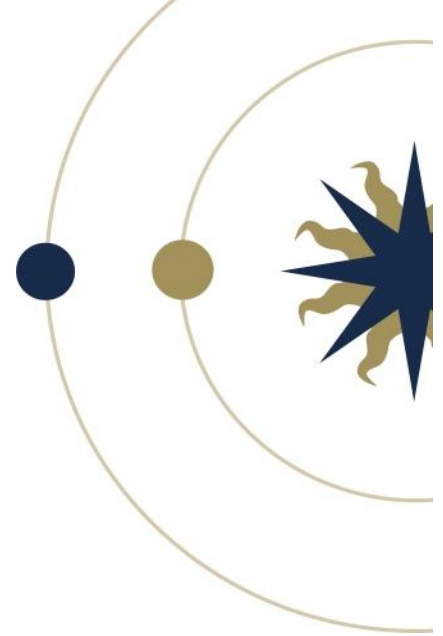




GREEN TEMPLETON COLLEGE | OXFORD



## Emerging Markets Symposium

13-15 January 2012

### Tertiary Education in Emerging Markets: An Analytical Framework



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## 1 Introduction

The purpose of this document is to provide comprehensive information on tertiary education and related themes in emerging market and wealthier and poorer comparator economies. The countries included are shown in Table 1.

**Table 1: Lists of Countries**

<b><i>Emerging Market Countries</i></b>
Argentina, Brazil, China, Chile, Colombia, Egypt, India, Indonesia, Jordan, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, Russia, South Africa, Thailand, Turkey, Tunisia
<b><i>High Income Countries Aggregate</i></b>
Australia, Japan, Switzerland, United Kingdom, United States
<b><i>Low Income Countries Aggregate</i></b>
Bangladesh, Cambodia, Ethiopia, Haiti, Nigeria

## Sources

The graphs presented here are mainly based on data from the World Bank, the United Nations Educational, Scientific and Cultural Organization (UNESCO), the Organization for Economic Co-operation and Development (OECD) and the Ibero-American Network for Science and Technology (RICYT). Additional information was derived from peer-reviewed journals. Detailed information on sources can be found at the end of this document.

## Definitions and Caveats

1. Enrolment data at different level of education refer to gross participation (i.e. total numbers of students enrolled regardless of age: UNESCO Institute of Statistics, 2011).
2. Comparability among countries included in the Inter-American Network Science and Technology Indicators (RICYT) is limited by definitions used by the countries concerned (RICYT, 2011).
3. UNESCO Education Indicators are based on the following definitions:

**Table 2: International Standard Classification of Education (ISCED-97)**

ISCED-97 categories		General Coverage
0 Pre-primary education		Pre-primary
1 Primary education or first stage of basic education		
2 Lower secondary or second stage of basic education		Secondary
3 Upper secondary education		
4 Post-secondary, non-tertiary education		Post-secondary
5 First stage of tertiary education-not leading to an advanced research qualification	5A Theoretically based tertiary programmes to qualify for entry to advanced research programmes	
	5B Practically oriented or occupation-specific programmes	
6 Second stage of tertiary education-leading to an advanced research qualification		
Source: UNESCO Institute of Statistics (1997).		

## Reference Years

The numbers displayed on the graphs are for a specific year or years. The year(s) are identified in the title line of each graph.

## 2 Macro Indicators

This section benchmarks demographic, economic and other macro indicators for emerging markets against indicators for comparator countries for the period 1990-2010 (subject to data availability). Except where otherwise indicated, the numbers shown on the charts in this section are for 2010.

### 2.1 Population and Migration

Figure 1: Total Population (millions), 1990-2010.

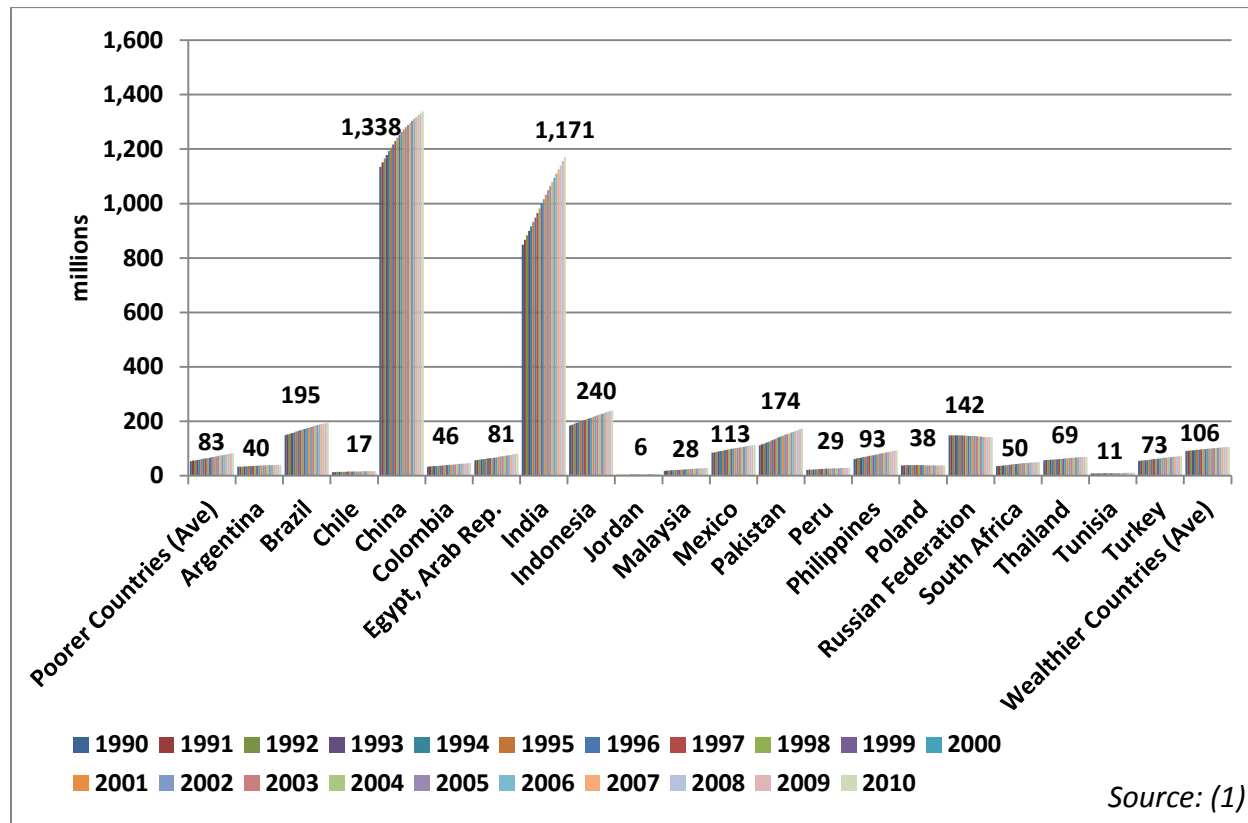


Figure 2: Urban population (% of total), 1990-2010.

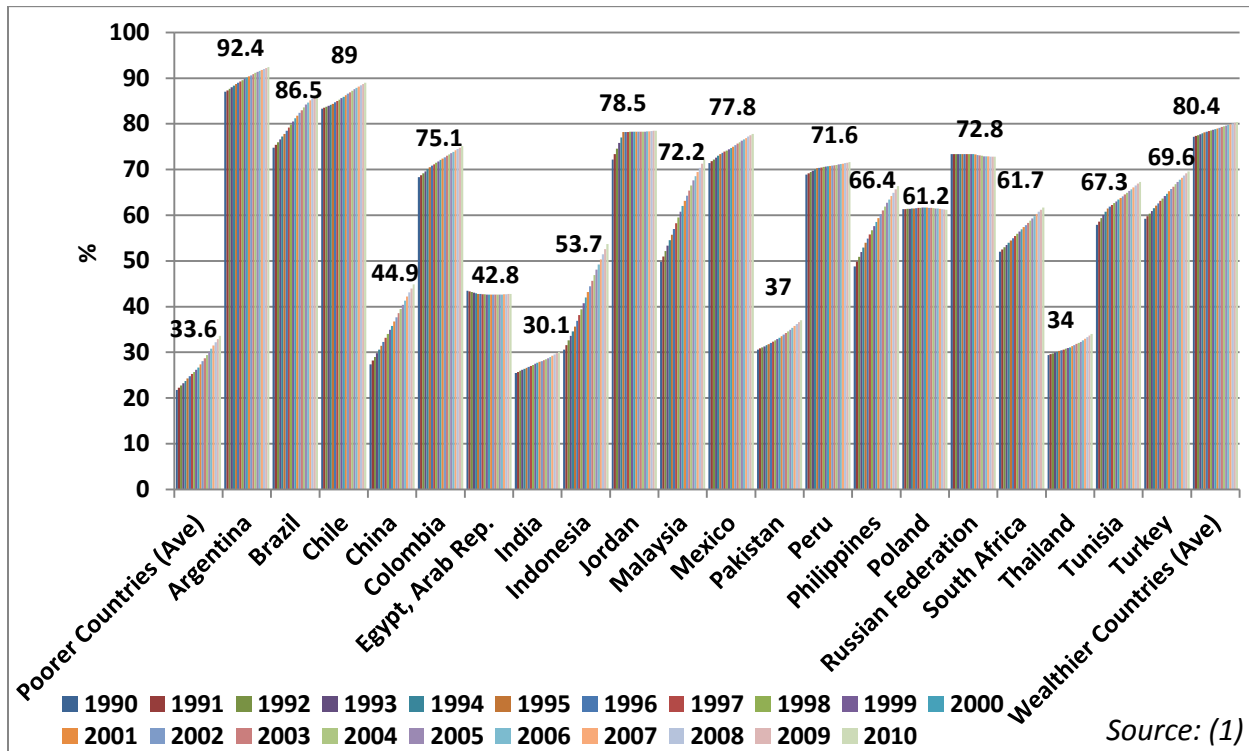


Figure 3: Rural Population (% of total population), 1990-2010.

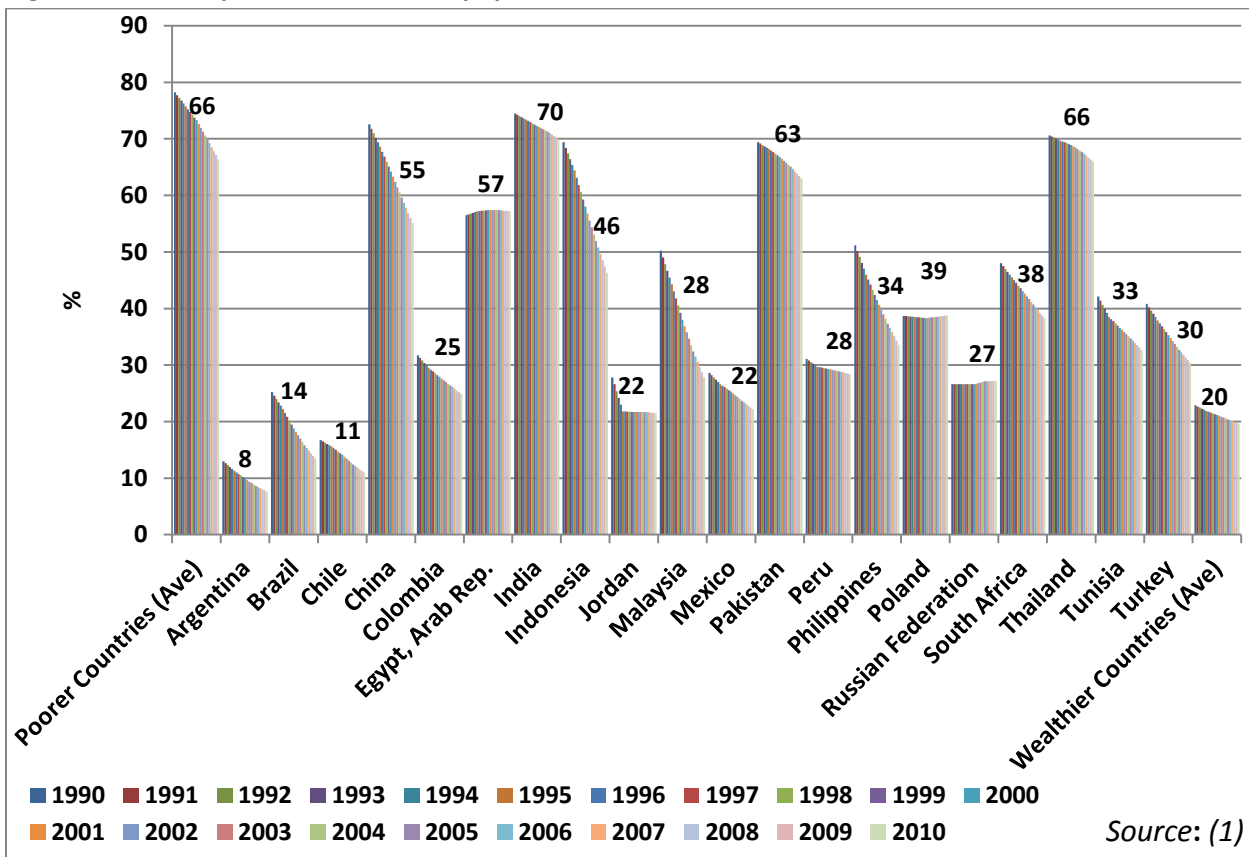
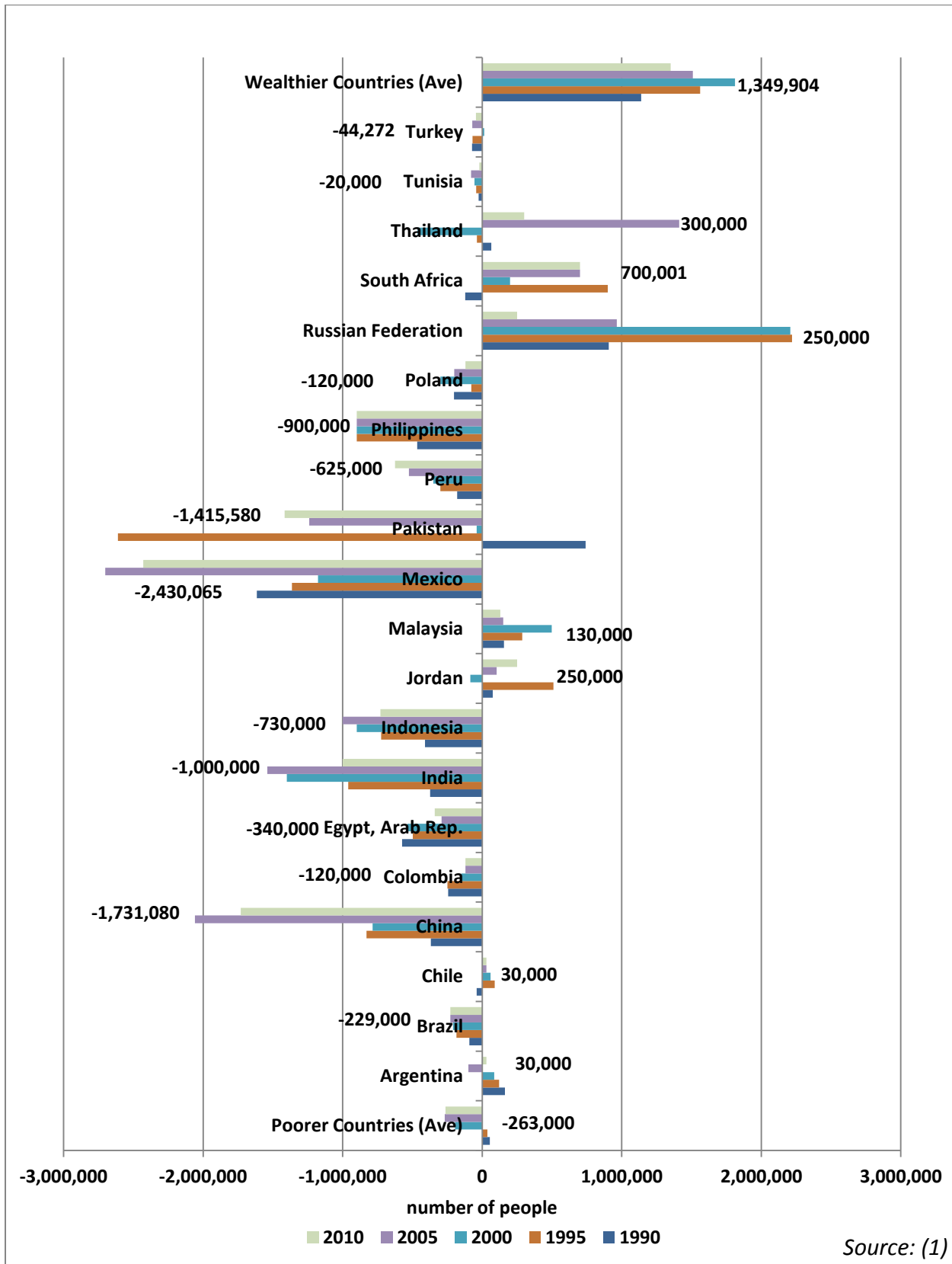


Figure 4: Net Migration, 1990-1995-2000-2005-2010.



Source: (1)

## 2.2 Gross Domestic Product (GDP) and National Expenditure Indicators

Figure 5: GDP (constant 2000 billion US\$), 1990-2010.

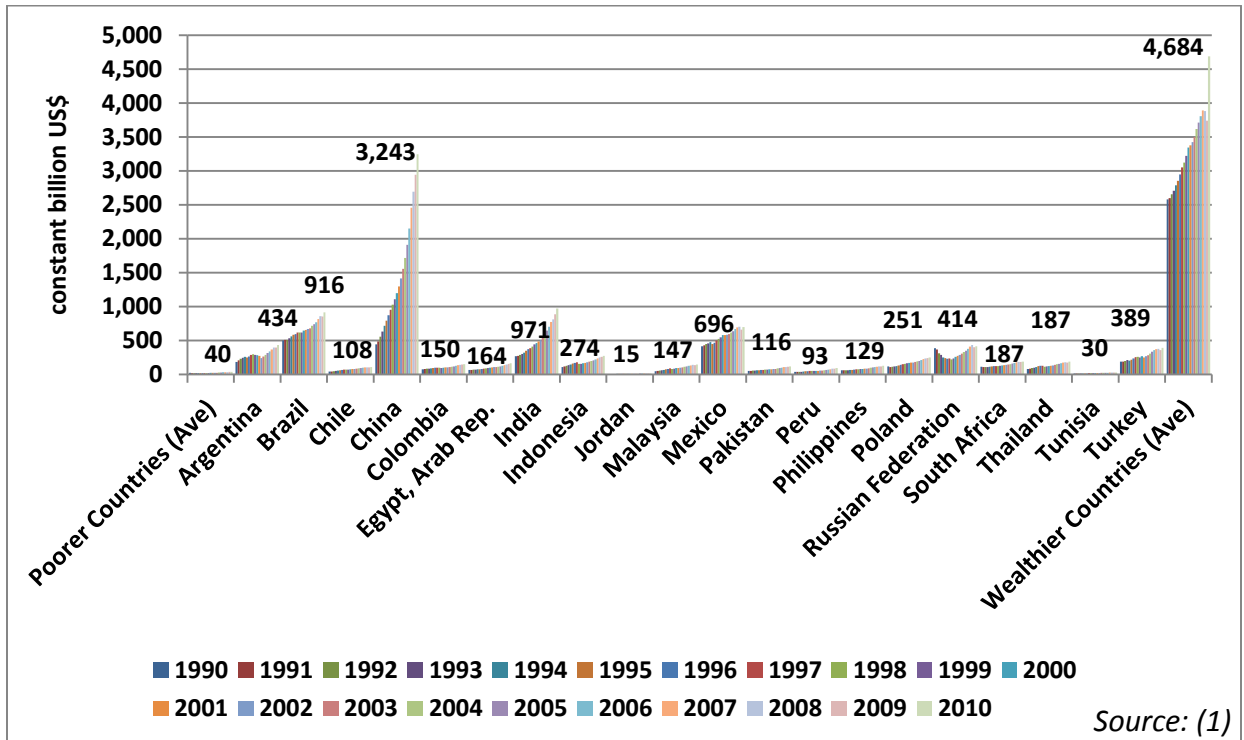


Figure 6: GDP (current billion US\$), 1990-2010.

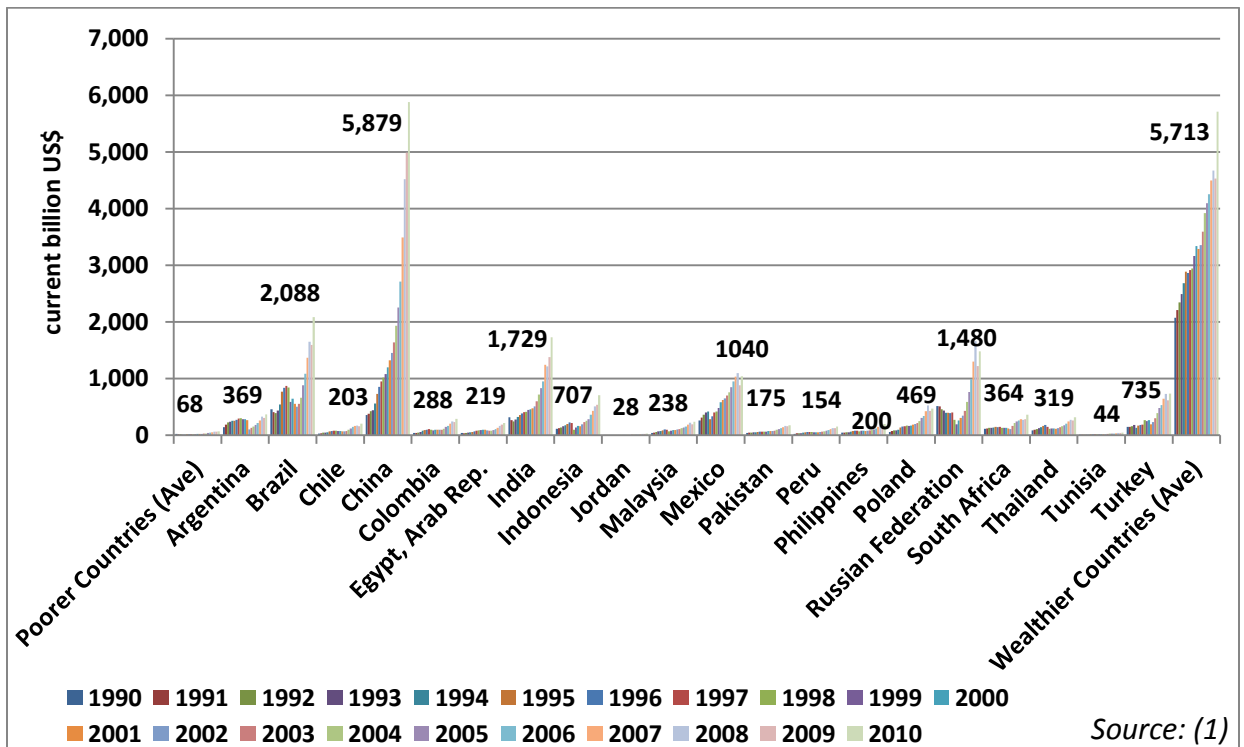


Figure 7: GDP Growth (annual %), 1990-2010.

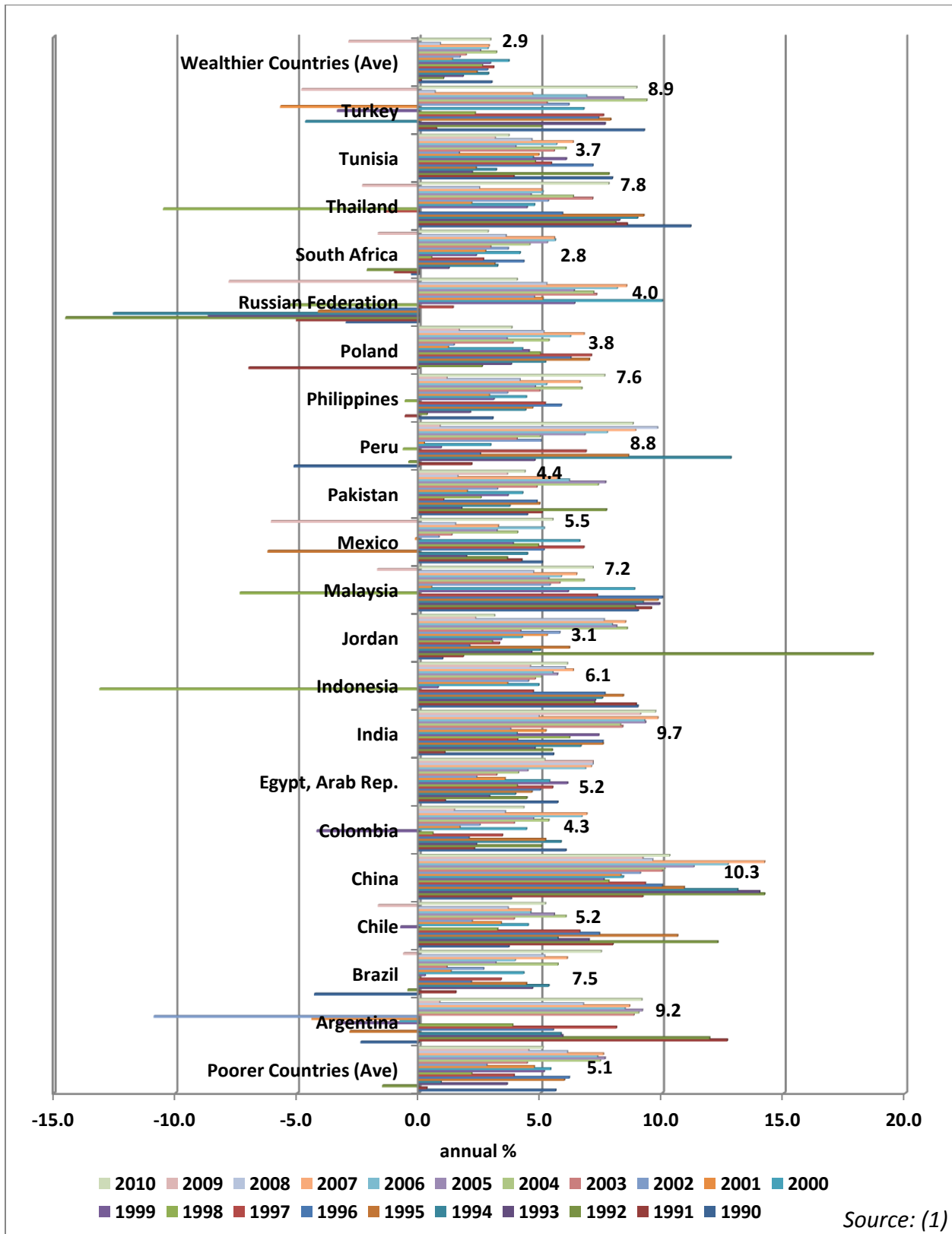


Figure 8: GDP per capita (constant 2000 US\$), 1990-2010.

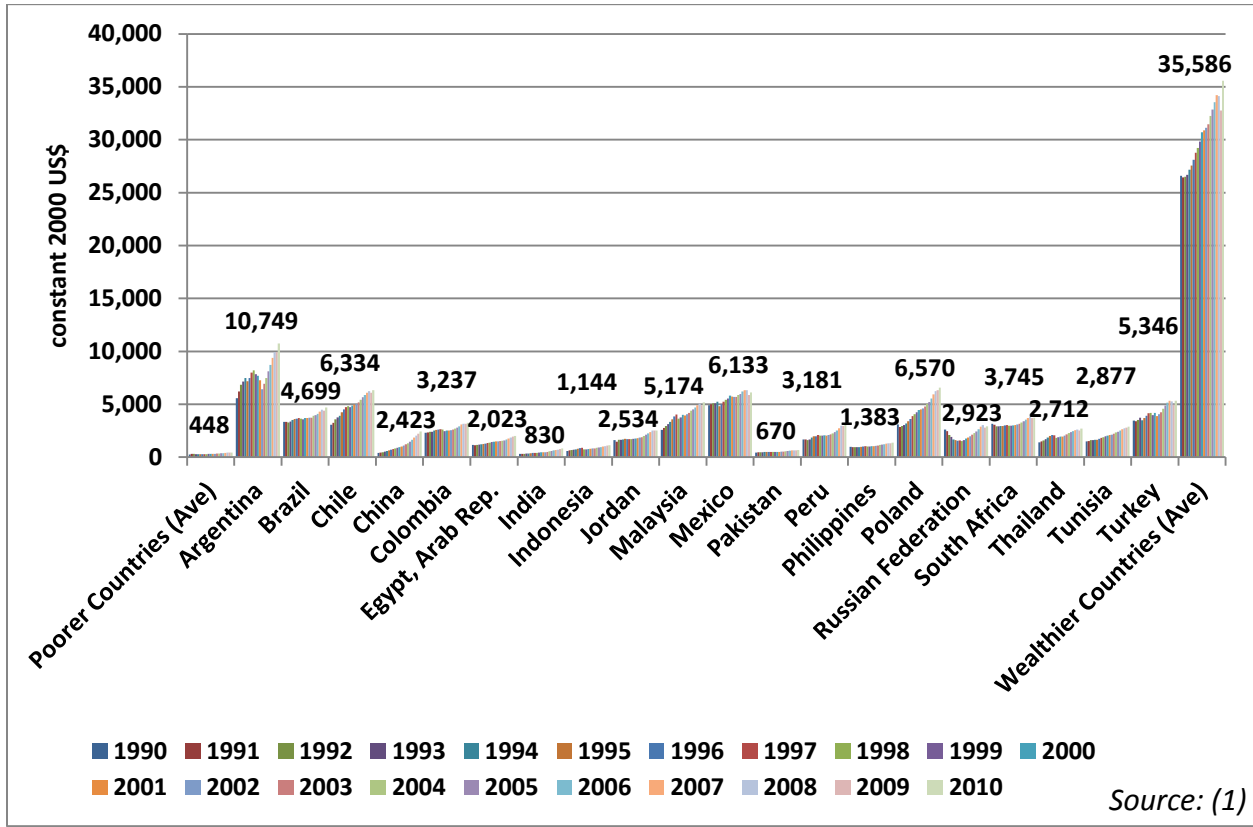


Figure 9: GDP per capita Growth (annual %), 1990-2010.

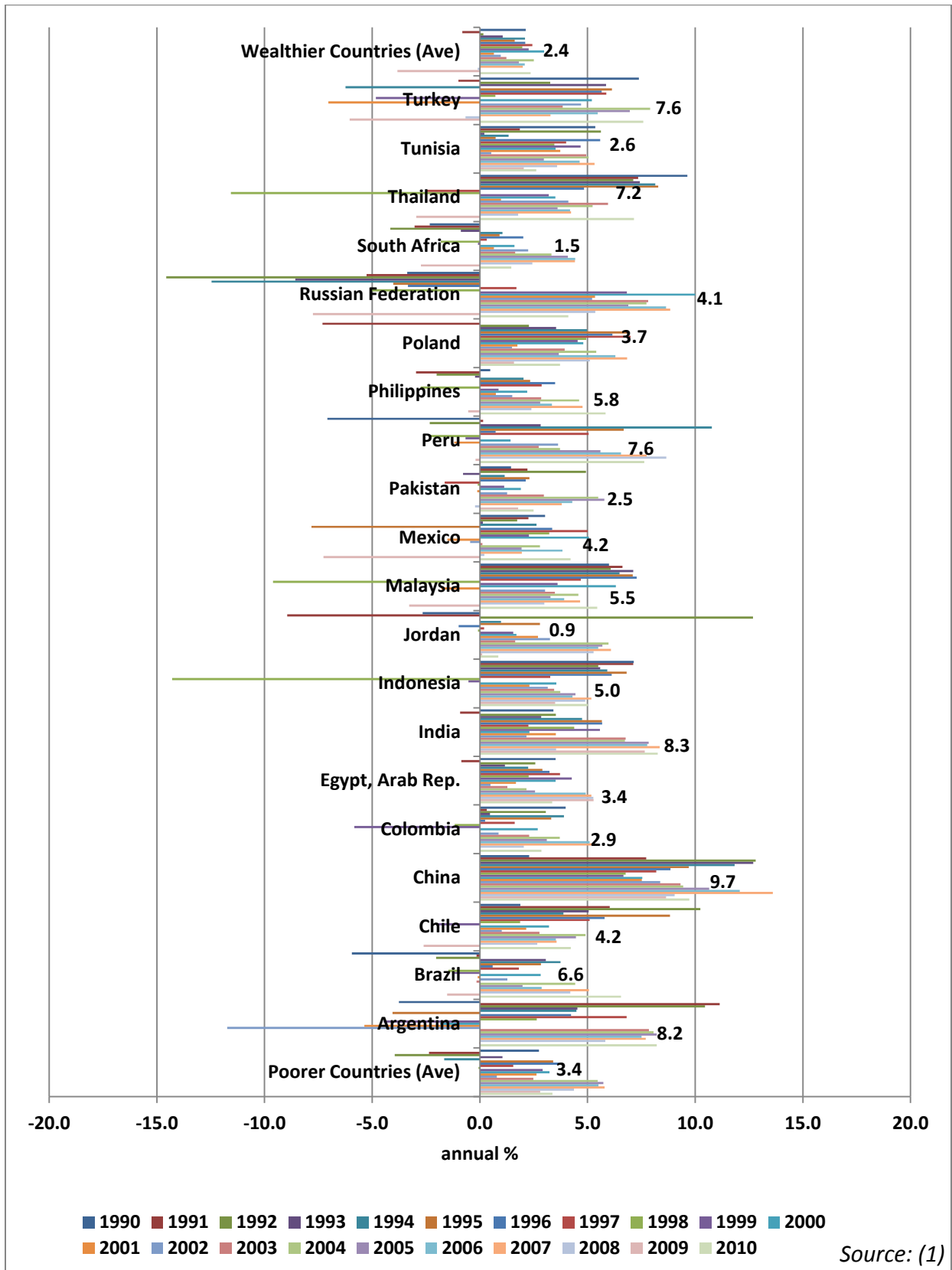


Figure 10: GDP per capita, Purchasing Power Parity (PPP) in constant 2005 dollars, 1990-2010.

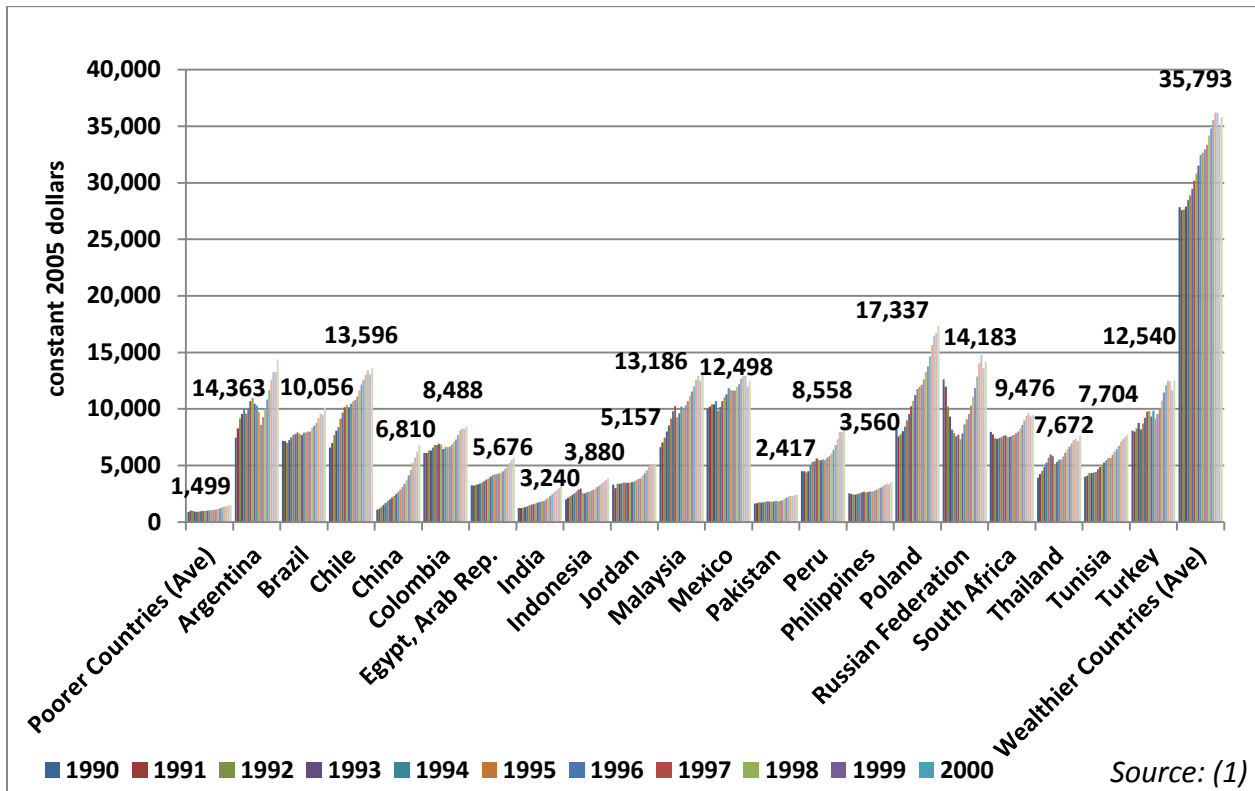


Figure 11: GDP, PPP (current international billion US\$), 1990-2010.

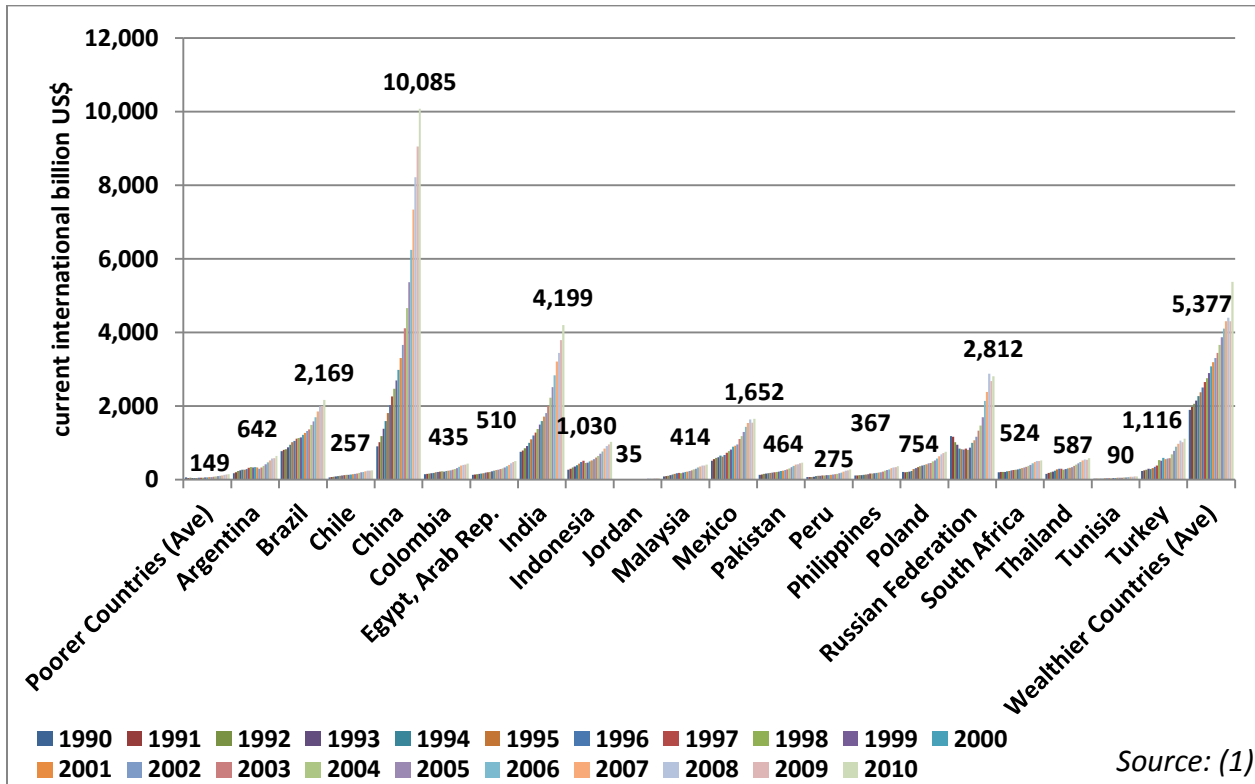


Figure 12: GDP, PPP (constant 2005 billion US\$), 1990-2010.

