform, universalising nine-year compulsory education and regulating teacher training and qualification standards. The Ministry is also in charge of distributing the central government's education fund and usually allocates money for specific needs, such as additional funding for poorer schools. The responsibility for funding and operating primary

and secondary schools lies primarily with local governments and social or business entities (China Online, 2000).

Private education
According to 2004 enrolment figures, just under 2% of all students at the primary level were enrolled in private schools. Private school enrolment was just over 3% for students at the secondary level.

Equity-related laws, policies, reports and research

Laws and policies
The *Common Programme of the Chinese People's Political Consultative Conference,* adopted as a temporary constitution upon the founding of China in 1949, stated that, "the culture and education of the People's Republic of China shall be New Democratic – national, scientific and popular" (People's Republic of China (PRC), 1949). It emphasised that "the main tasks of the People's Government in cultural and educational work shall be the raising of the cultural level of the people" (PRC, 1949). At that time, the enrolment ratio of primary school-age children was just 20%. By 1978, enrolment was six times that in 1949, and the proportion of girls in primary school had increased from 25.6% to 41.5% while their enrolment in secondary school increased from 28% to 44.9%. The proportion of minority students also increased from 2.6% to 44.9% (UNESCO, 2000*e*).

In the late 1970s and early 1980s, the government began attempting to address inadequacies in the education system. In particular, a series of statements and laws, including the *Decision on Several Issues Concerning Universal Primary Education* and the *Decision on the Reform of the Educational Structure*, recognised the need for quality compulsory education (UNESCO, 2000*e*). On 1 July 1986, the National People's Congress passed the *Compulsory Education Law of the People's Republic of China*, mandating nine-year compulsory education and stating that, "all children who have reached the age of six shall enrol in school and receive compulsory education for the prescribed number of years, regardless of sex, nationality or race" (PRC, 1986). The new law further stipulated that "under the leadership of the State Council, local authorities shall assume responsibility for compulsory education, and it shall be administered at different levels," thus entrusting the actual implementation of universal education to the local governments (PRC, 1986).

The 1990 World Conference on Education for All ensured that universal education would continue to remain a priority in China's agenda. The conference created a sense of urgency and served as a source of motivation for China to press forward with its efforts toward nine-year compulsory education. In response to the EFA conference, China convened the National Conference on Education for All in Beijing to raise awareness and support for EFA among its people. In a speech given at that conference, Premier Li Peng promised that education would be given a high priority in China's programme of national development because "basic education is the foundation of the entire edifice of education" (UNESCO, 2000*e*).

Building from the EFA objectives, the country passed more laws and policies setting specific goals and targets for universal nine-year education in the 1990s. The *Regulations on Standards Related to the Acceptance of Compulsory Education Achievement* established detailed requirements in 1994, including universal primary enrolment throughout the country. It also stipulated that schools in urban and economically-developed areas achieve universal lower secondary enrolment, and primary and lower secondary school dropouts of less than 1% and 2%, respectively. The regulations also required that rural and less-developed areas achieve lower secondary enrolment ratios of 95%, primary dropout rates of less than 2% and lower secondary dropout rates of less than 3%.

The regulations further stated that among 15-year olds at least 98% should complete primary education and illiteracy rates should be less than 1%. Regarding teachers, the regulations required that 90% at the primary level and 80% at the lower secondary level be fully qualified (UNESCO, 2000*e*). In 1995, *Suggestions from the State Council on the Implementation of the Guidelines for the Reform and Development of Education in China* set several important goals to be achieved by 2000, including a primary school enrolment rate of 99%, a lower secondary school enrolment rate of 85% and nine-year

compulsory schooling. These goals were set for areas that in total comprise 85% of the nation's population.

Government laws have also brought attention to specific disadvantaged groups. The *Ninth Five-Year Plan for Educational Development and the Long Range Development Programme Toward the Year 2010* calls for local governments to narrow the enrolment gaps created by gender, wealth and ethnicity. Numerous laws, including the *Child Protection Law*, the *Women's Rights and Interests Law* and the *People's Republic of China Education Law*, stipulate that boys and girls from ethnic minority[24] areas should have equal access to education (Wei et al., 2001). The *Guidelines for the Reform and the Development of Education in China* also mandates that the education of ethnic minorities and those with disabilities receive more attention.

Further, the Ministry of Education created funds and implemented programmes to aid local governments. In the late 1990s, it announced funding to raise teacher salaries according to workload and efficiency, launched a five-year programme to improve professional skills and teaching methods for primary and middle-school teachers, and mandated that teachers meet government qualifications. The Ministry also introduced a system of rotating teachers between urban and rural areas to reduce disparities in teaching quality. In early 2000, it initiated a programme to train 1,000 primary and secondary school teachers in small towns in the poorer western provinces (China Online, 2000).

China's current goals consist of universal enrolment and completion of primary school by 2015 and the elimination of all gender gaps in primary and secondary education by 2005. In this endeavour, the government is focusing efforts on poor and ethnic minority areas. Its strategies for attaining nine-year compulsory education in these regions involve increasing middle-school enrolment, promoting the quality and relevance of education, and introducing new textbooks and curriculum. Additionally, the government plans to raise the qualification for primary and junior middle-school teachers to Associate Bachelor's and Undergraduate, respectively, and improve teacher training. The central government also intends to allocate 4% of gross domestic product to education while encouraging local governments to increase their annual education expenditure by 1% (United Nations, 2003).

Reports and research

China has made significant progress toward universal education. In 1949, the enrolment ratio of primary school-age children was only 20% (UNESCO, 2000*e*). Thirty years later, enrolment was six times that in 1949 and the proportion of girls and minority students in school increased significantly. By 1990, the net enrolment ratio of school-age children had increased in the previous decade almost five percentage points to about 98%, with primary education universalised in areas that in total comprised 91% of the nation's population. By 1998, the enrolment ratio at the lower secondary level increased almost 16 percentage points to 87%, and areas inhabited by 73% of the nation's population had universal nine-year compulsory education. The enrolment ratio of primary school-age children was about 99% and the dropout rate decreased to less than 1%. Thus, access to primary school had "significantly improved, and disparities between various social groups in access" became insignificant (UNESCO, 2000*e*).

Despite these successes, educational inequity persists throughout the country. The sources of disparity are most often regional because of differences in economic development and wealth among the provinces. China's provinces make up three large regions based on their level of socioeconomic development. The first region consists of the most highly developed nine provinces in the nation, all of which are on the east coast and include the cities of Shanghai and Beijing. The second region, examples of which are Hunan and Sichuan, includes the central provinces that are moderately developed relative to

[24] China's population is comprised of 56 ethnic groups. The largest group, the Han, make up about 92% of the country's population and the elements of their culture are what most of the world perceives as "Chinese". The other 55 ethnic groups are considered ethnic minority groups, each with their own distinctive language, indigenous homeland, custom and sense of identity. Zhuang, Manchu, Miao, Tibetan, Mongolian and Korean are examples of the larger minority groups (China Internet Information Center, n.d.; Chinese Culture Center of San Francisco, n.d.).

the other regions. The third region consists of the poorest provinces and autonomous regions in western China, including such border regions as Tibet, Xinjiang and Inner Mongolia (UNDP, 1998).

The socioeconomic development and wealth of a province, which unfavourable natural environments may impact, greatly affects its ability to provide access to education. By 1998, all except one of the provinces in the most economically-developed east coast region provided 100% coverage. Coverage ratios[25] in the central region ranged from approximately 65% to 100%, but only four of the 13 provinces fell below 80%. In contrast, coverage ratios were lower than 70% in the poorest region, with Guizhou able to provide access to education for only 16.5% of its population. In addition to coverage ratios, the western provinces had less favourable education access and outputs than the eastern or more affluent central provinces. Completion and transition rates tended to be lower and secondary school dropout rates higher in the poorer provinces (Hossain, 1997). In terms of access, the four provinces with the lowest enrolment ratios in 1998 (Guizhou, Yunnan, Ningxia, Gansu) were all in the western part of China (UNESCO, 2000*e*).

The western provinces' struggle to achieve universal basic education is further exacerbated by relatively large minority populations with traditional customs and conventions (China Online, n.d.; UNESCO, 2000*e*). Eight western provinces and autonomous regions (Xinjiang, Inner Mongolia, Ningxia, Tibet, Guangxi, Qinghai, Yunnan, Guizhou) have a particularly high concentration of ethnic minorities. As research shows, the disparities between these and other regions are significant and their condition of education reflects the educational conditions of all ethnic minorities (UNESCO, 2000*e*).

Regional and wealth disparity greatly contribute to gender inequity. While the EFA report states that, at the national level, there is no longer a disparity in access to primary school between girls and boys, the gender disparity among regions is still substantial. In some areas (e.g. the eastern provinces of Shanghai or Jilin) the female enrolment ratio in 1998 was actually higher than the male enrolment ratio. However, in western provinces (e.g. Tibet and Qinghai) there were still large inequities between boys and girls (UNESCO, 2000*e*). A World Bank publication also shows that in the mid-1990s, the completion ratio for females in secondary school was lower than that of boys, and more rural females dropped out of school than males (Hossain, 1997). In 2000, the primary school enrolment for girls in the western provinces was 95%, compared to the national average of 99%. Additionally, while a number of provinces had virtually eliminated the gender gap with a primary education enrolment rate of 100%, the northwest and southwest provinces with large minority populations continued to lag behind. Tibet, for example, had only a total primary enrolment rate of 85.8%, with 2.5 times more girls than boys not enrolled (UN, 2003).

In addition to disparity at the provincial level, inequity exists within provinces by urbanicity. As of 1998, pupil-teacher ratios in rural towns were higher than in urban schools. Ratios were even higher in village schools compared to town schools (UNESCO, 2000*e*). A serious problem facing rural communities is the high number of *minban* (or community-paid) teachers. Teachers typically are paid by the state and have fringe benefits, whereas *minban* teachers are paid by the community and have low pay and no fringe benefits. Therefore they are often mobile and cannot devote all their energies to teaching. Since the late 1980s, the government has been trying to decrease the number of *minban* teachers. While many provinces are making gradual progress, there are still very high numbers of *minban* teachers in Tibet and Hainan (UNESCO, 2000*e*).

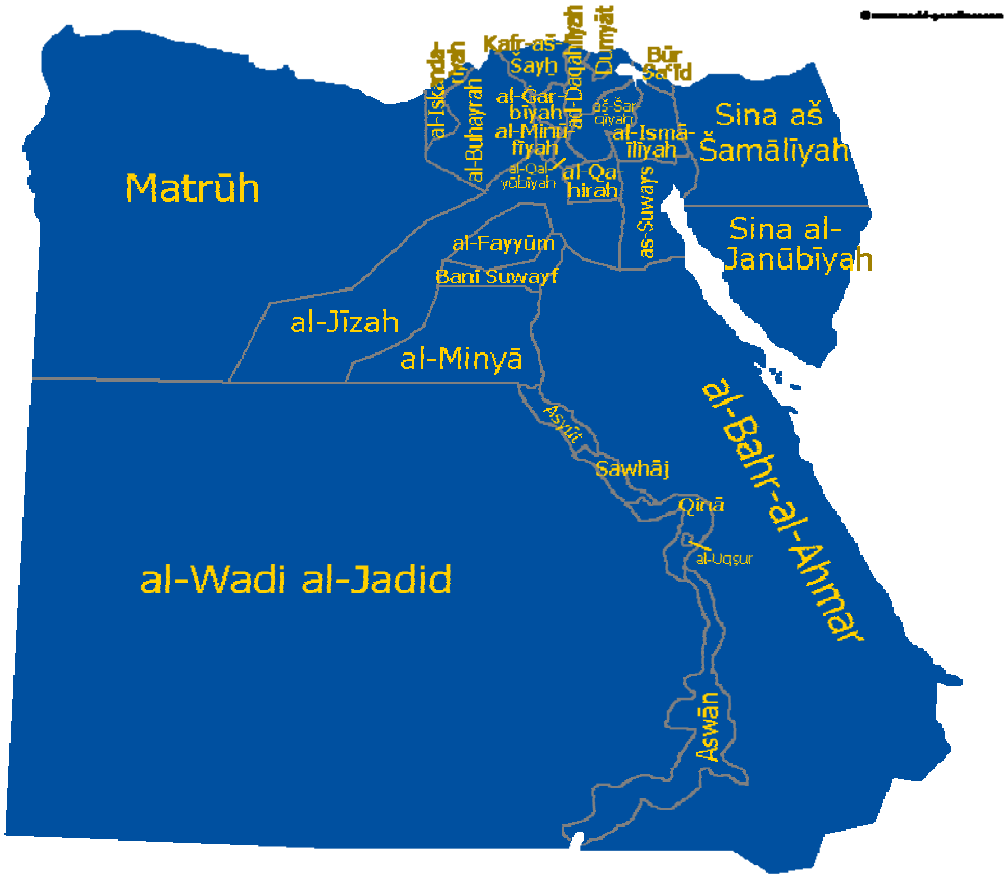
The most disadvantaged children are those who experience inequity at multiple levels. The Sample Survey on the Situation of Children, conducted in 1993, reported that three-quarters of children not enrolled in school were girls, mostly from poor and minority regions (UNDP, 1998). A later study also reports that "the problems in girls' education …[are] very obvious and most concentrated in regional areas that are primarily remote, economically underdeveloped, have poor transportation, are home to ethnic minorities, are rural and mountainous, and are autonomous," exemplified by five regions (Gansu, Guizhou, Ningxia, Qinghai, Tibet) (Wei et al., 2001).

[25] Coverage ratio is measured as the percentage of the population living in counties that have achieved nine-year universal education (UNESCO, 2000*e*).

Given that much of the educational inequity in China is due to the wealth and economic development of regions, the largest barrier to narrowing educational gaps is financial: there are clear correlations between per capita GNP and the coverage ratio (UNESCO, 2000*e*). Also, expenditure per pupil is higher in wealthier provinces than in poorer ones, but there is likewise significant disparity in education expenditure within provinces based on the wealth of the local area (Hossain, 1997). The EFA report asserts that since 1995 funding from the Chinese government, UNICEF and the World Bank have all been prioritised to benefit the poor western regions; yet, recent government funds designated for compulsory education have been devoted to the central provinces, with the western provinces not receiving much of this funding (UNESCO, 2000*e*). In addition, current policy dictates that local budgets provide most of the funding for education although in poor areas, counties lack the necessary finances to maintain primary schools and parents cannot afford to contribute to their children's education.

In 2000, China reported that 16 provinces had already attained a primary enrolment rate of 100%. However, many other provinces, especially those in the west with larger minority populations, were still struggling to reach this standard (UN, 2003). While much progress has been made over the past two decades, the Ministry of Education's Action Scheme for Invigorating Education Towards the 21st Century recognises that additional efforts focusing on poor areas and disadvantaged groups are needed and strongly recommends that basic education remain a priority in educational development (UNESCO, 2000*e*).

Egypt



Source: The World Gazetteer, http://www.world-gazetteer.com

Social context of education

Demographic, economic, geographic and government context
Egypt borders the Mediterranean Sea, the Gaza Strip, Libya and Sudan and has a land area of 1.0 million square kilometres. Its estimated population of 74.7 million has a median age of about 23.1 years. Egypt has comparatively low rates of estimated poverty (16.7%) and unemployment (9.9%) given its yearly gross domestic product per capita of about only $3,900. The government is a republic with 26 governorates (The World Factbook, 2004).

Organization of primary and secondary education
Compulsory education in Egypt extends from age 6 to 15 years and includes six years of primary education and three years of preparatory school. Following completion of the nine compulsory years, students may enter a three-year general secondary school (academic) or a three-year technical secondary school (for technicians).

Under the international classification system, students are in primary education (ISCED 1) for Grades 1 to 5, junior secondary school (ISCED 2A) for Grades 6 to 8 and then in either general senior secondary (ISCED 3A) or technical education (ISCED 3C) for Grades 9 to 11. Alternatively, some students enrol in vocational school (ISCED 2C) for Grades 8 to 10.

Education governance and finance
The constitution makes the central state the guarantor and supervisor of education in Egypt. The Ministry of Education is responsible for planning, evaluation, setting teacher standards, student benchmarks and providing educational materials. Within national guidelines, local authorities are responsible for implementation, student examinations and teacher recruitment.

Private education
Students enrol in private sector schools at a rate of 6% at the primary level and at a rate of 9% at the secondary level.

Education laws, policies, reports and research

The government of Egypt views education as the key to advancement, security and well-being for not only the nation as a whole but also individual citizens. President Mubarek, the current president of Egypt, has emphasised the importance of education in a number of his speeches. Most notably, in 1993 he said, "education and its progress is our path and gate to the New World map. Education is the cornerstone of our national security in its broad context, …and …leads to stability, development and welfare" (NCERD, 1999). This recognition of the importance of education goals and the value of education has formed the basis for education reform in Egypt. Among the primary reform objectives are the improvement of educational equity and the provision of education for all. With regard to this latter effort, the Minister of Education has said "it is high time for us to consider this proposed principle as the prevailing one for Egypt" (NCERD, 1999). While Egypt has made much progress toward this goal, many barriers to education for all persist.

Equity-related laws and policies
The use of education as a tool for advancement has been emphasised throughout Egypt's history. Prior to independence, primary schools were created to prepare children to enter secondary schools. However, due to the required school fees only the most privileged children enrolled (Hargreaves, 2001). Those children who completed primary education then entered secondary school, which was intended to provide the necessary qualifications to become employees of the British administration (Hargreaves, 2001). In 1923, the Minister of Education made elementary schools free and compulsory (NCERD, 1999). However, seven years later only 18% of eligible children were enrolled in elementary or primary schools, though some children not enrolled in public education attended private, usually foreign, schools (Hargreaves, 2001).

After 1952, education was further stressed as a means to improve society under the new government. In 1953, a unified primary compulsory education system was developed, elementary schools were abolished and primary schools were made free and compulsory for children from 6 to 12 years (Hargreaves, 2001; NCERD, 1999). With the exception of Armenian and Vatican schools, foreign schools were abolished in 1956, further unifying the primary school system (Hargreaves, 2001).

Education is recognised as a right in Egypt. This is highlighted by two fundamental principles supported by the country's 1971 constitution: equity before the law and equal opportunity (NCERD, 1999). Article 8 of the constitution mandates that the government guarantee equal opportunities for all citizens, while Article 40 ensures that all citizens are equal before the law (NCERD, 1999). The education system is further governed by a framework laid out by Articles 18, 20 and 21 of the constitution. These articles stipulate that education is a basic right that is governed by the State in order to ensure equity, that public education is free at all levels and that primary education is compulsory (NCERD, 1999). In response to education law No. 139, which was passed in 1981 and mandated that the State should strive to extend compulsory education to other levels of education, preparatory education also became compulsory (NCERD, 1996, 2001).

Beginning in the 1988/89 school year, compulsory education was reduced to eight years; further, the sixth grade of primary education was abolished to make funds available for improving the quality of learning in the other five primary grades (Hargreaves, 2001). However, in 1988 education law No. 233 reinstated the sixth year of primary education. It also stipulated that both the Ministry of Education and localities are

responsible for supervising and regulating education (World Bank, 2002). All schools in Egypt must follow the same curriculum on the same schedule, though, and must answer to the government regarding this practice: schools are accountable at the governorate level and governorate representatives are then accountable to the central government (Hargreaves, 2001). In 1989, the president proclaimed the 1990s a National Decade of Literacy and Adult Education (NCERD, 1999). Education was further recognised as "the major axis of national security" by the government in the early 1990s (NCERD, 1996).

The 1990s were marked by many educational developments in Egypt. In response to low literacy and enrolment rates among females and as part of an agreement between the Ministry of Education and UNESCO, community schools were established in 1992 (NCERD, 1999). These schools helped to increase enrolment among females in rural areas, who would otherwise not have access to schooling (PARC, 2002). Community schools are managed and supervised by local community leaders, rather than the government (NCERD, 1996). In the next year, one-class schools were established for females in an effort to reduce gender gaps in education. These five-year schools educate females who are of compulsory age but who are not enrolled otherwise. Further, ministerial decree No. 255, which was put forth in 1993, allows female primary school dropouts to enrol in one-class schools. Though completion of community schools or one-class schools usually marks the end of education for these females, they are allowed to further their education at the preparatory level (NCERD, 2001).

These efforts were followed by important government initiatives that set many goals and reforms for basic education, including the 1993 National Conference for the Development of Primary Education, the 1994 National Conference for the Development of Preparatory Education and the 1996 National Conference for the Development of Teacher Education and Training (NCERD, 1999). Influenced by the 1990 Jomtien conference, the Ministry of Education aspired to implement education for all at the basic education level by 2000 and eradicate illiteracy by 2002 (Hargreaves, 2001). Hence, the government initiated the Basic Education Enhancement Programme in 1996 to further extend access to vulnerable groups, such as females and those in poverty (World Bank, 2002). The major goals of this programme were to improve both the quality of education and equity in education. Through the enhancement programme, 700 Awareness Campaigns were assembled, in which children, preachers, women's organizations, non-governmental organizations and local community leaders participated (World Bank, 2002). These campaigns included workshops that were held in poor regions and that addressed issues related to enrolment, school dropout and grade repetition. In fact, they helped to re-enrol 3,900 dropouts and reveal to school administrators the enrolment barriers that the existing rules and regulations posed (World Bank, 2002).

The Egyptian government has taken many other initiatives to reform education, such as the World Bank-supported 1998 establishment of the Secondary Education Reform Programme, which aimed to improve access to general secondary education (World Bank, 2002). Furthermore, the National Council of Women, formed in 2000, and the National Council for Motherhood and Childhood aim to address gender issues and rectify them through government policies; notable improvements include reductions in the gender gap in education and dropout rates (PARC, 2002). Finally, a 2000 modification to ministerial decree No. 48, which was issued in 1994, aimed to improve access to education by providing educational tutoring groups for financially incapable pupils and fatherless children (NCERD, 2001).

The Ministry of Education has embarked upon a new phase in the implementation of education reform. In a 2003 speech, the minister of education identified three focus areas, one of which was the assurance of equal access to education (NSF, 2003). In particular, the government is aiming to construct more schools to alleviate class density and eliminate multi-shift schools, as well as place special emphasis on the education of girls (NSF, 2003). It further aspires to deal with economic inequities at a structural level to reduce dropout among the economically disadvantaged (NSF, 2003). Improvements in the quality of education and the establishment of a supportive institutional environment are its two other policy goals (NSF, 2003). Strategic approaches have been identified to facilitate the fulfilment of these goals, most notably the application of a national set of standards for education and the implementation of a process by which schools can develop and apply their own improvement plans (NSF, 2003). Other approaches include the strengthening of partnerships with non-government organizations and other groups to achieve

community participation, encouragement of innovation and the use of technology, and proper management of the process of change (NSF, 2003).

Equity-related reports and research

While Egypt has made great strides toward achieving education for all, inequity persists with regard to access to preparatory education, poverty level, gender, urbanicity and region. UNESCO, NCERD and the World Bank are among the many organizations with research findings pointing to these inequities.

Although access to education has been greatly improved at the primary level, disparities exist between the primary and preparatory levels. A 1997 household survey demonstrated that 97% of all Egyptian villages had access to primary education, while 92% had access to preparatory education (World Bank, 2002). Though this percentage is high, it should be closer to that of primary education, as both levels are compulsory. Furthermore, failure to pass the required exam at the end of the primary grades results in the termination of schooling for children, as they are then prevented from enrolling in preparatory school (World Bank, 2002). This is paradoxical because the primary school structure allows for children to be pushed out of the system before they complete the subsequent compulsory years of schooling.

Relative improvements in education access are counteracted by issues related to teacher quality. Between the 1991/92 and 1998/99 school years, the percentage increase in the number of teachers surpassed percentage increases in the number of classes and the number of pupils (NCERD, 1999). As a result, the pupil-teacher ratio decreased, seemingly benefiting students. However, compared to other similarly situated countries in 1999, the teaching force was inadequately qualified at the primary level: teachers were hired who had little or no training, or low levels of education in general (World Bank, 2002). Further, increases in the number of teachers between 1993 and 1999 were more prominent in higher levels of education (World Bank, 2002).

While some inequity exists between the primary and preparatory levels of education, the largest disparity is between basic education and secondary or higher education. In *The Paradox of Education and Unemployment in Egypt*, Galal emphasises that there is a bias in favour of higher education at the expense of basic education (2002). Although the World Bank (2002) states that resources have been shifted from higher education to basic and secondary education since 1990, for the 1997/98 school year only 14% of total education expenditures were for basic education (WOMANKIND Worldwide, 2001). Although universal enrolment is practically achieved at the primary level of education (97%), primary schools are receiving the least amount of financial support (World Bank, 2002).

Educational inequity also exists relative to poverty level. Although education is free, poor families are more affected by the hidden costs of schooling: direct costs incurred through the purchase of clothes and books and indirect costs experienced through the loss of family labour (WOMANKIND Worldwide, 2001). In fact, due to the loss of labour associated with schooling, rural areas have higher repetition and dropout rates than urban areas (World Bank, 2002).

Although poorer households spend about half as much on schooling in absolute terms, the cost per household for sending children to school is higher relative to their household income (World Bank, 2002). Consequently, 50% of children aged 7 to 11 who are not attending school are from the poorest quintile of the population, while 78% are from the bottom two quintiles (World Bank, 2002). According to a 1997 household survey, when asked why they are not attending school, 52% of the poor and 57% of the very poor cited financial reasons as their primary reason (World Bank, 2002). Further, due to the large increase in the number of teachers and low teacher salaries, financial support from families is encouraged, thereby raising the cost of free education for poor families (Hargreaves, 2001). Children from poor families also encounter another barrier: tutors. Because of the structure of primary education and the exit exam students are required to pass, some children obtain tutors to ensure their enrolment in preparatory education (World Bank, 2002). It is unlikely that children from poor families are able to afford tutors, which may disadvantage them within the education system relative to other students.

Moreover, although public school spending in 1997 was relatively equally distributed across levels of education, there is an inequitable distribution of spending across socioeconomic quintiles because such a small number of children in the poorest quintile attend higher levels of education (World Bank, 2002). Poorer regions and governorates also have the least access to Early Childhood Education (ECE) programmes, which have been shown to contribute to lower grade repetition rates, lower dropout rates and higher levels of educational attainment (World Bank, 2002).

Gender is another source of educational inequity. This is partly because parents would rather send sons than daughters to school: when females get married, their education provides little value to their families (WOMANKIND Worldwide, 2001). Universal primary education was achieved for males in 1987; at this time, though, only 79% of females were enrolled in primary schools (World Bank, 2002). Beginning in 1996 there was a noteworthy reduction in this gender disparity, and by 2000, females had also achieved universal primary education (World Bank, 2002). Nonetheless, females in Upper Egypt and other poor areas are still faced with barriers to education (PARC, 2002). In 2000, females had achieved higher net enrolment rates than males in urban areas for all education levels, but males had achieved higher net enrolment rates in rural areas and Egypt as a whole (American University in Cairo, 2000).