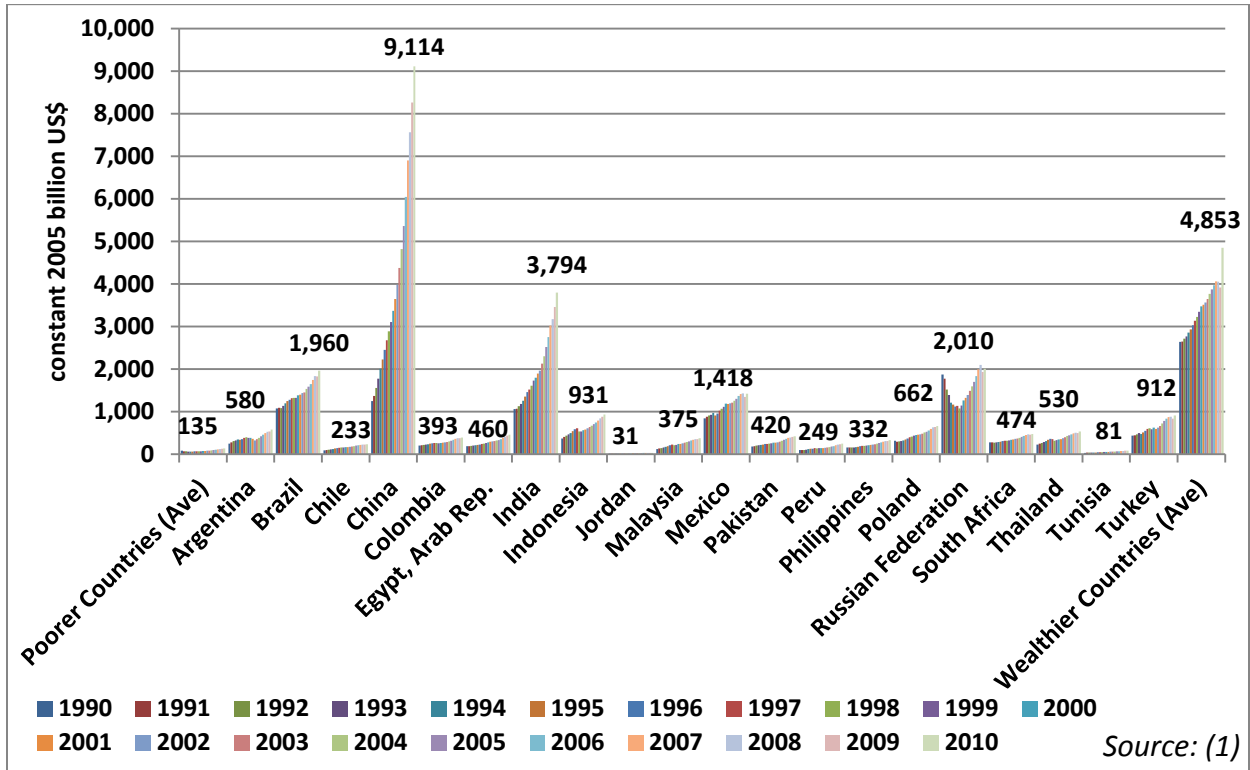


Figure 13: Gross National Expenditure (constant 2000 billion US\$), 1990-2010.

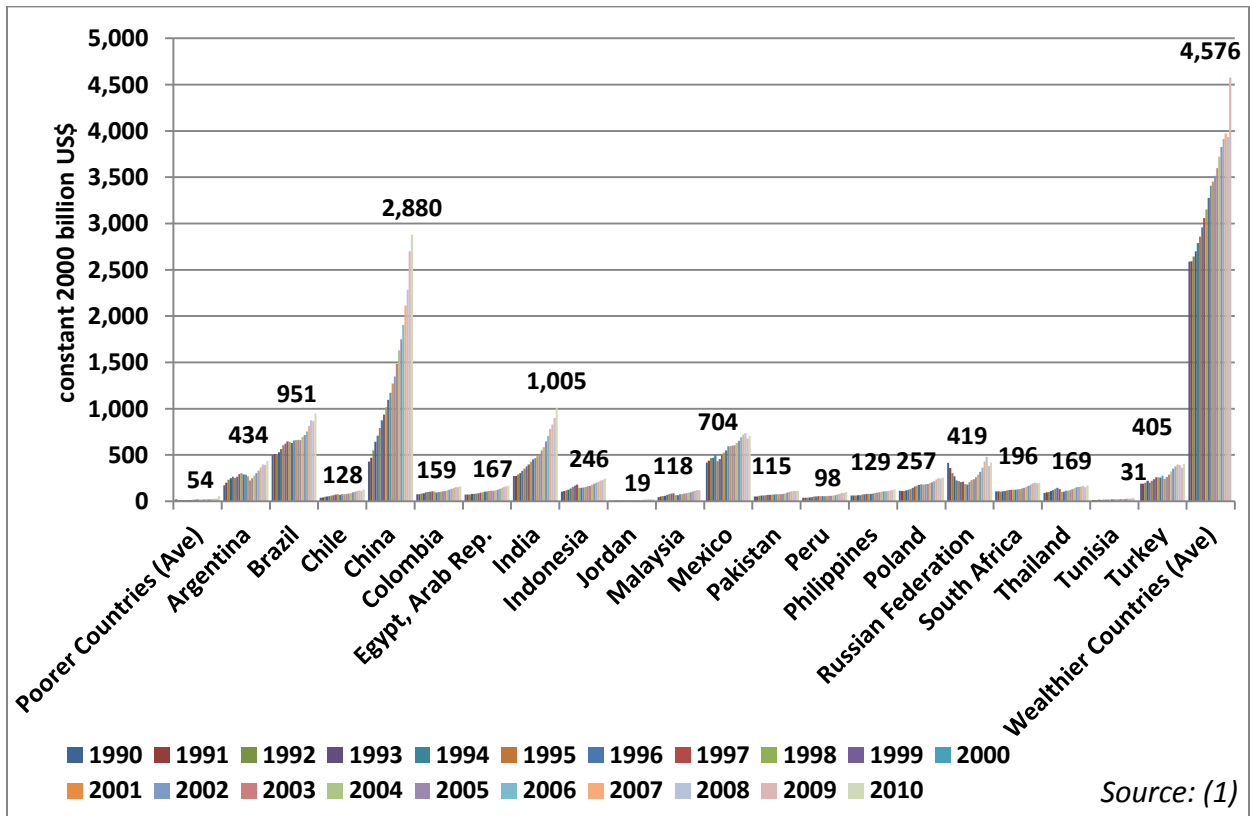


Figure 14: Inflation, GDP deflator (annual %), 1995-2010.

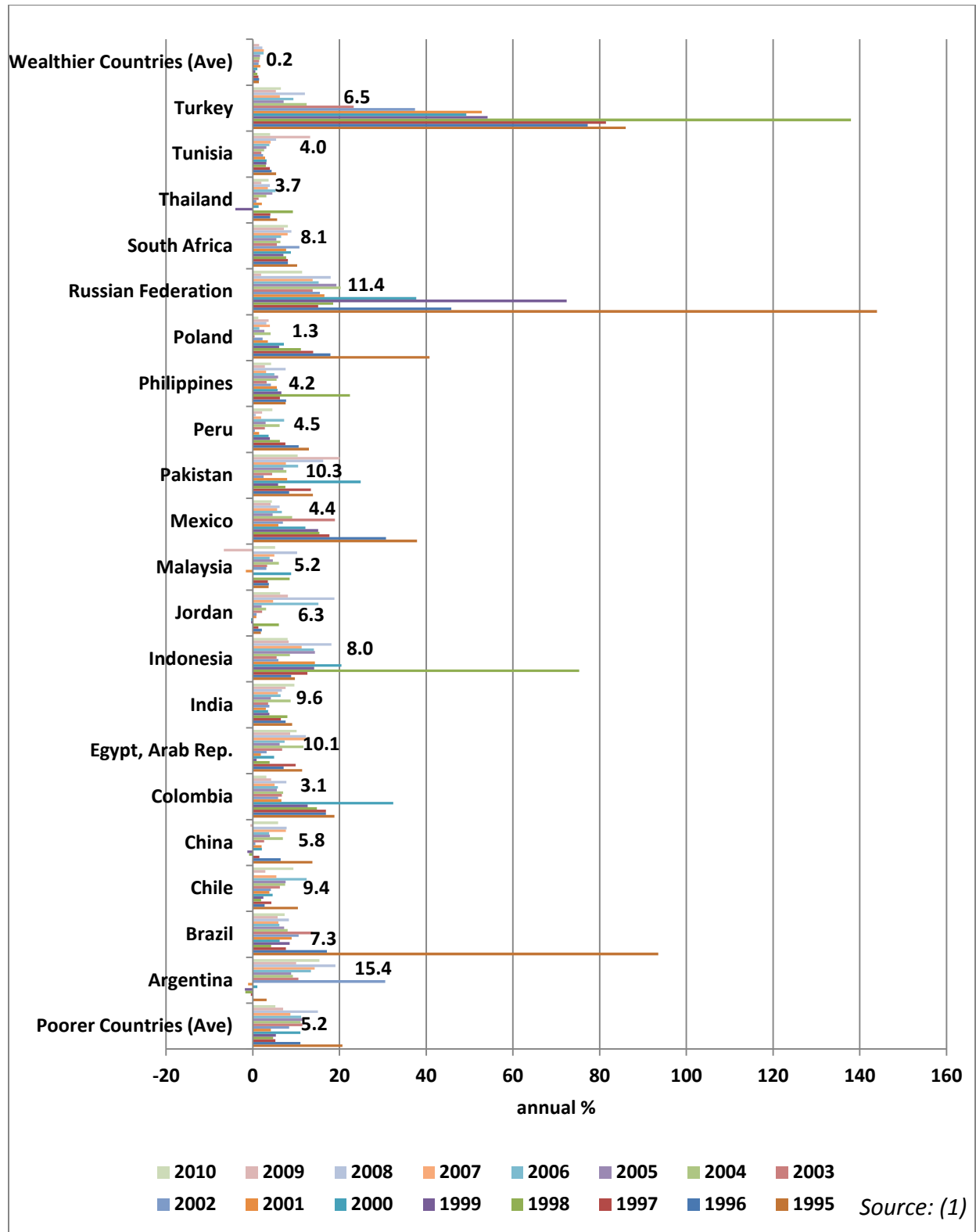


Figure 15: Tax Revenues (% of GDP) 1990-2009.

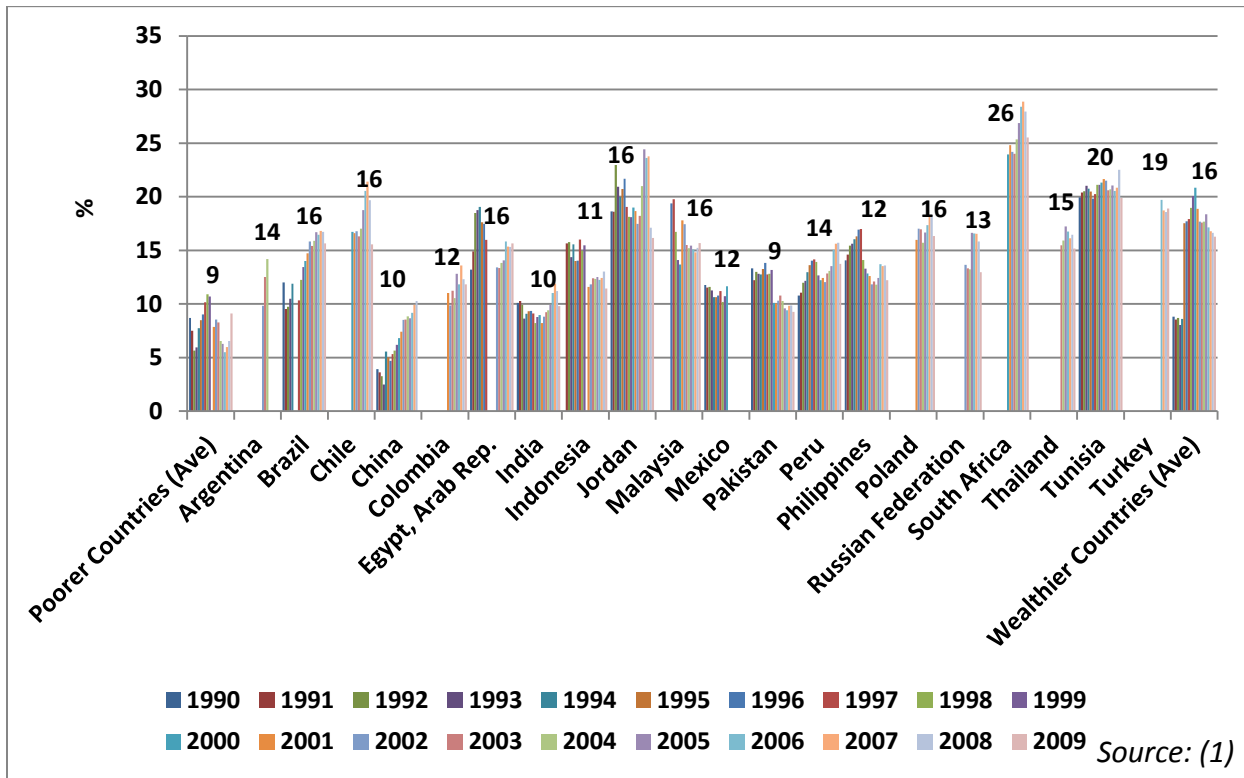
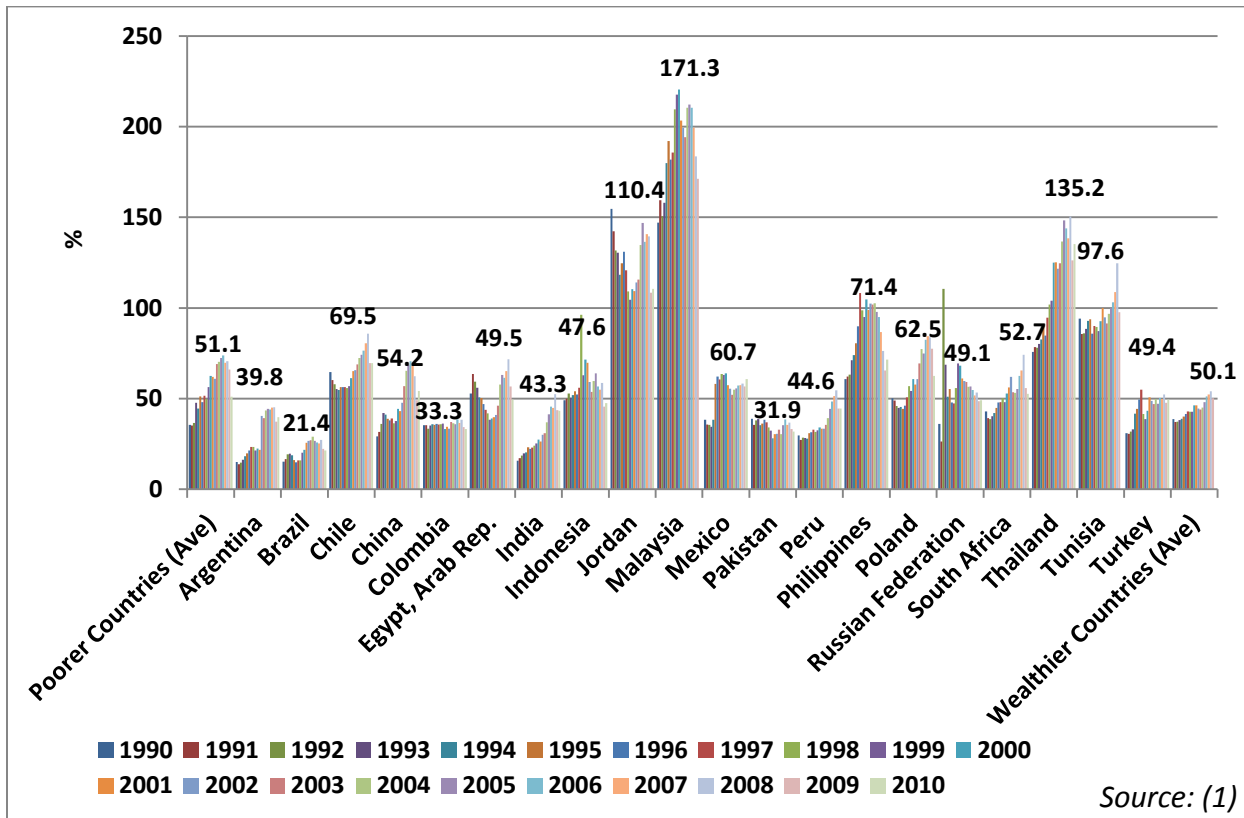


Figure 16: Trade (% of GDP), 1990-2010.



### 2.3 Other Development Indicators

Figure 17: Self-employed, total (% of total employed), 1990-2008 (numbers are for 2008 or later).

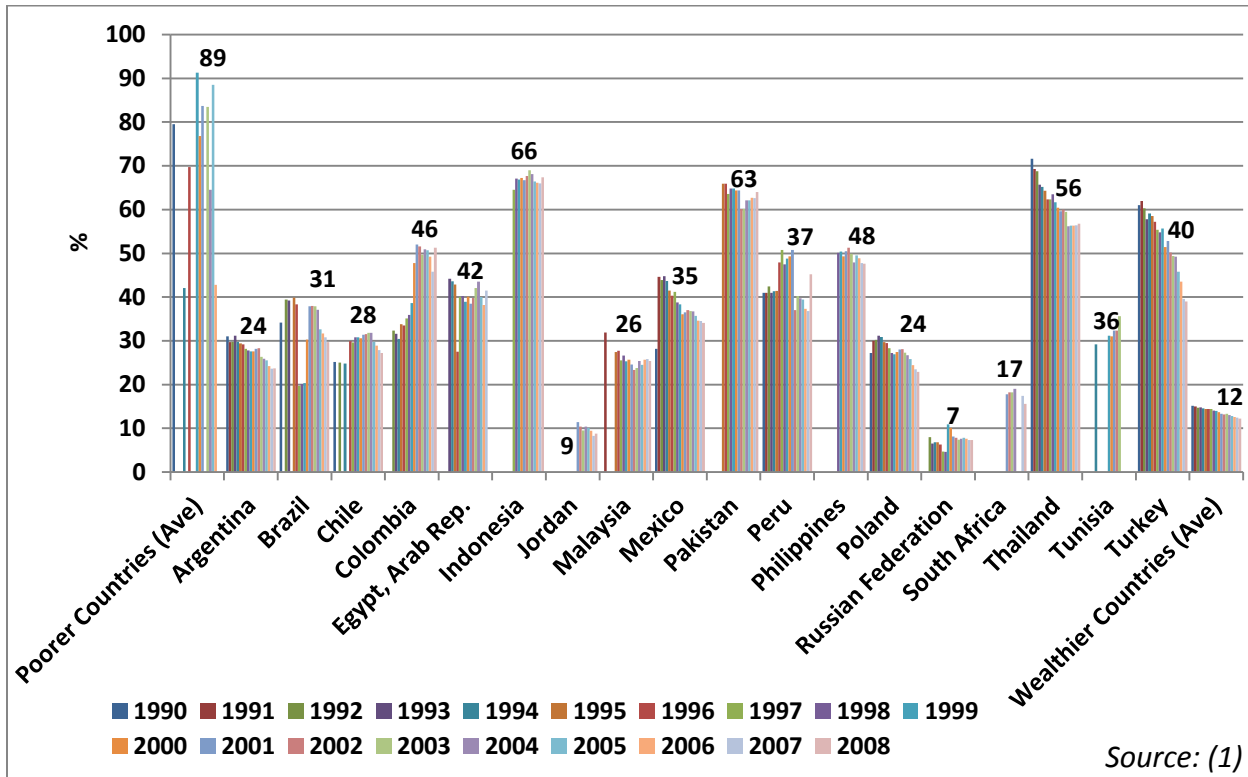


Figure 18: Internet Users (per 100 people), 1990-2009 (numbers are for 2009).

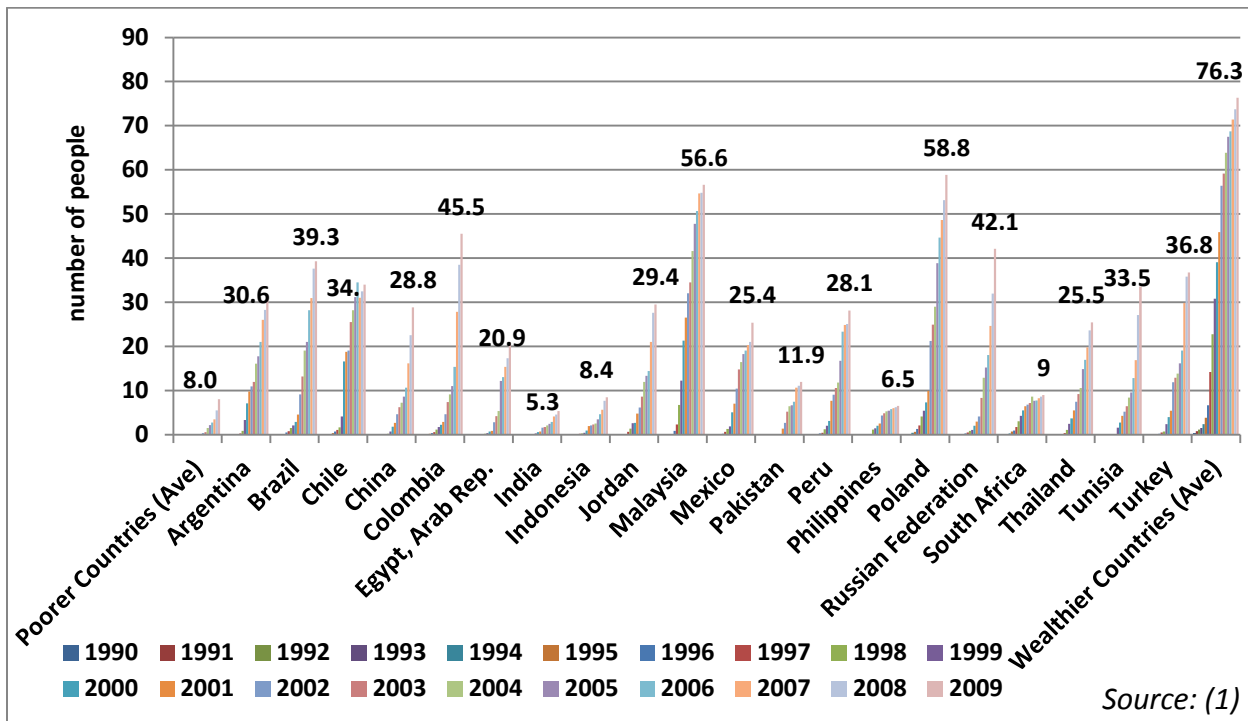


Figure 19: Mobile Phone subscriptions (per 100 people), 1990-2009 (numbers are for 2009).

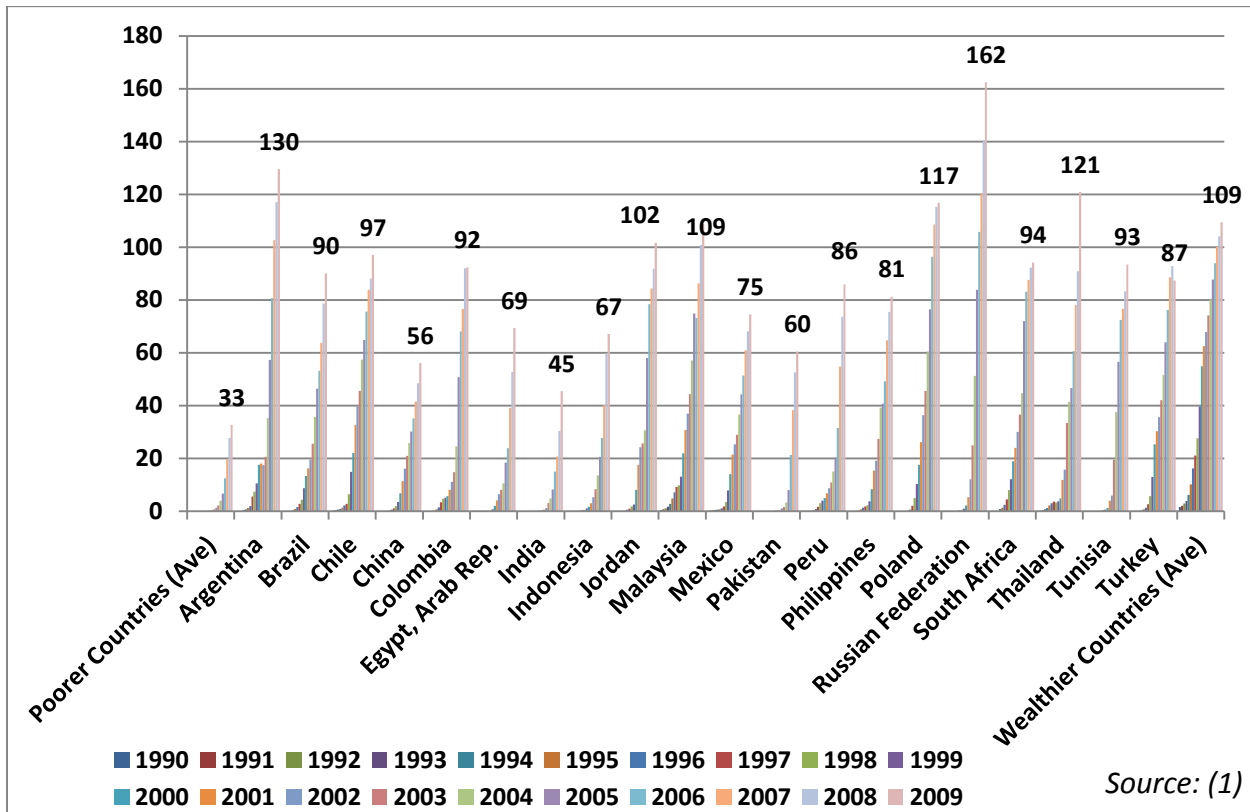


Figure 20: Pump Price for Gasoline (US\$ per litre), 2010.

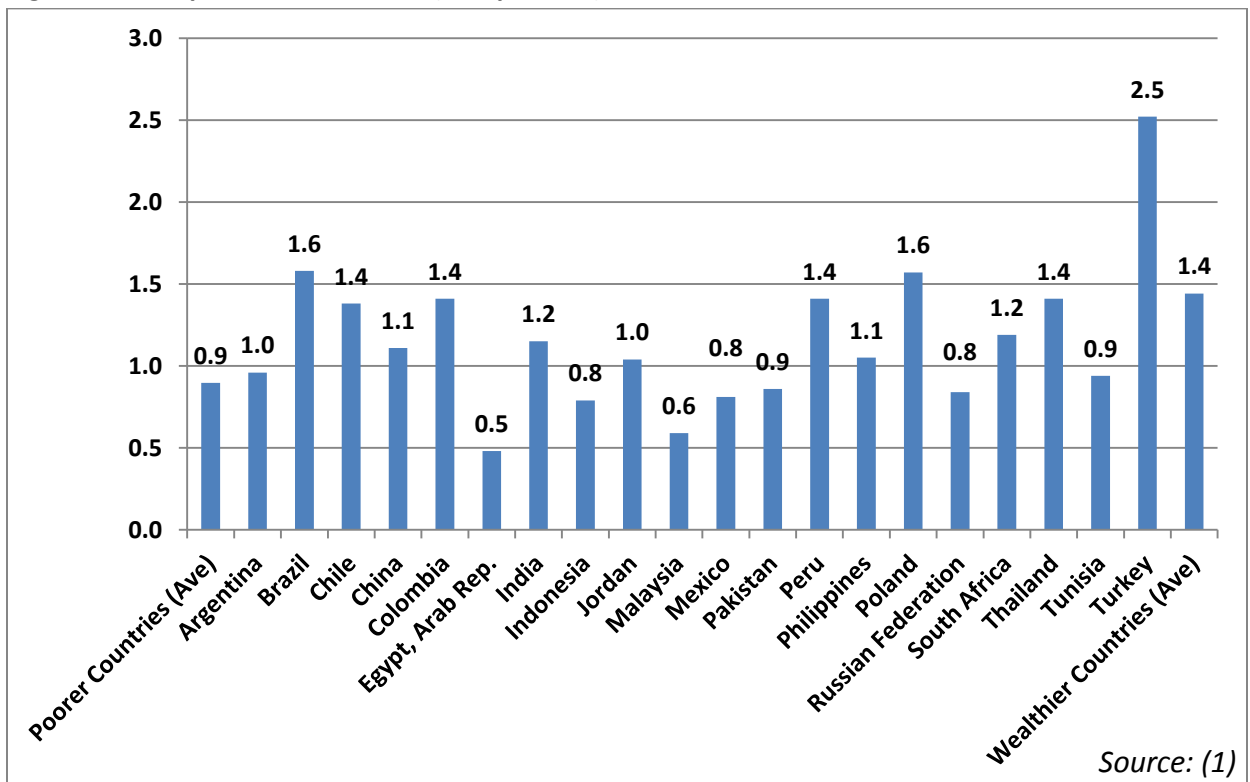


Figure 21: Quality of Port Infrastructure, (1=extremely underdeveloped to 7=well developed and efficient by international standards) 2007-2010.

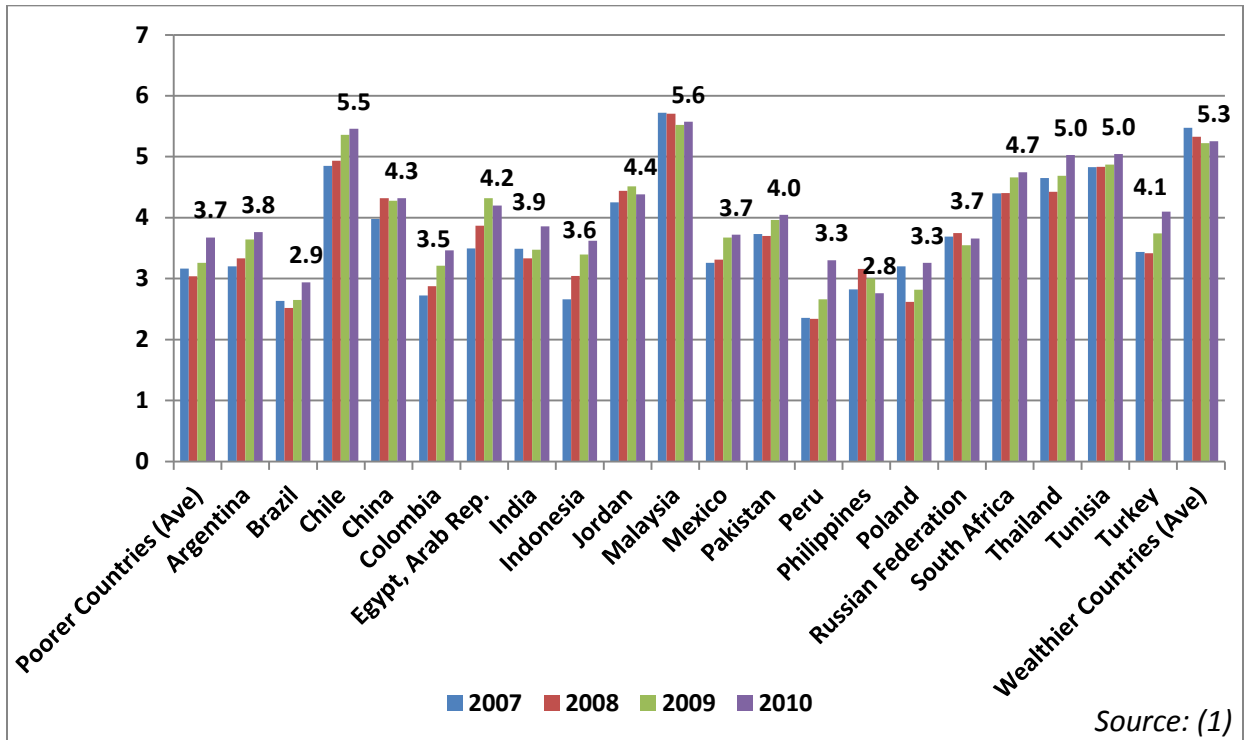
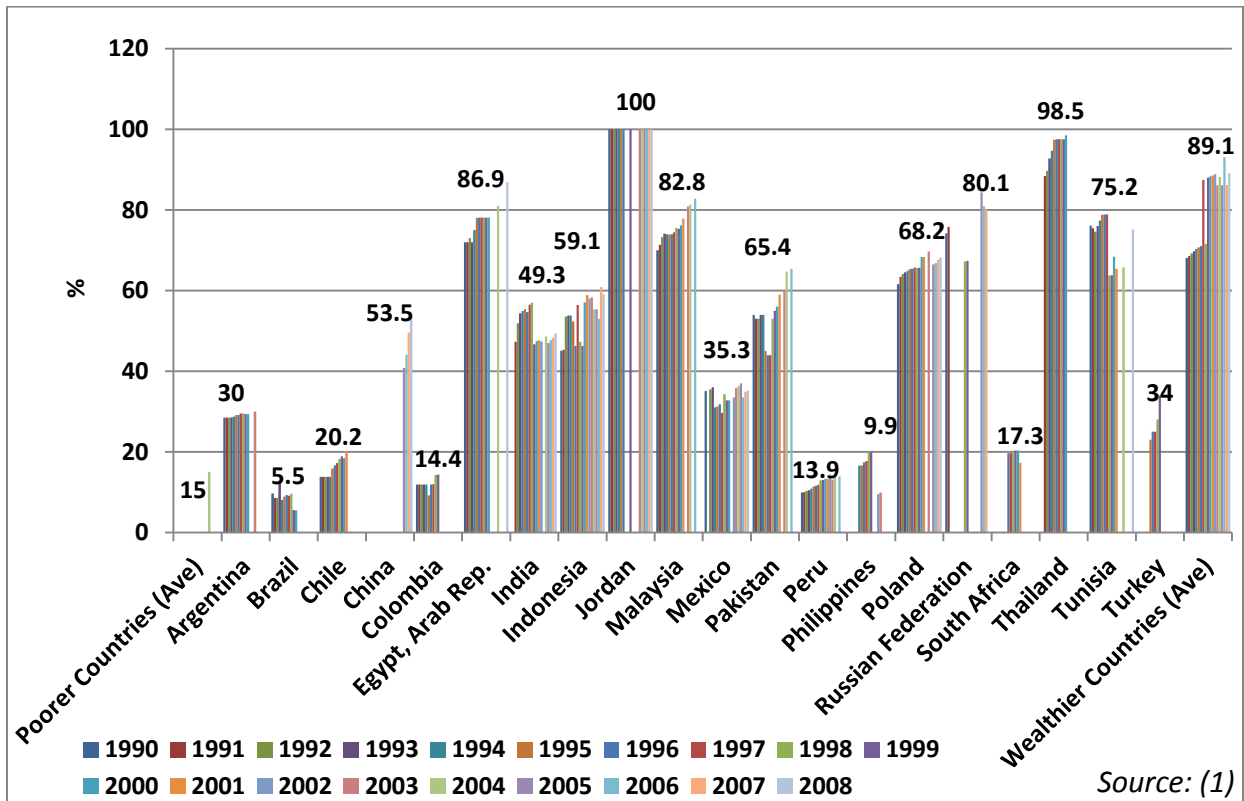


Figure 22: Paved Roads as % of total roads, 1990-2008 (numbers are for 2008 or later).



## 2.4 Research and Development Indicators

Figure 23: Patent Applications by Residents, 1990-2009 (numbers are for 2009 or later).

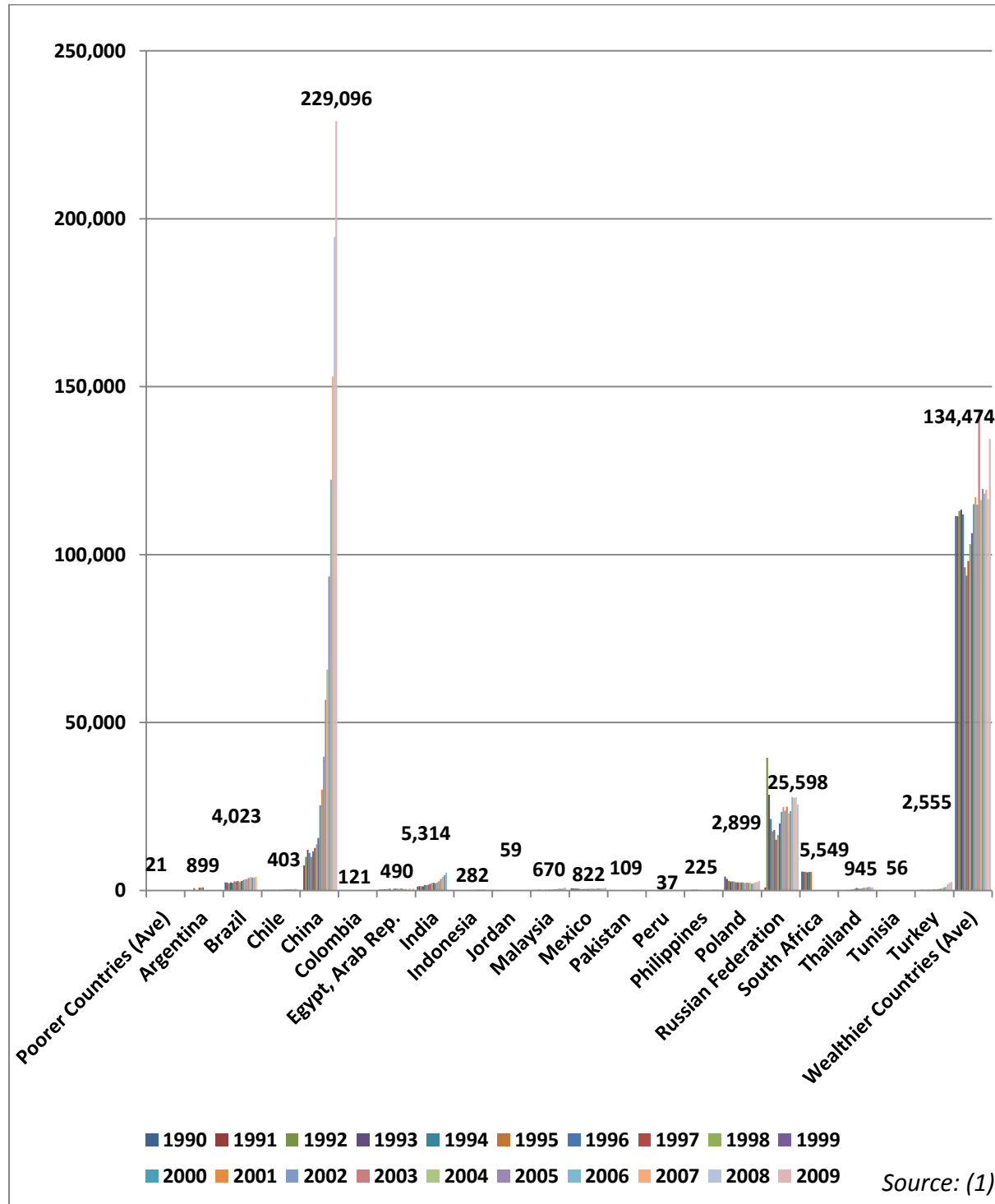


Figure 24: Research and Development (R&D) Expenditure (% of GDP), 1996-2007 (numbers are for 2007 or later).