Though illiteracy rates are decreasing overall, more females than males are illiterate (NCERD, 1999). The number of female illiterates in rural areas is almost twice as much as the number in urban areas (NCERD, 1999). In addition, in both urban and rural areas, more males than females have “at least some primary school education” (Demographic and Health Surveys, n.d.). Males also have higher net enrolment rates than females in secondary and higher education, which happen to be the levels of education that receive the most funding (American University in Cairo, 2000). Thus, females are benefiting less from expenditures in education, though they are more in need and even though they have lower repetition rates than males (NCERD, 1999).

Educational inequity also persists by urbanicity due to the difficulty of providing access to schools in rural areas. Community schools and one-class schools have helped in this regard. Though the urban-rural gap has narrowed, urban areas still have higher net enrolment rates than rural areas (American University in Cairo, 2000). For example, at one time in the 1990s, net enrolment rates averaged 80%, but within Upper Egypt, this rate ranged from 70% in cities to 55% in the nearby rural areas (WOMANKIND Worldwide, 2001). Disparities based on urbanicity also exist with regard to pupil-teacher ratios. Between 1993 and 2000, the overall pupil-teacher ratio remained constant, but in urban areas the ratio fell (World Bank, 2002). Urbanicity inequity is also illustrated by illiteracy rates, which are higher in rural areas relative to urban areas (PARC, 2002).

Still, Egyptian educational reforms have been relatively successful thus far: there are higher overall enrolment rates, males and females are attaining higher levels of education, improvements have been made in literacy rates and education is beginning to reach all socioeconomic classes (Galal, 2002). However, it is imperative to look at issues of equity at a regional level: while the nation as a whole might be thriving, gaps exist between rural and urban areas in Egypt. Although the rural-urban gap might be decreasing, wide gaps exist between the best-performing governorates and worst-performing governorates (PARC, 2002). Egypt has made great strides in improving access to education, but more efforts need to be exerted in terms of equity and quality. These problem areas are acknowledged in Egypt’s Millennium Development Goals, which include universal primary school completion for both males and females by 2015 in addition to the elimination of gender inequities in basic education by 2005 and in all levels of education by 2015 (PARC, 2002). The National Strategic Framework for Education in Egypt further acknowledges the importance of equity and quality in education, as many goals and approaches have been established in order to bridge the education gap and enhance the overall quality of education.

India

Source: The World Gazetteer, http://www.world-gazetteer.com

Social context of education

Demographics, economy, geography and government

India borders the Arabian Sea, the Bay of Bengal, Pakistan and Myanmar, and is the world's second most populous country (after China), with a population of almost 1.05 billion. Despite strong economic growth in recent years, the country remains highly underdeveloped: annual GDP per capita is about $2,900, approximately 25% of the population lives below the poverty line and unemployment is about 9.1%. India is a federal republic consisting of 28 states and 7 union territories (The World Factbook, 2004).

Organization of primary and secondary education

Compulsory education in India extends from age 6 to 14 and includes five years of primary school and three years of middle school. After two further years of study in secondary school, students receive the Secondary School Certificate. Students may then enrol in senior secondary school, which lasts two years and leads to public examinations for the higher secondary school certificate. Vocational training is also available at the higher secondary level; graduates are awarded the certificate of vocational education.

Under the international classification system, mainstream students enrol in primary education (ISCED 1) for Grades 1 to 6 and receive a primary certificate, followed by upper primary education (ISCED 2A) for Grades 7 to 9, earning an upper primary certificate. Upon completion, students enrol in lower-level technical and vocational education (ISCED 2C) or high school (ISCED 3A) for Grade 10 and receive an ITI certificate or a matriculation certificate, respectively. Students then enrol in senior secondary education (ISCED 3A) for Grades 11 and 12 and earn a senior secondary school leaving certificate.

Private education
17% of all students at the primary level enrol in private schools and private expenditure on education is growing: as a portion of total private expenditure, it grew 2.5% to 3.5% between the early 1980s and the late 1990s.

Education governance and finance
Management and funding of schools reflects the country's federal government structure, with states and local entities playing an important role. The state government organises local education programmes and provides most of the funding for education. The central government, through the Department of Education, coordinates planning with the states and funds experimental programmes. The department also takes action through the University Grants Commission and the National Council of Educational Research and Training, organizations that aim to improve education standards, develop new teaching materials and design textbooks (Library of Congress, 1995). At the primary and upper primary levels, the central government runs only 51% of schools – the figure is closer to 36% at the secondary and upper secondary levels.

Equity-related laws, policies, reports and research

Laws and policies
When India gained independence, there was no accepted national system of education (India Department of Education, n.d.*i*). Accordingly, Article 45 of the country's new constitution gave these instructions: "The State shall endeavour to provide, within a period of ten years from the commencement of this Constitution, for free and compulsory education for all children until they complete the age of fourteen years" (India, 1950). The Constitution also recognised discrimination against those lower on the caste system during the pre-independence period and ordered the states to "promote with special care the educational and economic interests of the weaker sections of the people, and in particular, of the Scheduled Castes and the Scheduled Tribes" (India, 1950).

The First Five Year Plan (1951-56) continued to emphasise the universalisation of elementary education (UEE) (India Department of Education, n.d.*i*). The Plan reaffirmed the Constitutional directive for compulsory education and acknowledged severe inequity between states in terms of educational facilities and public expenditure spent on education. It also drew attention to the nation-wide problems of waste and inefficiency. Of the total number of students who entered school during the 1945/46 school year, only 40% reached Class IV three years later. Thus, the expenditure for the other 60% of students was considered a waste since these students ended their schooling without ever achieving permanent literacy. Students who spent a number of years in the same grade level were a second inefficiency (India, 1951).

In spite of these early policies, little was done until the 1960s, when the government established an Education Commission. After a close examination of the system, the Commission recommended "a radical transformation in the prevailing education system" involving qualitative improvement, quantitative expansion and equal opportunities for all (India Department of Education, n.d.*f*). It further suggested that all children receive five years of elementary education by 1975/76 and seven years by 1985/86. These recommendations resulted in the *National Policy on Education of 1968*, but there were no major structural changes in the education system. Therefore the problems of waste and inefficiency continued throughout the 1970s and early 1980s (India Department of Education, n.d.*f*).

In 1986, India established the second *National Policy on Education* (NPE), a turning point because it gave basic education the highest priority and laid out a concrete plan of action for UEE (UNESCO, 2000*g*). This framework highlighted the success of the 1968 NPE, noting that more than 90% of the country's rural communities now had school facilities within one kilometre. Yet, it also recognised that the previous policy lacked detailed strategies and that the education problem had reached "such massive proportions" that they needed to be addressed with "the utmost urgency" (India Department of Education, 1998). Significantly, the newer NPE gave as much importance to universal retention and levels of achievement as to universal access and enrolment. NPE also recognised specific disadvantaged groups, such as Schedules Castes (SCs), Scheduled Tribes (STs) and girls, and called for equality and expansion of access at both the primary and secondary levels (India Department of Education, 1998). NPE's strategy

focused on the decentralised planning and management of elementary education (India Department of Education, n.d.*h*). These NPE goals and strategies were reiterated in and supplemented by the Seventh Five Year Plan (1985-90), which was modified halfway through implementation to align with NPE ideals (India, 1985).

The 1990 Education for All conference served as additional motivation for India in its journey towards UEE. The Central Advisory Board of Education, the highest education policymaking body in the country, recognised and endorsed EFA as a reaffirmation of NPE's policy direction for elementary education. Perhaps most important, EFA played a crucial role in changing India's view of basic education: from education as merely a service provided by the state to education as a fundamental right of every citizen (UNESCO, 2000*g*). In accordance with EFA, India set certain goals to be attained by 2000. In the *Status Report Towards the Next Millennium*, it defined UEE more specifically: universal enrolment, access, retention and achievement for Classes I through VIII; a primary school within one kilometre for all children; non-formal education for dropouts and working children; and reduction of the dropout rate for Classes I through V from 46% to 20% and from 60% to 40% for Classes VI through VIII (India Department of Education, n.d.*h*).

With the revision of NPE in 1992 and EFA's continuing influence, India expected the 1990s to be the decade it would "make a real breakthrough in achieving its long-cherished educational goals" (India, 1992). The Eighth Five Year Plan (1992 to 1997), following NPE guidelines, again vowed to maintain UEE as a high priority, with a specific focus on girls' education (India Department of Education, n.d.*e*). In order to achieve UEE, it set as its new target an additional enrolment of 56.1 million children (India Department of Education, n.d.*i*). Specific strategies continued to involve a decentralised approach to management and incentives for girls, SCs and STs, as well as measures for improving teacher quality (India Department of Education, n.d.*b*). It also planned to move forward with the expansion of secondary schools and promised to cater to the needs of deprived groups, such as girls, SCs, STs and those living in rural areas (India, 1992).

To attain the goals of NPE, EFA and subsequent five year plans, a number of schemes and programmes were created in the 1980s and 1990s. Many of these programmes sought to decentralise decisionmaking and encourage community participation, which were seen as crucial for sustaining long-term gain towards UEE. While many of these programmes were sponsored by the central government, funding also often came from state governments and international organizations (UNESCO, 2000*g*).

One of the earliest systems, in effect since 1979, was a programme of non-formal education (NFE). NFE is generally two years long and features part-time instruction, small groups of students, flexibility and special emphasis on girls' education. UNESCO reports that NFE contributes approximately 3.5% of total enrolment and is responsible for just over a 1% reduction in the number of dropouts at the primary level. While these numbers may seem minimal, they are significant because NFE provides a method for bringing primary education to disadvantaged and un-reached children, such as those who drop out of formal schools, children from locations without schools, children who assist with domestic chores and girls who are unable to attend formal schools (UNESCO, 2000*g*). Two other earlier programmes were the Andhra Pradesh Primary Education Project (APPEP) and Operation Blackboard, both of which aimed to improve the quality of primary education through the development of school facilities (India Department of Education, n.d.*b*, n.d.*h*).

While many programmes emphasise girls' education, *Mahila Samkhya* (MS) focuses solely on women. With projects in several regions (e.g. Andhra Pradesh, Assam, Bihar, Gujarat, Karnataka, Madhya Pradesh, Uttar Pradesh), MS is a women's empowerment group initiated with the goal of changing both society's and women's perceptions of females, concentrating especially on education in rural areas (India Department of Education, n.d.*f*, n.d.*g*, n.d.*h*). Its foundation is the organization of *mahila sanghas*, or collective women's groups, committed to addressing their own concerns. The objectives of MS include the following: to enable *mahila sanghas* to assist and supervise educational activities; to provide women and adolescent girls with the necessary educational support; and to create an environment where education aids in achieving equality (India Department of Education, n.d.*d*).

In order to ensure universal quality as well as universal enrolment, in 1991 the Minimum Levels of Learning (MLL) programme was created to identify basic competencies in language, math and other subjects, and to develop new textbooks (India Department of Education, n.d.*a*). The programme dictates a set of standards and measures that would ensure all students who complete basic education have achieved these outcomes (UNESCO, 2000*g*). Another project begun in the same year is the Bihar Education Project (BEP), which also aims for qualitative as well as quantitative improvement. Aided in part by UNICEF, its main focus is UEE in Bihar, especially for children aged 6 to 11, with special emphasis on girls, SCs and STs (India Department of Education, n.d.*f*, n.d.*h*).

Because poverty is a main reason for dropout, the government initiated the National Programme of Nutritional Support to Primary Education, also known as the Mid-Day Meal Scheme, in 1995. Its goals were to increase enrolment, retention and attendance in primary classes by providing free, nutritious and wholesome cooked meals for all students in Classes I through V (UNESCO, 2000*g*; India Department of Education, n.d.*d*). By 2000/01, the programme served 105.1 million students in 792,000 schools. Studies by the National Council of Educational Research (NCERT) and the Public Report on Basic Education (PROBE) all found that the programme has had a positive impact in moving the nation towards UEE (India, 2002).

Building on the experiences of previous projects, such as APPEP and BEP, the District Primary Education Programme (DPEP) was created in 1994 (India Department of Education, n.d.*a*, n.d.*f.*). Hailed by India as its most ambitious internationally assisted primary education programme, it seeks to implement the strategy of district-level planning set out by the Eighth Five Year Plan (India Department of Education, n.d.*a*., n.d.*f*). Its major concern is equity: all plans and strategies are tailored to address the specific needs of disadvantaged groups, such as SCs, STs and girls (India Department of Education, n.d.*a*.). Specific goals include providing all children with access to primary education; reducing gender and social gaps in enrolment, dropout rates and learning achievement to less than 5%; reducing overall primary dropout rates for all students to less than 10%; and raising average achievement levels by at least 25% over baseline levels (India Department of Education, n.d.*h*). DPEP also reaffirms the importance of the Panchayati Raj Institution (PRI), established in 1992 with the passing of the 72nd and 73rd Amendments (India Department of Education, n.d.*i*). These local bodies are responsible for preparing development plans and implementing educational programmes (India Department of Education, n.d.*h*; UNESCO, 2000*g*). Community participation is at the heart of DPEP, and PRI exemplifies methods for involving minorities, women and other socially deprived groups (India Department of Education, n.d.*a*.).

By the end of the 1990s, DPEP covered 60% of children in 13 states (Madhya Pradesh, Assam, Haryana, Maharashtra, Karnataka, Tamil Nadu, Kerala, Orissa, Himachal Pradesh, Andhra Pradesh, West Bengal, Uttar Pradesh, Gujarat) (India Department of Education, n.d.*h*). The majority of these districts have large populations of tribal and socially-disadvantaged people and low female literacy (India Department of Education, n.d.*a*.). The successes of DPEP have marked it as a viable strategy for UEE. Between the 1993/94 and 1996/97 school years, enrolment in DPEP districts in Assam, Haryana, Madhya Pradesh and Maharashtra increased on average 3.7% to 16.8% more than non-DPEP districts. Primary school enrolment in DPEP districts increased by 630,000, 51.5% of which were girls, and enrolment increases between the 1995/96 and 1997/98 school years far exceeded the national average. Gender-based inequity in enrolment between SCs and the general population were almost non-existent, and repetition rates improved in many cases by more than 50% in the 1996/97 school year. Learning scores also increased substantially over the 1994 baseline in language and math (India Department of Education, n.d.*a*.).

While most programmes have focused on primary school, a few featured plans to improve secondary schools. For example, National Open School (NOS), initiated in 1989, provides distance learning and non-formal education. It recently expanded to include Open Basic Education (OBE) programmes, which provide alternative schooling to newly literate students, school dropouts and those who complete NFE at the primary level (India Department of Education, 2003). Another scheme that began in the 1980s is *Jawahar Navodaya Vidyalaya* (JNV). Its objective is to provide high-quality education that includes cultural values, environmental studies and physical education to talented children in rural areas. Admission is based on tests conducted in Class VI and seats are reserved for disadvantaged students:

75% for rural students, 22.5% to 50% for SC and ST students and about 33% for girls (India Department of Education, 2003).

Despite the successes of these programmes, the Ninth Five Year Plan (1997-2002) recognised that UEE had not been met. This Plan continued to affirm Article 45 and set its target at an additional enrolment of 25 million in lower primary and 16 million in upper primary. It also pledged to further empower Panchayati Raj Institutions as the nucleus of programme implementations (India, 1997). In addition, the Plan introduced conceptual changes to secondary schools. It intended to change the perception that secondary schools were merely a bridge for elementary and higher education and instead establish it as preparation for young people to enter either the work world or higher education. It also promised to expand NOS and distance education in order to meet the demands for secondary education that came with the expansion of elementary education (India, 1997).

Guided by the Ninth Five Year Plan, the first few years of the new century saw continued expansion and development of programmes. In 2001, India established the Indian Elementary Education Project, known in Hindi as *Sarva Shiksha Abhiyan* (SSA). The programme is an agreement between the central government, states, districts and civil society to "provide useful and relevant elementary education" for all children between the ages of 6 and 14 by 2010 (India Department of Education and Literacy, n.d.). It also builds on the achievements of DPEP and extends the programme to the whole nation (World Bank, 2004). Its objectives are specific: all children in school by 2003; all children completing five years of primary school by 2007; all children completing eight years of elementary school by 2010; and universal quality education by 2010. Like previous programmes, it promises to focus on the education of girls, SCs, STs, minority groups, urban-deprived children and children with disabilities (India Department of Education and Literacy, n.d.).

In 2002, UEE received significant additional support when basic education became a constitutional amendment. No longer just a set of instructions, basic education was now a fundamental right: "the State shall provide free and compulsory education to all children of the age of six to fourteen years in such manner as the State may, by law, determine" (Legal Informatics Division, 2002). Every child could now demand elementary education from the state, and parents were legally required to provide all possible educational opportunities to their children (India Department of Education, 2003).

This same year also marked the beginning of the current Tenth Five Year Plan. Its targets were generally those outlined in SSA's framework, with strategies continuing to involve SSA as the primary means for achieving UEE, as well as emphasising the need to formulate separate strategies for each problem area (India, 2002). Accordingly, the government recently created a separate SSA component that focuses only on under-privileged and disadvantaged girls' education in Classes I through VIII. The objective of the National Programme of Education of Girls at Elementary Level (NPEGEL) is to reduce gender gaps in enrolment especially for SCs and STs whose gender gaps are 30% and 26% at the primary and upper primary levels (India Department of Education, n.d.*c*).

Reports and research

Nationally, India has made immense progress in access and enrolment since the time of independence. During the 1950/51 school year, only 40% of children aged 6 to 11 had access to education facilities, while only 10% of 11- to 17-year-olds had access (India, 1951). By 1986, 94.5% of the rural population had primary schools within a walking distance of one kilometre, and about 84% had upper primary schools within three kilometres. Gross enrolment rates of children aged 6 to 11 were 42.6%, and 12.7% for those aged 11 to 14 during the 1950/51 school year (India Department of Education, n.d.*i*). Half a century later, these rates were 94.9% in primary school and 58.8% in upper primary school (India, 2002). The government has also made significant improvements in expenditures. Expenditure on education was a mere 0.7% of GNP during the 1951/52 school year, but by the mid-1990s this figure rose to 3.8% (UNESCO, 2000*g*).

In spite of these national achievements, there remain large inequities throughout the country, the most glaring of which is gender inequity. During the 1949/50 school year, women accounted for about one-half of India's population, yet made up only 28%, 18% and 13% of the total number of students in primary, middle and high school, respectively (India, 1951). Girls' enrolment increased substantially in the 1980s and 1990s but still lagged behind boys. Although India was able to cut in half the total number of children out of school, girls still accounted for 60% of this figure (India Department of Education, n.d.*i*). Additionally, gains made in enrolment were not reflected in completion rates. According to the 1991 census, for every 100 rural girls in Class I, there were only 40 rural girls in Class V, 18 in Class VIII, 9 in Class IX, and 1 in Class XII. For urban girls, the corresponding numbers were only slightly better, from 82 in Class V to 62, 32 and finally 14 in Class XII (India Department of Education, n.d.*g*).

Rural girls are doubly disadvantaged because not only are educational facilities less accessible, but rural girls are also more likely to have to help with household work related to fuel, fodder, water or sibling care (India Department of Education, n.d.*g*). Other reasons for non-attendance include early marriage or betrothal, traditional views that educating girls is not useful, parents' unwillingness to send girls to schools with male teachers, and lack of proper security measures for girls travelling from village to village (Education still reaches too few girls and women in India, 1992). A high level of violence is also cited for low female attendance, specifically in the state of Bihar, especially against SCs and STs. Women from these disadvantaged groups experience the most brutal forms of violence (Unterhalter and Shushmita, 2001).

Although the government has long recognised the gender gap and many programmes in the 1980s and 1990s sought to reduce that disparity, the inequity between boys and girls was still significant at the turn of the century – especially across regions. There were at least as many girls aged 6 to 14 outside of school as there were in school, and certain states (Bihar, Jammu and Kashmir, Rajasthan, Uttar Pradesh) had a significant problem. In Uttar Pradesh at the end of the 1990s, not even 2 out of 10 girls aged 6 to 11 were enrolled in primary school. There was also a large gender gap in educational efficiency: in Uttar Pradesh, girls took almost eight years longer than boys to complete lower primary education, on average (UNESCO, 2000*g*). The net enrolment ratio (NER) for girls in 1999/00 was lower than for boys, and the number of girls in upper primary school was still significantly lower than in primary school (India, 2002).

In addition to gender inequity, inequity between SCs and STs and the rest of the population has also received attention in policies and five year plans. SCs comprise about 16% of the total population while STs make up 8%. Enrolment has increased over the years so that their participation rate at the primary level by the 1990s was about proportionate to their share in the population. However, dropout rates and gender disparities for this group were still significant, and both groups still lagged behind the general population in terms of enrolment and literacy (India Department of Education, n.d.*i*).

While gender and social disparities have occupied the forefront of India's policy, the country also has its share of regional inequity. Some states have been somewhat successful at UEE. In Goa, Kerala and Mizoram, almost all children enrolled in initial primary school classes complete at least four to five years of school. Kerala and Punjab in the 1990s both demonstrated high levels of efficiency in their schools, with students completing five years of primary school in about 4.7 and 5.5 years (UNESCO, 2000*g*). Four other states (Gujarat, Kerala, Maharashtra,Tamil Nadu) are also recognised by the Ninth Five Year Plan as providing good physical school facilities and quality of education (India, 1997). Even Madhya Pradesh, a traditionally undeveloped state, showed a significantly high NER of just over 88% in the late 1990s (India, 1997; UNESCO, 2000*g*).

In contrast are the states that consistently fall short of national averages, especially Bihar, Uttar Pradesh and Rajasthan. In 1986, there were 31,815 communities with populations of 300 or more but without a primary school within one kilometre – most were in seven states (Arunachal Pradesh, Assam, Bihar, Jammu and Kashmir, Madhya Pradesh, Rajasthan, Uttar Pradesh) (India Department of Education, n.d.*i*). Many of these same states also need to improve physical facilities and the quality of education (India, 1997).

While GER in many areas in the 1990s had already exceeded 100%, some states still had significantly lower ratios. Some (e.g. Uttar Pradesh and West Bengal) also had students requiring an average of 15.7 and 14.3 years to complete five years of primary education. Of the 39.25 million additional children that needed to enrol in school in order for India to achieve UEE by 2000, 30.45 million were in eight states (Andhra Pradesh, Bihar, Gujarat, Madhya Pradesh, Maharashtra, Orissa, Uttar Pradesh, West Bengal). Among these, five states accounted for over two-thirds of the total necessary additional net enrolment (UNESCO, 2000*g*).

Public expenditure also varies from state to state. In the late 1990s, it ranged as low as 2.5% of state domestic product in Haryana to as high as 6% in Kerala. Variations also exist in per capita expenditure, with per capita expenditure in Kerala (Rs. 423) more than two times that in Bihar (Rs. 176). In addition, some poorer states may spend less per capita in terms of dollar amounts but more percentage-wise. For example, Bihar spends a higher share of its income, 4.5%, on education, but that only translates to a per capita expenditure of Rs. 176. Haryana, on the contrary, puts in only 2.5% of its state domestic product, but that equals a per capita expenditure of Rs. 270 (India Department of Education, n.d.*h*).

As of 2000, India accounts for 26 million, or more than one-fifth, of the world's out-of-school children (UIS/UNICEF, 2006). The inequities of gender, social class and region remain a problem, even amidst policy, programmes and schemes intended to address these issues. In addition, though the government has consistently stated its intention of raising education expenditure to 6% of GDP, this has yet to happen (UNESCO, 2000*g*). Still, India recognises the unfinished tasks and challenges ahead of it and continues to implement policies to move UEE forward; for example, the government introduced *The Free and Compulsory Education Bill, 2004* which mandates primary education (India Department of Education, 2004).

Indonesia

Source: The World Gazetteer, http://www.world-gazetteer.com

Social context of education

Demographics, economy, geography and government

Indonesia is comprised of more than 17,000 islands and has a land area of over 1.8 million square kilometres, making it the largest archipelago in the world. The country has an estimated population of 234.8 million (2003), with a median age of about 25.8 years. Indonesia's economy is underdeveloped: it has yearly GDP per capita of about $3,200 and approximately 27% of people live below the poverty line. The government is a republic consisting of 27 provinces, two special regions and one special capital city district (The World Factbook, 2004).

Organization of primary and secondary education

Compulsory education in Indonesia extends from age 7 to 15 and includes six years of primary education and three years of junior secondary education. Students may enrol in senior secondary education – in academic, religious, or vocational tracks – for three more years.

Under the international classification system, students are in primary education (ISCED 1) from Grades 1 to 6, and junior secondary education (ISCED 2A) from grades 7 to 9. Depending on their track, students then enrol in either senior secondary general (ISCED 3A) or senior secondary technical (ISCED 3B) for Grades 10 to 12.

Education governance and finance

Indonesia recently moved to decentralise the administration of public schools. According to a 1999 initiative, the central government is responsible for: national curriculum and age standards, basic learning material standards, credentialing requirements, education finance guidance, the academic calendar, student transfer and certification, and regulations for higher education. All other governance and finance issues are relegated to the district and municipal governments.

Private education

Many of the private schools in Indonesia are run by religious organizations. At the primary level, 16% of students enrol in private education. The figure is higher for secondary education: 42%.

Equity-related laws, policies, reports and research

Laws and policies

The Indonesian constitution, adopted in 1945, declared that every citizen has both the obligation and the "right to receive education" and government has "the obligation to fund this [basic education]" (Indonesia, 1945: Article 31). Equality of educational opportunity has also been a theme of development since the first *Repelita* (1969-1973), a five-year economic development plan (UNESCO, 2000*f*). One of the first programmes created to try to meet these needs was *INPRES SD,* which aimed to build a stable foundation for education through improved school facilities, equipment and teachers (UNESCO, 2000*f*). Additionally, in the mid-1970s, the government decided to use surplus funding from the oil industry to fund the construction of primary schools and the hiring of more teachers (Filmer and Lieberman, 2002). As a result, the primary NER rose to 85% by 1983, leading the government to declare Six Year Compulsory Education for Primary School the following year. A decade later, primary NER was 92%, and the programme was extended to include both six years of primary education as well as three years of lower secondary education (UNESCO, 2000*f*).

As access to schools and participation in primary and lower secondary education increased, Indonesia realised the need for both qualitative and quantitative improvement. In 1978, the government introduced the first national systematic improvement programme for primary education, which aimed to raise standards of teaching and learning by improving teachers' qualifications, books and curricula (Van der Werf et al., 2000). Additional steps, such as the use of new learning techniques and training for primary school teachers, were implemented in the 1980s (Filmer and Lieberman, 2002). However, many of the same problems still existed in the 1990s, including a lack of textbooks and qualified teachers, both of which contributed to high dropout rates. In 1992, the government started the Primary Education Quality Improvement Project (PEQIP). Its objective was to introduce new methods and policies for improving the overall quality of primary education. Initiated in six regions (Aceh, Bali, Nusa Tenggara Timur, Sulawesi Utara, Sumatera Barat, Yogyakarta), PEQIP developed new books and materials, provided additional funds for schools and experimented with new ways of teaching and grouping students (Van der Werf et al., 2000).