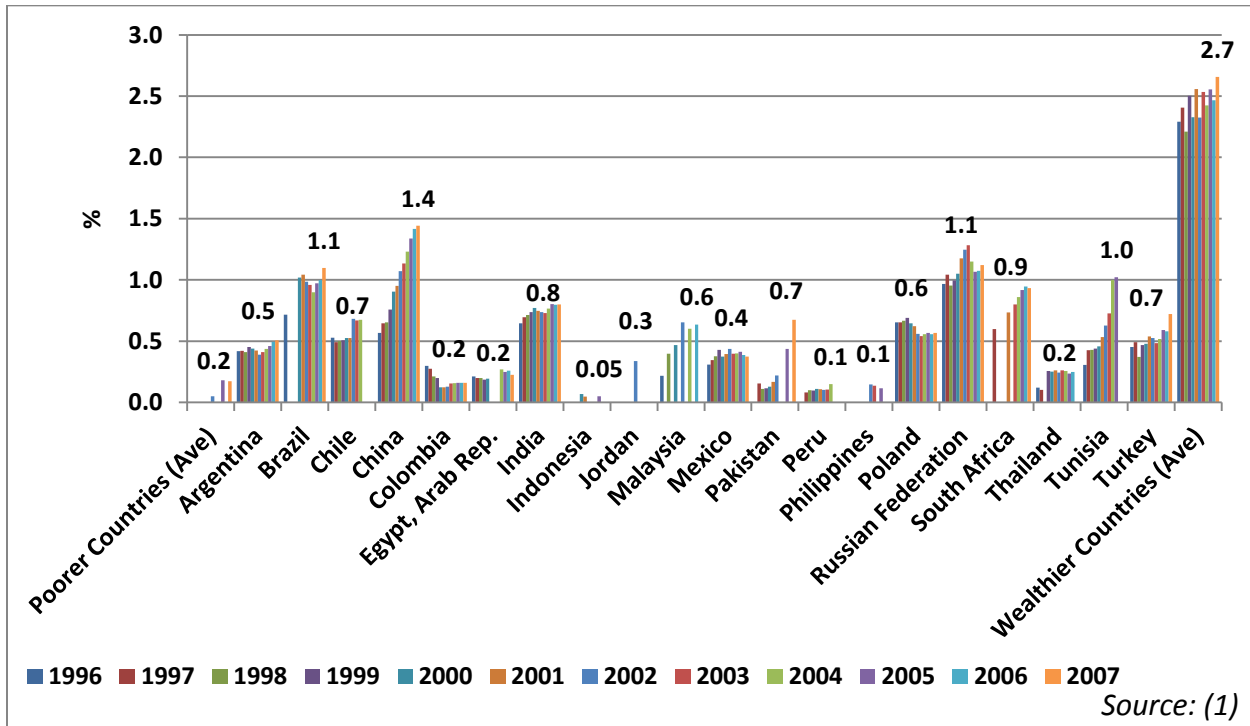


Figure 25: Researchers in R&D (per million people), 1996-2007 (numbers are for 2007 or later).

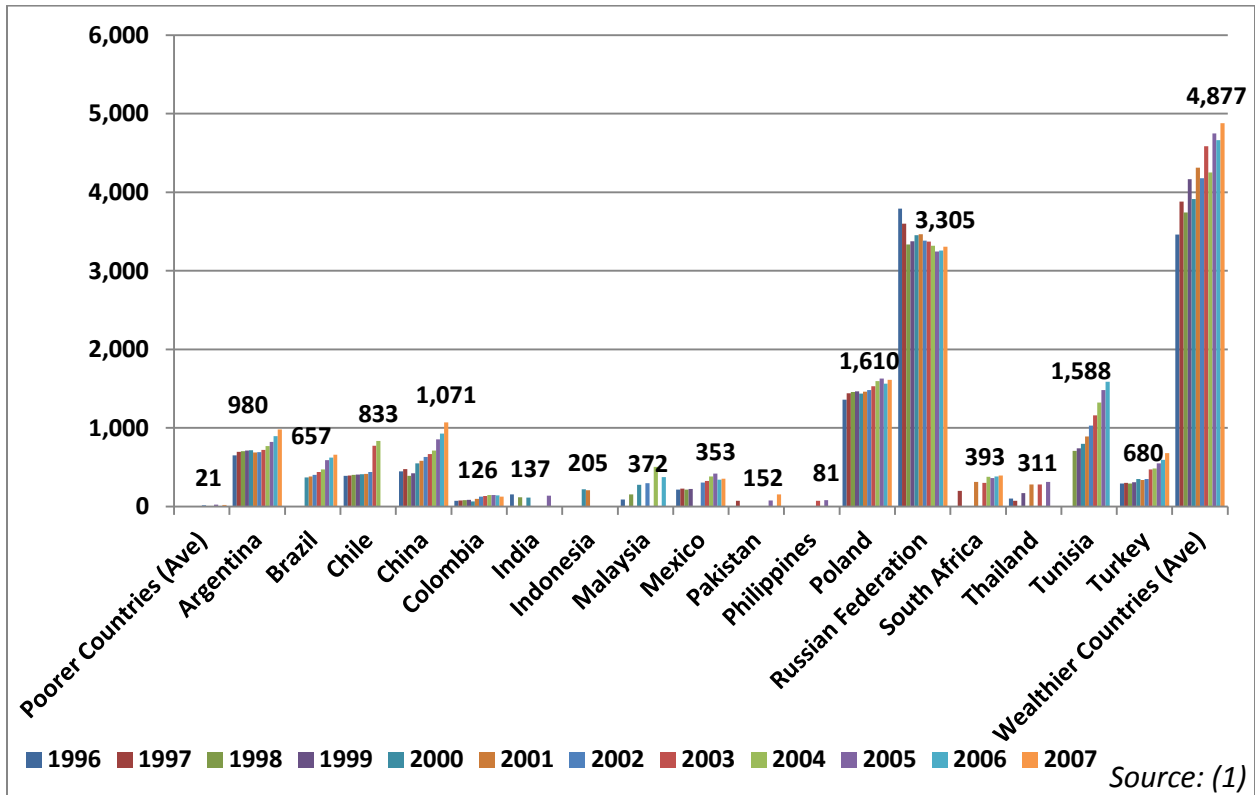


Figure 26: Scientific and Technical Journal Articles, 1990-2007 (numbers are for 2007).

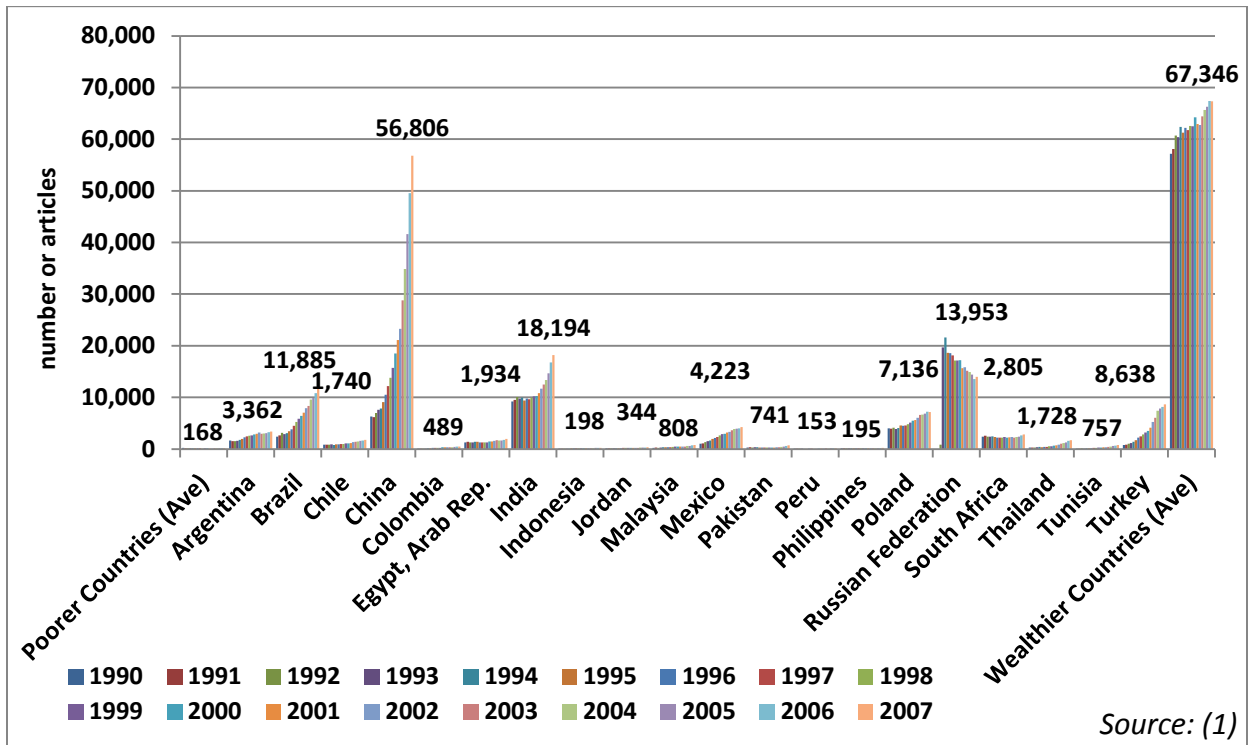
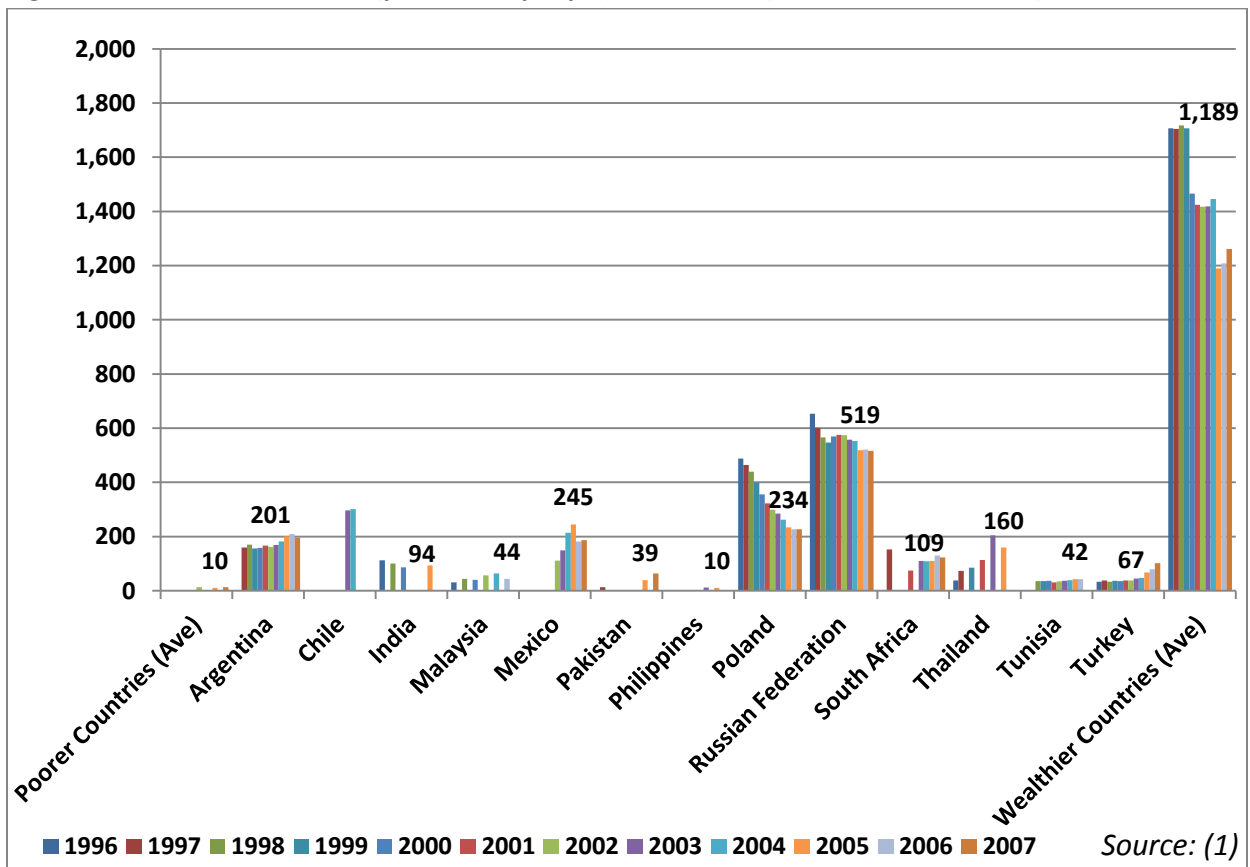


Figure 27: Technicians in R&D (per million people), 1996-2007 (numbers are for 2007).



### 3 General Education Indicators

#### 3.1 Participation

Figure 28: Total Gross Enrolment in Primary Education (Ratio of Total Enrolment to the Population of the Age Group that Officially Corresponds to Primary Education), 1990-2008 (numbers are for 2008).

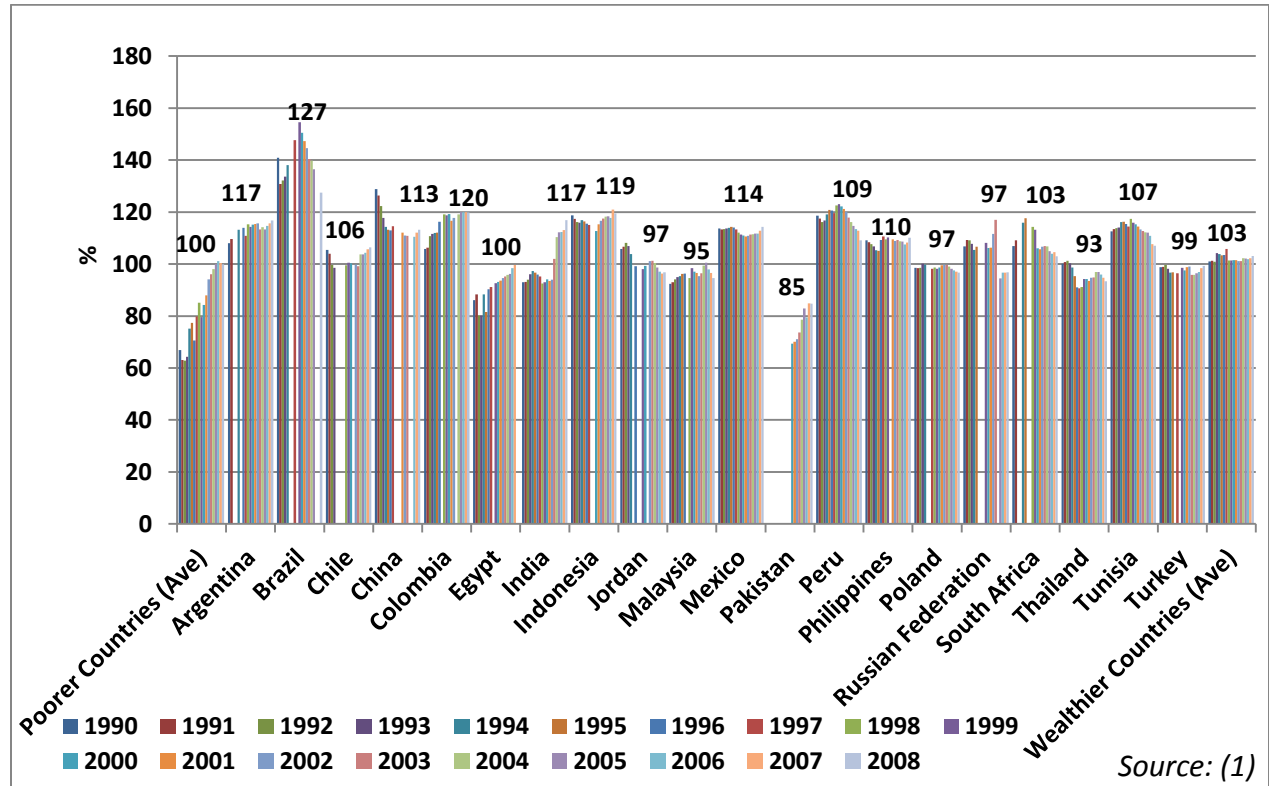


Figure 29: % of Private School Enrolment in Primary Education of Total Primary Enrolment, 1998-2008 (numbers are for 2008).

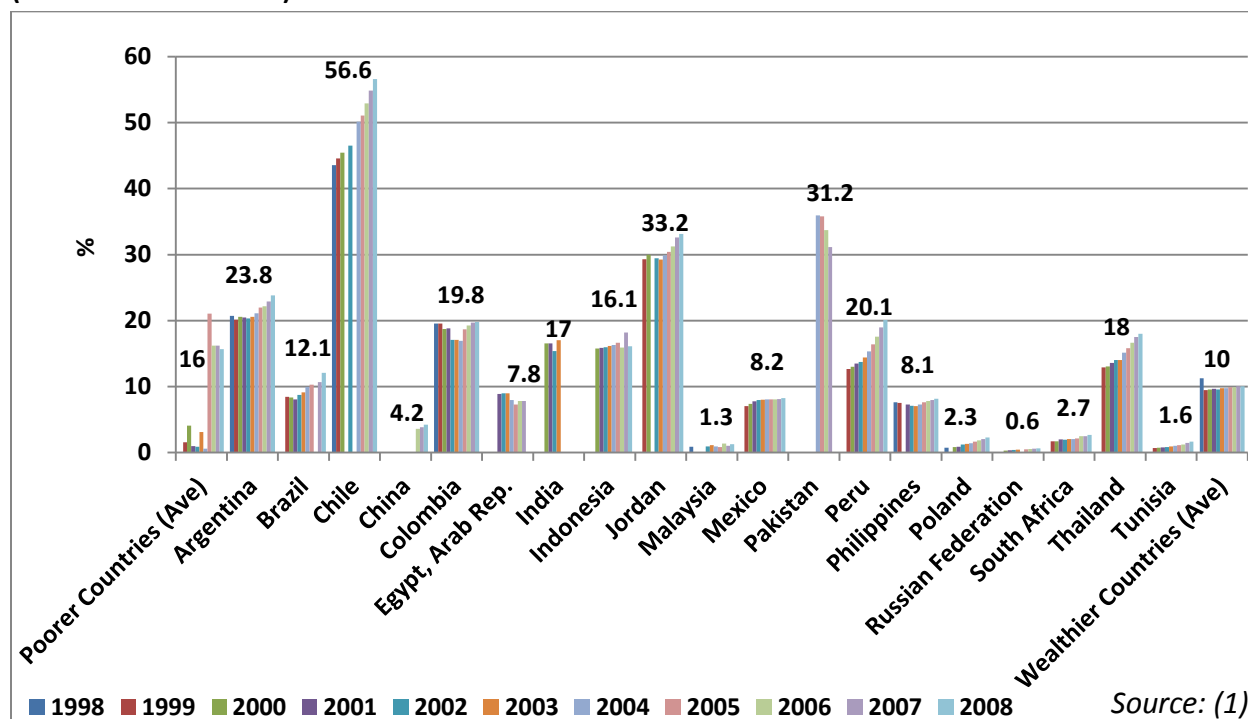


Figure 30: Total Gross Enrolment in Lower Secondary Education (Ratio of Total Enrolment to the Population of the Age Group that Officially Corresponds to Lower Secondary Education), 1998-2008 (numbers are for 2008).

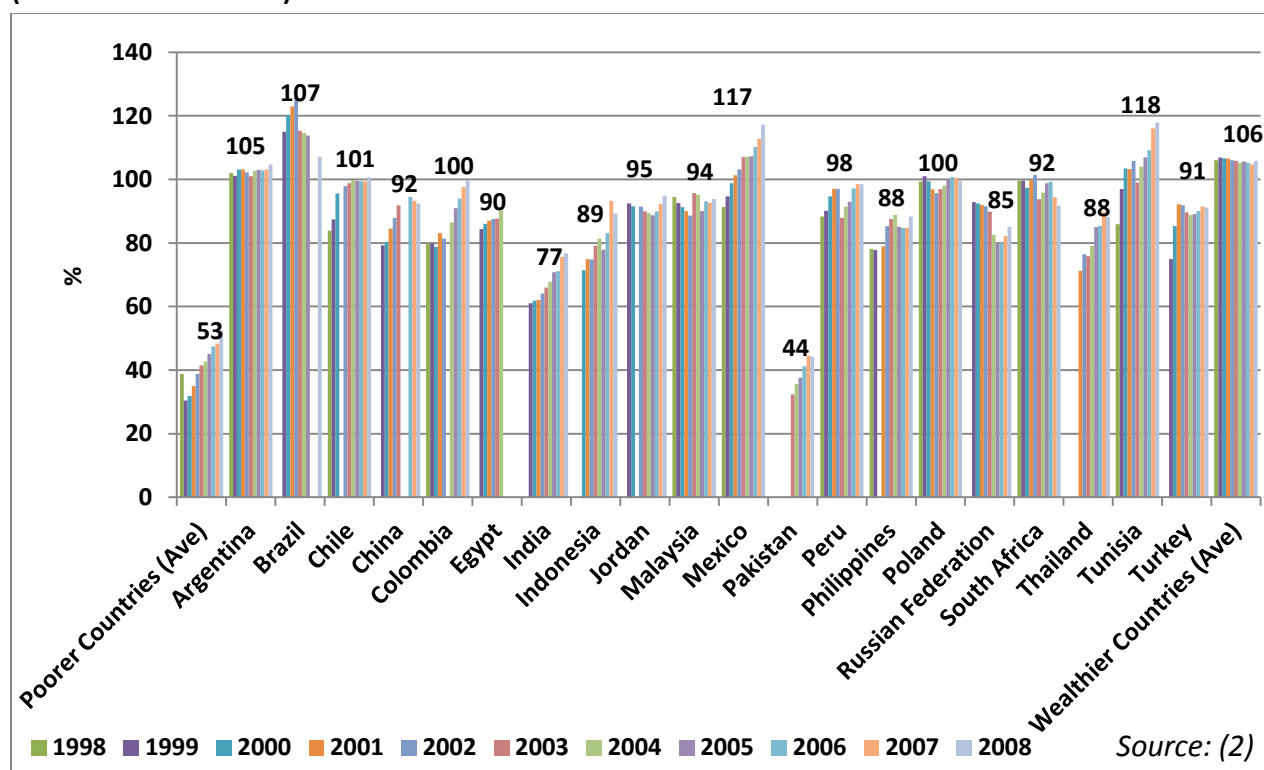


Figure 31: Total Gross Enrolment in Secondary Education (Ratio of Total Enrolment to the Population of the Age Group that Officially Corresponds to Secondary Education), 1990-2008 (numbers are for 2008).

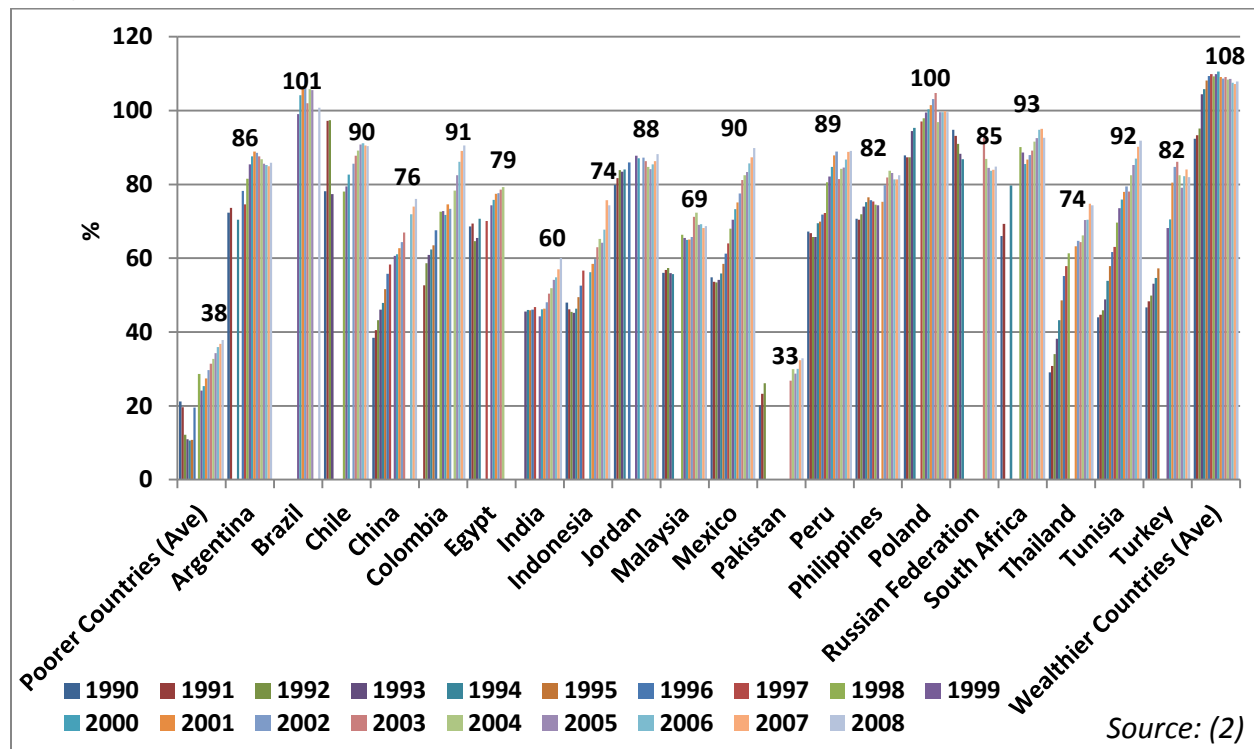
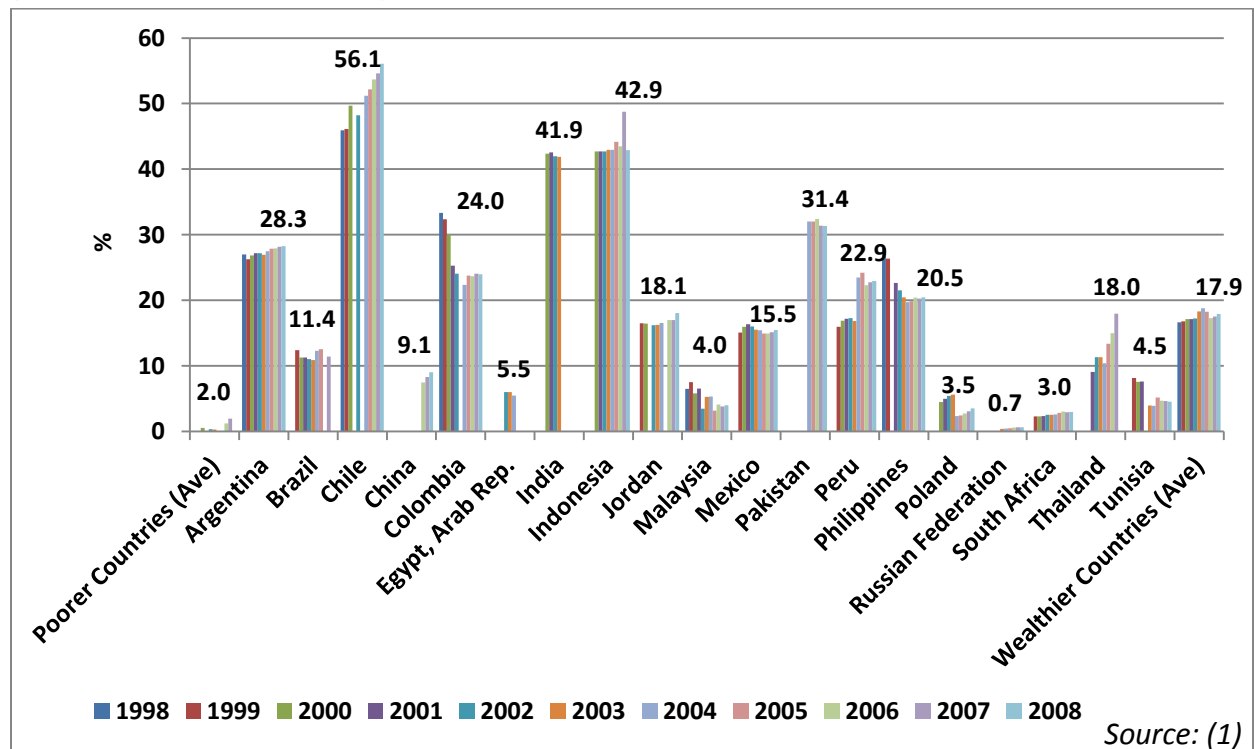


Figure 32: Private School Enrolment in Secondary Education (% of Total Secondary), 1998-2008 (numbers are for 2008 or later).



### 3.2 Pupils and Teachers

Figure 33: Number of Pupils in Primary Education (millions), 1990-2008 (numbers are for 2008).

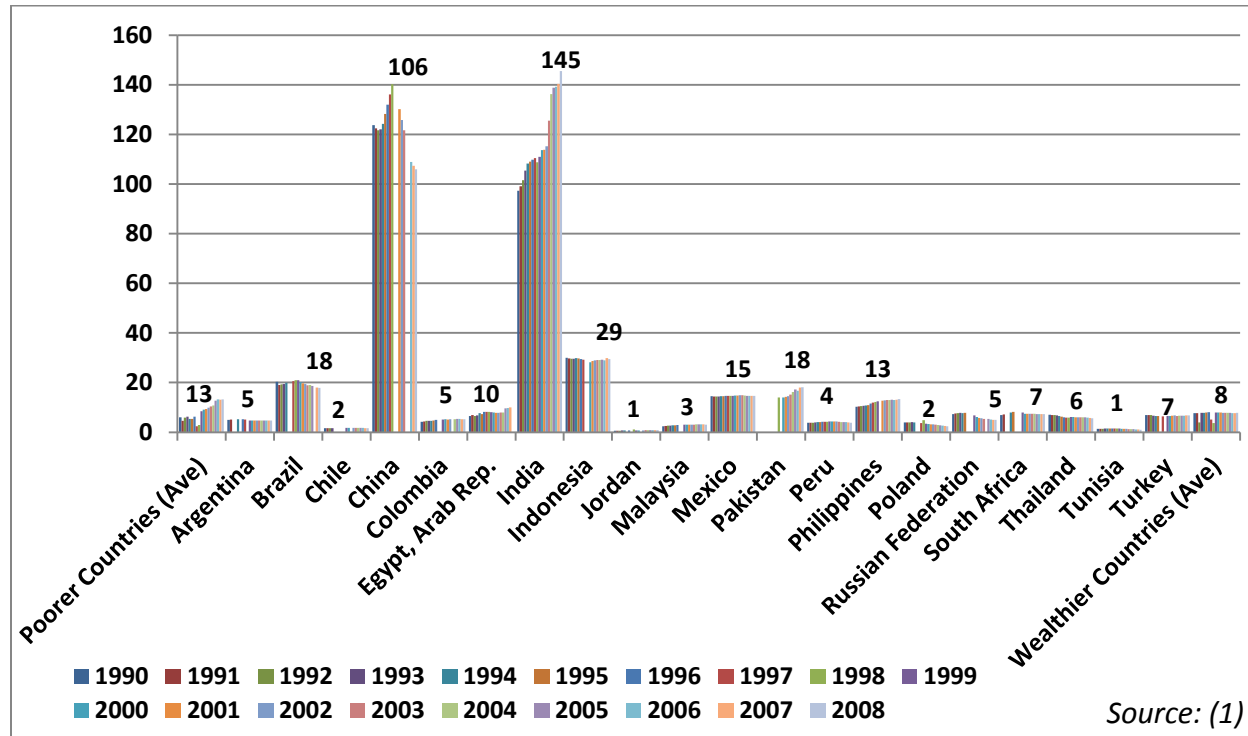


Figure 34: Pupil-Teacher Ratios in Primary Education, 1990-2008 (numbers are for 2008 or later).

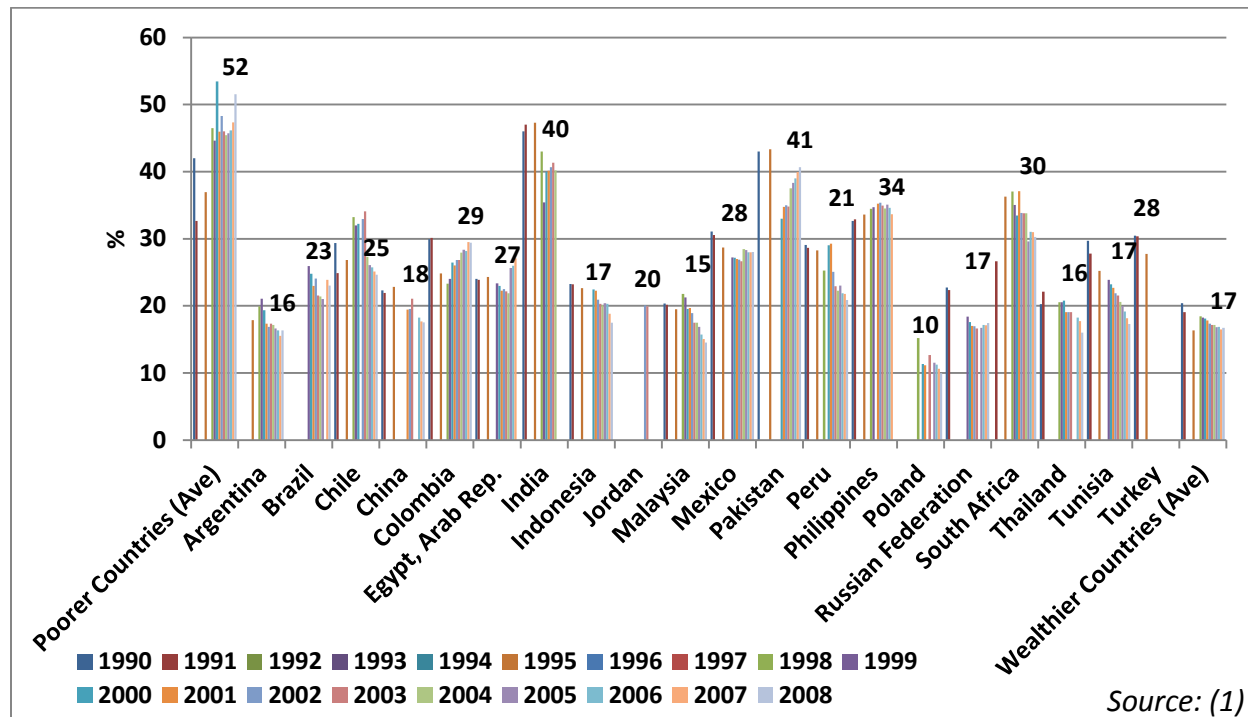
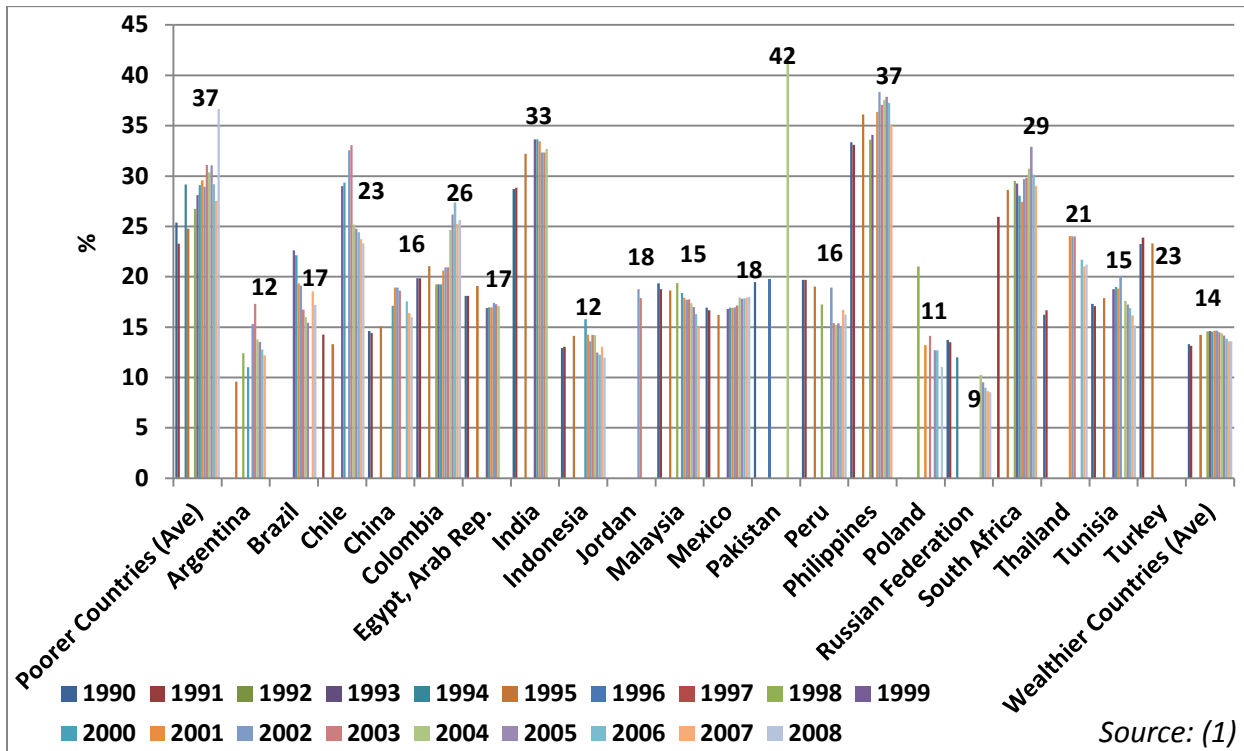


Figure 35: Pupil-Teacher Ratios in Secondary Education, 1990-2008 (numbers are for 2008 or later).



### 3.3 Completion

Figure 36: Primary Education Duration (years), 1990-2010.