Moreover, the government also recognised that the educational needs of some communities would not be easily met by formal schools and, in 1994, established a system of out-of-school education. Packet A provides general and vocational primary education for dropouts and students whom formal schools are unable to accommodate. Each learning group consists of a maximum of 40 learners and at least one trained or experienced tutor. Packet B is the equivalent programme for lower secondary schools and is also comprised of a maximum of 40 learners but with a minimum of five tutors (UNESCO, 2000*f*).

In late 1997 and early 1998, the Indonesian *rupiah* depreciated sharply, resulting in a severe economic crisis (IMF, 1998). The government responded with a series of programmes intended to sustain pre-crisis participation and enrolment rates (Filmer and Lieberman, 2002). In June 1998, Indonesia launched the "Stay-in-School" campaign, which included scholarships targeted at the poorest junior secondary children in order to maintain or even increase retention and transition rates (World Bank, 1999). The following month, the government announced an Education Safety Net package of additional grants and scholarships (Filmer et al., 1999). This was followed by the Scholarships and Grants Programme (SGP), which awarded scholarships to poor primary students and also provided school grants to fund teaching materials, building maintenance and fee waivers for students from poor families (Filmer and Lieberman, 2002). In addition, the government launched a national social mobilisation effort through television, radio and print, encouraging children to stay in school (World Bank, 1999).

In 2001, the central government underwent major reorganization and decentralisation; consequently, the district governments were delegated more educational authority and responsibility (Indonesia, 2003*b*). These decentralisation measures made the district governments responsible for setting education priorities, securing and allocating funds, mobilising teachers, and managing and operating schools. The central government retained control of national assessments, curriculum development and regional equity. Researchers Filmer and Lieberman consider this decentralisation to be risky but potentially advantageous in terms of educational accomplishments. With the increase in responsibilities, district

governments have the means to develop support systems and financial compensation in ways that could motivate and empower students, families and teachers. However, the central government has yet to set out clear procedures for teacher training and assessment, and district-level budget cuts and teachers' contentions with their salaries pose significant challenges to the quality of education (Filmer and Lieberman, 2002).

Two years later in 2003, Indonesia reaffirmed its commitment to universal education by passing the *Act of the Republic of Indonesia Number 20*, which states that the government is aware of the need to "create equality of opportunity in education and to ensure that basic education is made available to all" (Indonesia, 2003*a*). In addition, this new law supports "certain fundamental principles, notably universal access to basic education without gender bias, non-discrimination, equality of opportunity, and equity in education" (Indonesia, 2003*a*). The law also echoes a constitutional amendment that states at least 20% of the national budget and 20% of regional budgets should be allocated to education (Indonesia, 2003*a*).

That same year, the government released a National Plan of Action: Indonesia's Education for All, which established the goal of attaining universal nine-year education by the 2008/09 school year. Additionally, the plan detailed four important educational targets: junior high gross participation rate of 95%; 1% primary and junior secondary repetition rates; 99% primary graduation rates and continuation to junior secondary school rates; and increases in National Exit Exam scores. This national plan includes tactics to reach disadvantaged children, including girls, children living in remote areas, poor children and children with disabilities. It also provides initiatives to help improve the quality of education, such as the establishment of a final exam system, minimum competency standards for teachers, and surveys and studies that can effectively monitor school quality (Indonesia, 2003*b*).

Reports and research

Nationally, Indonesia has made significant progress toward nine-year compulsory education. Between the 1970/71 and 2000/01 school years, primary enrolment doubled and junior secondary increased by six times while senior secondary increased by four times. During the 2000/01 school year, the national primary net participation rate (NPR) was 94.3%, with gross participation rates (GPR) at 113.5% (Indonesia, 2003*b*). The country has seemed to maintain these successes in spite of its economic crisis. The 1997 gross intake rate of 101.2% declined slightly to 99.3% in 1998, but gains the following year made up for those losses (Morrisson, 2002; UNESCO, 2000*f*). However, between the 1992/93 and 2000/01 school years, only 45.6% of enrolled elementary students graduated from junior high school as scheduled, indicating that more than 50% of students could not finish basic education within nine years. One possible reason for this is that only 57.4% of children aged 13 to 15 had access to junior secondary school. In addition, averages for the National Exit Exam were approximately 5.9 in both primary and junior secondary school, indicating that students only mastered about 60% of the curriculum (Indonesia, 2003*b*).

Still, Indonesia's gains toward equitable education are significant, as statistics show that access in education at the national level is now fairly distributed between boys and girls. During the 1999/00 school year, the primary GPR was about 104.8% for girls and 108.8% for boys. At the junior secondary level, the differences in GPR were also slight – 70.9% for girls and 72.7% for boys. In villages in 2000, the GPR of females aged 13 to 15 was even slightly higher than for males of the same age, and the same was true at the junior and senior secondary levels in certain regions (e.g. Sumatera Barat and Sulawesi Utara). Although the national gender gap grows slightly for older students, the difference in the 16 to 18 years age group in 1999 was still only about 5%. Gender inequity is not evident at the country level, but disparities persist at the regional level. For example, GPR for girls in Papua in the 1999/00 school year was only 73.9% compared to 91.4% for boys. Similar disparities existed at the beginning of this century in other regions, such as Bali, Maluku, Nusa Tenggara Barat and Yogyakarta (Indonesia, 2003*b*).

Regional inequities, in addition to gender gaps in participation rates, are also present. For example, dropout rates during the 2001/02 school year ranged from 1.5% in Jawa Barat to 14.2% in Maluku, with 19 provinces reporting dropout rates higher than the national average of 5.4%. Inequities exist also in terms of continuation rates and school quality. In particular, Yogyakarta in 2000 had high scores on the National Exit Exam as well as high percentages of qualified teachers and adequate access to textbooks, whereas regions such as Nusa Tenggara Timur failed to provide access to textbooks and qualified

teachers and students in Papua and Maluku scored poorly on the standardised exam (Indonesia, 2003*b*). Pupil-teacher ratios are another source of regional inequity. These ratios are an important indicator of spending since teacher salaries are the main expenditures in educational budgets. Six regions (Bali, Kalimantan Selatan, Kalimantan Tengah, Sulawesi Utara, Yogyakarta) during the 1998/99 school year had primary school ratios of 16 or fewer pupils per teacher while three regions (Jawa Barat, Nusa Tenggara Barat, Timor Timur) had 25 or more pupils for every teacher (Morrisson, 2002).

In addition to gender and regional inequities, educational gaps related to income persist, although the large increase in enrolment has helped to narrow gaps across income distribution. At the primary level, enrolment for poor and middle-income children showed the greatest increase. At the junior secondary level, enrolment growth was spread evenly across all income groups in the 1970s, but by the 1980s increases greatly favoured the poor (Morrisson, 2002). In 1993, the primary NER was 87% in the poorest quintile and 93% in the richest quintile. By 2000, the NER difference between the poorest and richest quintiles was only 1%. For junior secondary school, the NER almost doubled in the poorest quintile while only increasing slightly in the richest quintile, which helped to narrow the gap in that level as well (Filmer and Lieberman, 2002). But, at the senior secondary level, increased enrolment continued to be dominated by wealthier students, with gaps clearly growing as the level of schooling increased. The two poorest quintiles and the middle quintile showed gaps of 3%, 11% and 14% at the primary, junior secondary and senior secondary levels, respectively (Morrisson, 2002). Additionally, the 1995, 1998 and 2002 national census data all clearly showed that higher social and economic status converted to higher school participation rates (Indonesia, 2003*b*).

Disparities in wealth are even more glaring when comparing education expenditures. The government allocates funds for each student enrolled in school. At the primary level, where there was nearly universal enrolment, the total government expenditure in the late 1990s favoured the poor because poor families tended to have more children. At the junior secondary level, the participation rate was higher for wealthier students but there were more school-age children in the poorer quintiles, thus evening out government expenditures. However, at the senior secondary level, the number of children was relatively equal across all quintiles and participation rate for rich children was higher; therefore, government budgeting favoured the wealthy. Additionally, due to user fees paid by parents, government contributions in the wealthiest quintile only averaged 57% of the total budgets of schools. But in the poorest quintiles, government expenditures totalled 82%, creating a significant difference between total education expenditure by richer and poorer quintiles (Morrisson, 2002).

The economic crisis also contributed to disparities, most severely affecting the urban poor at the junior secondary level. While first grade enrolment actually increased from 1998 to 1999 by 3.1%, the enrolment rate for boys in the poorer areas of Jakarta fell by 8.3%, with similar trends in other poor urban areas such as Jawa Tengah and Maluku. Overall, enrolment in the junior secondary level fell by 1.6%, but the decline in urban areas was four times the national average. Again, Jakarta seemed to have been most seriously affected, reporting that enrolment dropped by 14.4% for boys and 19.4% for girls (Filmer et al., 1999).

In the late 1970s and 1980s, Indonesia was praised as a model for improving primary school enrolment and it continues to be considered a “forerunner” of the EFA movement (Filmer and Lieberman, 2002). In spite of promising statistics and significant progress in reducing inequities, the problem of quality remains. International assessments show that education achievement compares unfavourably with neighbouring countries and high dropout and low transition rates prevail even in areas with accessible schooling facilities (Filmer and Lieberman, 2002). Consistently declining government expenditure on education contributes to the lack of quality (Indonesia, 2003*b*). In the first half of the 1990s, spending on education rose by almost 25% of overall expenditure, with spending per pupil rising by 75% in primary school. However, in the 1997/98 school year, public education expenditure fell by 29%, with spending per pupil considerably below pre-crisis levels. By 2000, government expenditures were 19% and 25% lower than 1996/97 spending on primary and junior secondary education, respectively (Filmer and Lieberman, 2002). The EFA report strongly recommends that at least 4% of GNP be allocated for education, warning that quantitative EFA achievements unaccompanied by qualitative improvements will not positively influence Indonesia’s economic growth (UNESCO, 2000*f*).

Nigeria

Source: The World Gazetteer, http://www.world-gazetteer.com

Social context of education

Demographics, economy, geography and government

Nigeria is located in Western Africa and borders the Gulf of Guinea between Benin and Cameroon. It is a federal republic comprised of 36 states and one territory and has an estimated population of 133.9 million, with a median age of about 18 years. Annual GDP per capita is about $800 per year and approximately 60% of people live below the poverty line. As of 1992, the unemployment rate was around 28% (The World Factbook, 2004).

Organization of primary and secondary education

Compulsory basic education in Nigeria extends from age 6 to 15 and includes six years of primary education and three years of junior secondary education. Mainstream academic students may continue in senior secondary school for three additional years of education. Technical schools are also available at the upper secondary level.

Under the international classification system, students enrol in basic education (ISCED 1) for Grades 1 to 6 and in junior secondary (ISCED 2A) for Grades 7 to 9. Students then spend Grades 10 to 12 in senior secondary school (ISCED 3A) or technical college (ISCED 3B), or Grades 10 and 11 in vocational colleges, teacher training or mono-technics (ISCED 3C). Alternatively, some students may spend Grades 9 and 10 in vocational training (ISCED 2C), leading to the Certificate of Proficiency.

Education governance and finance

The management and financing of primary education in Nigeria are responsibilities shared by the federal, state and local authorities, with the federal government assuming primary responsibility. According to one

report, however, federal funding of primary education amounts to less than 5% of expenditure. At the secondary level, state government assumes greater responsibility for management and finance.

Equity-related laws, policies, reports and research

Laws and policies

Nigeria's constitution states that, "government shall direct its policy towards ensuring that there are equal and adequate educational opportunities at all levels" (Federal Republic of Nigeria, 1999). Historically, the development of primary education has been left solely to state and local government (Tahir, 2001). The McPherson Constitution of 1951 gave power to the regional governments to pass education laws and provide primary education, but unlike the western and eastern regional governments, the northern regional government did not increase primary education enrolment (Aluede, Aguele and Aluede, 2003). The western and eastern regions experienced "rapid development" of primary schooling, though, and all regions developed secondary grammar schools of good quality (World Bank, 2003).

In 1976, the government initiated the first nationwide effort, the Universal Primary Education Programme (UPE) to improve the inadequate development of primary education in Nigeria (Tahir, 2001). UPE was intended to address gender and regional inequities in access to primary education, but primary education declined because subsequent governments neglected to sustain UPE; this led to decreases in enrolment, attendance, quality and quantity of teachers, infrastructure and facilities (Tahir, 2001).

The newly-elected government in 1999 identified education as one of its three greatest priorities and at the same time conceptualised and implemented the Univeral Basic Education Programme (UBE) (World Bank, 2000). UBE built on UPE by making primary education compulsory and increasing its scope by including junior secondary school and all children from age 6 to 15 (UBE, 2002). This federal intervention is intended to improve horizontal equity in Nigeria's education system by being "all inclusive" and ensuring access to free basic education for all children. It is designed to promote effective use of resources and quality control, evidenced by reductions in dropout rates and the acquisition of "appropriate levels" of skills such as literacy, numeracy and life skills (Tahir, 2001; UBE, 2002). Today, UBE is supported through a partnership of federal, state and local government (Tahir, 2001).

Principles and objectives from a number of international efforts to improve Education for All are the basis of UBE (UBE, 2002). These include the Jomtien Declaration in 1990, the Amman Re-affirmation of the Jomtien recommendations in 1995 and the Dakar World Education Forum in 2000. Although state and local governments are legally responsible for the provision and management of basic education in Nigeria, UBE has been accepted and implemented by all states (UBE, 2002). It is considered a bottom-up programme because it involves the general public, including parents, teachers, communities, etc. (Tahir, 2001). UBE attempts to "raise the consciousness of Nigerians for basic education and mobilise the populace not only to participate in UBE, but more importantly to embrace it as their programme" (Tahir, 2001).

In addition to initiating UBE, the federal government provides standards for its operations and intervenes in areas critical to UBE's success including the construction of new classrooms (UBE, 2002). The federal government also supports national institutions that are key to the implementation of particular components of UBE, such as the National Teachers Institute and the Nigerian Educational Research and Development Centre, which provide teacher training and curriculum development, respectively. In contrast, states formulate UBE policies, pay the salaries of junior secondary school teachers, and recruit and promote teachers in Grades 7 and above. Local governments maintain local government educational authorities, support the operations of UBE, and are responsible for recruiting and paying salaries of primary school teachers.

Reports and research

According to the World Bank, educational standards have fallen and "the regional variations in educational coverage in Nigeria are so large that for many purposes the average national figures have little meaning" (2000; 2003). Analysis of educational development in Nigeria has found inequalities between the northern and southern states, as well as among the northern states (Aluede et al., 2003). Inequality across the regions was considered of "serious magnitude" as early 1977 (Aluede et al. as cited in Beckett and O'Connel, 1977). Inequitable pupil-teacher ratios and primary school enrolment and completion rates are significant issues. The strain placed on more educationally developed states by the federation's method of allocating resources to states is another concern. Educational inequity in Nigeria often has been discussed in terms of gender and urbanicity, and by geographic region (i.e. northwest, northeast, central, southwest, southeast) rather than by state.

Teacher shortages have been a problem nationally, but especially geographically – some states have had as many as 70 pupils per teacher (Tahir, 2001). Teacher allocation is considered inequitable, with significant variations across states and pupil-teacher ratios ranging from less than 30 in one-third of the states to more than 50 in another third (World Bank, 2003). Teacher absenteeism, along with resource-poor school environments and curriculum that is minimally relevant, have been identified as one of the causes of primary school dropout (World Bank).

Approximately 19% of primary school-age children are not enrolled in school, with inequitable access by region (World Bank, 2000). Specifically, the northern region has significantly lower enrolment rates among 6-, 11- and 14-year-olds than the southern or central regions (World Bank, 2003). In 1999, almost all 11-year-olds were enrolled in primary school in the southern regions, but only 36% were enrolled in the northeast. In terms of gender, female enrolment rates are lower than male enrolment rates in the north, but are higher than male enrolment rates in the southeast. As of 1999, the World Bank also notes that urban enrolment rates are higher than rural rates, but that schools in urban areas tend to be overcrowded due to inadequate facilities.

Completion rates for junior secondary and primary education are likewise inequitable, with significant variations across regions, gender, location and household income (World Bank, 2003). For example, completion rates are 78% for urban boys from the wealthiest quintile of households, but 37% for rural girls from the poorest quintile of households in the northeast. Similar patterns are found in the northwest, but completion rates are lower for both groups. Overall, the southwest and southeast regions have much higher primary and junior secondary completion rates than the northeast and northwest regions (World Bank, 2003).

Insufficient funding is another issue since state and local governments depend upon statutory allocations from the federal government to fund primary education and other social services. Across states, per capita state government revenues "vary quite substantially" (World Bank, 2003). About 78% of local government revenues come from statutory allocations from the Federation Account (World Bank, 2003). As of 2001, almost one-half of these allocations were reserved for primary teacher salaries. Thirteen states had more than 60% of federation allocations deducted for teacher salaries while less than 40% was deducted in 10 other states. According to the World Bank, "The stress on local governments caused by the requirement that they fund all primary teacher salaries varies not only by state, but also across local governments within a state" (2003).

Pakistan

Source: The World Gazetteer, http://www.world-gazetteer.com

Social context of education

Demographics, economy, geography and government

The Islamic Republic of Pakistan was formed in 1947 and is comprised of four provinces, one territory and one capital territory. Pakistan borders the Arabian Sea, India, Iran, Afghanistan and China, and has a land area of 803.9 thousand square kilometres. It has an estimated population of 150.6 million (2003), with a median age of 19.8 years. Pakistan has an underdeveloped economy, with GDP per capita of $2,100 and 35% of the population below the poverty line. Unemployment stands at only 7.7%, but underemployment is significant (The World Factbook, 2004).

Organization of primary and secondary education

Compulsory education in Pakistan extends from age 5 to 15 and includes five years of primary school, three years of middle school, and two years of secondary school. Students may continue to higher secondary school or technical secondary school for two years of non-compulsory education.

Under the international classification system, academic students enrol in primary education (ISCED 1) from Grades 1 to 5, middle education (ISCED 2A) from Grades 6 to 10 and intermediate education (ISCED 3A) for Grades 11 and 12. Vocational students follow academic students until middle education, at which point they enter a one-year (ISCED 2) or two-year (ISCED 2C) training programme.

Education governance and finance

Responsibility for education is shared among federal, provincial and local authorities. Most funding is transferred from the central government to the provinces, which contribute their own funding and distribute money to local education authorities (districts) and other education sectors. The federal

government also sets national educational guidelines and goals. Districts are primarily responsible for implementation.

Private education
There are two main types of private institutions that provide education in Pakistan: private schools and *Madrassas*, or religious schools. At least one-quarter of primary students not in religious training enrol in private schools. Reliable statistics are not available on *Madrassa* enrolment, though one group estimates that one-third of Pakistan's children attend *Madrassas* (ICG, 2002).

Equity-related laws, policies, reports and research

Laws and policies
Pakistan's goals align with Education for All (EFA) and include free and compulsory primary education, with a particular emphasis on eliminating gender inequity by 2015. The country also aims to generally improve the quality of basic education, especially as it relates to literacy, numeracy and essential life skills. In addition, Pakistan's 1973 constitution calls for the state to "remove illiteracy and provide free and compulsory secondary education" within the shortest possible period (Part II, Article 37(b)).

Pakistan has a number of education policies and plans of action that support the constitution's educational mandate, most notably the 1998 National Education Policy (NEP), which extend to 2010. With regard to primary education, NEP targets universal primary education and provides that "disparities and imbalances of all types shall be eliminated so as to promote equity" (Pakistan Ministry of Education, n.d.*c*). The government hopes to pass a *Compulsory Primary Education Act* sometime in 2004/05 (AEPM, 2000). Referring to secondary education, the policy declares, "access to quality education is the basic right of every citizen," and proposes to increase the number of secondary schools by over 30,000 (Pakistan Ministry of Education, n.d.*d*).

One of NEP's fundamental approaches is to broaden the base of education providers by involving private and non-governmental partners and by decentralising educational governance. The government's position on private involvement in the education sector has varied over the past three decades. In 1972 the government nationalised all privately-managed schools, which numbered just under 20,000 at the time. Seven years later in 1979, the government reversed its policy and began encouraging private sector involvement through tax incentives. Aligned with the 1979 policy, NEP views public-private partnerships as an "underpinning" of reform efforts (Pakistan Ministry of Education, n.d.*a*).

To promote these partnerships, NEP calls for tax rebates, grants, loans, free land and, in rural areas, funding for school construction and management. The policy also requires that companies with capital of more than 100 million Rupees operate schools up to the secondary level using their own funds (Pakistan Ministry of Education, n.d.*b*).

In 2001, the government created district governments, which grant executive power to elected *nazims* (mayors) and are designed to determine more effectively and meet the needs of local communities and the education system. District control formerly rested with the civil service's district management group (DMG). The reform aims to increase efficiency, support decision-making by local stakeholders and improve community participation (Embassy of the Islamic Republic of Pakistan, n.d.*a*). According to the *Education Sector Reforms: Action Plan,* "education has been devolved to the districts up to higher secondary level" (Pakistan Ministry of Education, n.d.*e*). The newly-created district offices have responsibility for facility development and management, compliance with education standards and annual teacher evaluations. The federal government recognises that some districts – particularly those in rural areas – may not have capacity to meet their new responsibilities. To address this potential inequity, the government plans to compensate for district underdevelopment through technical assistance and workshops.

The federal government also enacted a reform initiative in 2002 offering *Madrassas* – free schools that provide religious training and often include room and board – a number of incentives. These included teacher training; salaries for teachers of formal subjects; and funding for textbooks, computers and other education materials in exchange for voluntary compliance with federal regulations designed to mainstream their curricula (Embassy of the Islamic Republic of Pakistan, n.d.*b*). This reform was intended to bring funding and support to schools whose students graduate poorly prepared for the workforce.

Since they are entitled to generate their own education initiatives, provinces have also made efforts to improve educational equity. Punjab, for example, has taken steps independent of the federal government by enacting a compulsory primary education programme (The Government of Punjab, n.d.). Education finance, however, appears to remain largely a federal responsibility.

Reports and research

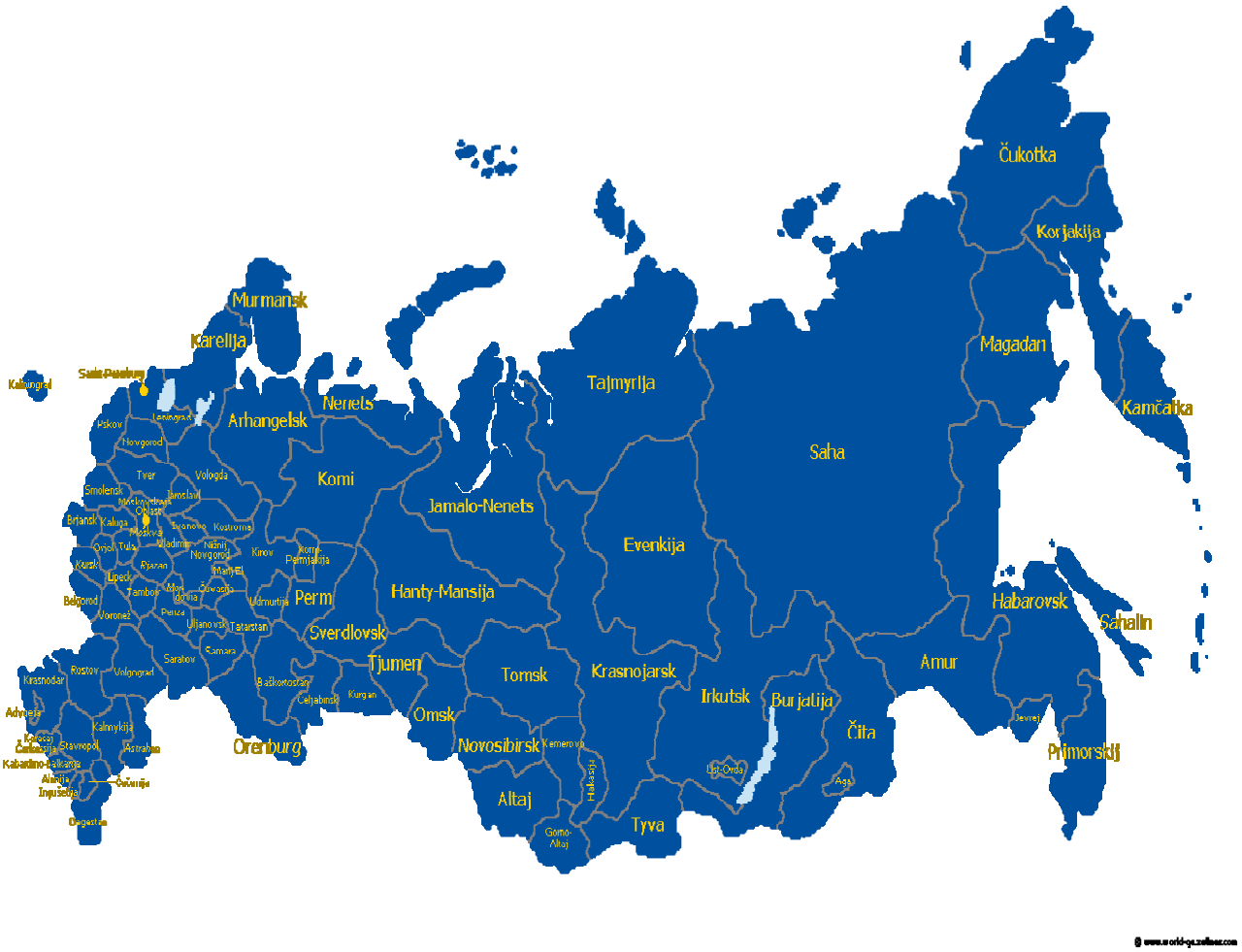
According to its 2000 Education for All assessment, Pakistan has made some progress since Jomtien, but has had difficulty meeting fundamental goals (Saleem, 1999). The report cites that funding for primary education more than tripled between 1990 and 1998 (from Rs. 9,563 million to Rs. 38,674 million), and claims today that there is "no shortage of qualified and trained teachers" (Saleem, 1999). Seemingly contradicting this statement, however, the report states that the pupil-teacher ratio averages 48:1. Further, primary education gross enrolment figures are only 60%.