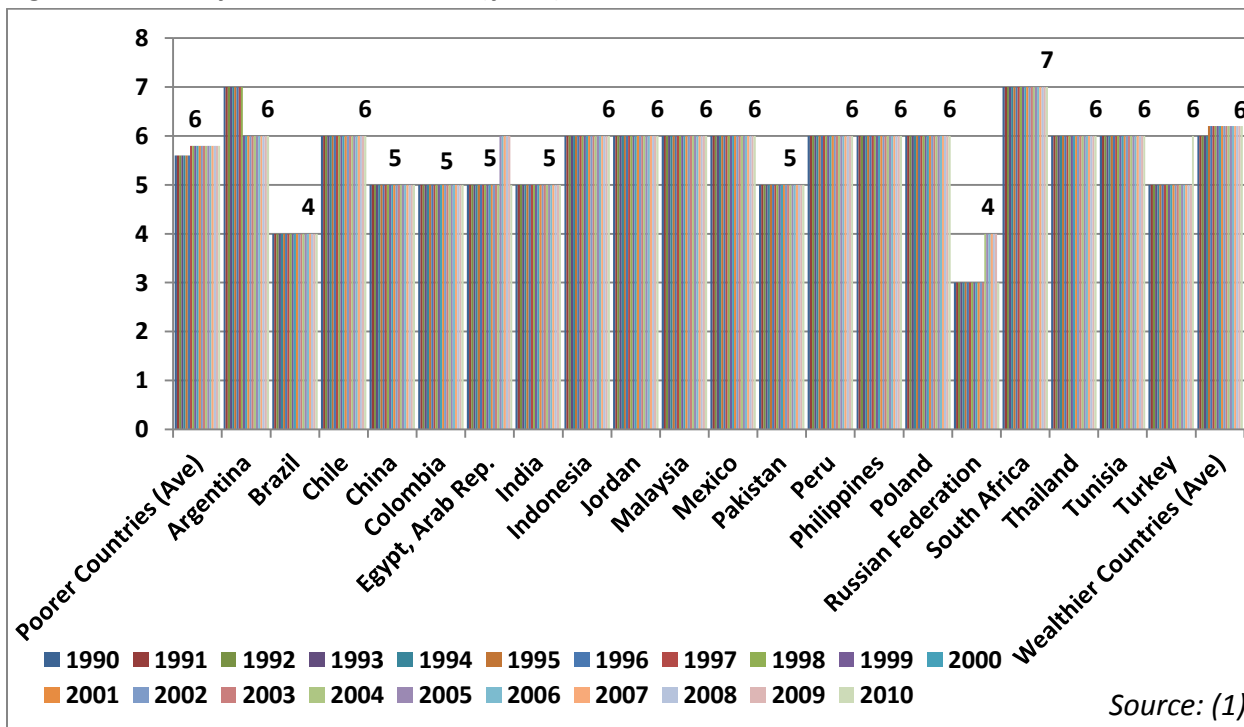


Figure 37: Primary Completion Rate (% of relevant age group), 1990-2009 (numbers are for 2009 or later).

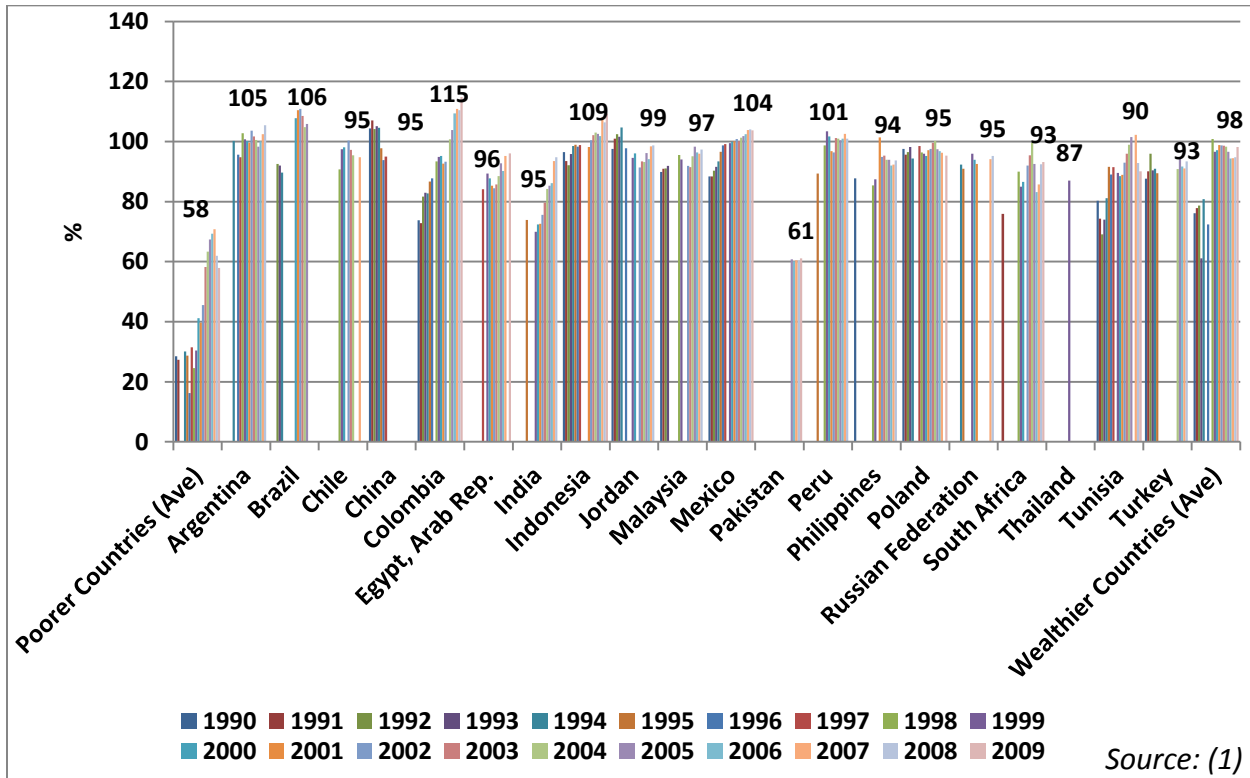


Figure 38: Progression to Secondary School (%), 1990-2007 (numbers are for 2007 or later).

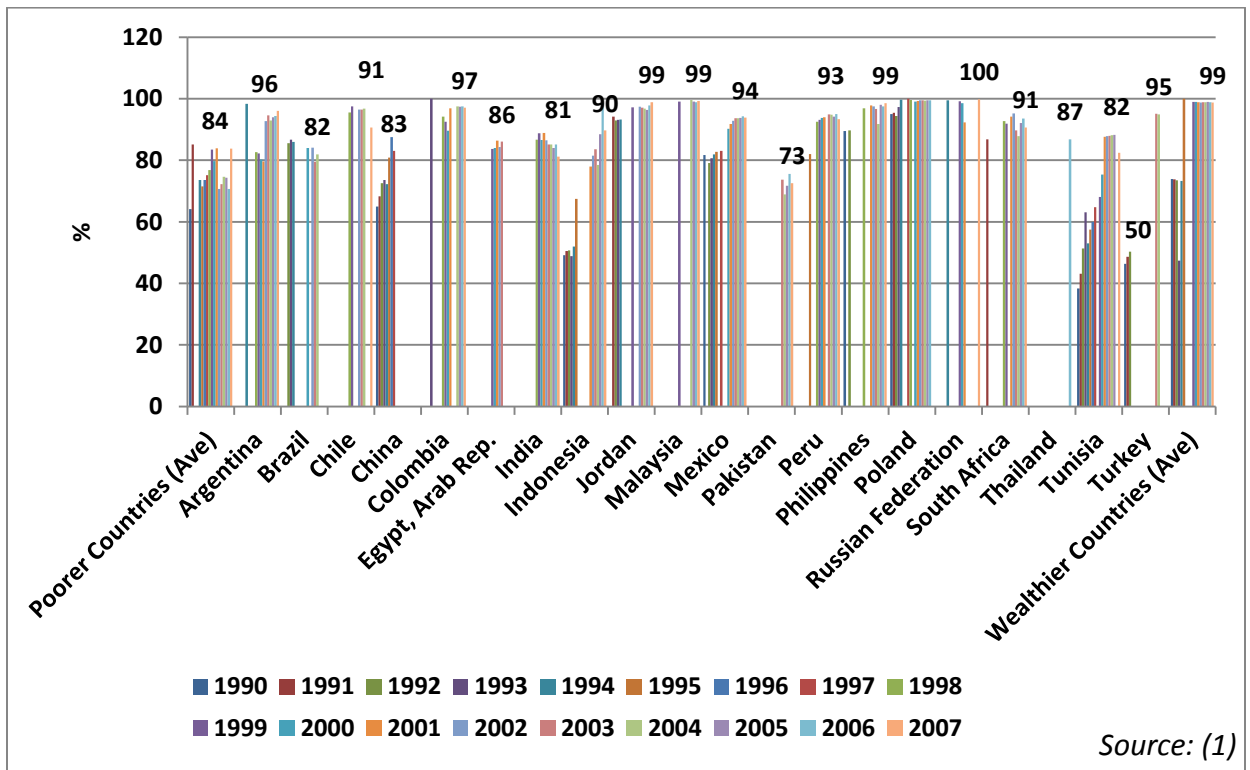
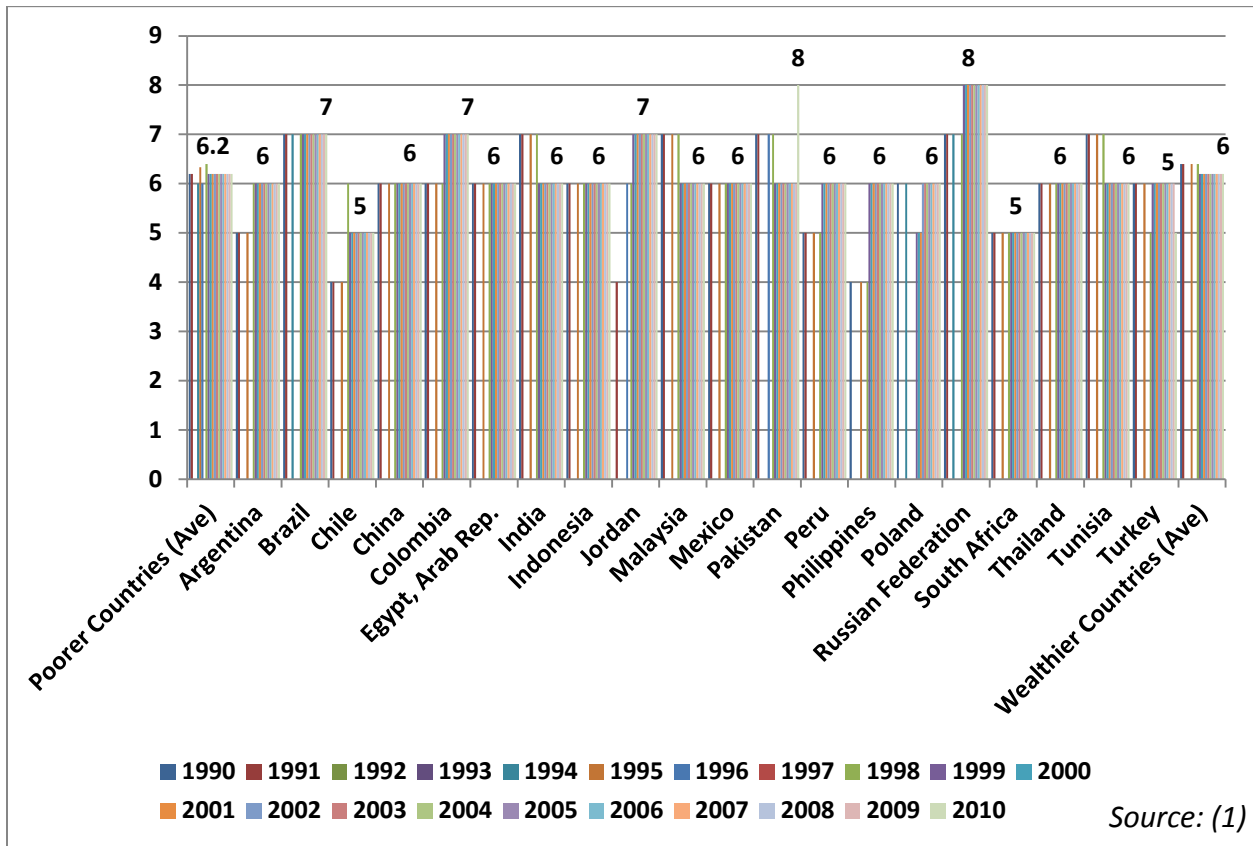


Figure 39: Secondary Education Duration (years), 1990-2010.



### 3.4 Education Expenditure

Figure 40: Expenditure on Pre-Primary Education as % of Total Expenditure on Education, 1998-2008 (numbers are for 2008 or later).

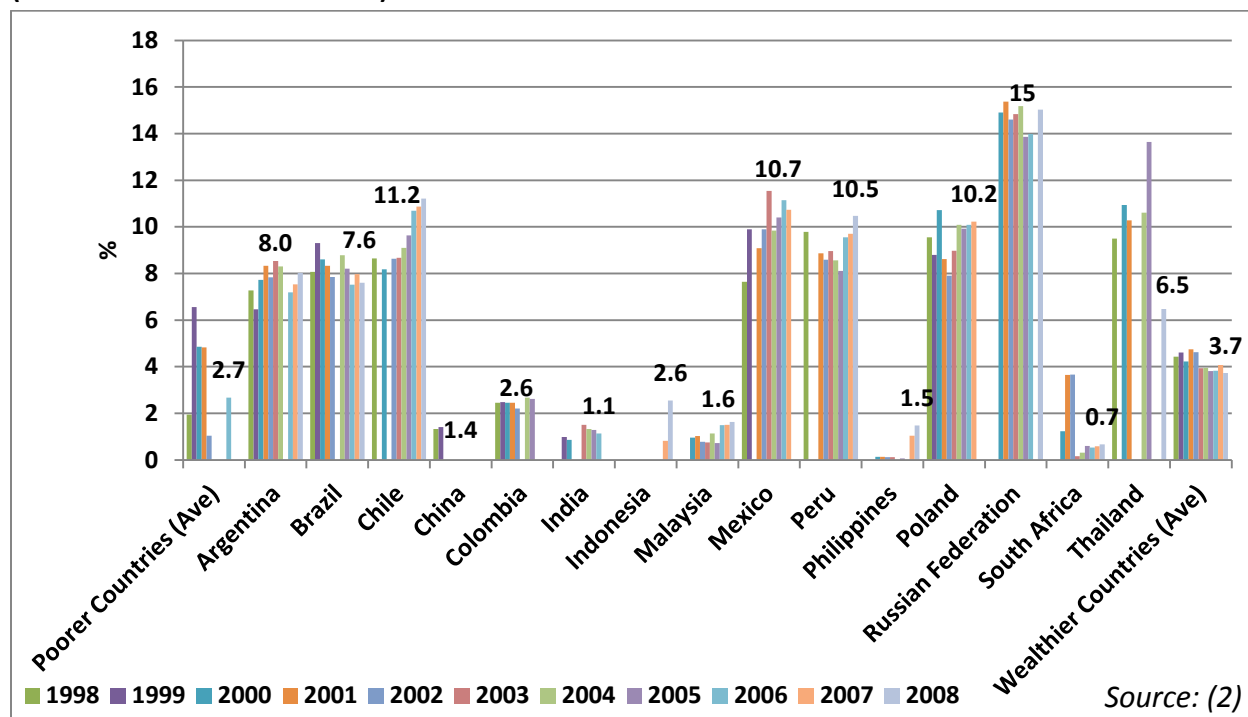


Figure 41: Expenditure on Primary Education as % of Total Expenditure on Education, 1998-2008 (numbers are for 2008 or later).

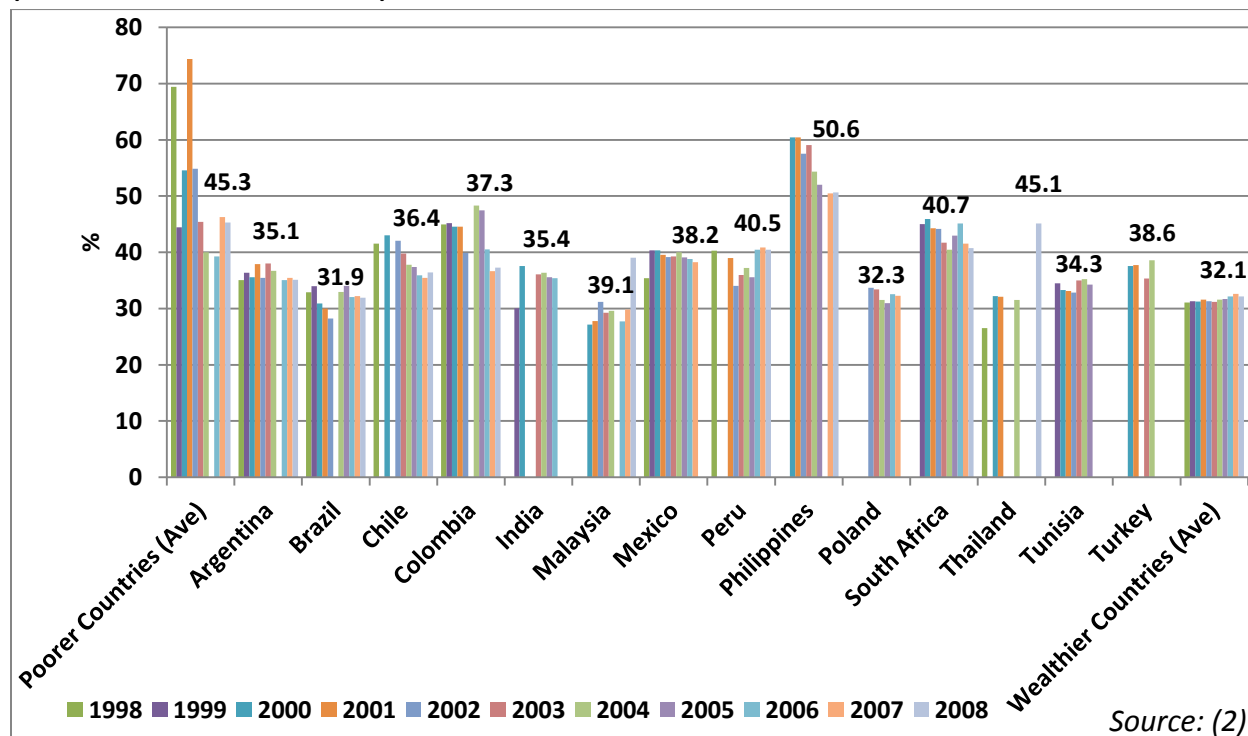


Figure 42: Expenditure on Lower Secondary Education as % of Total Expenditure on Education, 1998-2008 (numbers are for 2008 or later).

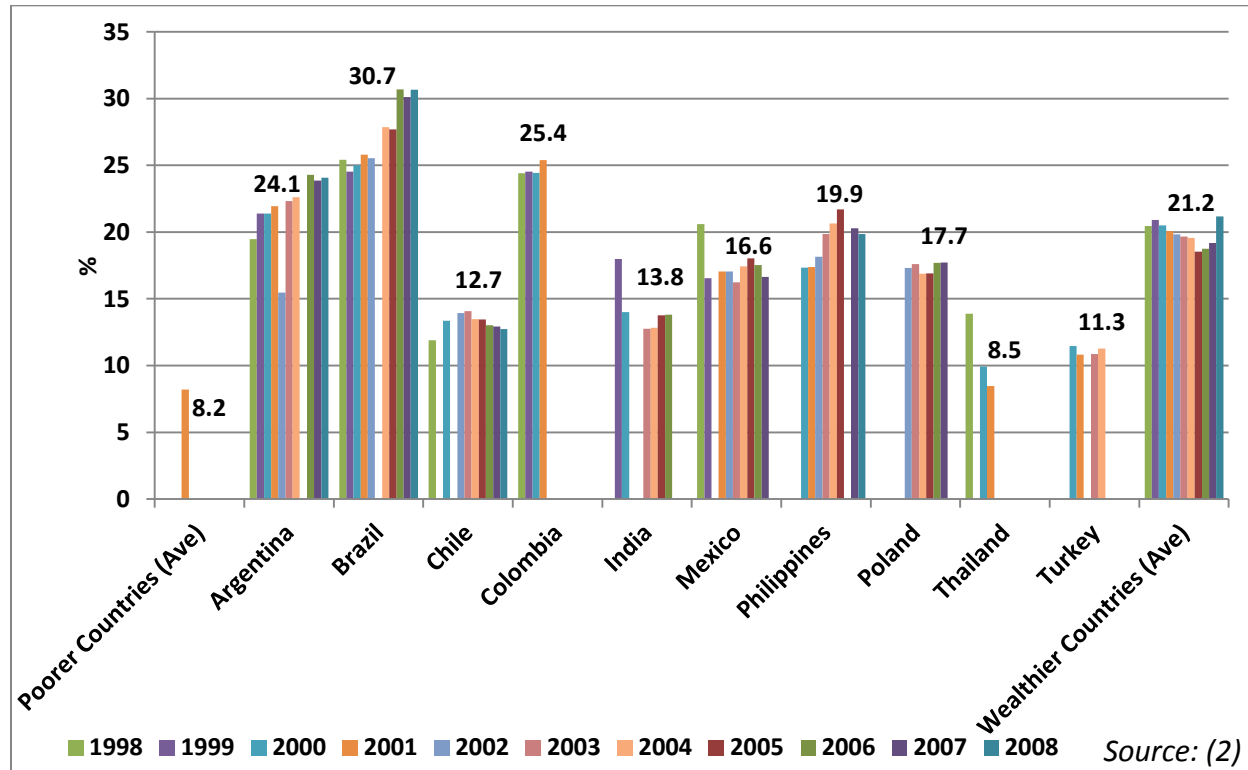


Figure 43: Expenditure on Upper Secondary Education as % of Total Expenditure on Education, 1998-2008 (numbers are for 2008 or later).

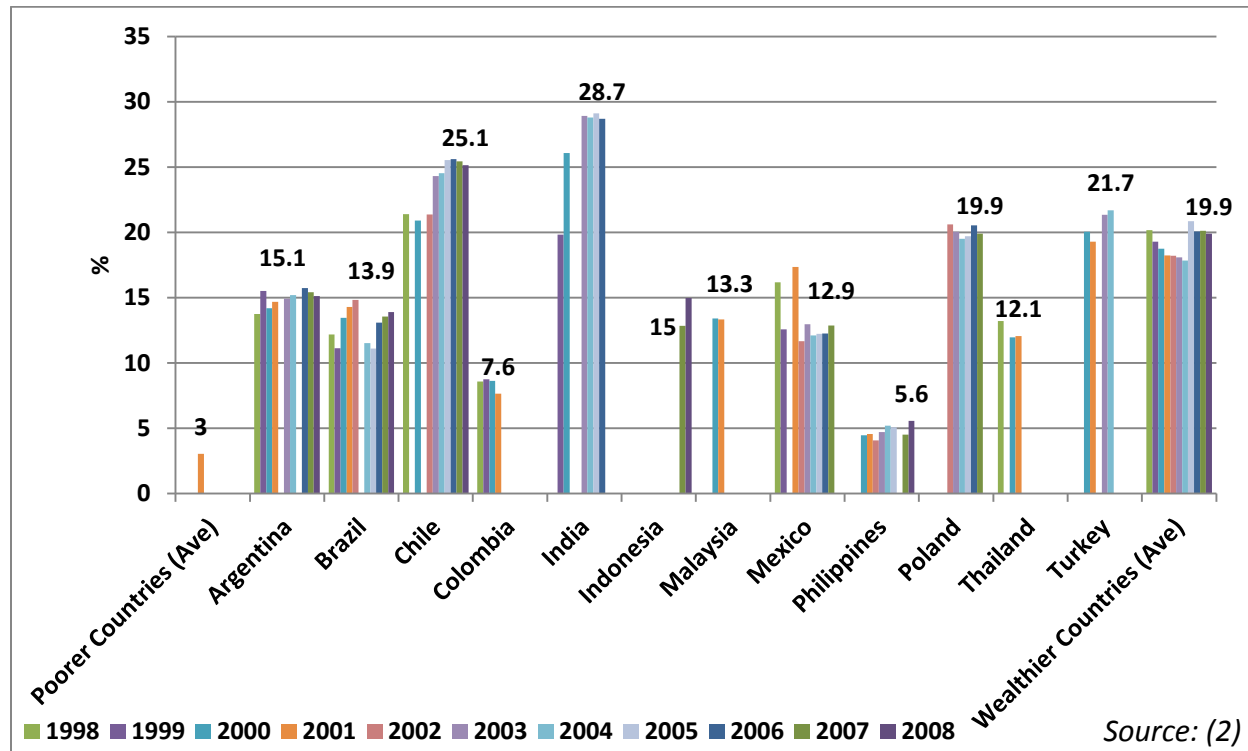


Figure 44: Expenditure on Secondary Education as % of Total Expenditure on Education 1998-2008 (numbers are for 2008 or later).

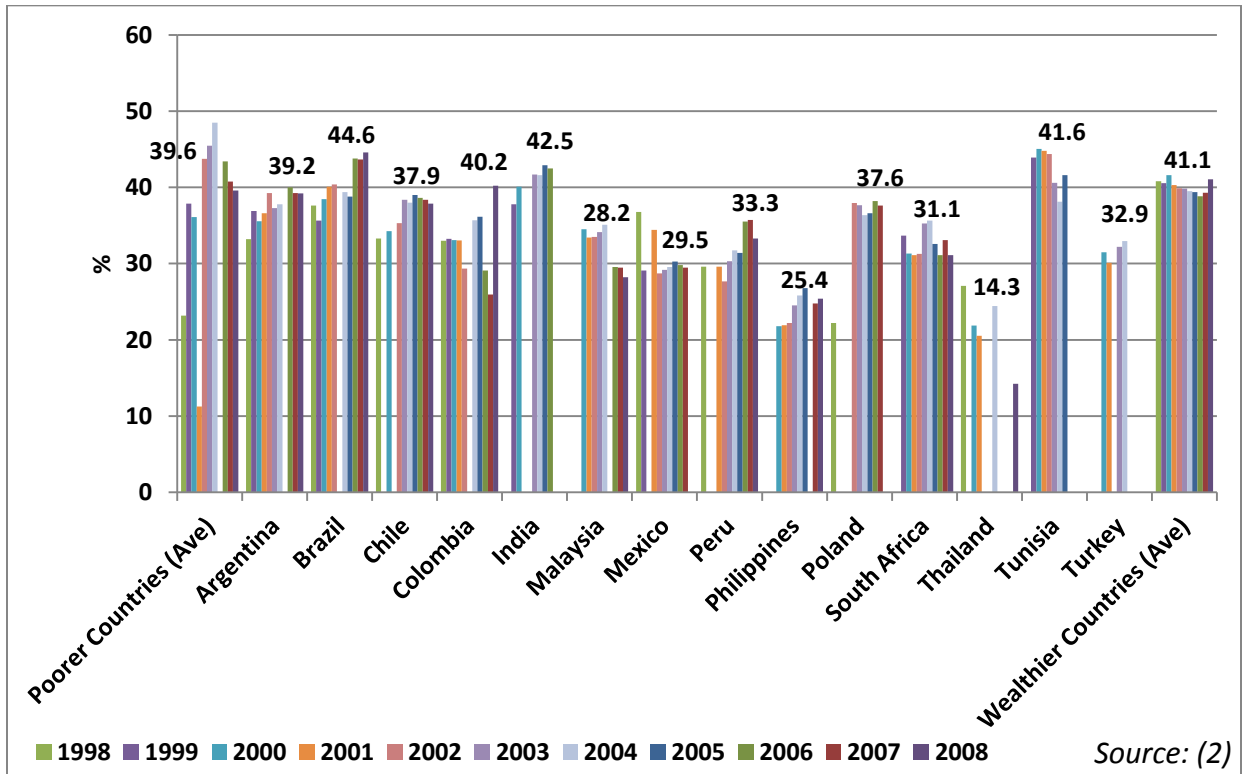


Figure 45: Expenditure on Tertiary Education as % of Total Education Expenditure, 1998-2008 (numbers are for 2008 or later).

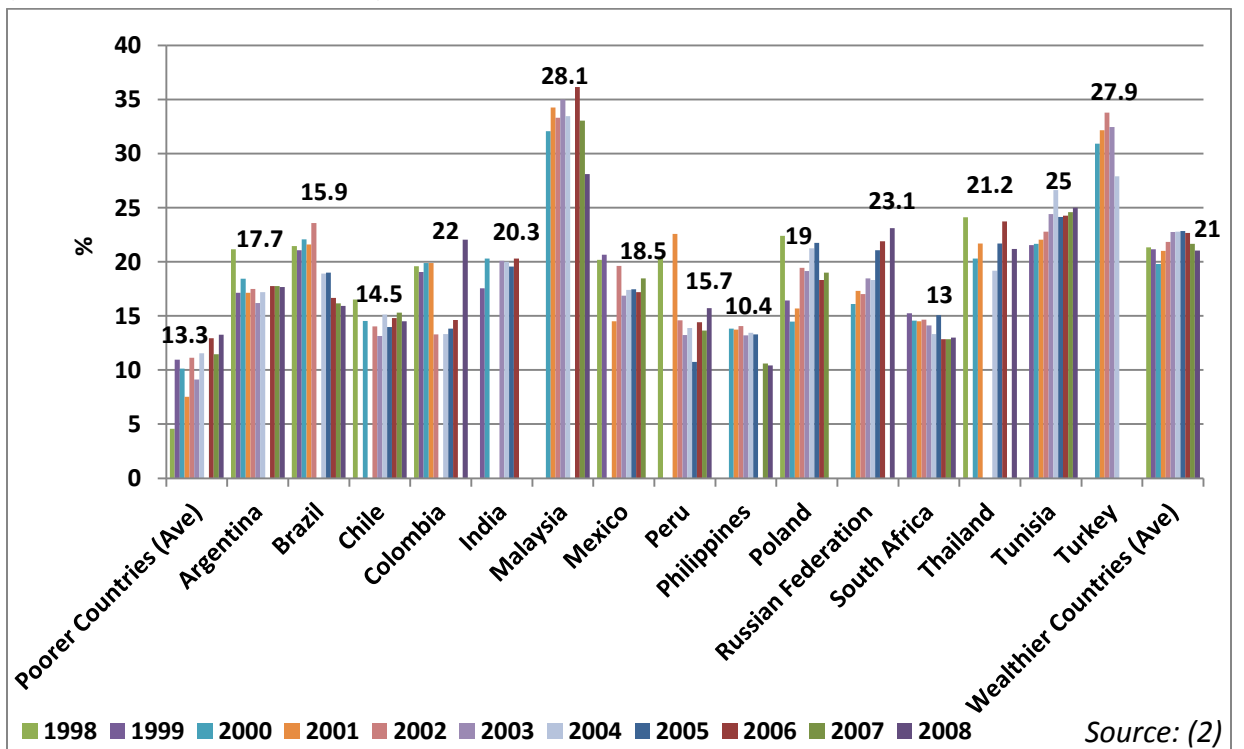


Figure 46: Public Expenditure on Education as % of GDP, 1998-2008 (numbers are for 2008 or later).

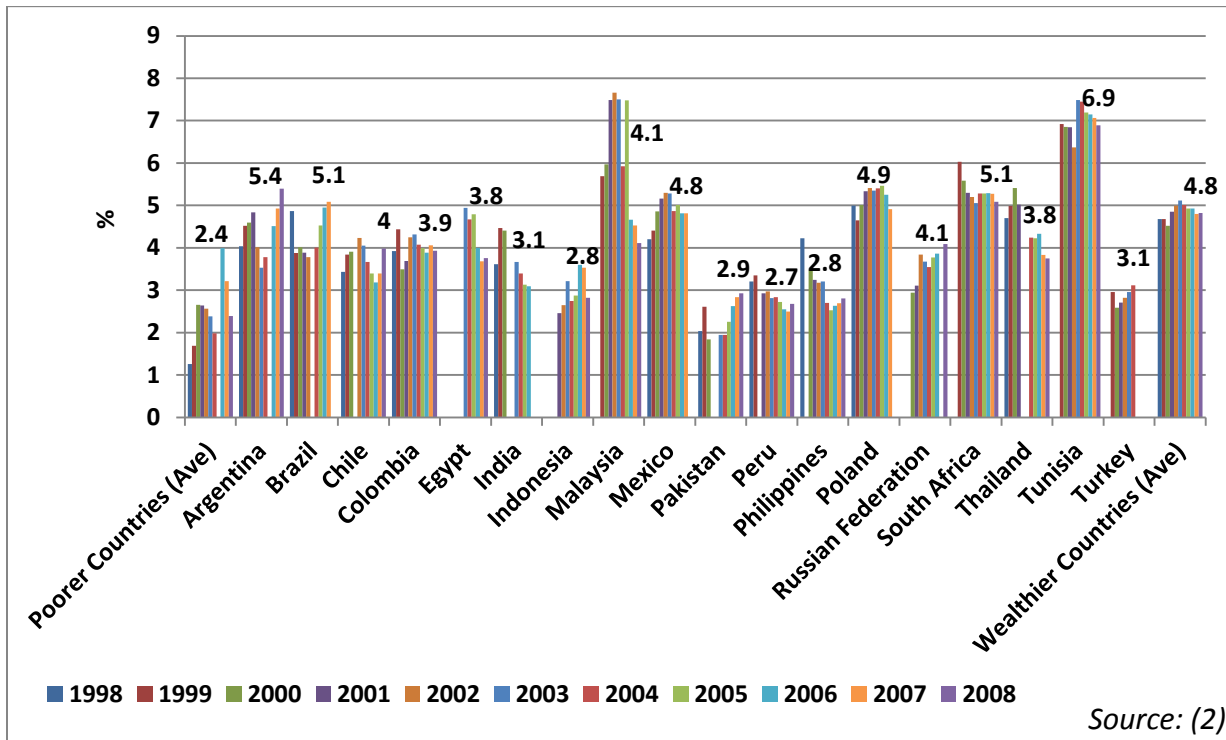


Figure 47: Public Expenditure on Education as % of Total Government Expenditure, 1998-2008 (numbers are for 2008 or later).

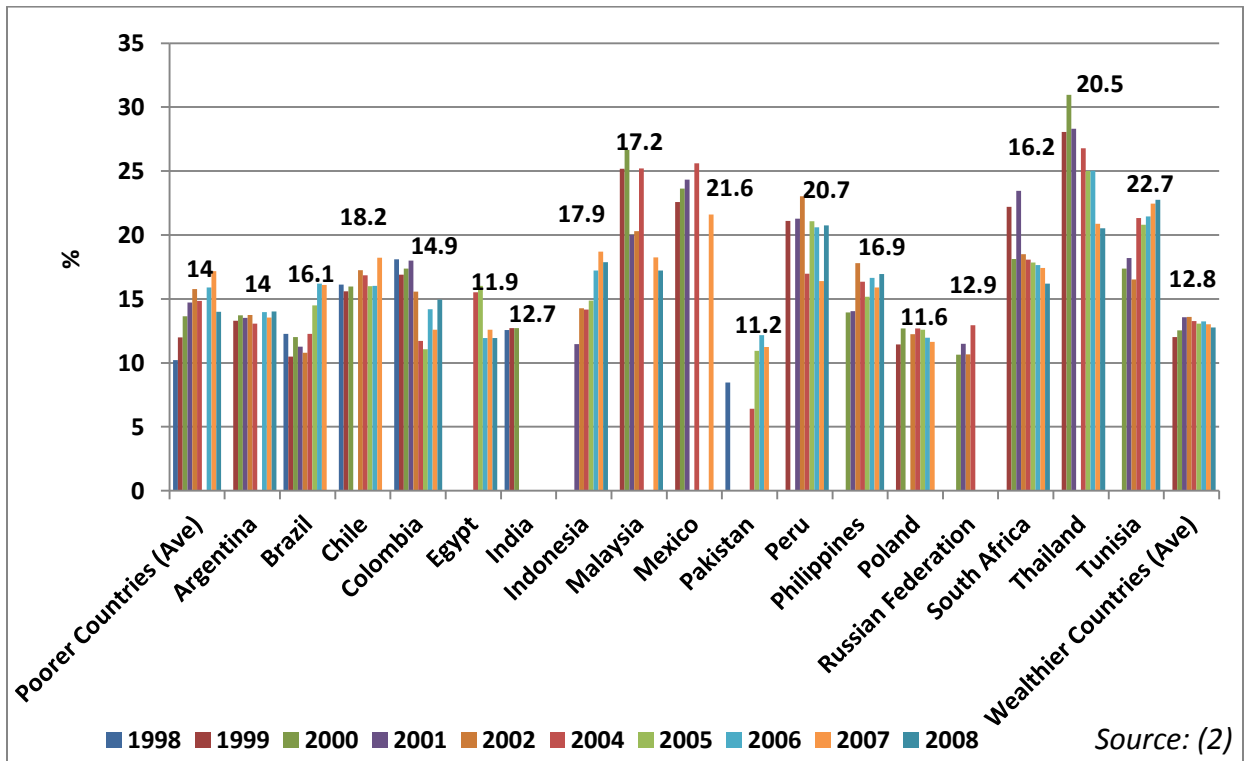


Figure 48: Total Public Expenditure per Pupil on Education as % of GDP per capita, 1998-2008 (numbers are for 2008 or later).

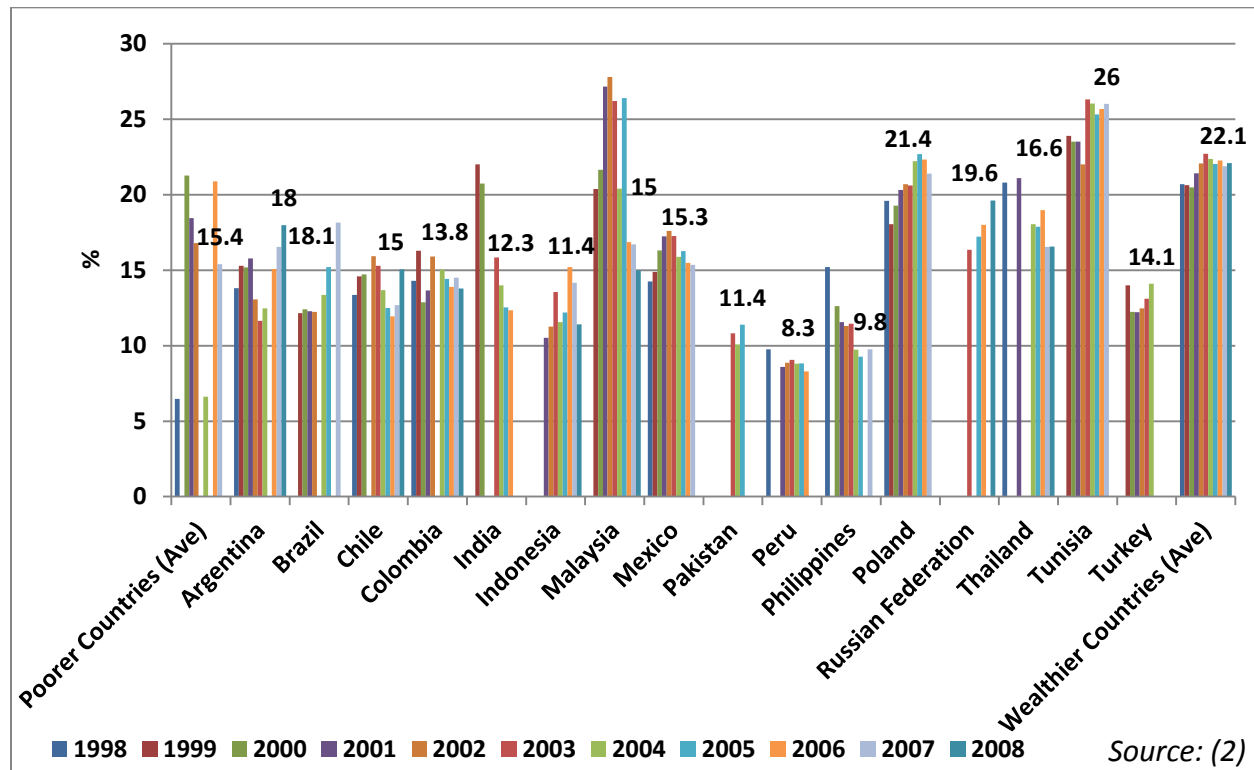


Figure 49: Public Expenditure per Pupil on Primary Education as a % of GDP per capita, 1998-2008 (numbers are for 2008 or later).

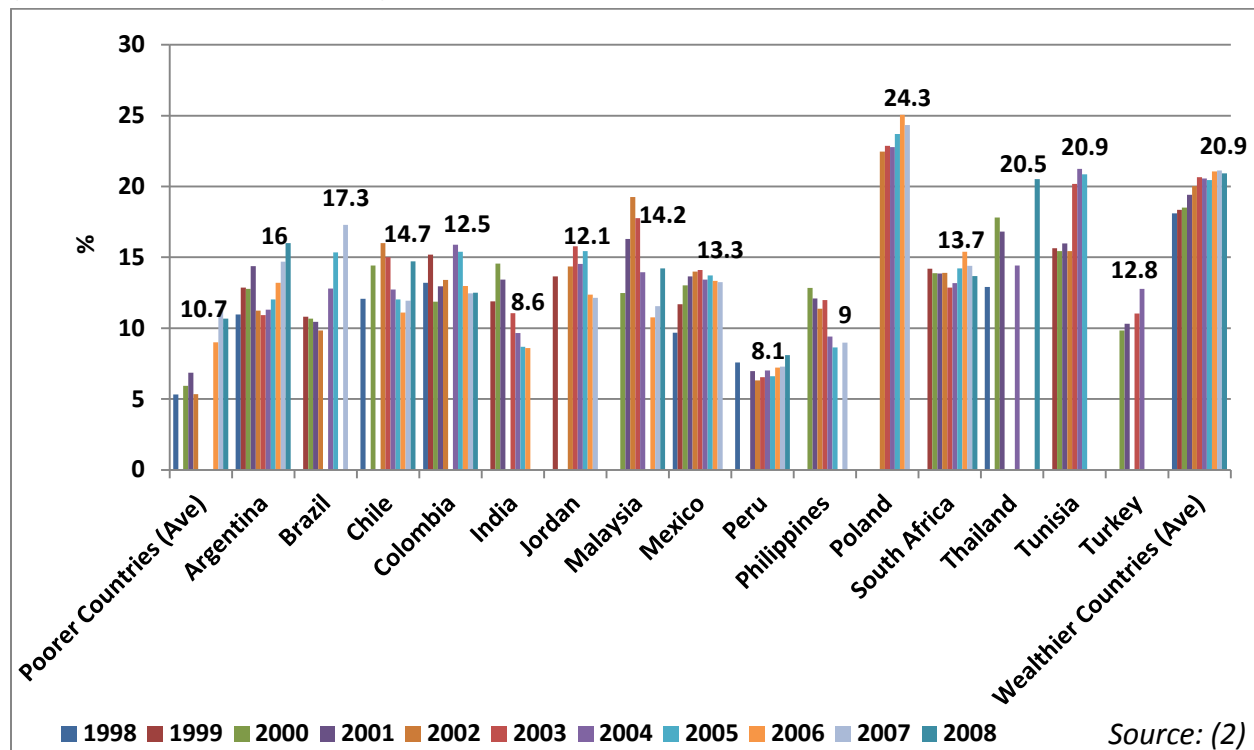


Figure 50: Public Expenditure per Pupil on Secondary Education as % of GDP per capita, 1998-2008 (numbers are for 2008 or later).

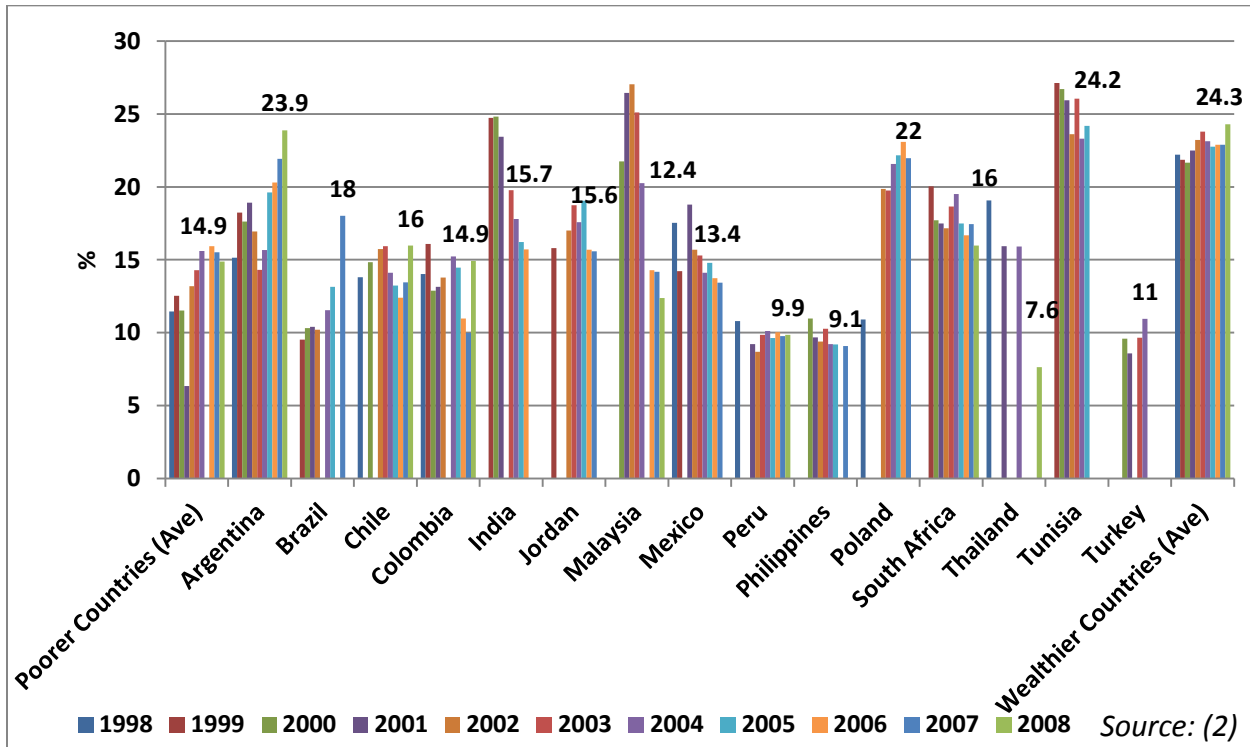
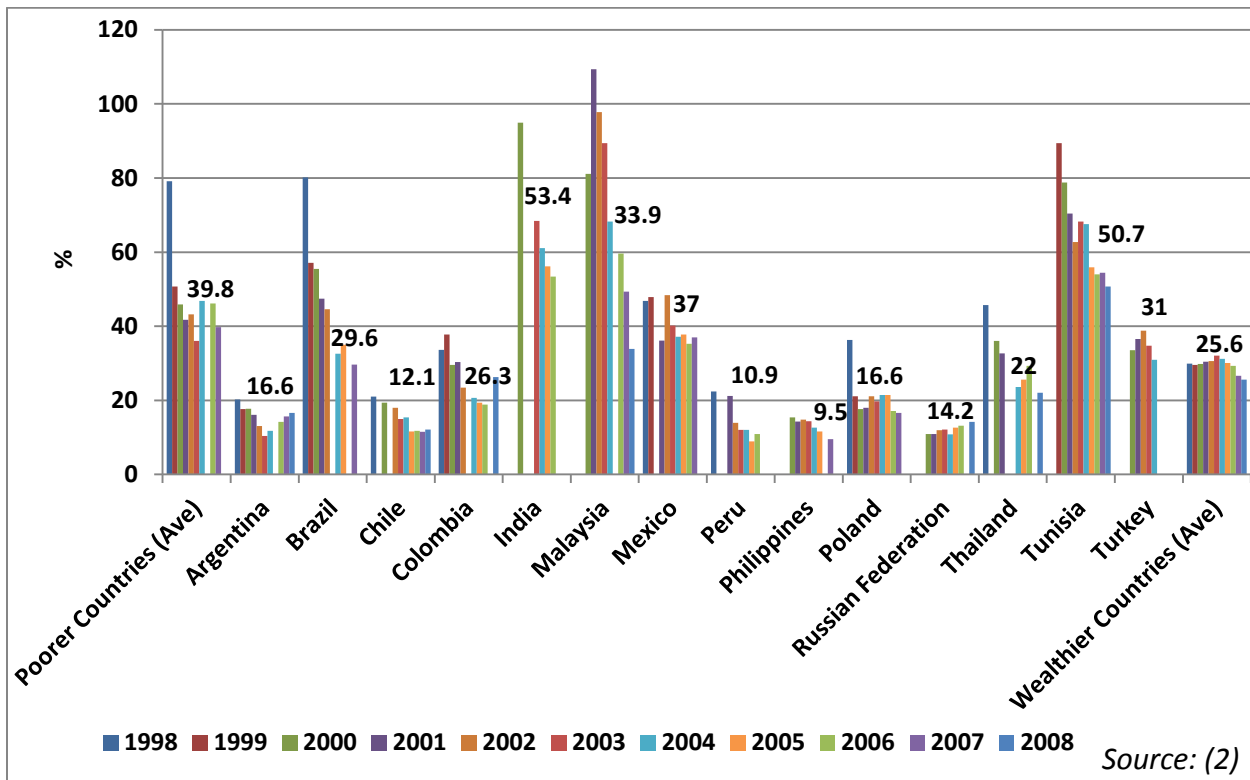


Figure 51: Public Expenditure per Pupil on Tertiary Education as % of GDP per capita, 1998-2008 (numbers are for 2008 or later).



### 3.5 Education and Literacy

Figure 52: Adult Literacy (% aged 15 and above), 1990-2009 (numbers are for 2009 or later).

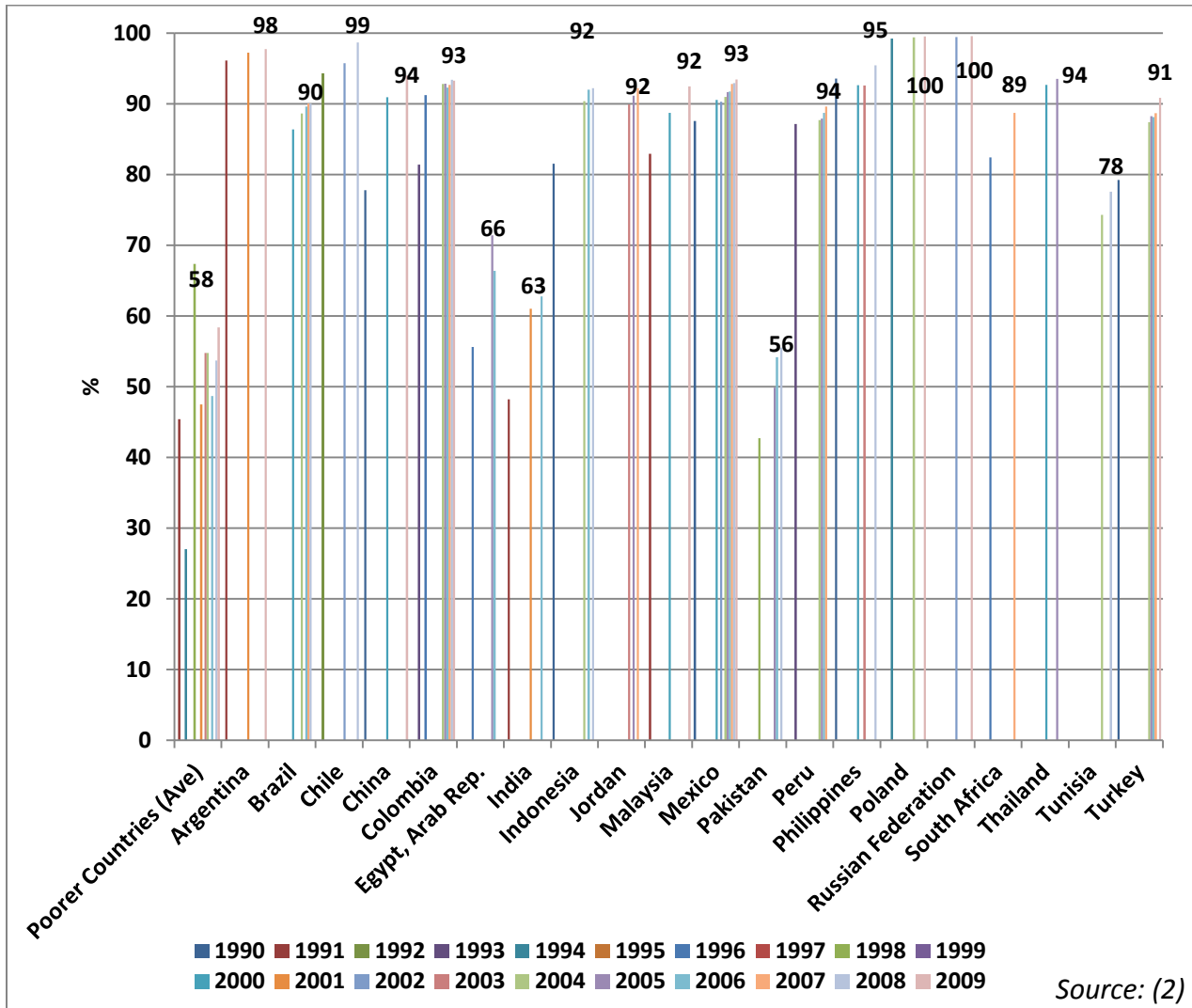
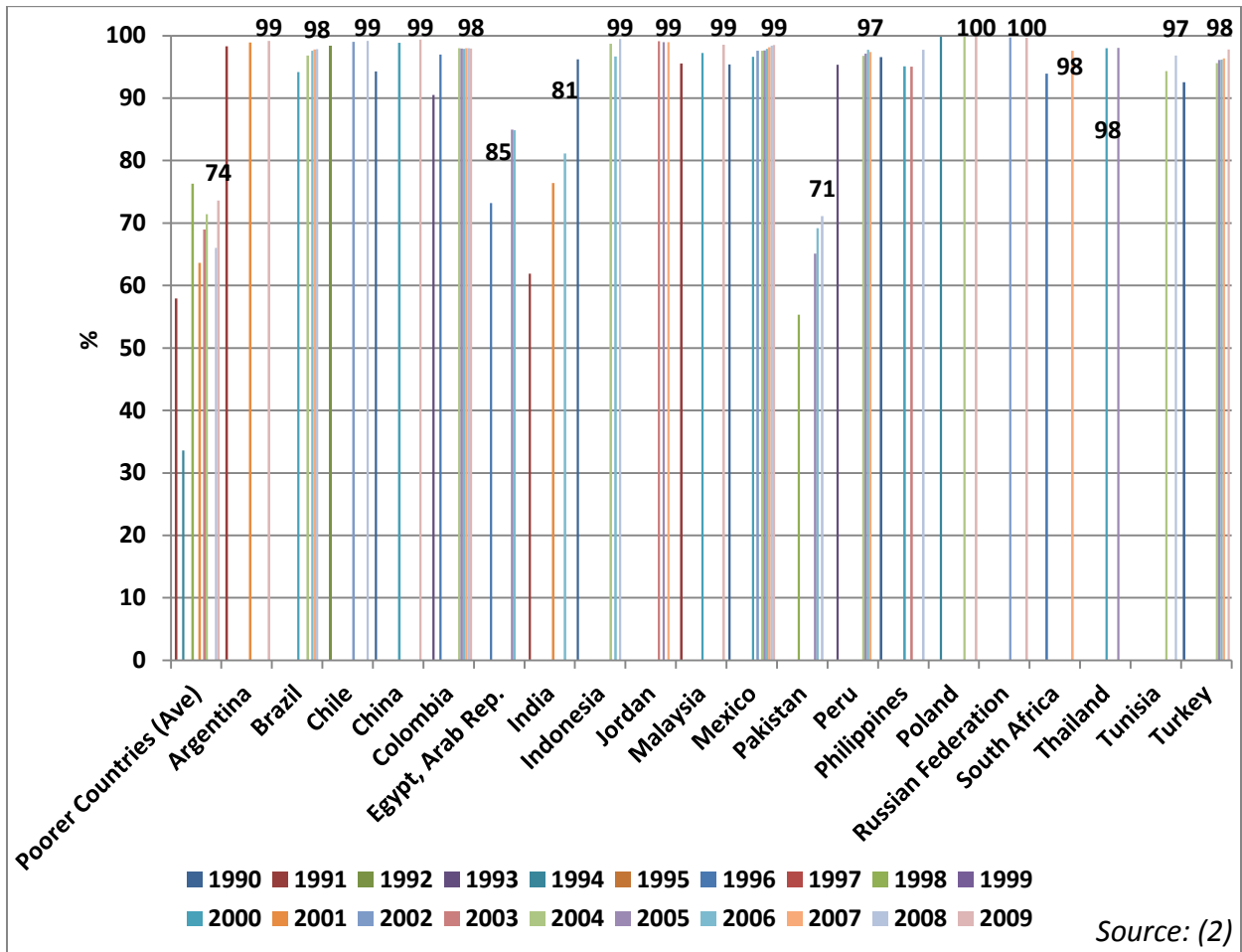


Figure 53: Youth Literacy (% aged 15-24), 1990-2009 (numbers are for 2009 or later).



Source: (2)

### 3.6 Education and Labour Force

Figure 54: Labour Force, Total (millions), 1990-2009 (numbers are for 2009).

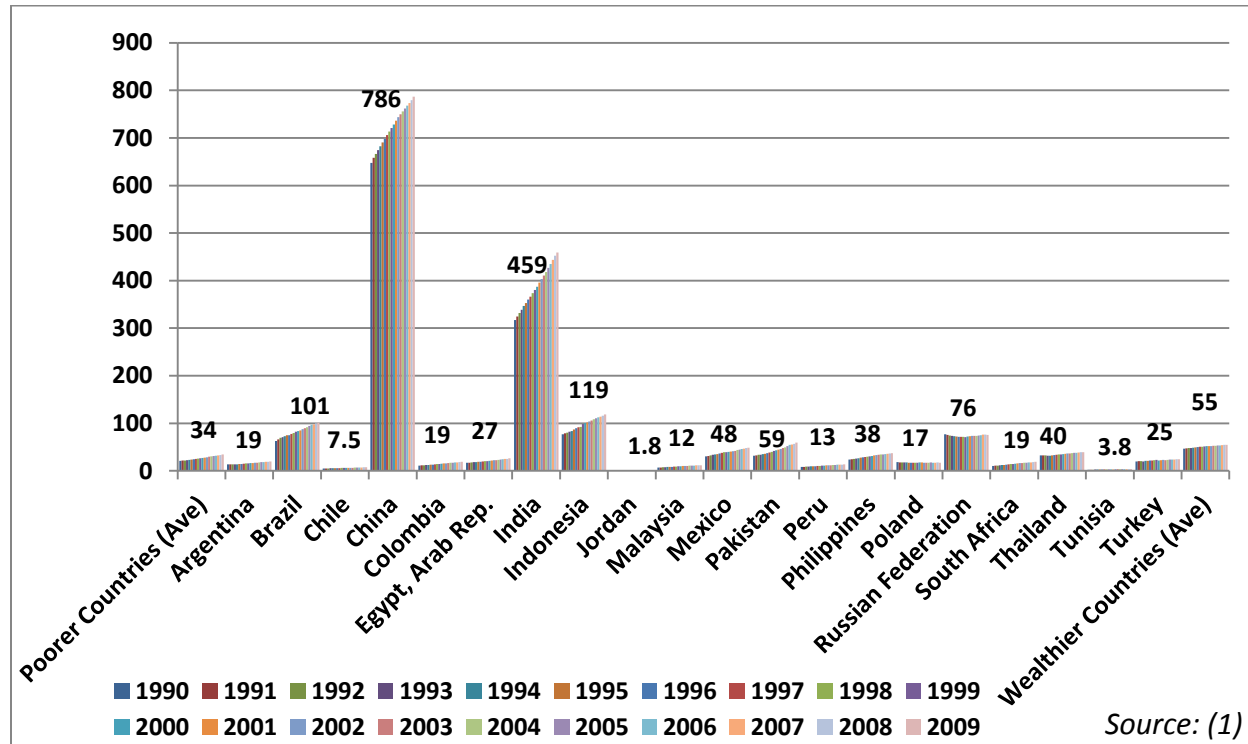


Figure 55: % Labour Force with Primary Education, 1990-2007 (numbers are for 2007).

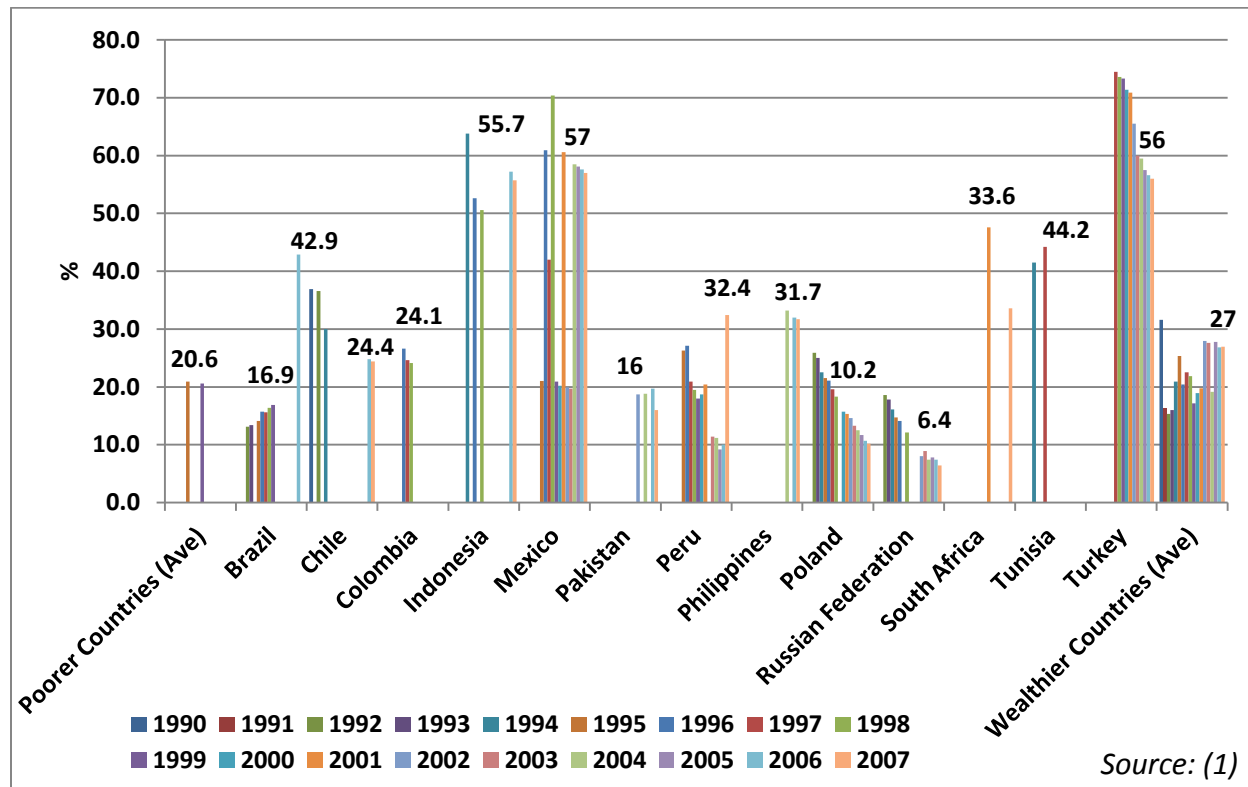


Figure 56: % Labour Force with Secondary Education, 1990-2007 (numbers are for 2007).

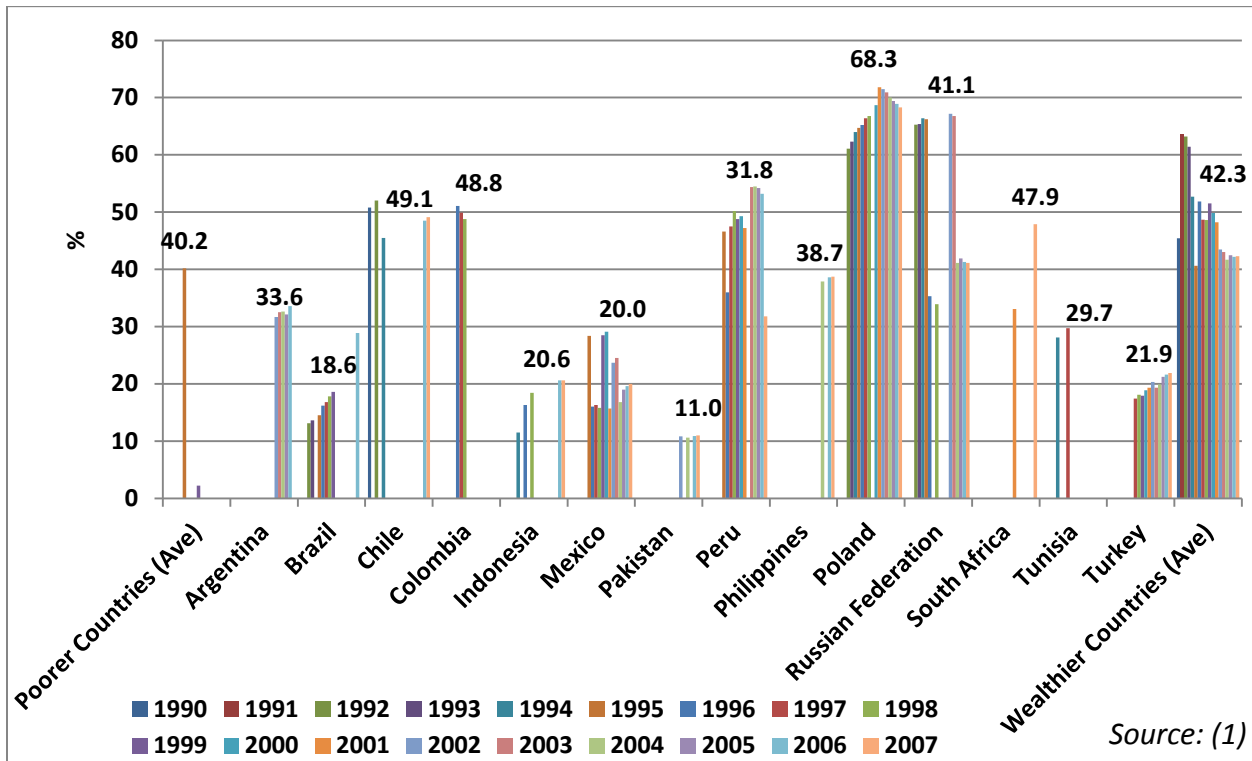
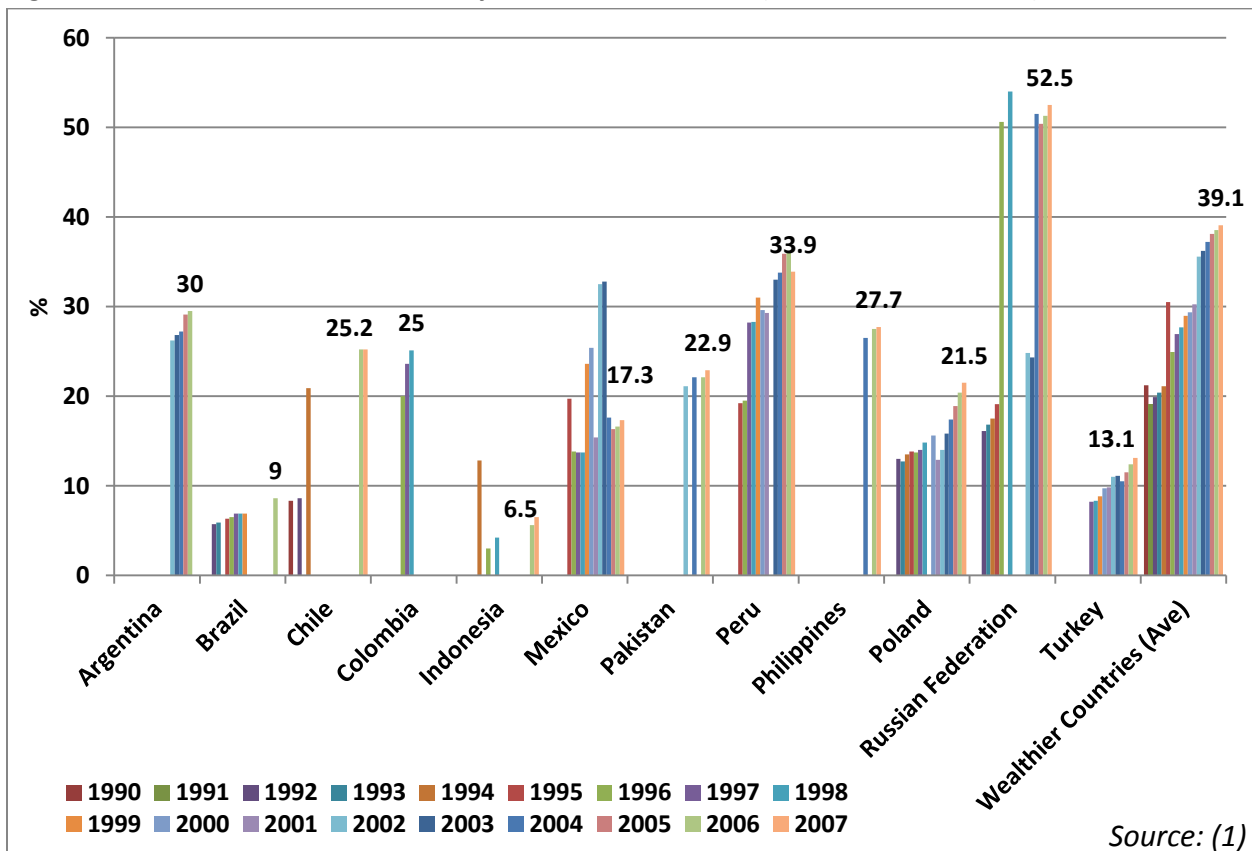
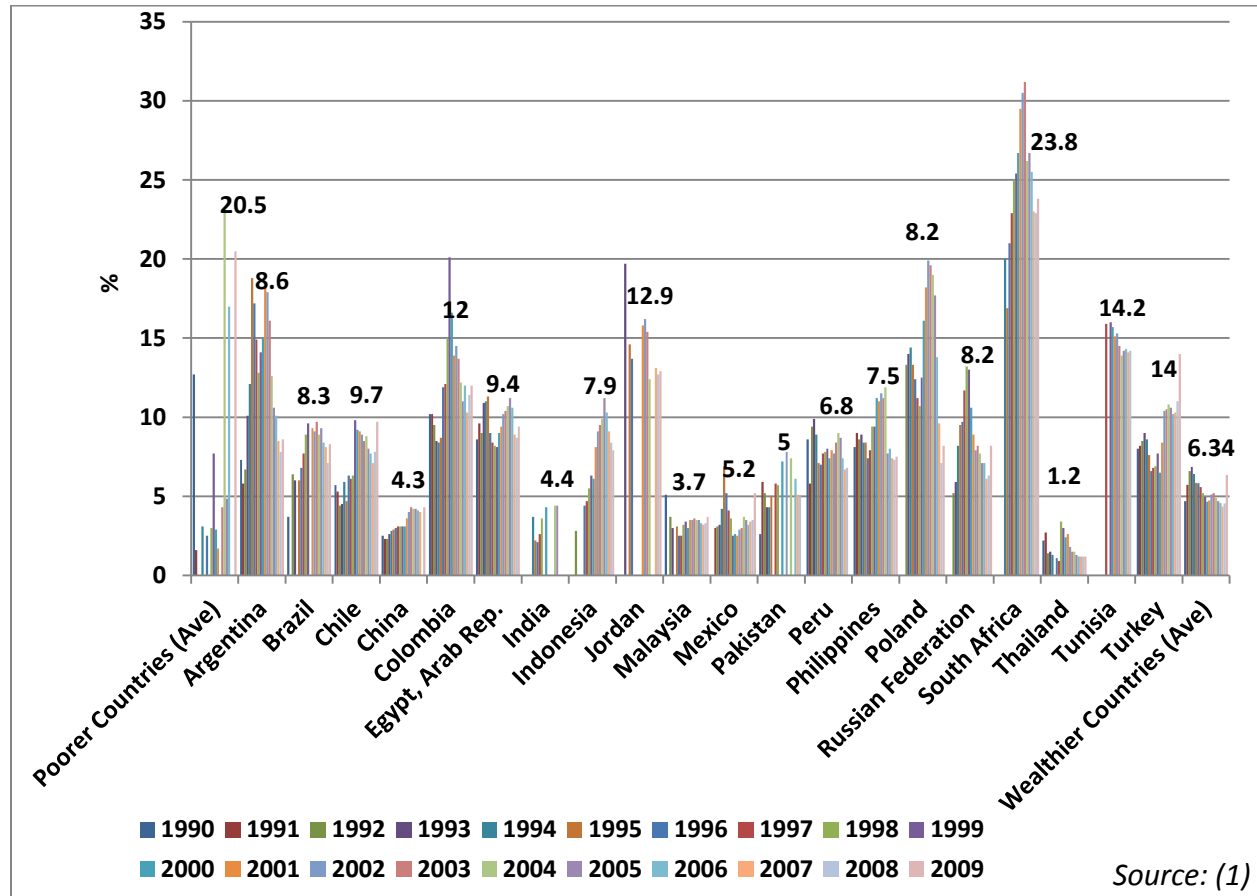


Figure 57: % Labour Force with Tertiary Education 1990-2007 (numbers are for 2007).



### 3.7 Education and Employment

Figure 58: % Total Labour Force Unemployed, 1990-2009 (numbers are for 2009 or later).



Source: (1)

Figure 59: % Labour Force aged 15-24 Unemployed, 1990-2009 (numbers are for 2009 or later).

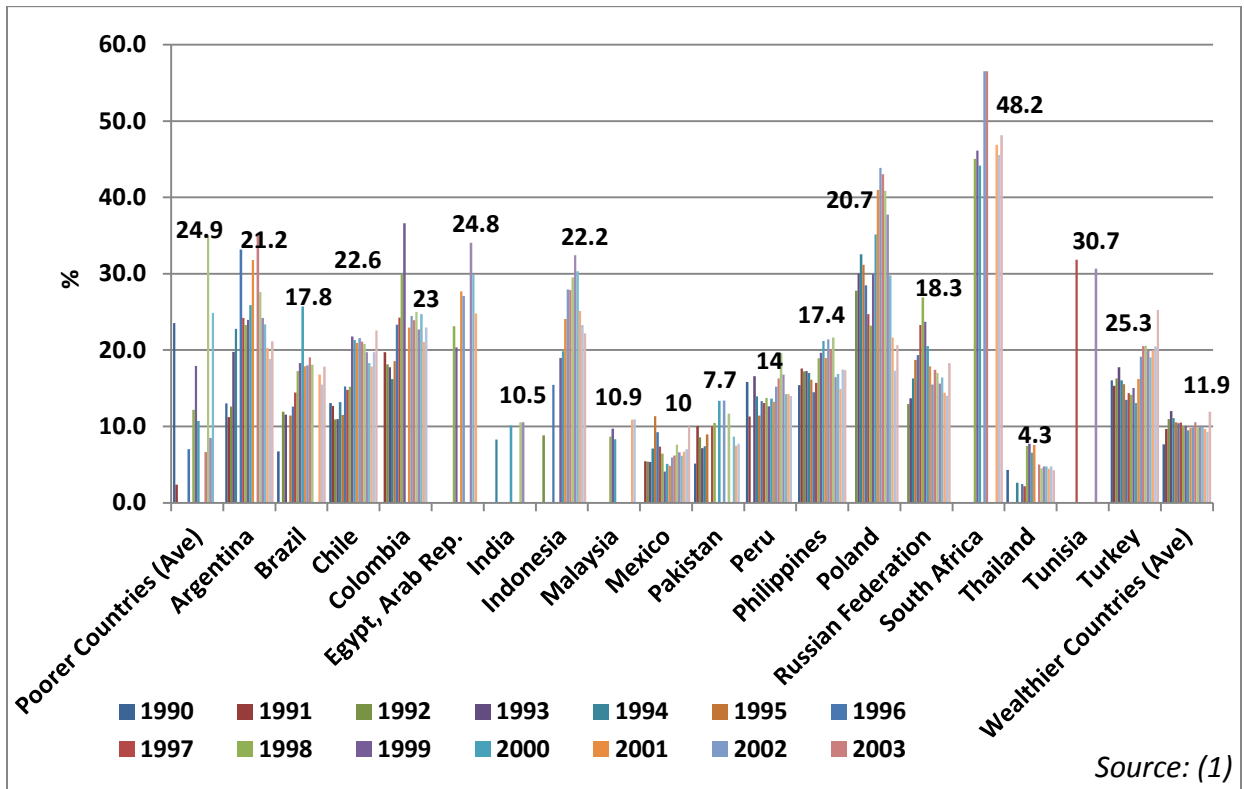


Figure 60: % Unemployed with Primary Education, 1990-2007 (numbers are for 2007 or later).

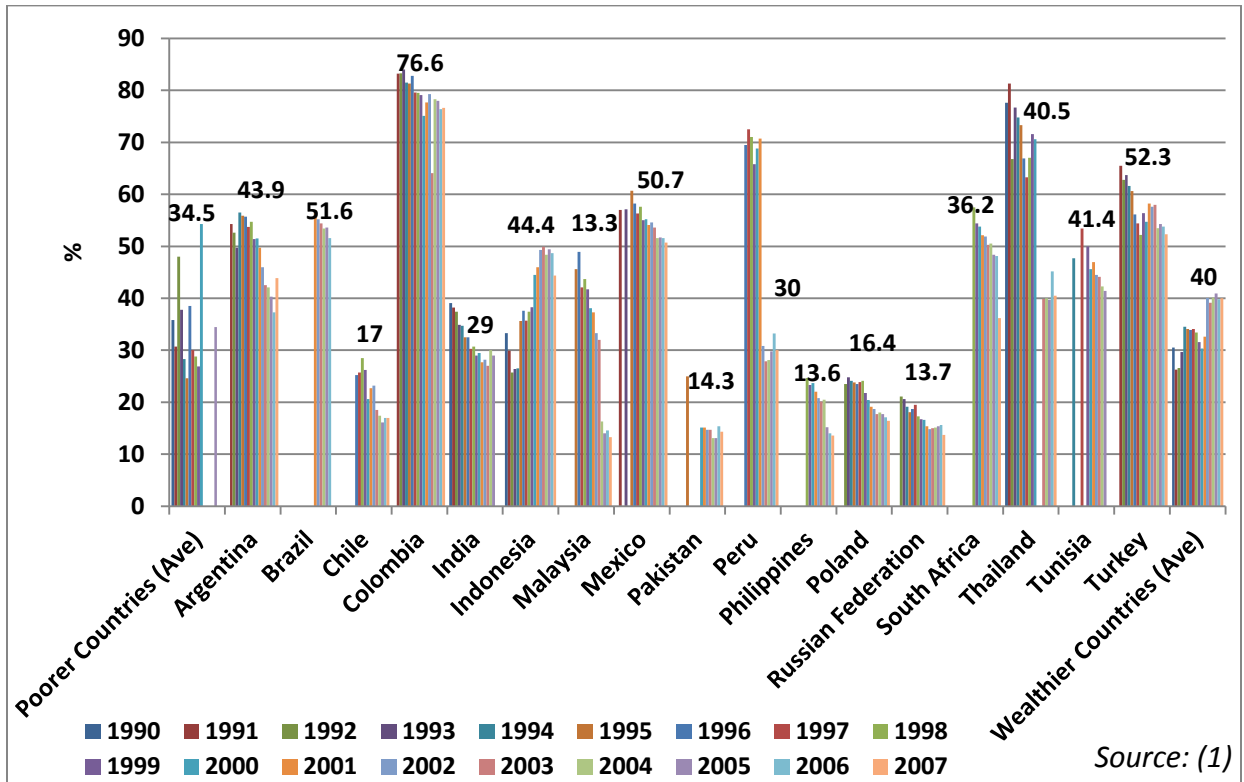


Figure 61: % Unemployed with Secondary Education, 1990-2007 (numbers are for 2007 or later).