A number of negative trends were noted in a 2003 UN Human Development Report: during the 1990s, the NER dropped from 46% to 42% and rural/urban inequity intensified, particularly for boys (Hussain, 2003). Although gender inequity in primary school enrolment lessened, declining enrolment rates for boys account for much of this development. General human development indicators also point to regional inequity: literacy rates range from 36% in Balochistan to 51% in Sindh.

The International Crisis Group (ICG), an independent and multinational organization that works to resolve and prevent deadly conflict, completed a report on Pakistan's devolution effort. ICG (2004) argues that the creation of district governments has "proved little more than a cover for further centralised control over the lower levels of government". The report also questions whether the reform will curb corruption or increase government accountability.

It is important to note that it is difficult to fully assess the equity of Pakistan's education system because of extensive enrolment in private schools and *Madrassas*, which operate in almost complete independence from the government. This presents unique challenges. During the 1995/96 school year, approximately 22% of enrolled primary students attended private institutions and private enrolment reached 50% in urban Punjab (Rashid, 2000). The quality of private and NGO-operated schools varies widely, though they are generally considered superior to government schools. The Brookings Institution, a think tank devoted to research and policy analysis, reports that there are as many as 45,000 *Madrassas* in Pakistan with enrolments that range from a few students to thousands, though the exact number is unknown (Singer, 2001). Graduates of *Madrassas* tend to be poorly equipped for the workforce or higher education, and tend not to be educated in subjects such as economics, science or computing (Singer, 2001). ICG (2004) estimates that *Madrassas* are attended by one-third of Pakistan's children and predicts that they are unlikely to voluntarily comply with the *Madrassa* reform initiative. In fact, "most [Madrassas]…have said they will resist any attempts to secularise education".

Russian Federation



Source: The World Gazetteer, http://www.world-gazetteer.com

Social context of education

Demographics, economy, geography and government

The Russian Federation was formed after the USSR separated into 15 independent states in 1991. The Russia Federation is located in Northern Asian and covers roughly 17 million square kilometres, making it the largest country in the world by land area. The country has a population of roughly 144.5 million (2003), with a median age of 37.6 years. The Russian economy is middle-tier according to most indicators: GDP per capita is $8,900, unemployment is 8.4% and 25% of the population is in poverty. The government is a federal republic consisting of 89 federal administrative units. Elections were most recently held in March 2004.

Organization of primary and secondary education

Compulsory education in the Russian Federation extends from age 6 to 15 and includes four years of primary school and five years of basic school. Students may continue for two further years of academic work at senior secondary schools or up to four more years of technical/vocational education at *Technikum*, *Kolledz* or *Uchilishe*.

Under the international classification system, mainstream academic students enrol in primary education (ISCED 1) for Grades 1 to 4 and basic general education (ISCED 2) for Grades 5 to 9. After finishing basic general education, students have the option to continue onto secondary education (ISCED 3A) for Grades 10 and 11, a two- or three-year initial vocational education programme (ISCED 3C) or a four-year secondary specialised programme (ISCED 2A+5B).

Education governance and finance
The 1992 *Education Act* shifted significant management and financing responsibilities to the regional and local levels. Reforms in 2002 introduced a single state examination aimed at increasing education quality and efficiency, and moved responsibility for paying teachers' salaries from the local to the regional level.

Private education
Private schools were banned until 1992; primary and secondary private school enrolment is less than 1%.

Characteristics of education system/structure
The modern crisis facing the education system of the Russian Federation is largely the result of the lasting effects of drastic political change. Covering an area of more than 17 million square miles, the Russian Federation is comprised of 89 regions with a combined population of nearly 144 million people with over 150 different nationalities (The World Factbook, 2004). Since the August 1991 collapse of the Soviet Union, the Russian Federation has faced the overwhelming task of uniting diverse cultures and governments under a single quality education system. During Soviet control, equality of opportunities was an obvious political priority, but now this priority is "endangered" and has become a source of political disappointment (UNESCO, 2000*b*). The Russian Federation now faces grave financing problems as the country continues to develop a market economy and the strain has proven to be a major obstacle toward providing equal basic education to all. "With the gap between the new demands being made on the structure of educational services and on their content growing, on the one hand, and with the education system being slow to react, on the other, the new stage of educational reform is attempting to overcome the shortcomings of the previous stages" (UNDP, 2002). There is little doubt as to the importance of equality of education throughout the Russian Federation and current challenges facing its government require serious concern and reform.

Equity-related laws, policies, reports and research

Laws and policies
Educational equity and excellence is not a new phenomenon to the Russian Federation. Historically, the strength of the education system in the Russian Federation was its "commitment to equity and access, regardless of ethnic background, gender or geographical location" (IBRD, 1999). However, following the 1991 upheaval, education expenditure decreased, social stratification by income level increased and inequality in the standard of living and quality of life by territory of residence intensified (UNESCO, 2000*b*).

During the 1990s, the government attempted to fix many of the problems facing the education system and the society as a whole. In a 1992 national report, '*Development of education*,' the Russian government proposed an "ideological base" for education reform based on two principles, one of which was that "creating a new society necessarily entitles changing education ideology and content" (UNESCO, 2000*b*). Subsequently, several pieces of legislation passed during the 1990s to support the education reform effort.

Planned in stages, the initial transition began with Stage I in 1994 and 1995. The goal of this stage was "the transition to balanced education development" by "creating legislative and normative-legal base mechanisms of changes and development" (UNESCO, 2000*b*). According to the EFA report, this phase included "active work for the elaboration of the federal *Law 'On education'*," which dictated state education policy in the country after becoming effective in July 1992 (UNESCO, 2000*b*). Included within *'On education'* is access to education for all citizens regardless of gender, race, religion or nationality (UNESCO, 2000*b*). Building upon this legislation, the federal *Law on Local Government* was passed in 1995 and dictated the major education expenditure responsibilities of each level of government (IBRD,

1999). Thus, the Russian Federation recommitted itself to the equity that was popularly promoted during the Soviet years.

The second stage, which occurred between 1996 and 1998, emphasised the consolidation of the initial stage's progress and promoted further development of the education system (UNESCO, 2000*b*). Comprising the biggest push for reform within the system, this stage included the federal programme *'Development of education in Russia*,*'* which sought to "develop the network of educational establishments and organizations of the system" in accordance with the requirements of society's educational needs (UNESCO, 2000*b*). Furthermore, a major emphasis was placed on preventing a financial crisis in the funding of educational establishments and organizations (UNESCO, 2000*b*).

Unfortunately, not only was there not a substantial increase in education expenditure in the 1998 federal budget, but the number of education workers was cut. The new Minister of Education, upon taking office in September of that year, announced his intentions to continue the reform measures of the previous government (IBRD, 1999). Budgetary problems continued to plague the Russian Federation as reforms continued into the 21st century. "It became more and more obvious," according to UNESCO's EFA report, that "the strategy of education development, worked out by the educational community, increasingly came into conflict with real budgetary policy of the Government" and that a long-term solution was necessary (2000*b*).

Indicative of the 1990s education reform movement in the Russian Federation was a decentralisation process, which transferred much of the federal government's control over the education system down to the individual regional governments. Through this process, "a significant degree of autonomy in the teaching/learning process, previously unknown, was given to local educators" as the Ministry of Education lost much of its power (Zajda, 2003). According to Joseph Zajda (2003), the decentralisation process "represented a radical shift in ideology" for the Russian Federation and created a new era of administrative control. Under the new decentralised system, each regional government was responsible for the development and maintenance of its school system. The process began with the January 1992 *Law on the Basic Principles of Taxation*, which enabled the regions to "exercise control over the use of resources allocated to them by the federal government for the first time" (Zajda, 2003). These state-level governments established the compulsory minimum standards of content while the timeframe for the "mastering of basic education programmes in state and municipal educational establishments" were outlined by the federal *Law 'On Education'* (UNESCO, 2000*b*).

At the turn of the 21st century, the education system sat on the edge of major ideological, structural and institutional change. The success of the government's efforts depended on two features: the size of investment in addition to optimisation of expenditure within the education system (UNESCO, 2000*b*). The results of these reforms would lead to the establishment of yet a third stage of reform.

Reports and research

The research institutes of the Russian Academy of Education and other scientists and specialists within the Ministry of Education are responsible for conducting research on education quality and equity within the Russian Federation (UNESCO, 2000*b*). Other organizations like UNESCO (2000*b*), The International Bank for Reconstruction and Development (1999) and private researchers have conducted external studies. Overall trends point to a quality system, including widespread high enrolment and completion levels with "nearly all children attend[ing] general education, through the final year (Grade 11) (IBRD, 1999). In fact, "in the best of Russian schools, learning achievement is on par with the best found anywhere in the world" (IBRD, 1999). The Russian Federation does, however, face many challenges in redeveloping and maintaining its strong education tradition. Issues of pupil-teacher ratios, under- and non-trained teachers and deteriorating education facilities remain a constant problem. Most troubling for the future of Russian education are four main issues: 'anti-school' pressure from the new society, problems with decentralisation, an expanding budgetary crisis and increasing regional inequality.

As the Russian Federation continues to face the challenges of establishing a market economy, its society and culture is rapidly changing and progressing. The demands of the new economy have brought with it the need for a new generation with the capability for market success. The redistribution of property and the new emphasis on money decreased the importance of education to the extent that a 1992 sociological investigation found that only 20% of school graduates acknowledged the importance and significance of general secondary education (UNESCO, 2000*b*). This increased to 53% in 1998, but the attractiveness of employment remained strong for the youth of the Russian Federation (UNESCO, 2000*b*). Today's "special anxiety" is the problem of "children and adolescents, for different reasons, not attending school and not receiving valuable education" (UNESCO, 2000*b*).

Many throughout Russian society blamed the influx of young people in the workplace for a general decline in the moral quality of society (UNESCO, 2000*b*). This belief was reinforced by the number of juvenile delinquents in the criminal justice system: juveniles accounted for 16% to 20% of total crime, and by 2000, the number of juvenile delinquents was estimated to exceed 230,000 (UNESCO, 2000*b*). Others challenged the assumption that the importance of education has diminished in the Russian Federation, arguing instead that low participation rates over time are not an indication that Russians do not realise the need for and value of education (UNDP, 2002). This issue will no doubt persist as the market economy continues to expand.

The move toward decentralisation both helped and hurt the Russian education system. Ideally, the goal of decentralisation is to put the power in the hands that are best able to serve the needs of students, families and school officials. As the IBRD says, when decentralisation is done properly, it accomplishes this by putting "decisionmakers closer to the clients" (IBRD, 1999). On the other hand, the problem arises when decentralisation is not carried out thoroughly in an organised way. The current problem in the Russian Federation is that the roles and responsibilities of each level of government are not clearly defined; furthermore, the responsibilities that *are* allocated are not adequately funded (IBRD, 1999). The result is increased "inefficiency and inequity across [the Russian Federation's] geographic regions and socioeconomic groups" (IBRD, 1999).

The problem of inequality between regions is one of utmost concern in the Russian Federation. It is clear that certain regions are better able to handle the responsibilities of their education systems while others struggle to organise and, more importantly, fund their programmes. What seems to be occurring in the Russian Federation is that, while the benefits of decentralisation may result in the long term, the initial transition is creating a fiscal crisis resulting in increasing "inter-regional inequality among schools" (IBRD, 1999). The federal government is responsible for the allocation of funds to regional school systems and some regions fare far better than others when applying those funds. "There is a significant correlation between a high local share of total regional revenues and a larger share of regional expenditures on education" (IBRD, 1999). While this seems to support the push toward decentralisation, it is obvious that some revision of the system is necessary to bring about a more efficient allocation of resources and to better respond to the needs of the education community (IBRD, 1999).

The budgetary constraints facing the Russian Federation intensified in the years following the end of the Soviet Union. The still-new market economy, while allowing some to prosper, forced many others deeper into poverty. In the face of the current economic crisis, education has "declined to a considerably less financial priority" since the Soviet era (UNESCO, 2000*b*). In fact, capital expenditure for education is the lowest compared to all other investment of fixed capital in the economy (UNESCO, 2000*b*). The federal government is not able to adequately fund each of the regions due to limited overall financial resources, which has led to increased inequalities between regions in terms of quality general compulsory education (UNESCO, 2000*b*).

Research into regional inequality within the Russian Federation is extensive and reports seem to point to an overwhelming divergence of quality and access between regions. Most studies have shown that while "higher levels of expenditure do not necessarily translate into higher educational outcomes, Russian's poorest regions are now struggling to maintain even the most basic educational services" (IBRD, 1999). These poorer schools are mainly in labour-excessive regions, small cities and countryside areas and represent a growing area in which the opportunities for educational choice is limited compared to that of

children living in wealthier regions (UNESCO, 2000*b*). These inequities of quality and access are merely adding to the overall social stratification, a phenomenon furthered by diverse differences between the various nationalities living in the regions of the Russian Federation.

Many of the marginalised national groups in the Russian Federation live in the poor regions of the North, Siberia and Far East (UNESCO, 2000*b*). Within these rural regions, the funding bases are minimal as most residents are minimally educated, single-worker families making very low wages. Additionally, private donators are hesitant to invest in money in underdeveloped and underperforming schools (UNESCO, 2000*b*). Indeed, there are dramatic inequalities in education funding, “with wealthy regions spending four to six times as much as poor ones” (Zajda, 2003). Consequently, children in poorer regions are at a higher risk of being behind in their schooling and more apt to drop out (UNESCO, 2000*b*). Such results are troubling to the federal government given that one of its major goals was the “support and protection of educational interests of [all] nationalities and ethnic groups” (UNESCO, 2000*b*).