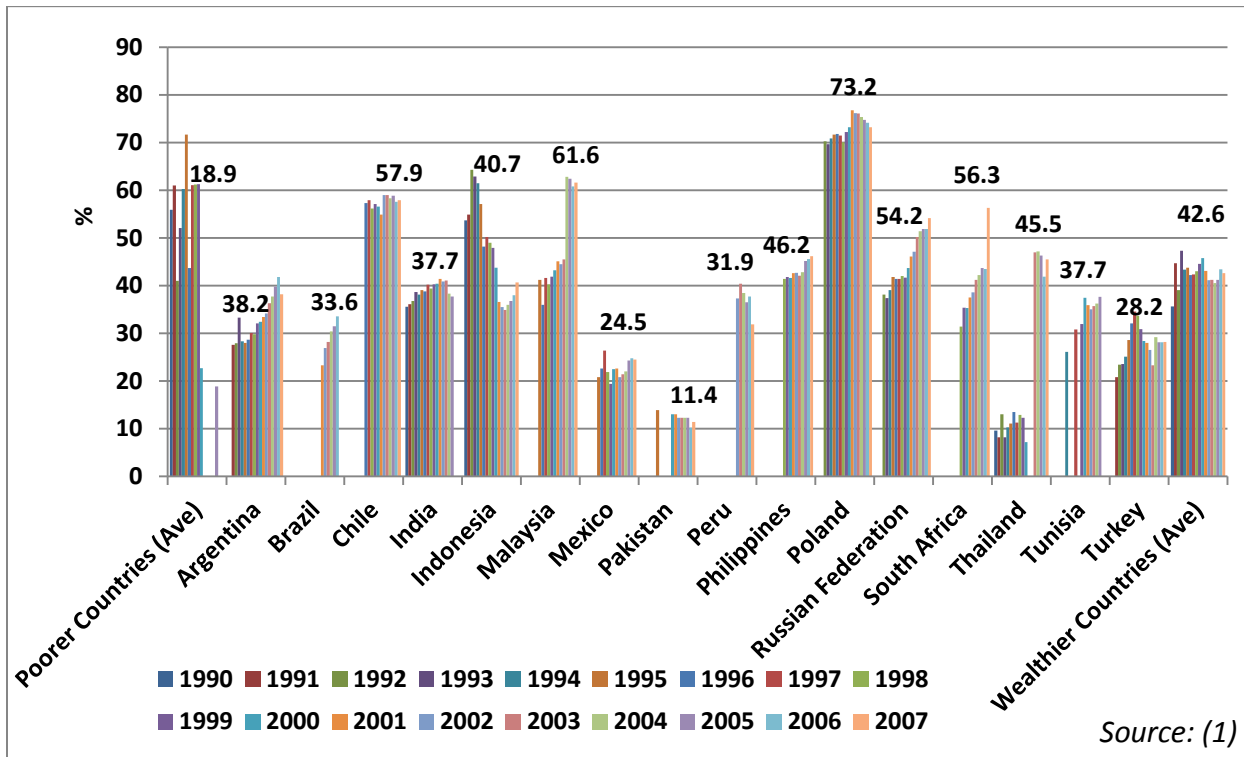
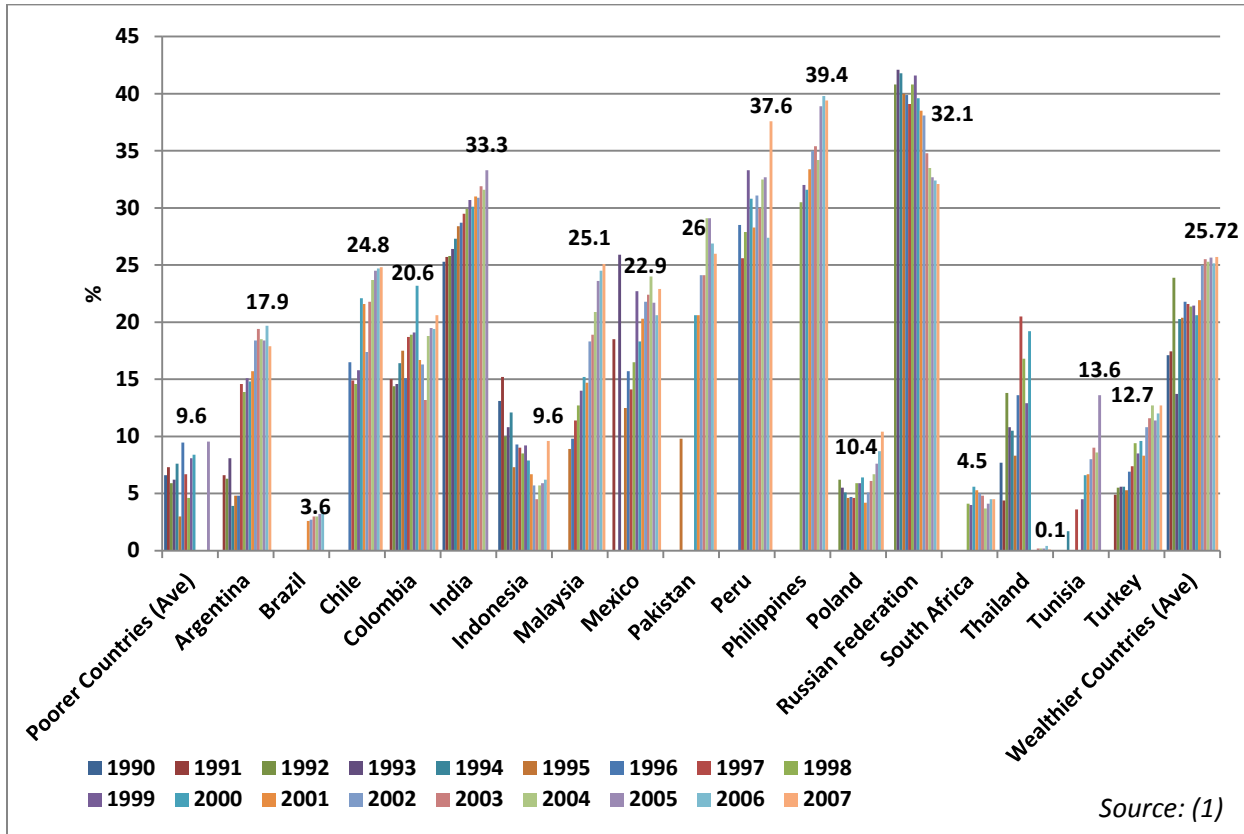


Figure 62: % Unemployed with Tertiary Education, 1990-2007 (numbers are for 2007 or later).



## 4 Tertiary Education Indicators

### 4.1 Participation

Figure 63: Total Enrolment in Tertiary Education ('000), 1990-2009 (numbers are for 2009).

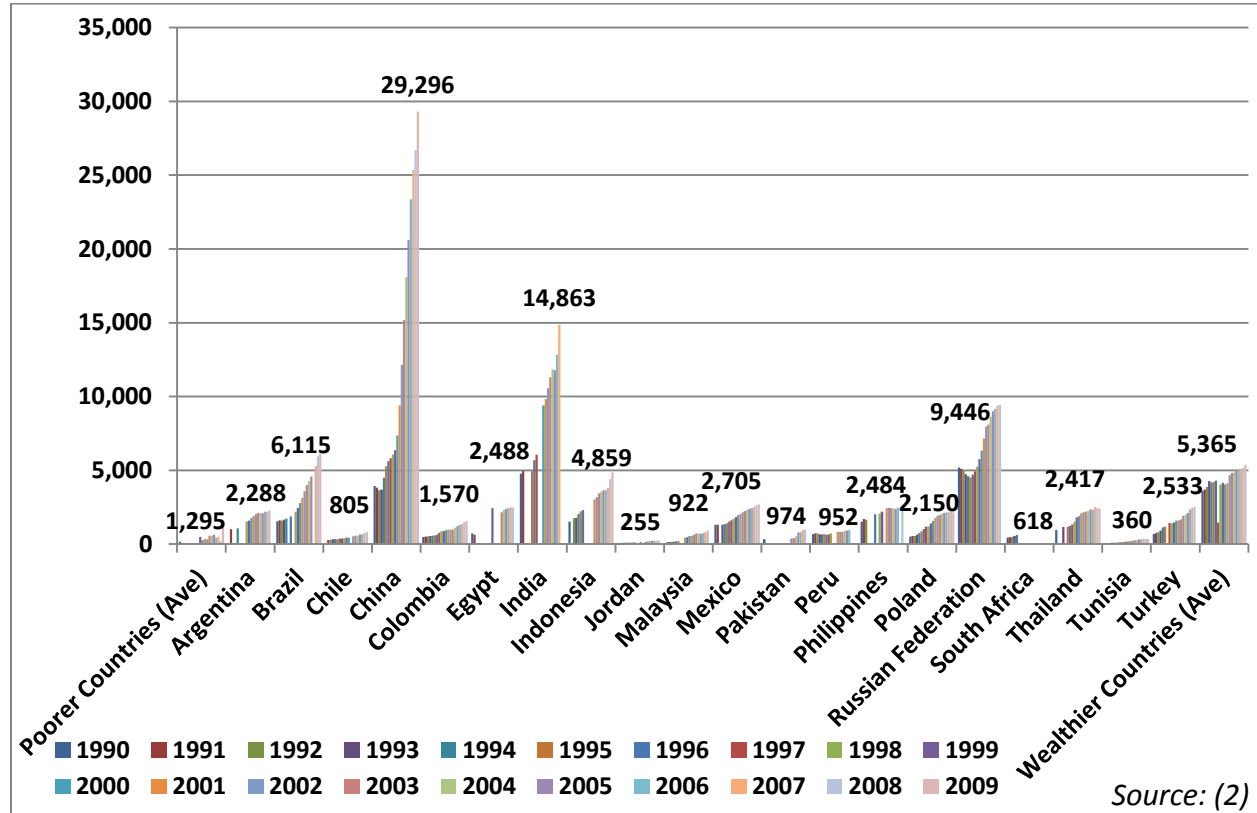
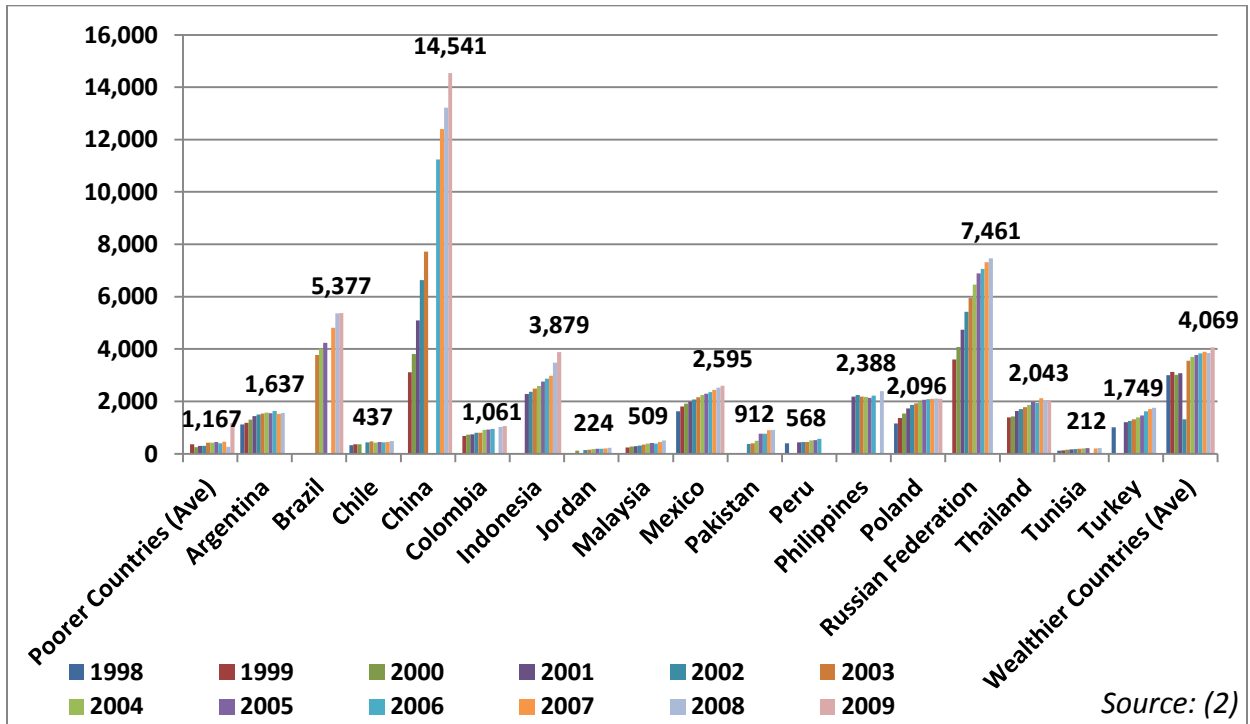
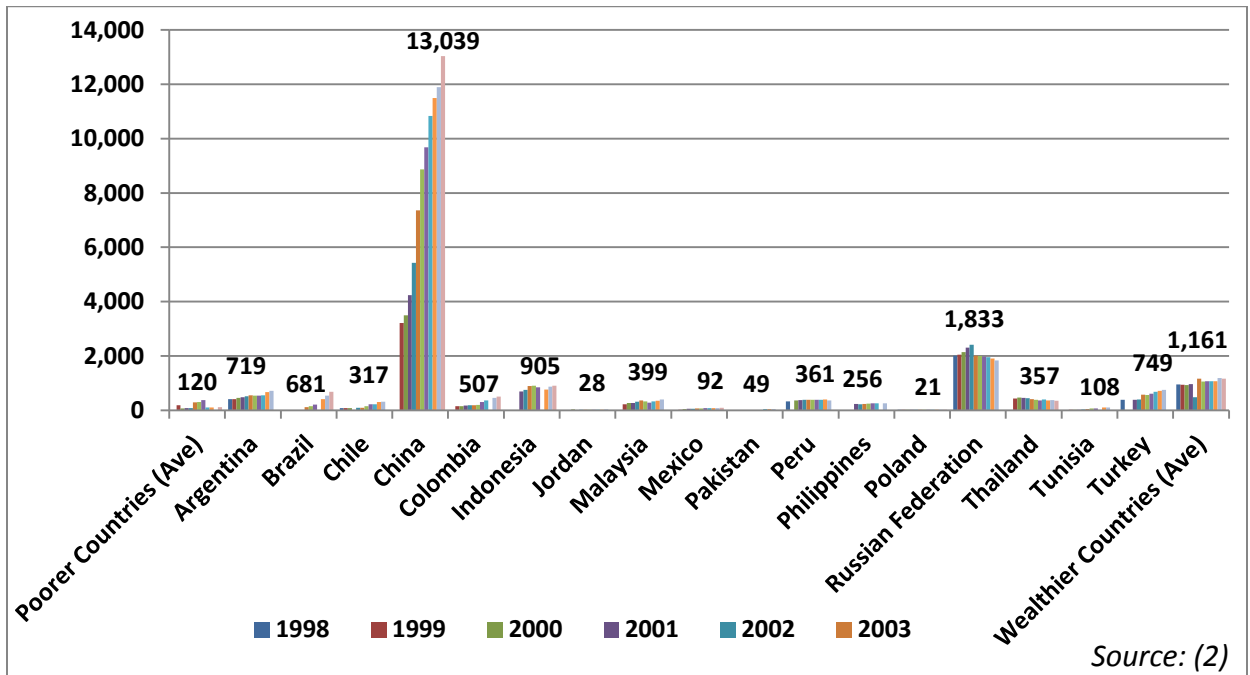


Figure 64: Total Enrolment ('000) in ISCED Level 5A (Tertiary) Education\*, 1998-2009 (numbers are for 2009).



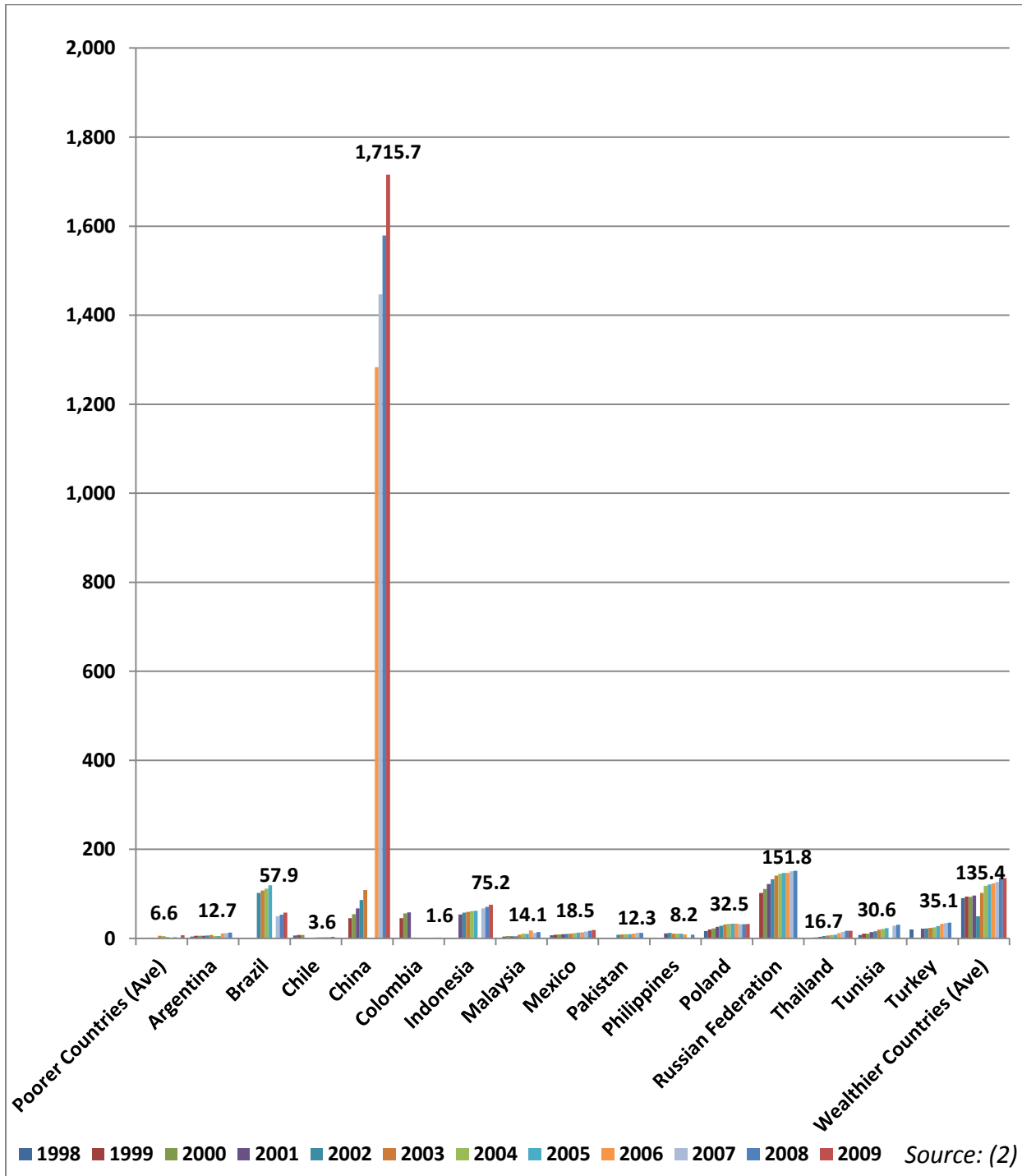
\* See definition of 5A on Table 2, Page 8.

Figure 65: Total Enrolment ('000) in ISCED Level 5B (Tertiary) Education\*, 1998-2009 (numbers are for 2009).



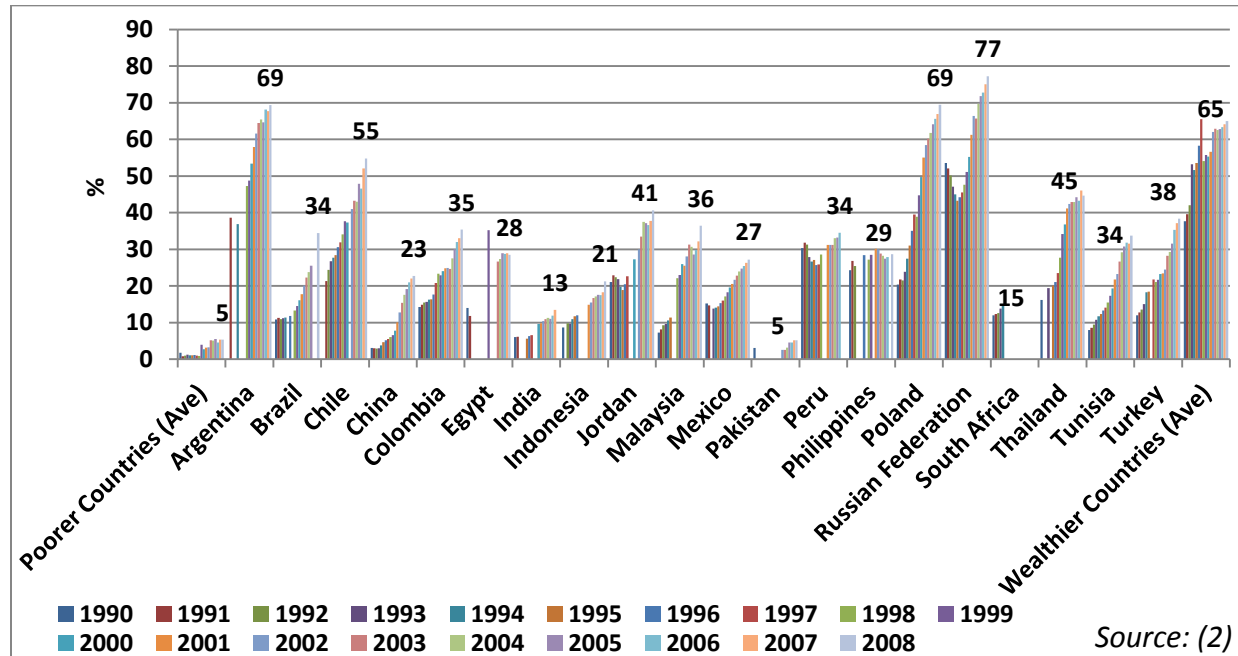
\* See definition of 5B on Table 2, Page 8.

Figure 66: Total Enrolment ('000) in ISCED Level 6 (Tertiary) Education\*, 1998-2009 (numbers are for 2009).



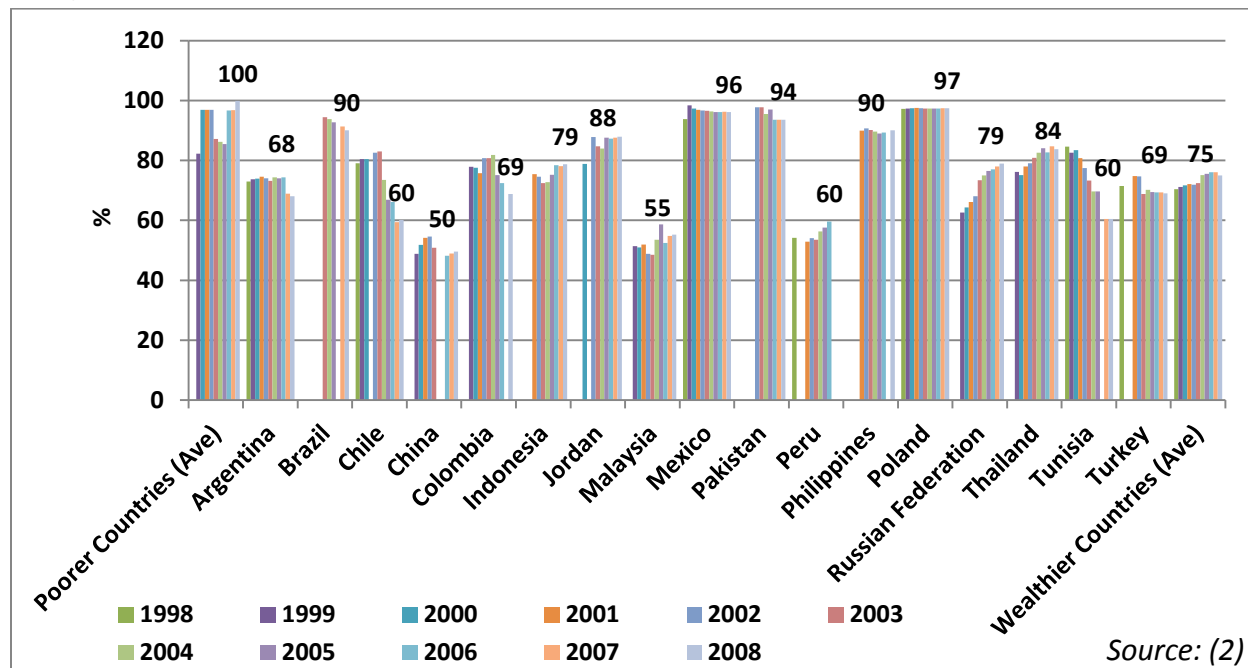
\*See definition of Level 6 on Table 2, Page 8.

Figure 67: % Students\* in ISCED 5 and 6 (Ratio of students to the total number of five-year age group following on from the secondary school leaving), 1990-2008 (numbers are for 2008).



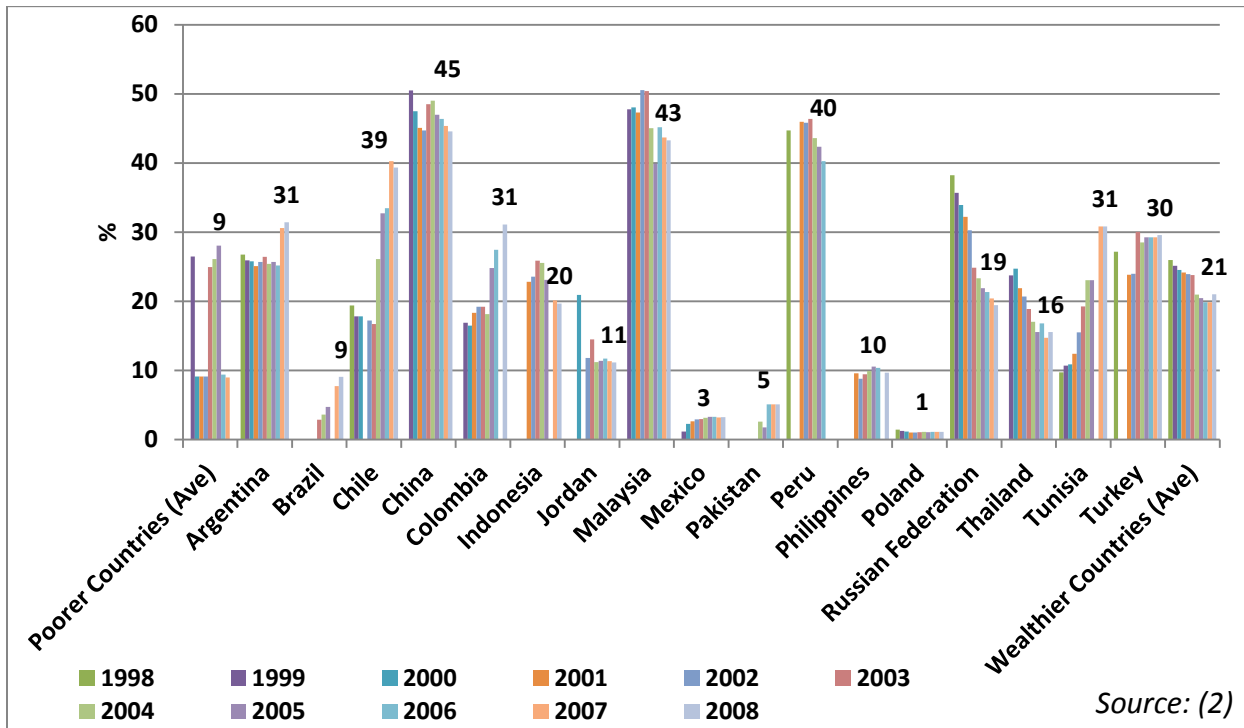
\*See definition of ISCED Levels 5 and 6 on Table 2 page 9.

Figure 68: % Students\* in ISCED Level 5A of Total ISCED Levels 5 and 6, 1998-2008 (numbers are for 2008).



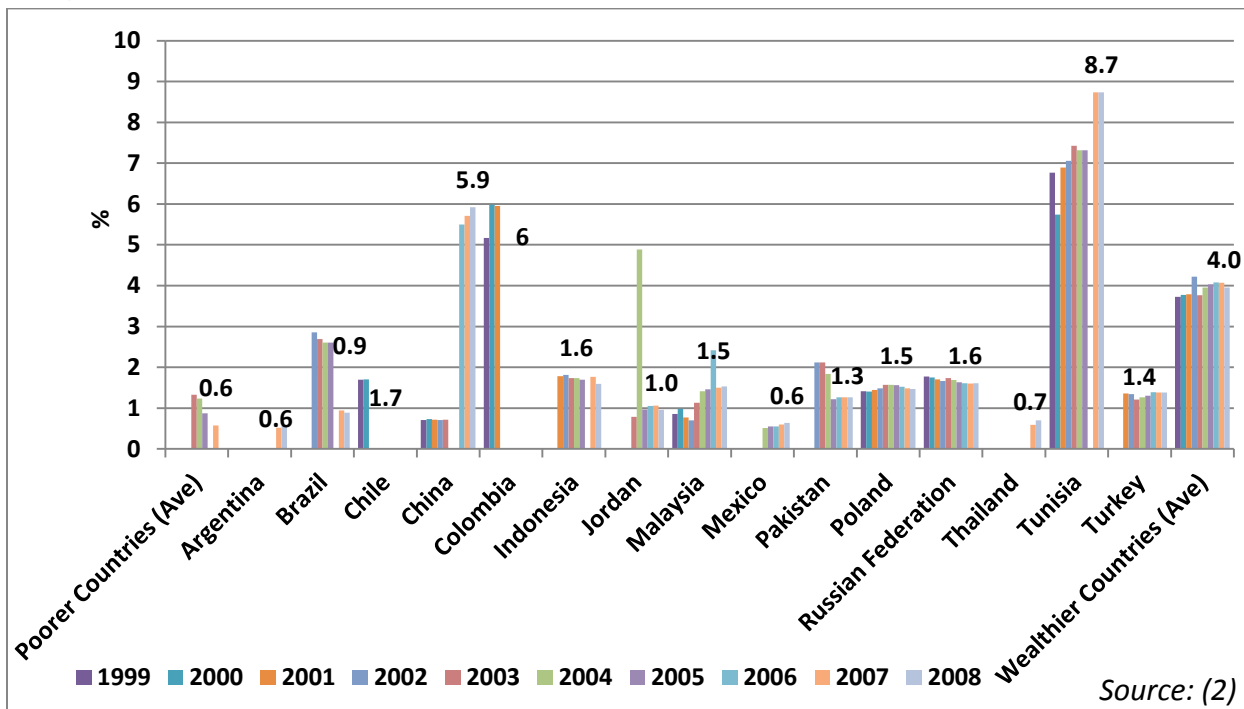
\*See definition of ISCED Levels 5 and 6 on Table 2 page 9.

Figure 69: % Students in ISCED 5B\* of Total ISCED Levels 5 and 6\*, 1998-2008 (numbers are for 2008).



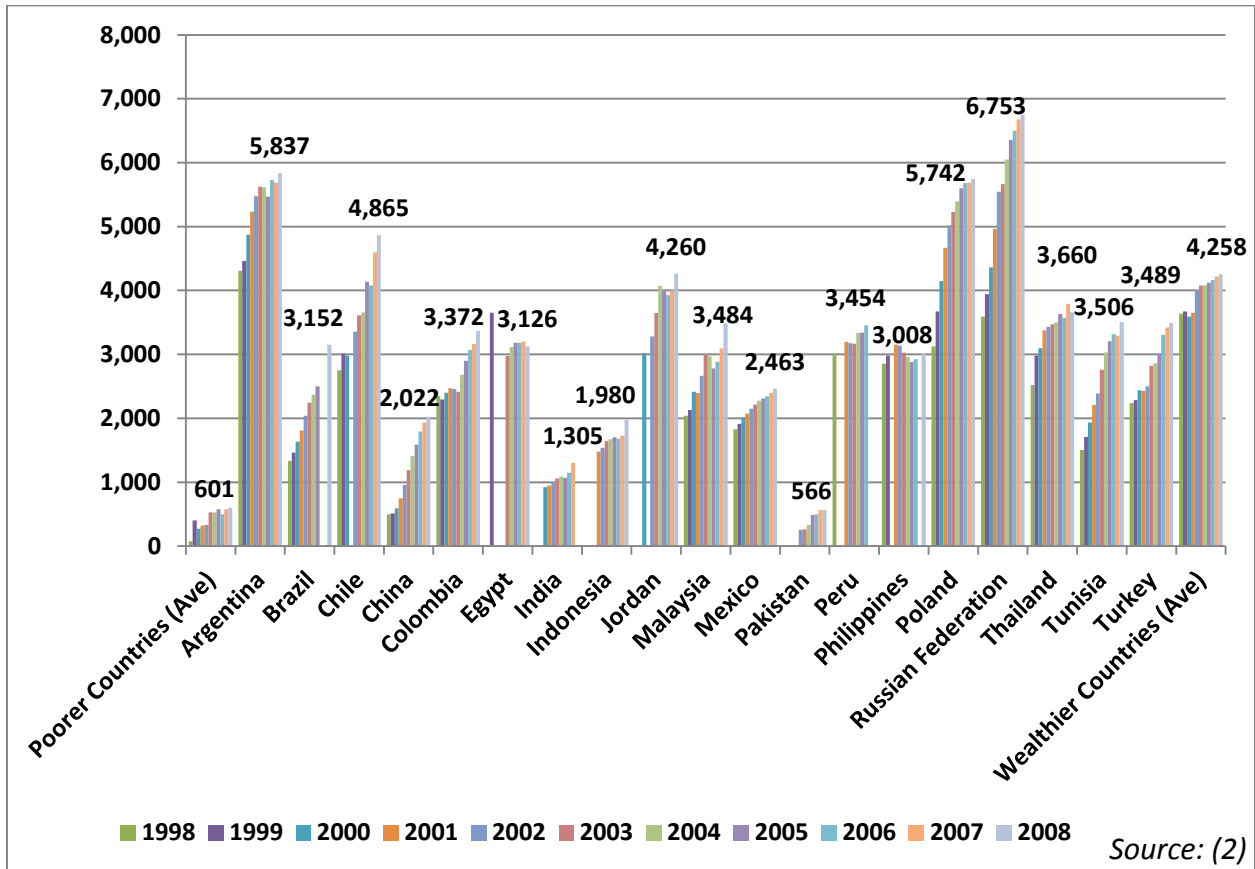
\*See definition of ISCED Levels 5 and 6 on Table 2 page 9.

Figure 70: % Students in Level ISCED 6 of Total ISCED Levels 5 and 6\*, 1998-2008 (numbers are for 2008).



\*See definition of ISCED Levels 5 and 6 on Table 2 page 9.

Figure 71: Numbers of Students ('000) in Tertiary Education per 100,000 Population 1998-2008 (numbers are for 2008).



Source: (2)

## 4.2 Graduation

Figure 72: Numbers of Graduates ('000) From All Tertiary Education Programmes, 1998-2009 (numbers are for 2009).

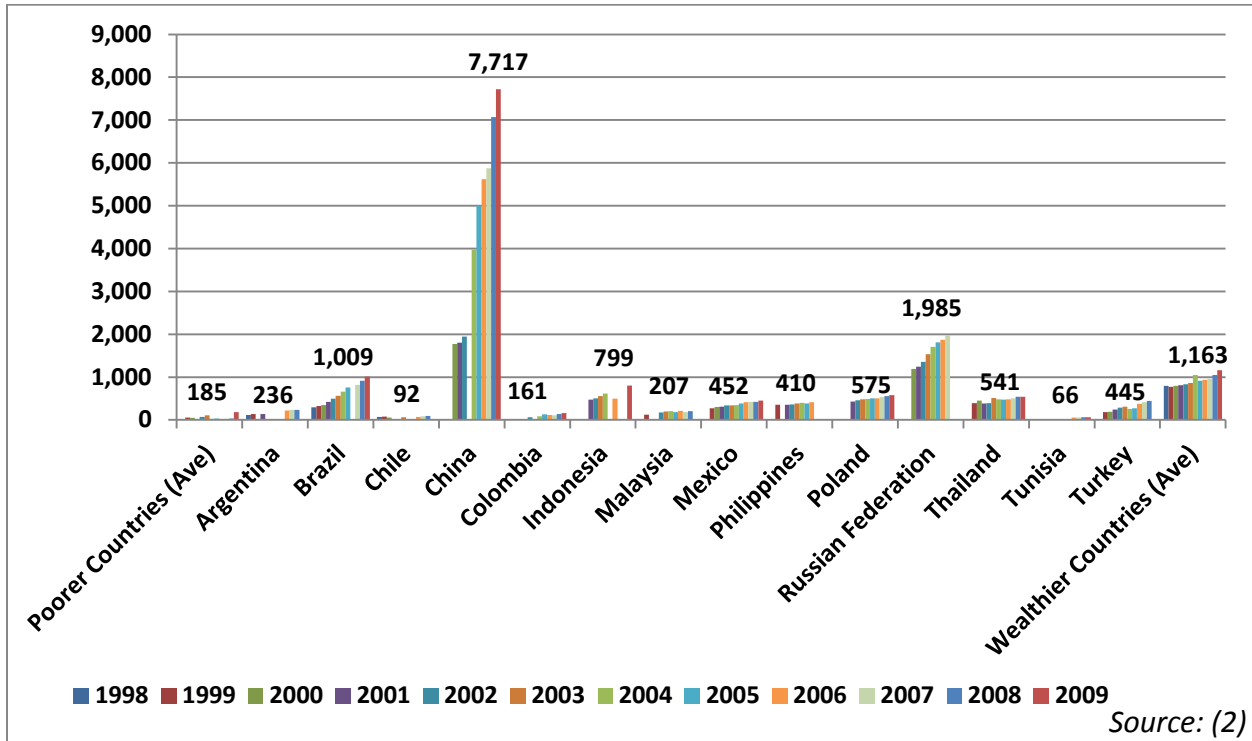


Figure 73: Graduates in Education as % of Total Tertiary Graduates, 1998-2008 (numbers are for 2008 or later).