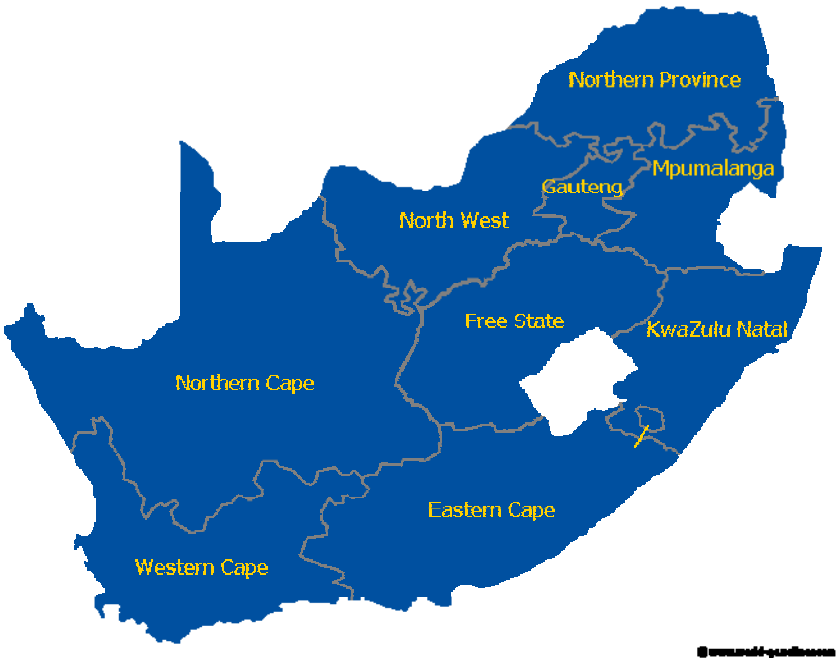
Further, the gap between those students from affluent backgrounds and those from poorer families is growing. Access to education is more and more a product of family income. In fact, the “social hierarchy of schools” reflects the “emerging class system” in which students with higher socioeconomic backgrounds receive the best education and are more likely to continue their education beyond the compulsory years (Zajda, 2003).

The future of education

Just as society at large has had to adjust to the new market economy, so too must schools learn to cater to the growing need of students to receive the skills necessary to succeed in such a system (UNESCO, 2000*b*). Educational equity must also be improved so that opportunities are not catered to few at the cost of others. The federal government has realised this need as it has sought to defend the rights of minorities far better than in previous years (UNESCO, 2000*b*).

The hope for universal compulsory education is greatly diminished if some students receive better opportunities while others struggle to achieve even basic levels of educational success. “Successful school reforms in any country need to reflect concrete and feasible objectives, including adequate levels of financing” (Zajda, 2003). Currently, the means for providing such a system of reforms does not exist within the Russian Federation's economy, though the drive to do so is strong.

South Africa



Source: The World Gazetteer, http://www.world-gazetteer.com

Social context of education

Demographics, economy, geography and government
South Africa is located at the southern tip of Africa and has a land area of 1.22 million square kilometres that is occupied by an estimated population of 42.8 million (2003) with a median age of about 24.5 years. South Africa is one of Africa's most-developed economies, but unemployment and poverty are considerable: annual GDP per capita is around $10,700, yet about 50% of the population is in poverty and approximately 37% of the population is unemployed or has dropped out of the workforce. The government is a republic comprised of nine provinces (The World Factbook, 2004).

Organization of primary and secondary education
Compulsory education in South Africa extends from age 6 to 15 and includes six years of primary education and three years of junior secondary education. Upon completion of junior secondary education, students receive the General Education and Training Certificate. After continuing for three years of senior secondary education, students sit for the Senior Certificate Examination (SCE).

Under the international classification system, students are in primary education (ISCED 1) for Grades 1 to 7 and junior secondary education (ISCED 2A) for Grades 8 and 9. For Grades 10 to 12, students enrol in either upper/senior secondary education (ISCED 3A) or technical schools (ISCED 3B). Some students may enrol in technical colleges (ISCED 3C) for Grades 10 and 11.

Education governance and finance
The constitution places education governance in the hands of the provinces, but most funding comes to the provinces through the national Department of Education. Provinces are expected to make decisions within national norms.

Private education
Overall, 2.1% of students enrol in independent schools, formerly known as private schools.

Equity-related laws, policies, reports and research

Laws and policies

Apartheid greatly affected the South African education system, leaving a legacy characterised by oppression, deprivation and marginalisation (DERSA, 2003). However, in the 1990s the country experienced significant political changes that have been the basis for its efforts to improve educational equity. Specifically, South Africa's first democratic elections in 1994 led to the 1996 implementation of a new constitution and Bill of Rights containing equality and non-discrimination provisions and guaranteeing the right to free basic education. These provisions affected an education system that until then had been marked by severely inequitable services and state school funding policies (DERSA, 1999). The constitution further requires that provinces implement the norms and standards established by the national government (Fiske and Ladd, 2002; Reschovsky, 2002).

One of the greatest challenges of the new government was creating one public school system with equal educational opportunities from a system that was very unequal in terms of race and region (DERSA, 2002; Reschovsky, 2002). This challenge was first met with the *South African Schools Act of 1996* (SASA), which was implemented along with the country's new constitution. SASA established a national system of public and privately-funded independent schools and is the legal basis of the country's education system and compulsory schooling for those aged 7 to 15. SASA also established norms for public funding of public schools, procedures for provincial education departments to follow when allocating funds to ordinary public schools and standards for the exemption of parents who are unable to pay school fees (DERSA, 1998). These norms became national policy in April 1999.

SASA is based on the constitution's guarantee of equality and recognition of the right of redress. It declares that the "State must fund public schools from public revenue on an equitable basis in order to ensure the proper exercise of the rights of learners to education and the redress of past inequalities in educational provision" (DERSA, 1996). The constitution requires that provinces receive an equitable share of nationally-raised revenues to support education, but greatly limits the types of taxes they can impose. Schools may levy fees, however, if approved by majority at local parent general meetings; if fees are to be charged, the Department of Education requires that parents with certain incomes relative to the fees be fully or partially exempted to ensure equal access to education (DERSA, 1998).[26] The Department of Education also developed a national policy that would direct public funding to schools in a way that "promoted equity and redress, and contributed to raising the overall quality of education provision" (DERSA, 1999).

To target resources to needs of schools, provinces are required to create a list of schools sorted by their combined ranking using two criteria: conditions at the schools including pupil-teacher ratios and the need for repairs, and poverty level of the community the schools served as determined by parent education level and proportion of households with electricity and piped water (DERSA, 1998). The sorted lists are then divided into quintiles based on need, with resources typically allocated based on the following schedule:

School quintile	Expenditure allocation (percentage of resources)
Poorest 20%	35%
Next 20%	25%
Next 20%	20%
Next 20%	15%
Least poor 20%	5%

[26] If the combined annual gross income of the parent(s) is less than 10 times the annual school fees per pupil, the parent(s) qualifies for full exemption; if the combined annual gross income of the parent(s) is less than 30 times but more than 10 times the annual school fee per pupil, then the parent(s) qualifies for partial exemption (DERSA, 1998).

Further, the Department of Education's personnel policy aims to remove inequities in the distribution of public resources for education across and within provinces by ensuring that schools are supplied with an adequate number of both teaching and non-teaching staff who are equitably distributed according to the pedagogical requirements of the schools (DERSA, 1998).

In 1999, the Minister of Education identified significant inequality as a failure of the South African education system and pointed to continuing inequities in terms of basic facilities and learning resources as one of the most urgent problems in education (DERSA, 1999). That same year the president labelled education as a critical priority to create a democratic and prosperous society. The focus on improving delivery of educational services was aimed at increasing access and the quality of education for the most vulnerable and poor (DERSA, 1999). Subsequently, the Department of Education developed a five-year implementation plan, called the Tirisano Implementation Plan, which began in 2000.

This plan outlines the Minister's priorities for South Africa's education and training system. It attempts to improve education quality and standards for all students by establishing strategic objectives and performance indicators:

- all schools are well organised and run, have appointed principals and heads of departments, have management teams that demonstrate a commitment to developing a school culture that promotes equity, have a system for monitoring performance and achievement and have governing bodies that provide strategic leadership and direction in the development of schools;
- all learners meet or exceed national standards established for the different stages of learning;
- all educators are participating in professional development programmes;
- all learners and educators attend school daily; and
- all schools meet the minimum physical and infrastructure requirements to support teaching and learning (DERSA, 1999).

Access to basic quality education has continued to receive significant attention from the government. In 2003, the Department of Education produced a Plan of Action to ensure progress on its goals of access to free and quality basic education for all students. This plan emphasises improvements in the quality of schooling for the poorest 40% of students through increased spending on poor schools and subsidisation of poor students by parents of wealthy students (DERSA, 2003). Funding mechanisms are intended to provide adequate funding to all poor schools by 2005 and to ensure that each student has an equal start in life (DERSA, 2003). National rather than provincial poverty quintiles are used to ensure equally poor students across the country receive the same level of targeted funds. The elimination of any barriers to education access within three years is another significant focus of the plan.

Reports and research

South Africa has made significant improvement in the equity of public resources: between 1991 and 2001, expenditure per pupil and the number of state-paid teachers became more equitably distributed across the provinces (Fiske and Ladd, 2002). Recent studies find that whereas public expenditure per pupil for whites was nine times that of blacks in some areas in 1986 and 3.5 times that of blacks in the early 1990s, this difference decreased to 1.5 as of 1997 (DERSA, 2002; Reschovsky, 2002).[27] Pupil-teacher ratios across the provinces also decreased over this period. Research shows that the coefficient of variation for pupil-teacher ratios decreased by 65% through 2000, partly because of the redistribution of resources to poorer provinces (Reschovsky, 2002). Greater equity in education expenditures and teaching personnel, due to a significant redistribution of educators toward poor schools, has also been noted by the Department of Education (DERSA, 2003). This has led to a decrease in pupil-teacher ratios in poor schools since 1996.

[27] This was due to increases in total expenditures as well as reductions in expenditures on non-black students between 1993 and 1997.

Still, because of the government's formula for distributing funds to the provinces, provinces have not been provided adequate funding to meet the basic needs of all students and those who are more costly to educate (Fiske and Ladd, 2002). Although resources per pupil rose substantially in the poorest provinces, due to a shortage of approximately 50,000 classrooms, some provinces had larger average class sizes even with lower pupil-teacher ratios. This shortage raises concerns about teacher effectiveness since classes are sometimes held in places that are not conducive to learning (Reschovsky, 2002). Further, the three provinces with the highest expenditure per pupil also had higher pass rates for the Senior Certification Exams, the only measure of student performance across all provinces (Reschovsky, 2002).[28]

Research has also found disparities relative to teacher experience (Reschovsky, 2002). The teacher salary schedule is set nationally with more-experienced and qualified teachers compensated more than less-experienced teachers; this helps to explain the continuing inequity in school expenditures since some provinces have higher average teacher salaries and personnel costs comprise a significant portion of school budgets (Reschovsky, 2002). Although average teacher salaries continue to be higher in the provinces with higher proportions of whites, average salaries in the poorer provinces are approaching the national average.

Equity in South Africa has also been examined in terms of gender, but equity relative to gender is a diminished concern. In fact, gender disparity in general enrolment rates decreased between 1997 and 2000: the GER in 1997 was 12 percentage points higher for males than females, but only three percentage points higher in 2000 (DERSA, 2002). It has been noted, though, that female students pass the Senior Certification Exam at a slightly higher rate than male students: 12.4% versus 10.3% (DERSA, 2002).

Research has also examined race and income: South Africa has one of highest Gini coefficients (0.58) for income distribution when compared with other countries, indicating extreme income inequalities (Reschovsky, 2002). Life expectancy, adult literacy and school enrolment are also significantly different for whites and blacks (Reschovsky, 2002). If the United Nations Human Development Index that examines these measures of well-being were calculated for white South Africans, then the country would rank 18th in the world; if calculated for black South Africans it would rank 118th (Reschovsky, 2002). The difference in life expectancy for whites (71 years) and blacks (59 years) has been called the most comprehensive measure of inequality in South Africa (Van der Berg, 1998). While blacks have experienced income gains through higher wages and occupational mobility, these were largely counteracted by increased black unemployment through at least 1998 (Van der Berg, 1998).

Redistribution of social spending has been called the most promising device to reduce racial inequalities in South Africa because of its ability to reduce poverty, even though it is considered the most costly approach to social reform (Van der Berg, 1998). Although the country has made improvements in this regard, Reschovsky (2002) argues that the 2000/01 equitable share formula fails to fulfil the constitutional mandate that provinces be provided with sufficient resources to provide basic services because the formula penalizes provinces with the greatest burden to redress the educational deficiencies created by apartheid. Specifically, students younger than 6 or older than 17 are weighted as one-third of a pupil – even though youth older than 17 from poorer provinces are more likely to need additional schooling to pass the Senior Certification Exams due to inadequate schooling under apartheid (Reschovsky, 2002).

Last, school fees have affected how students sort themselves among schools, and class has replaced race as the primary determinant of access to formerly white schools (Fiske and Ladd, 2003). To ensure that the constitutional guarantee of a basic education is a reality for all South Africans, schools should be provided with sufficient resources to help students acquire the skills and knowledge necessary for a basic education, as defined by the government (Fiske and Ladd, 2002; Reschovsky, 2002).

---

[28] Students have to pass exams in six or more subjects. Comparisons between provinces are difficult because there are two versions of each exam and since the overall pass rate does not reflect differences in the mixture of exams taken. In addition, taking the exam is optional and some students may be discouraged or prevented from completing it.