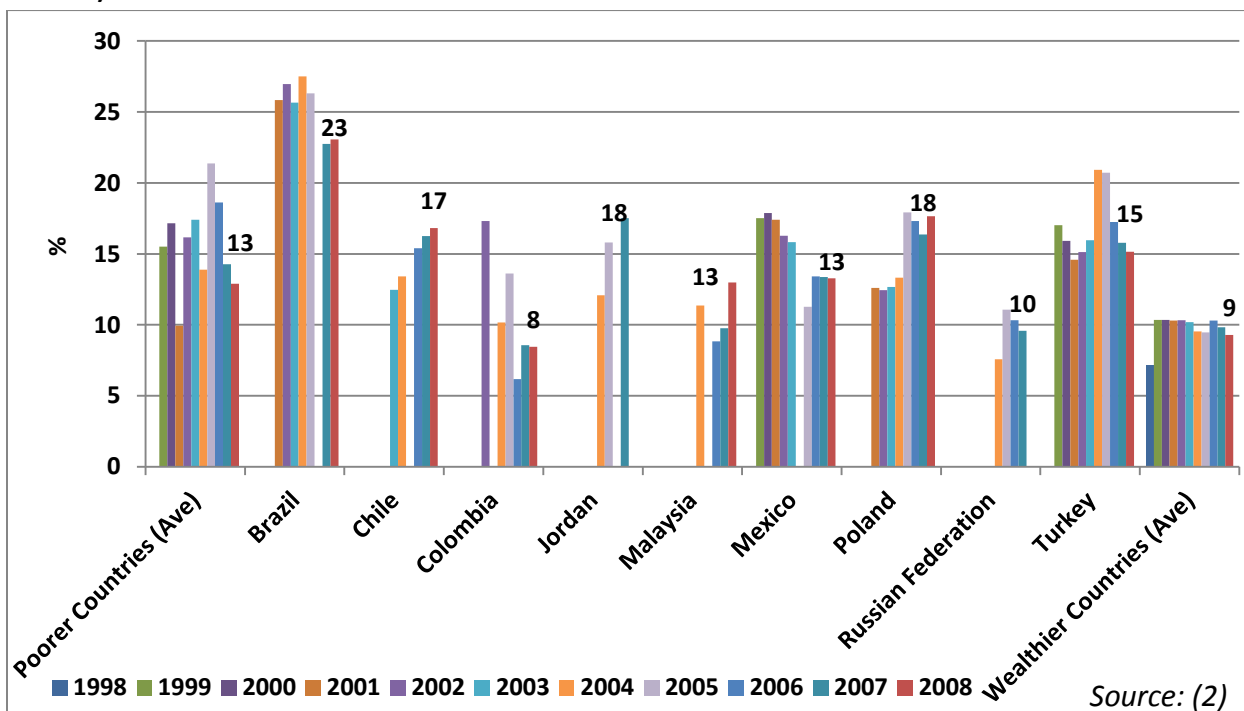


Figure 74: Graduates in Engineering, Manufacturing and Construction as % of Total Tertiary Graduates, 1998-2008 (numbers are for 2008 or later).

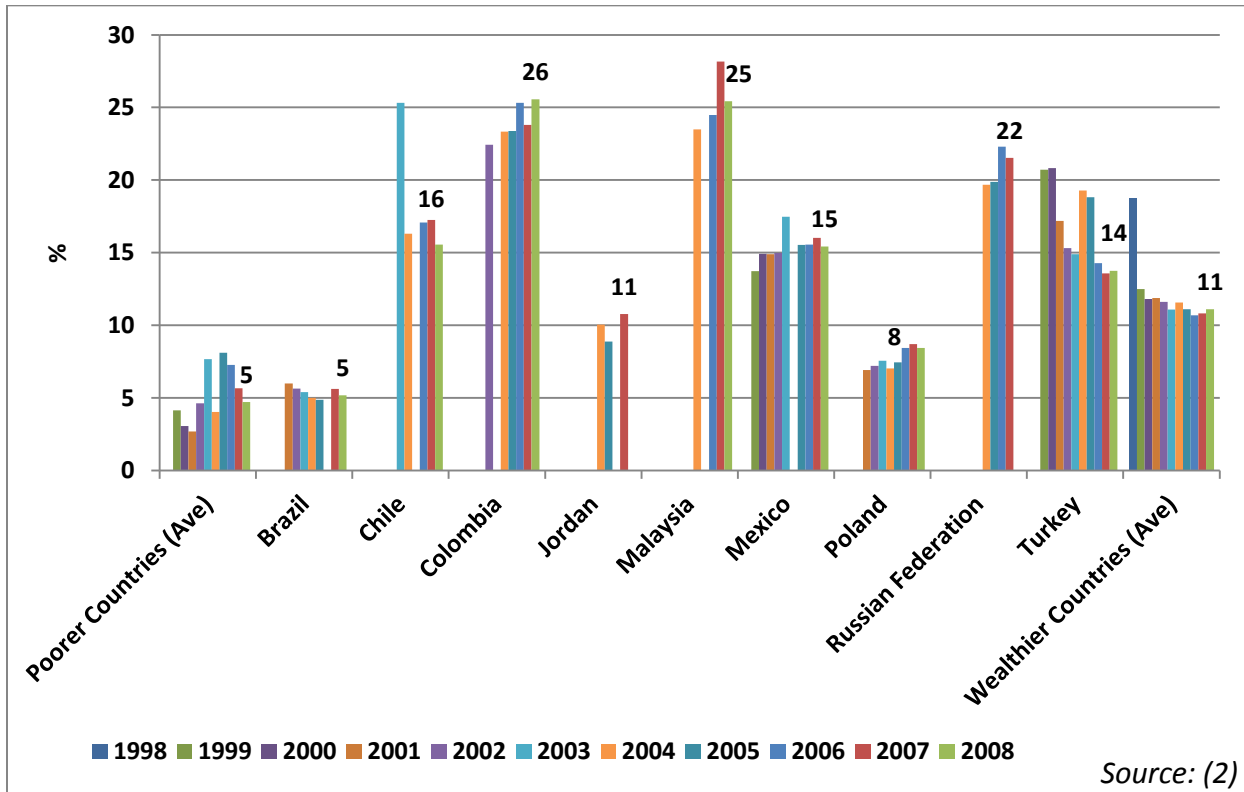


Figure 75: Graduates in Health and Welfare as % of Total Tertiary Graduates, 1998-2008 (numbers are for 2008 or later).

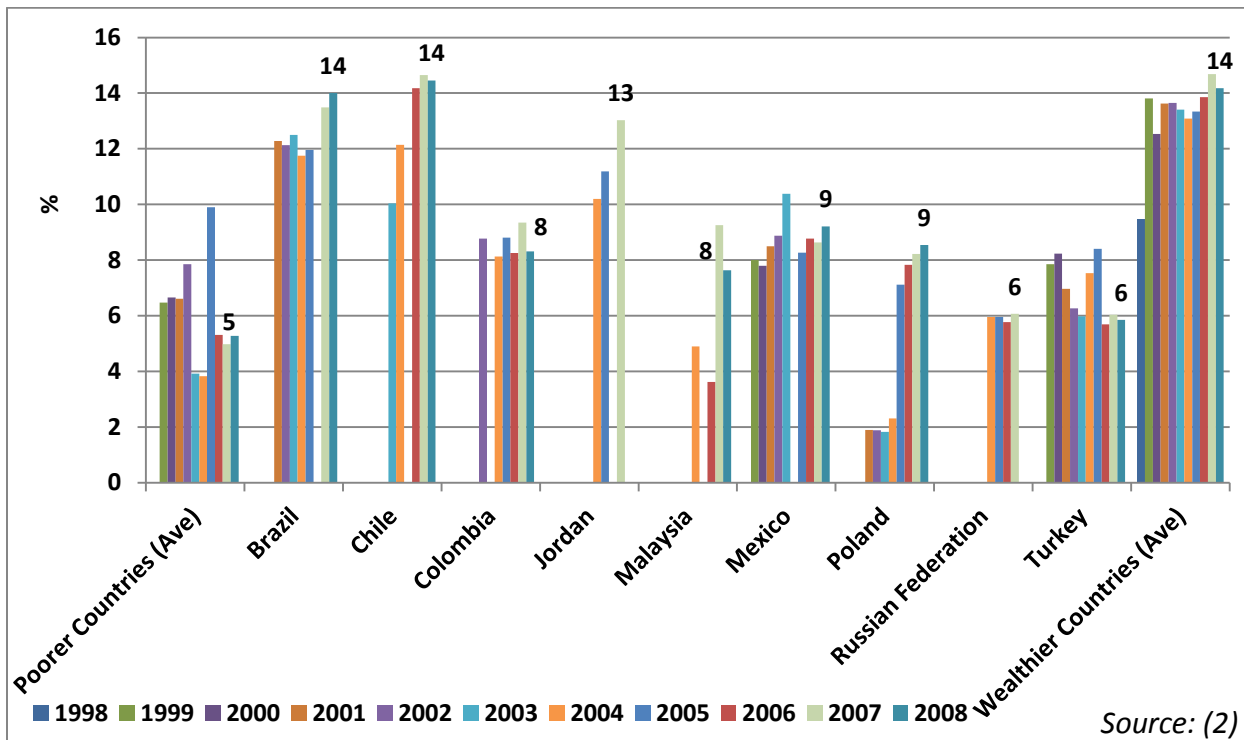


Figure 76: Graduates in Arts and Humanities as % Total Tertiary Graduates, 1998-2008 (numbers are for 2008 or later).

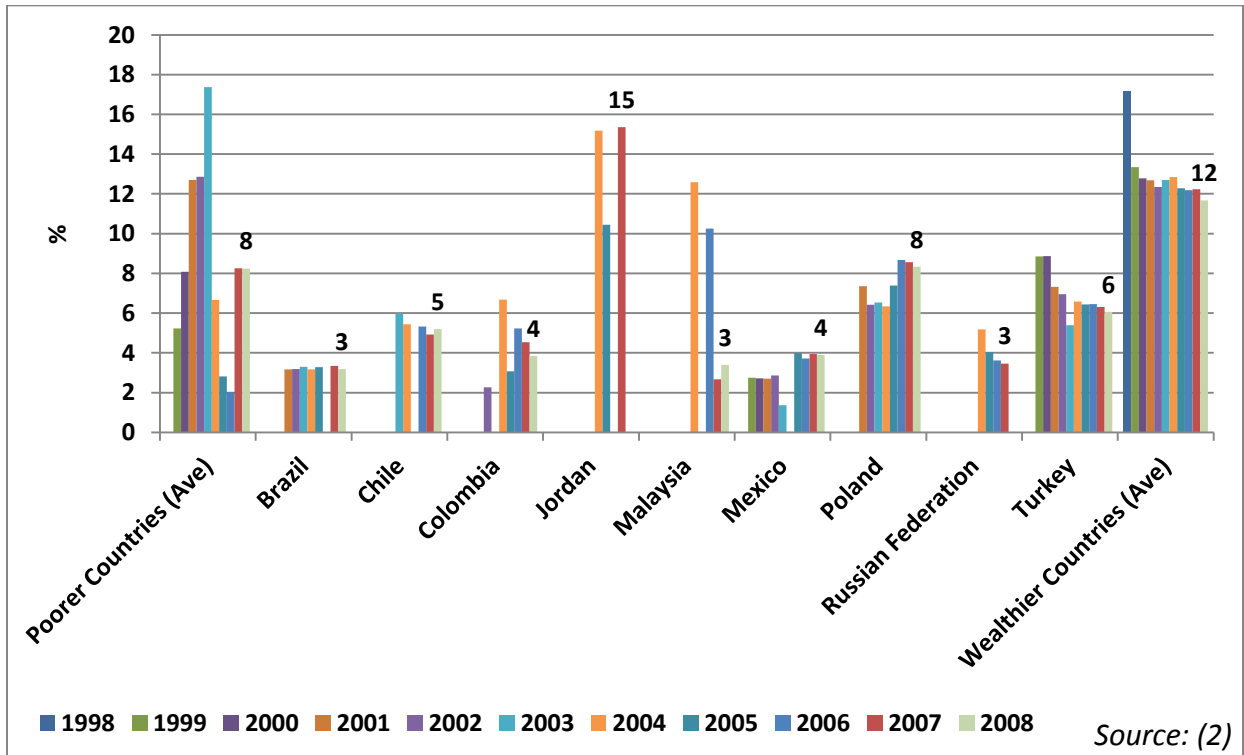


Figure 77: Graduates in Social Sciences, Business and Law as % Total Tertiary Graduates, 1998-2008 (numbers are for 2008 or later).

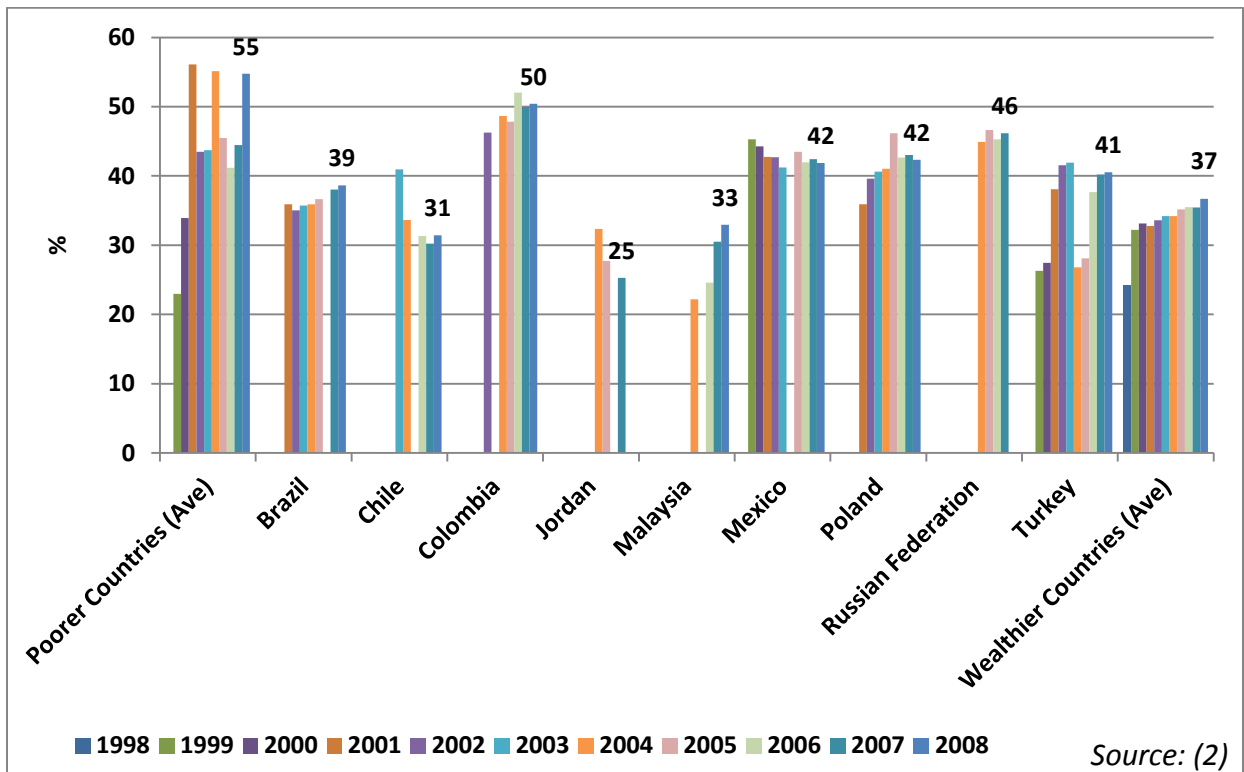


Figure 78: Graduates in Science as % Total Tertiary Graduates, 1998-2008 (numbers are for 2008 or later).

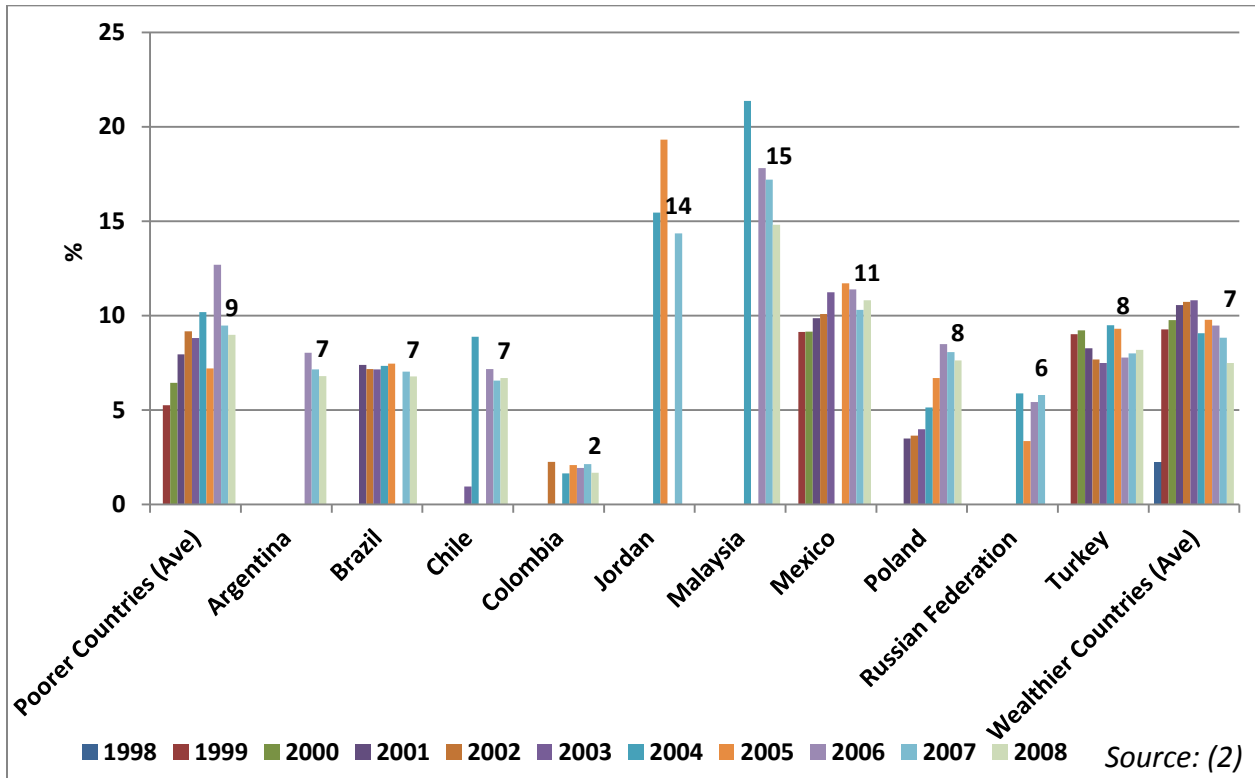


Figure 79: PhD Graduates by Field, Argentina, 2004-2008 (numbers are for 2008).

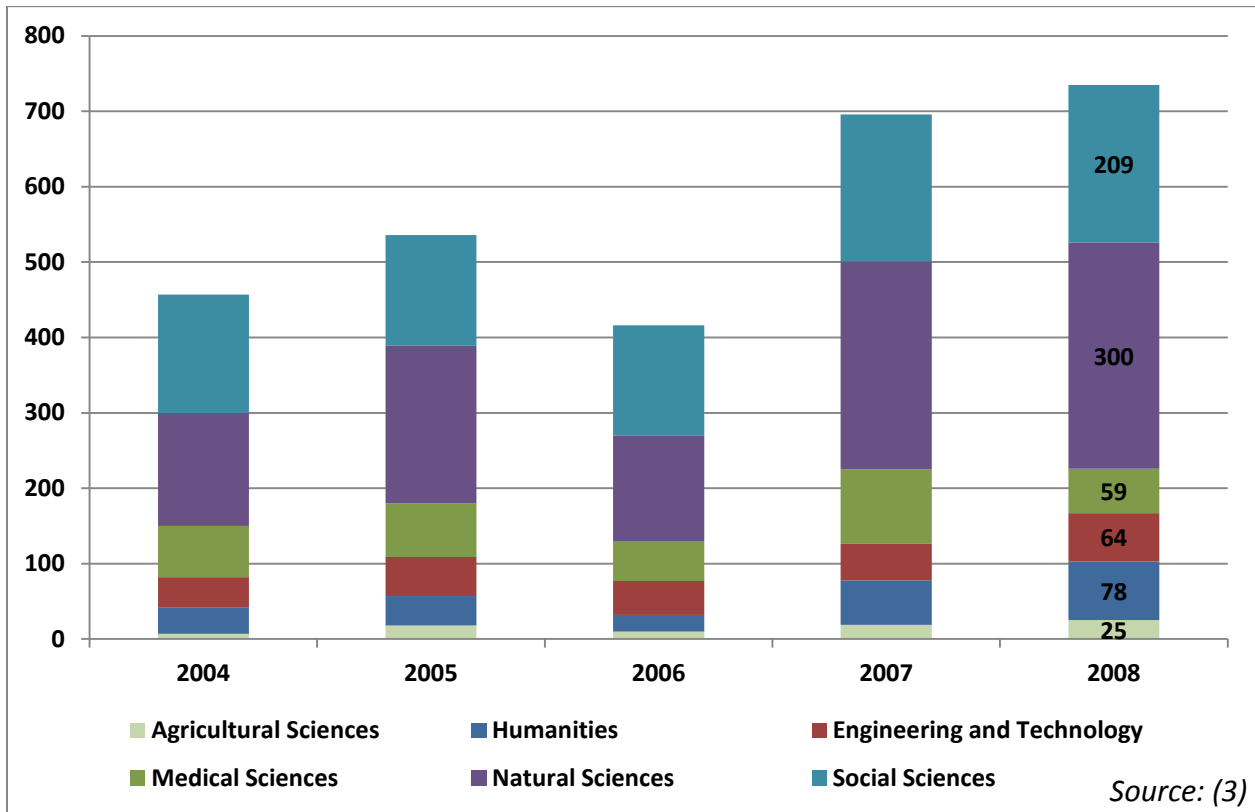


Figure 80: PhD Graduates by Field, Brazil, 1990-2008 (numbers are for 2008).

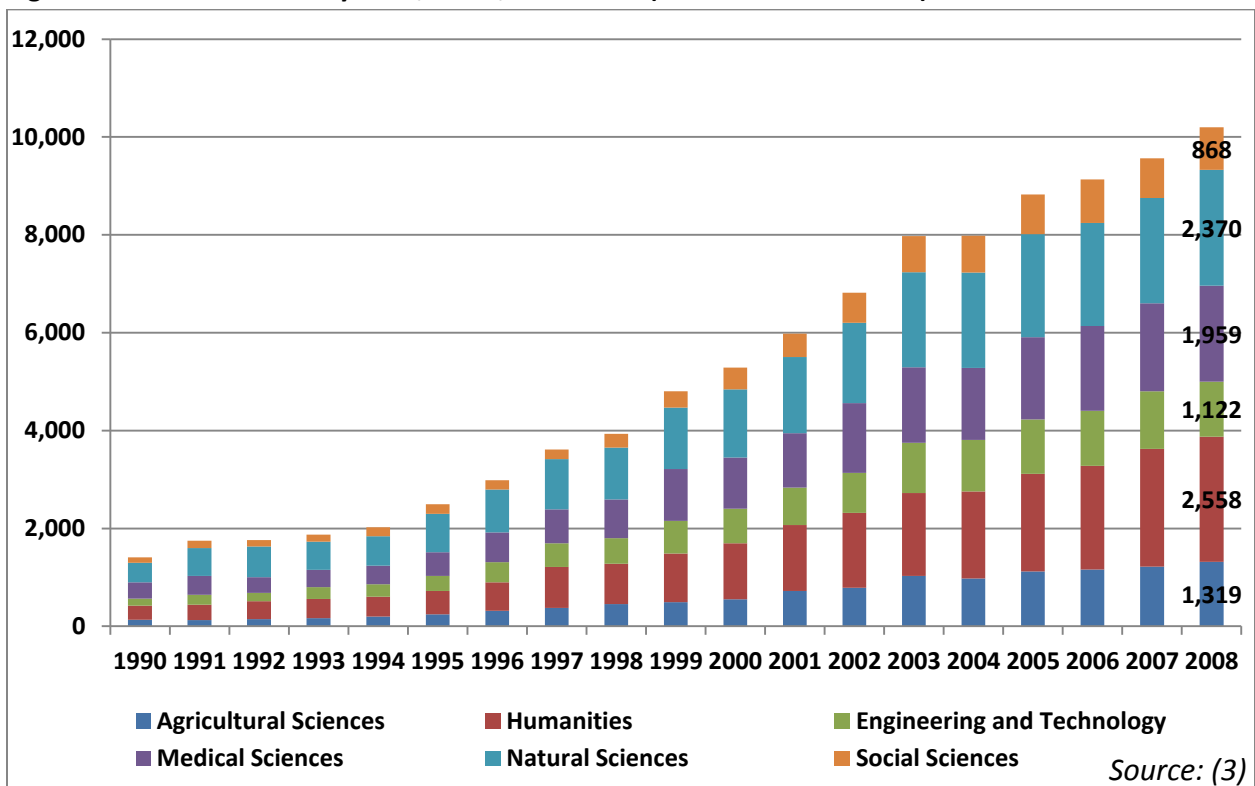


Figure 81: PhD Graduates by Field, Chile, 1990-2008 (numbers are for 2008).

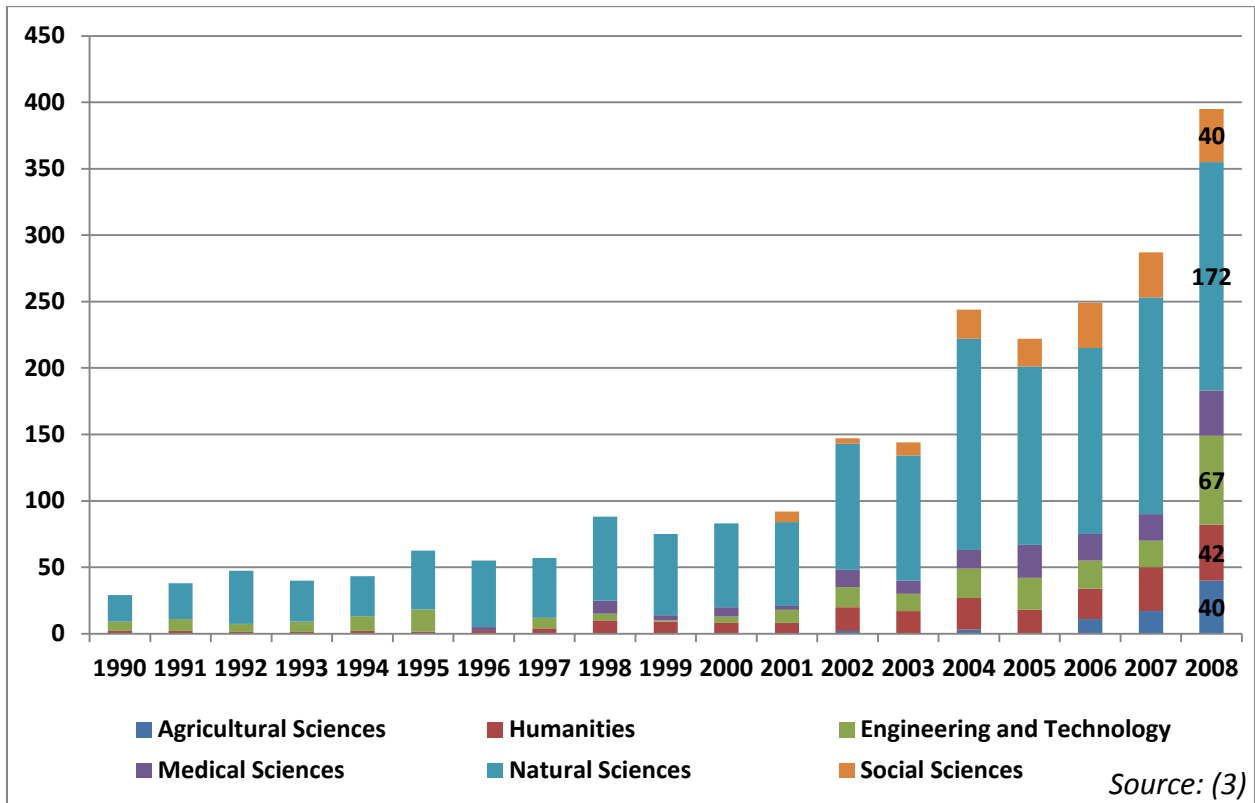
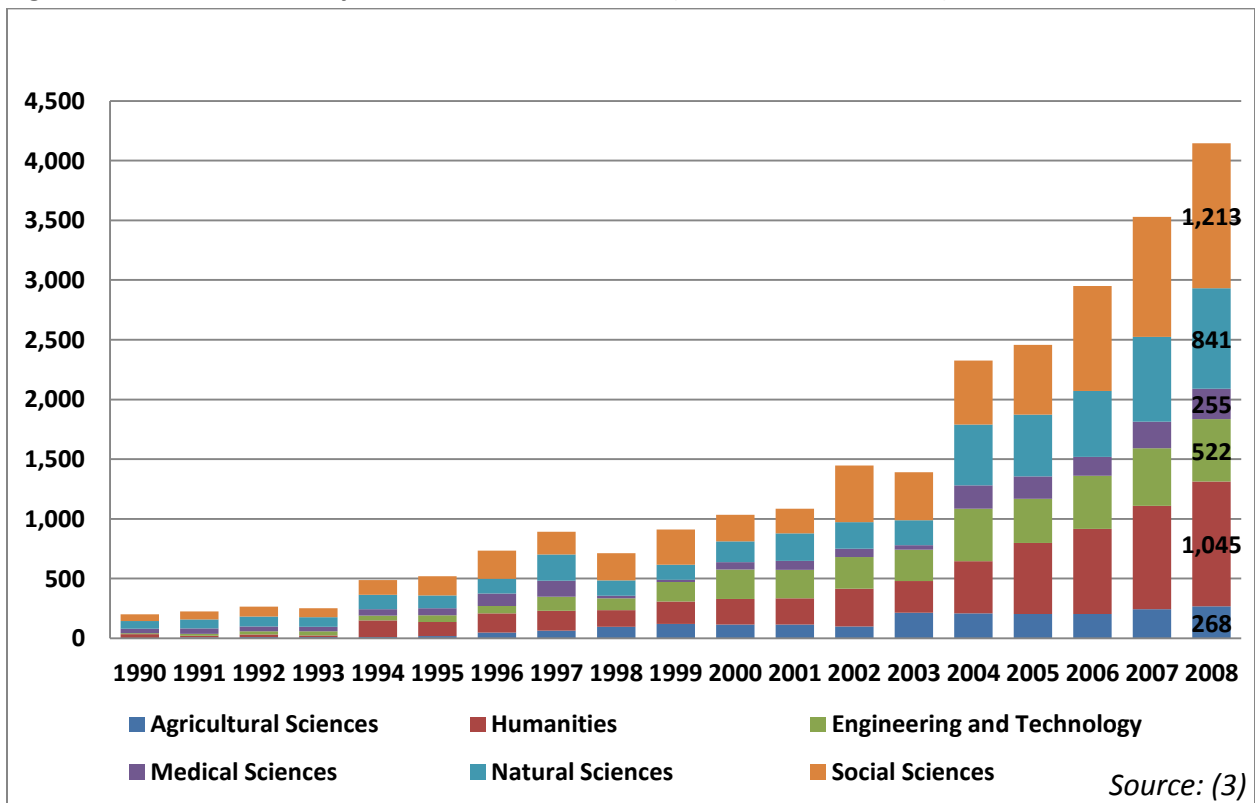


Figure 82: PhD Graduates by Field, Mexico, 1990-2008 (numbers are for 2008).



### 4.3 Cross Border Tertiary Education

Figure 83: Foreign Students in Tertiary Education in Selected Countries as % Total Students 2000 and 2007 (numbers are for 2007) Notes: 1. 'Foreign' students are defined on basis of country of residence. 2. Year of reference 2006.

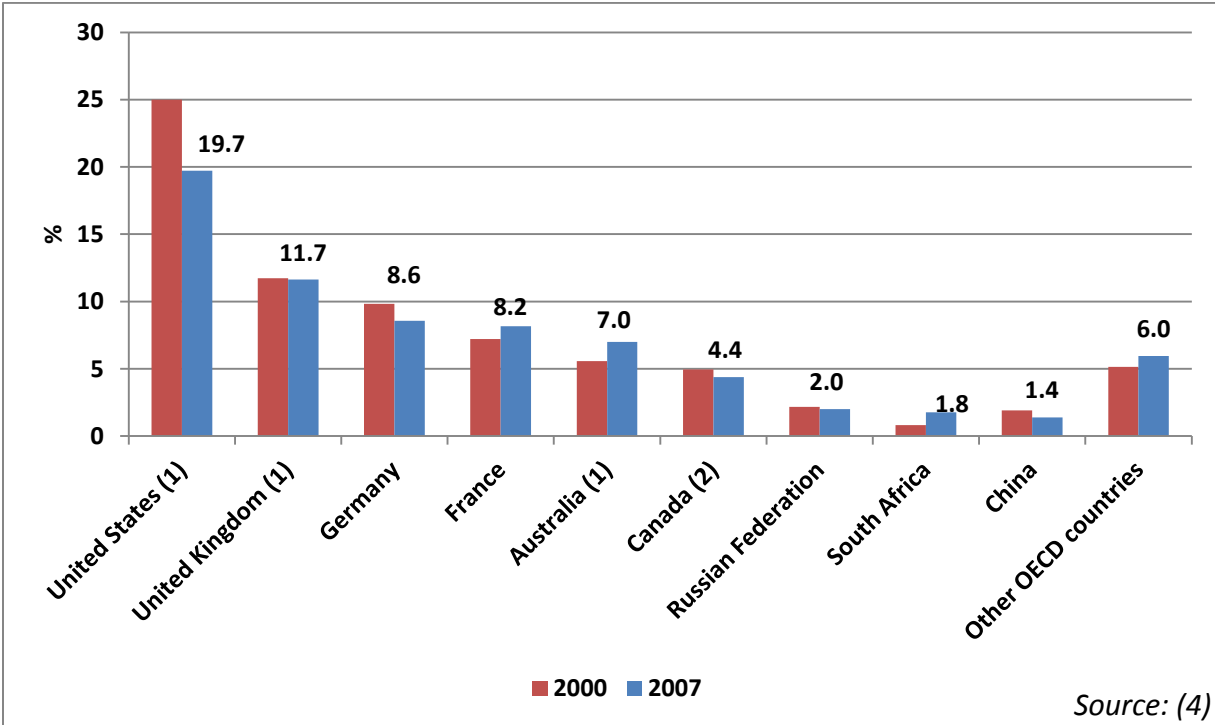


Figure 84: International Tertiary Level Students in OECD Countries by Country of Origin, 2009.

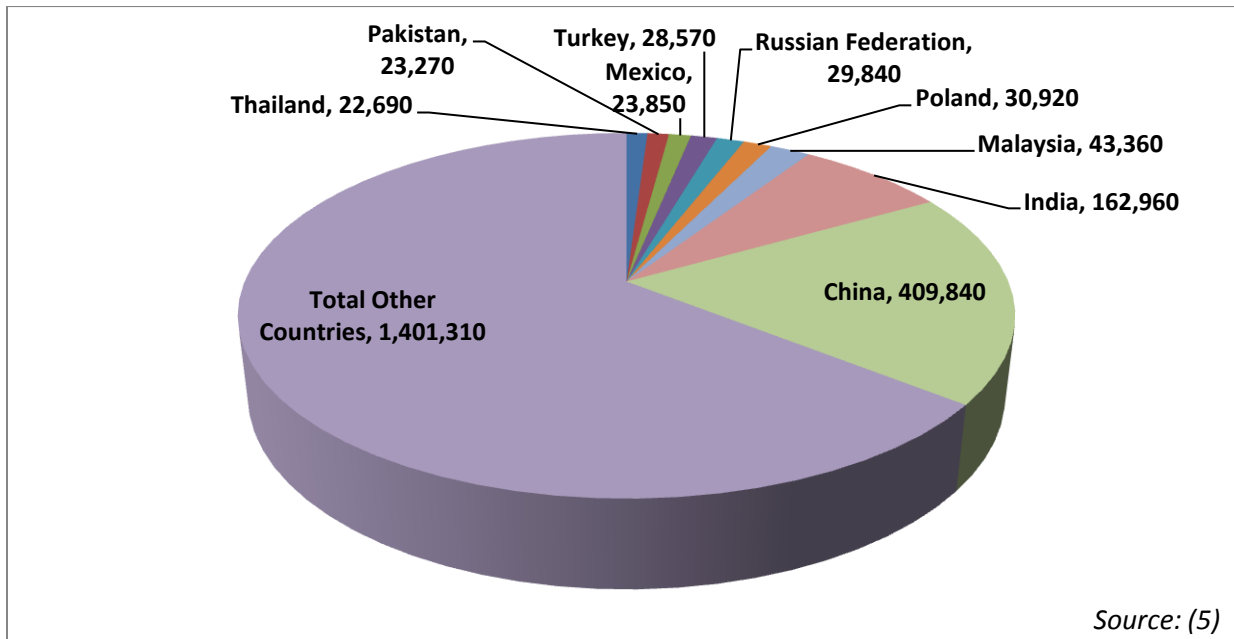
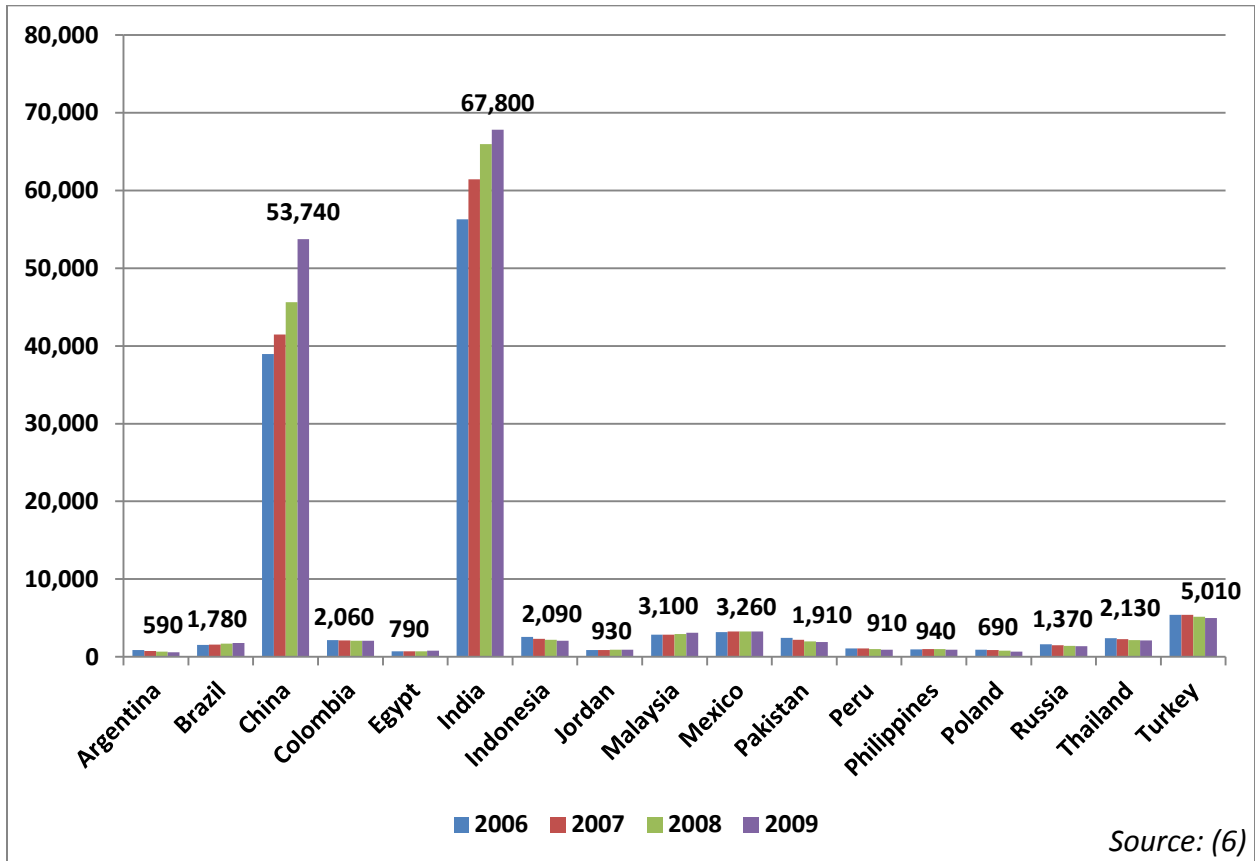
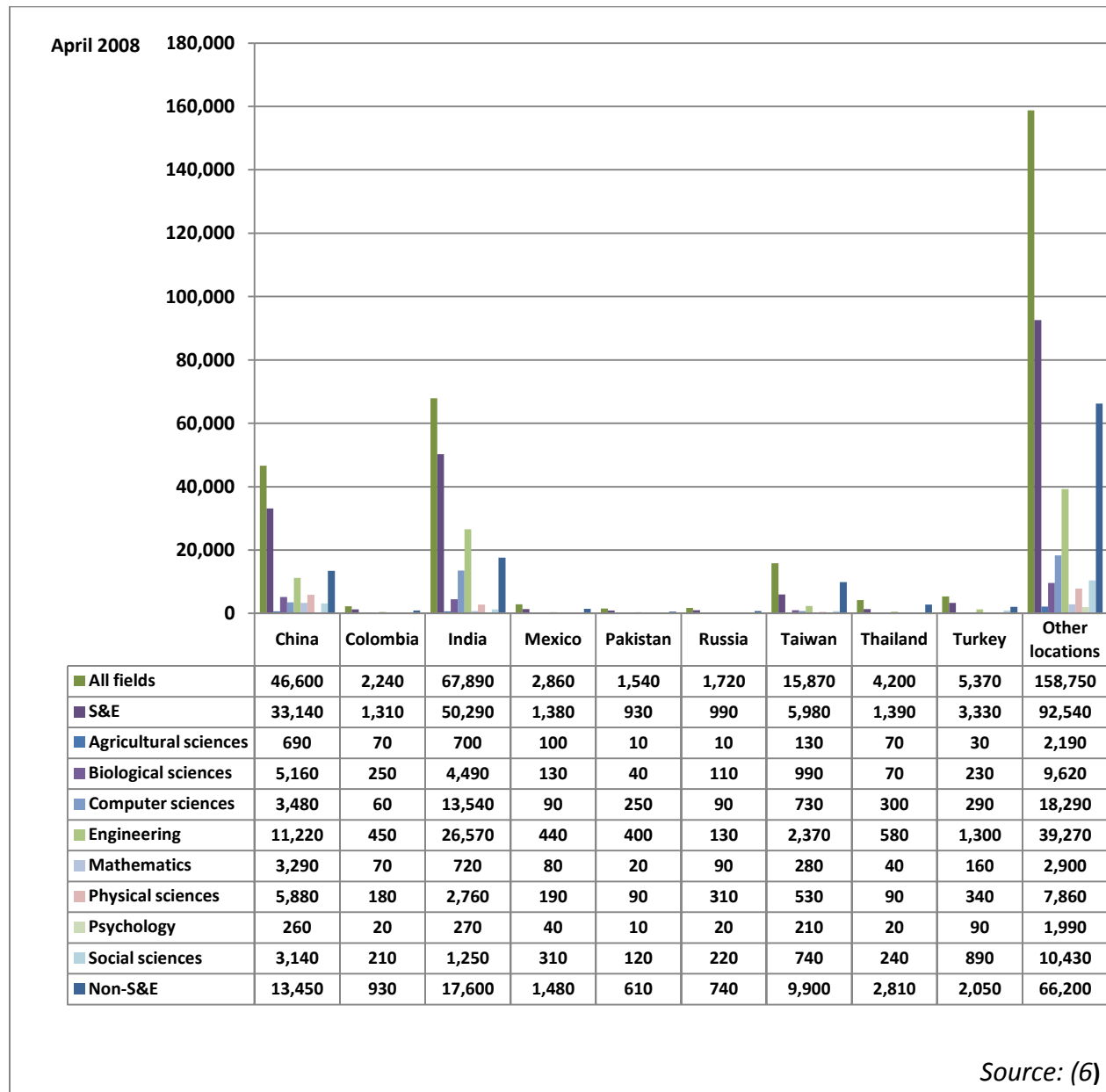


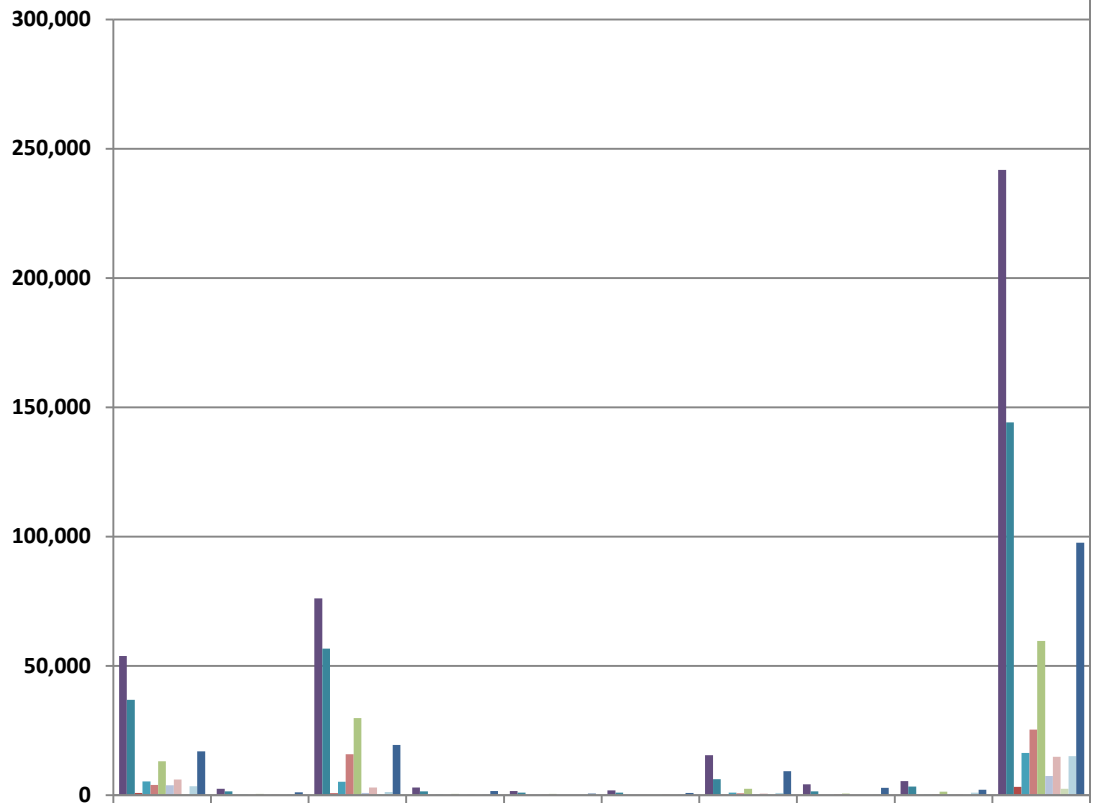
Figure 85: Foreign Science and Engineering Students in Tertiary Education in USA by Country of Origin 2006- 2009 (numbers are for 2009).



**Figure 86: Foreign Graduate Students in USA Universities, by Field and Selected Countries of Origin: April 2008 and 2009.**



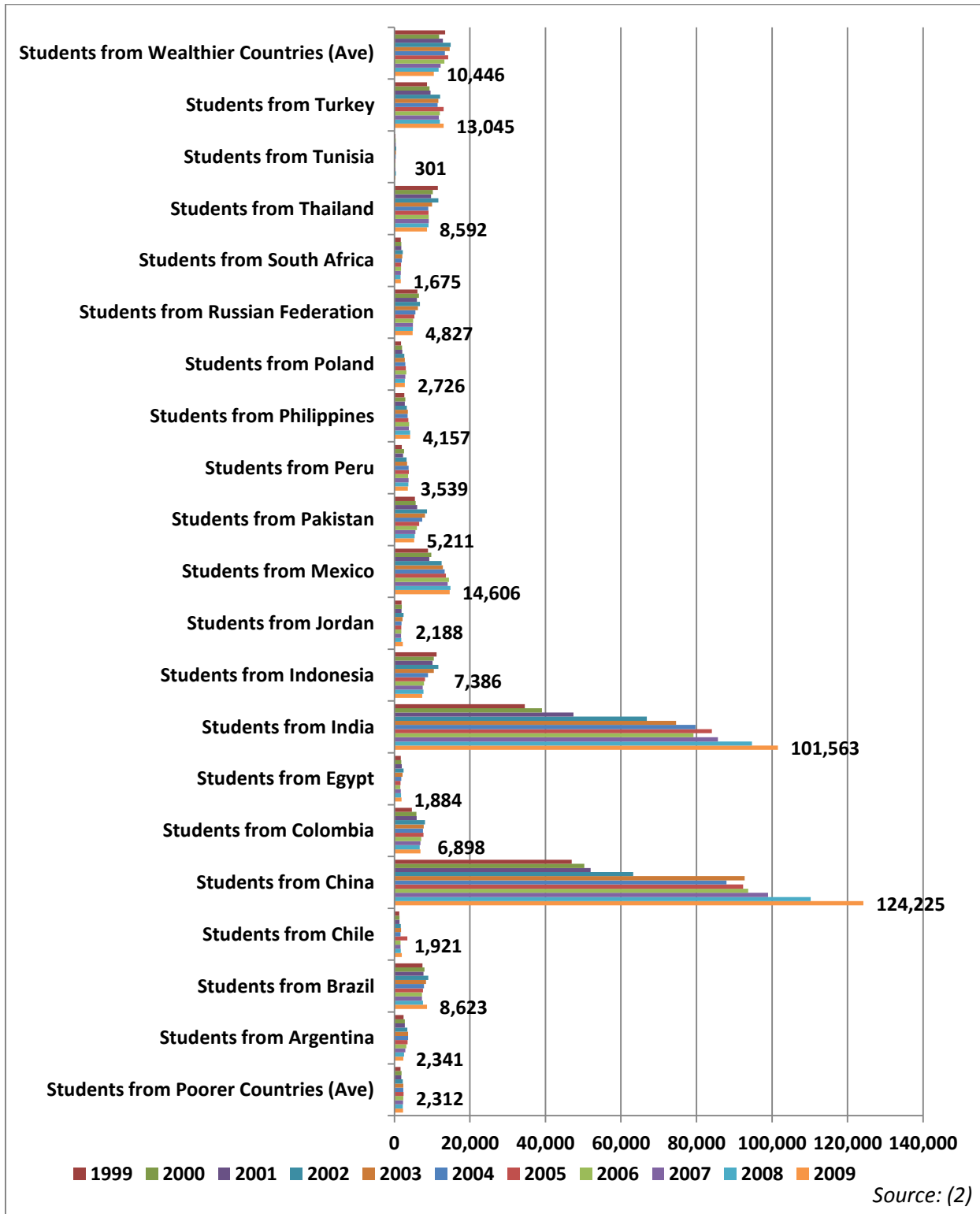
April 2009



	China	Colombia	India	Mexico	Pakistan	Russia	Taiwan	Thailand	Turkey	Other locations
All fields	53,800	2,420	76,100	2,980	1,510	1,760	15,380	4,140	5,390	241,760
S&E	36,890	1,410	56,680	1,430	920	960	6,110	1,380	3,340	144,140
Agricultural sciences	830	70	730	100	10	20	140	70	20	3,160
Biological sciences	5,290	250	5,120	150	40	110	990	80	240	16,300
Computer sciences	3,970	70	15,800	100	220	80	700	270	320	25,370
Engineering	13,110	500	29,790	460	430	130	2,470	610	1,290	59,600
Mathematics	3,840	90	780	90	30	90	300	40	160	7,390
Physical sciences	6,070	190	2,960	180	70	300	540	90	330	14,770
Psychology	300	30	260	40	10	20	210	20	80	2,490
Social sciences	3,470	220	1,240	320	120	210	760	210	910	15,090
Non-S&E	16,910	1,010	19,410	1,550	590	800	9,270	2,760	2,050	97,630

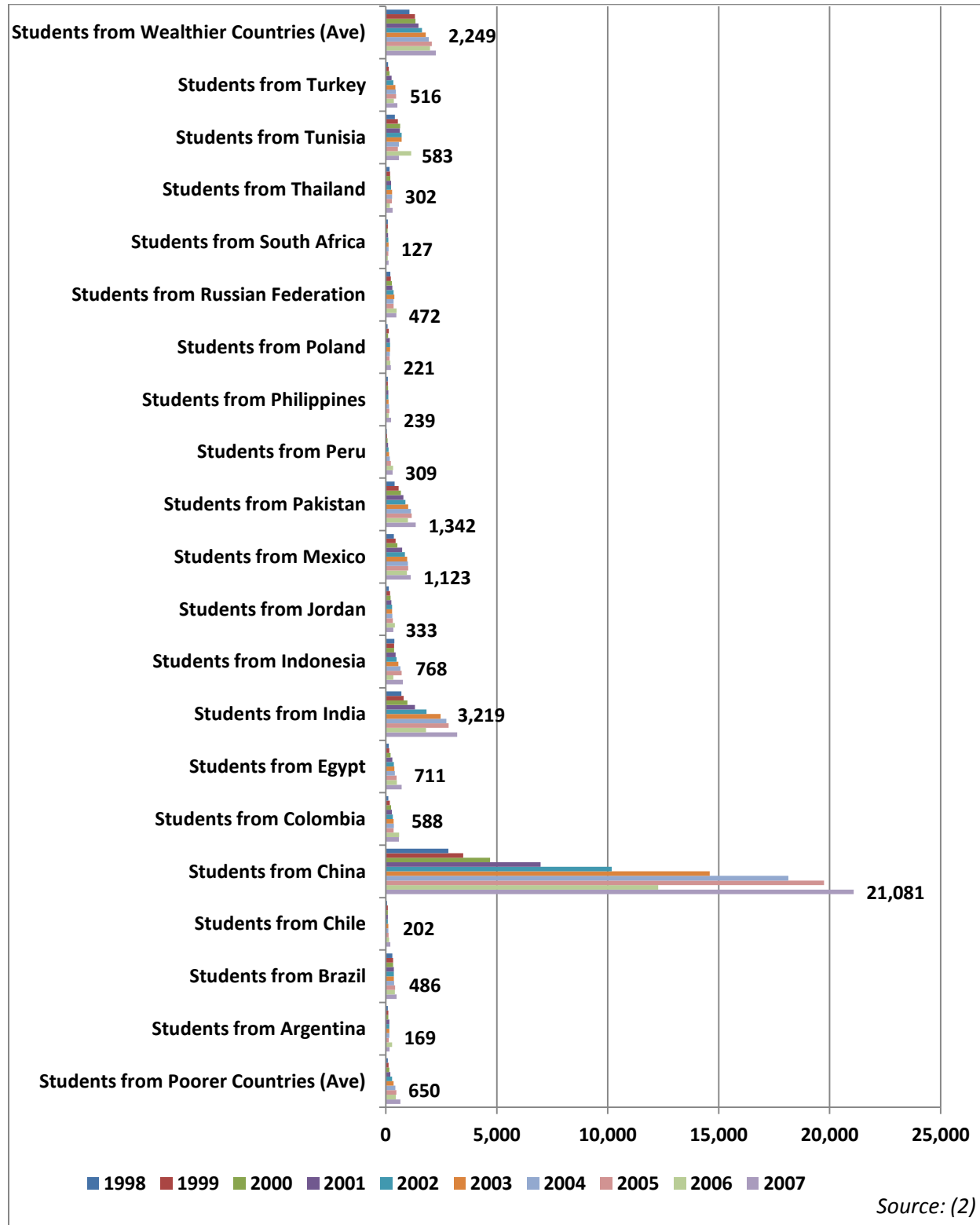
Source: (6)

Figure 87: Foreign Students in Tertiary Education (ISCED Levels 5 and 6\*) in USA, 1999-2009 (numbers are for 2009).



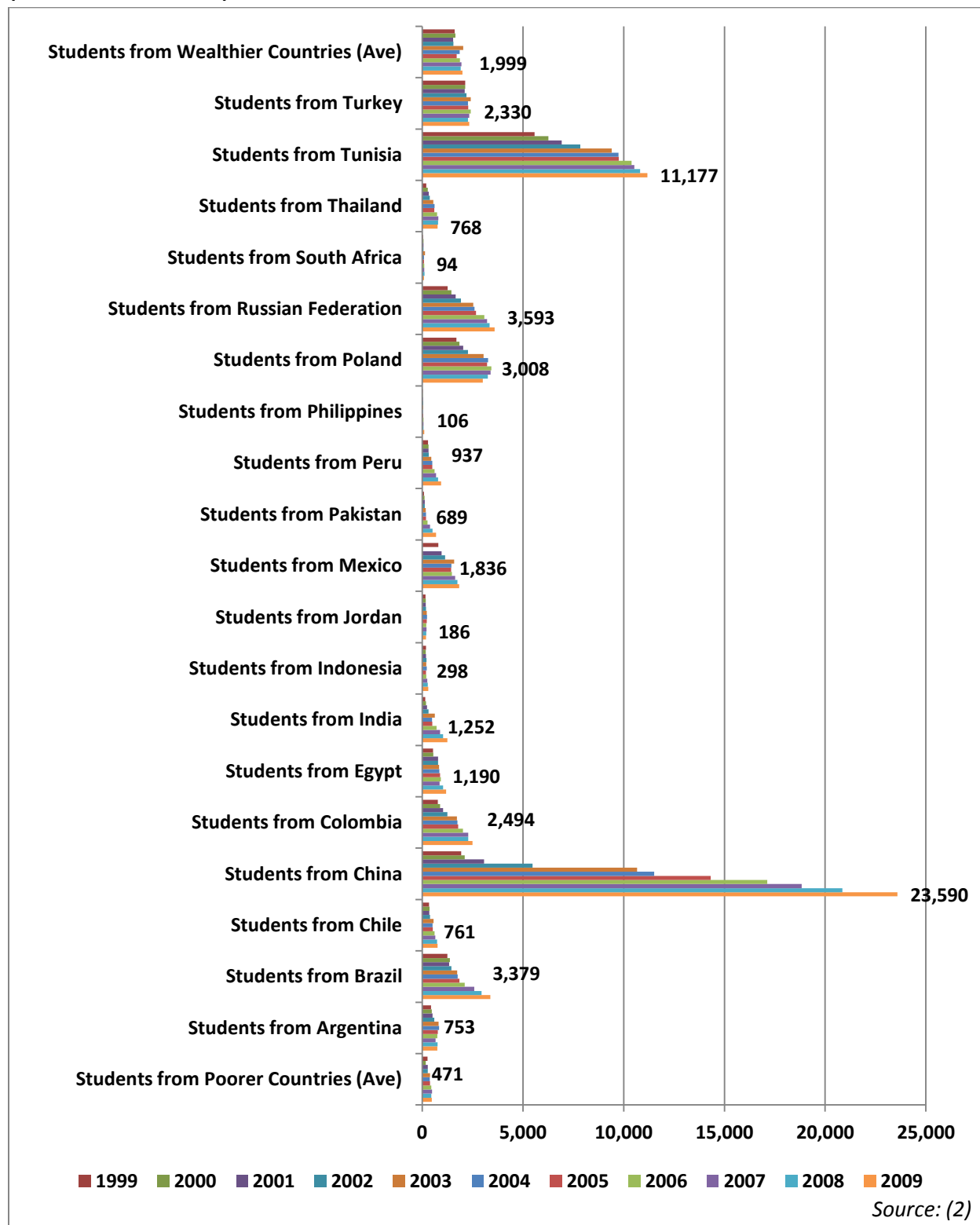
\*See definition of ISCED Levels 5 and 6 on Table 2 page 9.

Figure 88: Foreign Students in Tertiary Education (ISCED Levels 5 and 6\*) in Canada, 1998-2007 (numbers are for 2007).



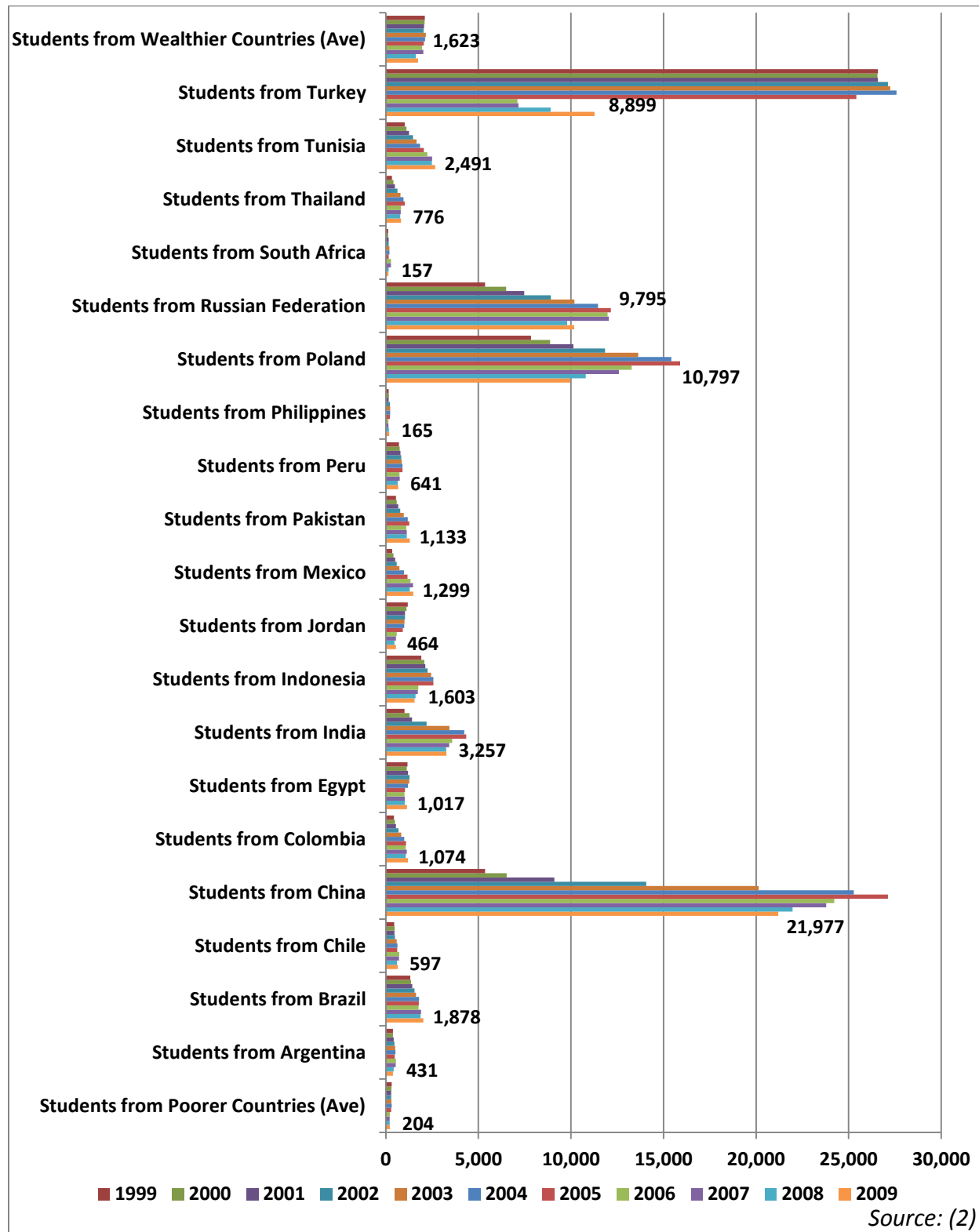
\*See definition of ISCED Levels 5 and 6 on Table 2 page 9.

Figure 89: Foreign Students in Tertiary Education (ISCED Levels 5 and 6\*) in France 1999-2009 (numbers are for 2009).



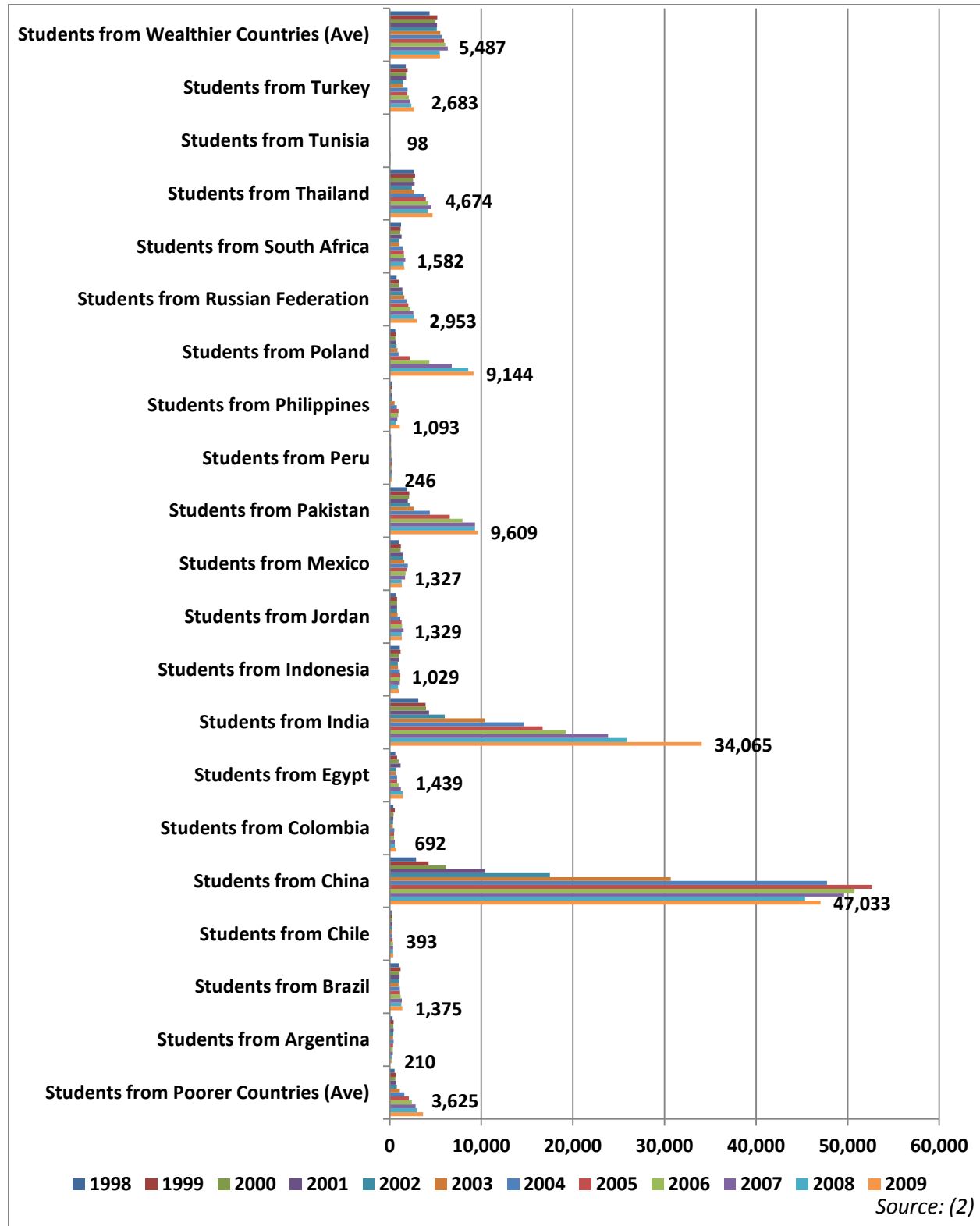
\*See definition of ISCED Levels 5 and 6 on Table 2 page 9.

Figure 90: Foreign Students in Tertiary Education (ISCED Levels 5 and 6\*) in Germany 1999-2009 (numbers are for 2009).



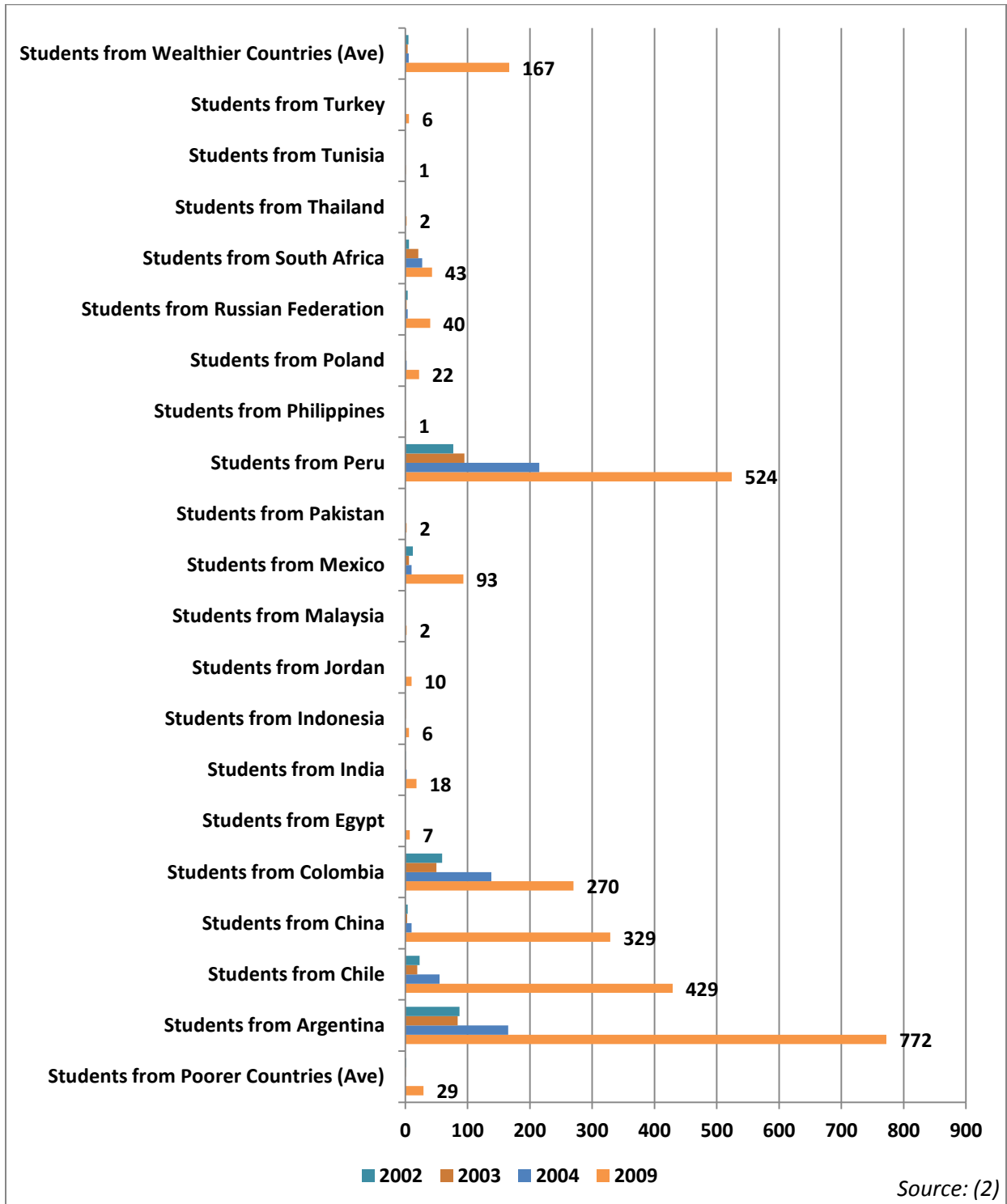
\*See definition of ISCED Levels 5 and 6 on Table 2 page 9.

Figure 91: Foreign Students in Tertiary Education (ISCED Levels 5 and 6\*) in the United Kingdom 1999-2009 (numbers are for 2009).



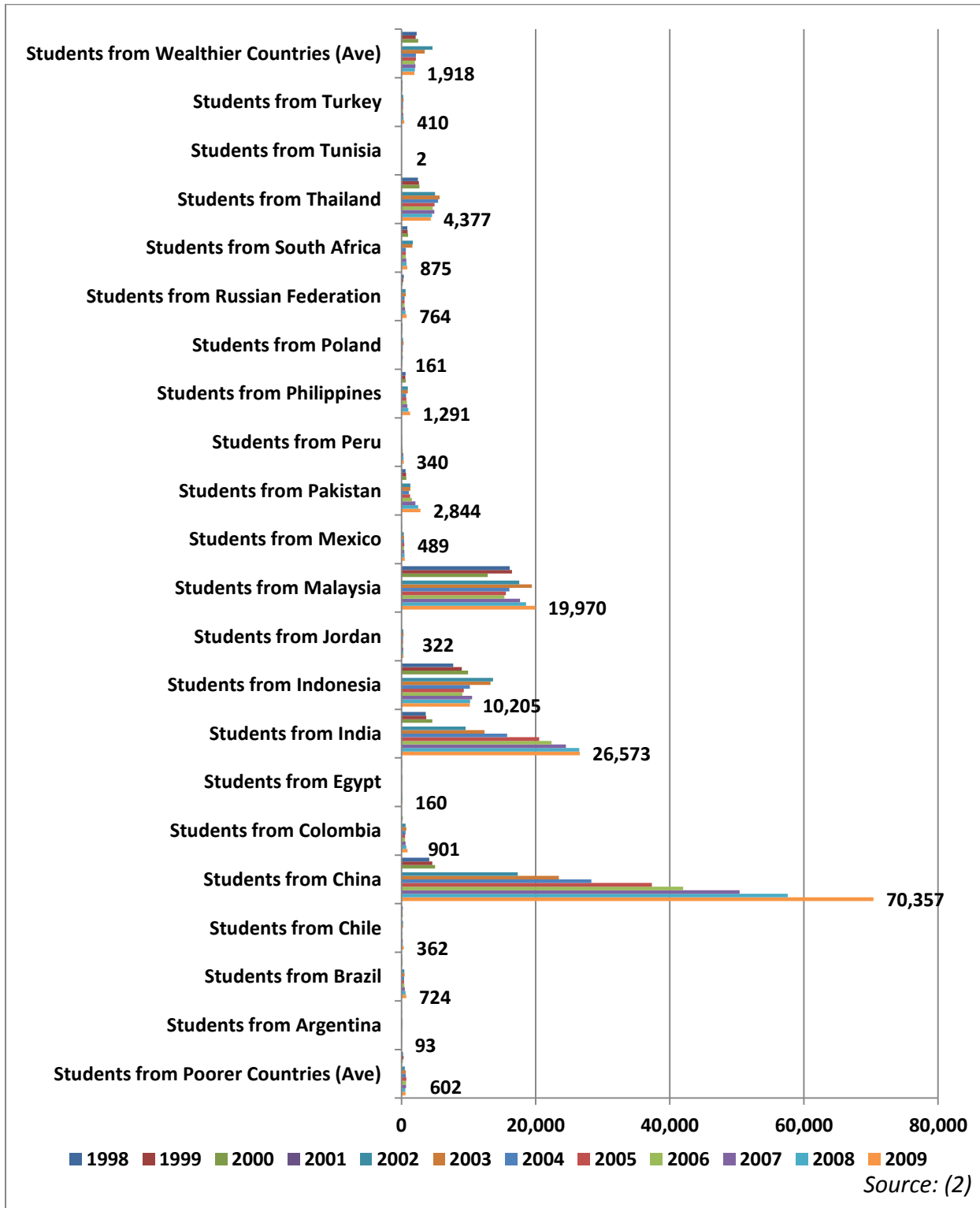
\*See definition of ISCED Levels 5 and 6 on Table 2 page 9.

Figure 92: Foreign Students in Tertiary Education (ISCED Levels 5 and 6\*) in Brazil.2002-2004 and 2009 (numbers are for 2009).



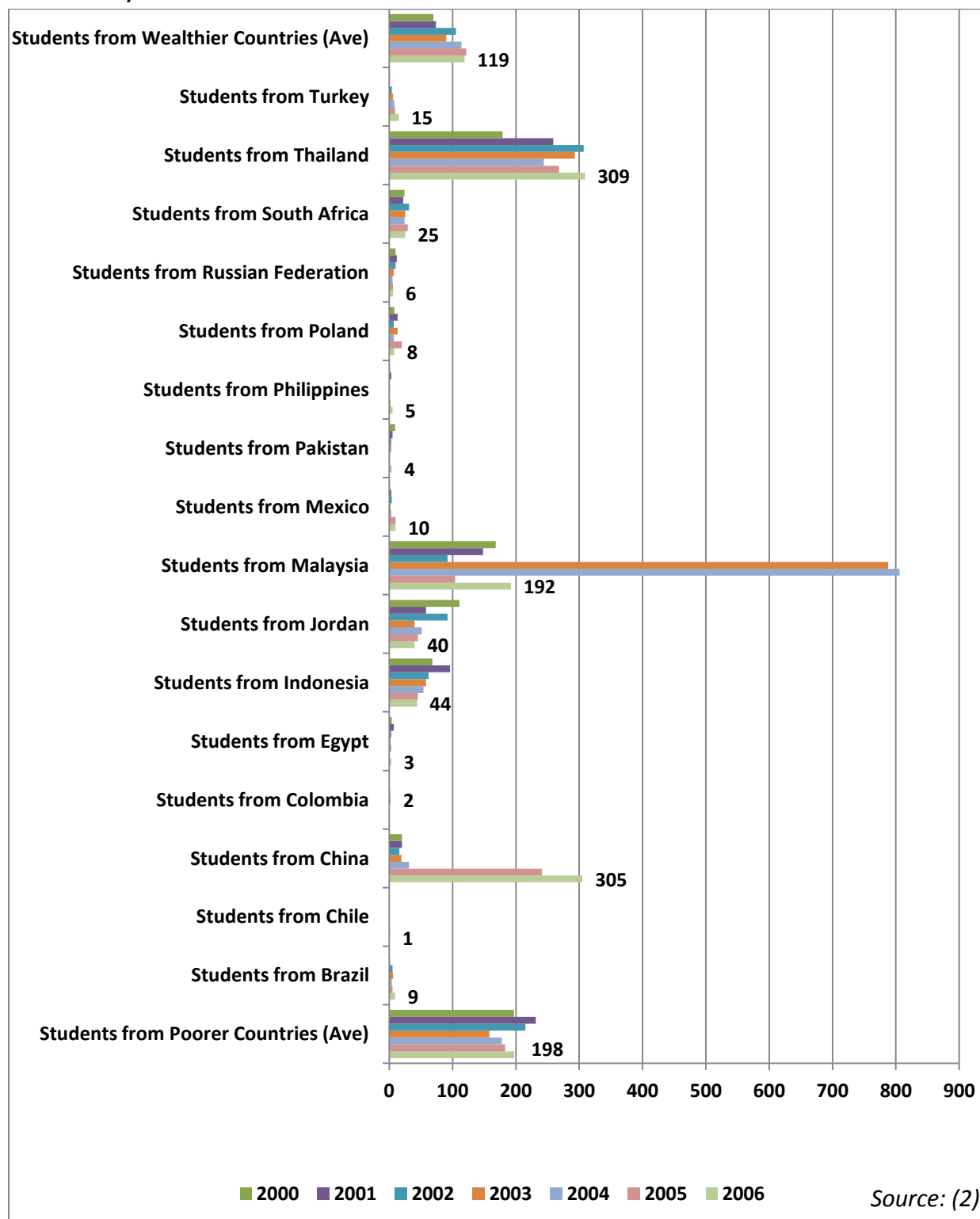
\*See definition of ISCED Levels 5 and 6 on Table 2 page 9.

Figure 93: Foreign Students in Tertiary Education (ISCED Levels 5 and 6\*) in Australia, 1998-2009 (numbers are for 2009).



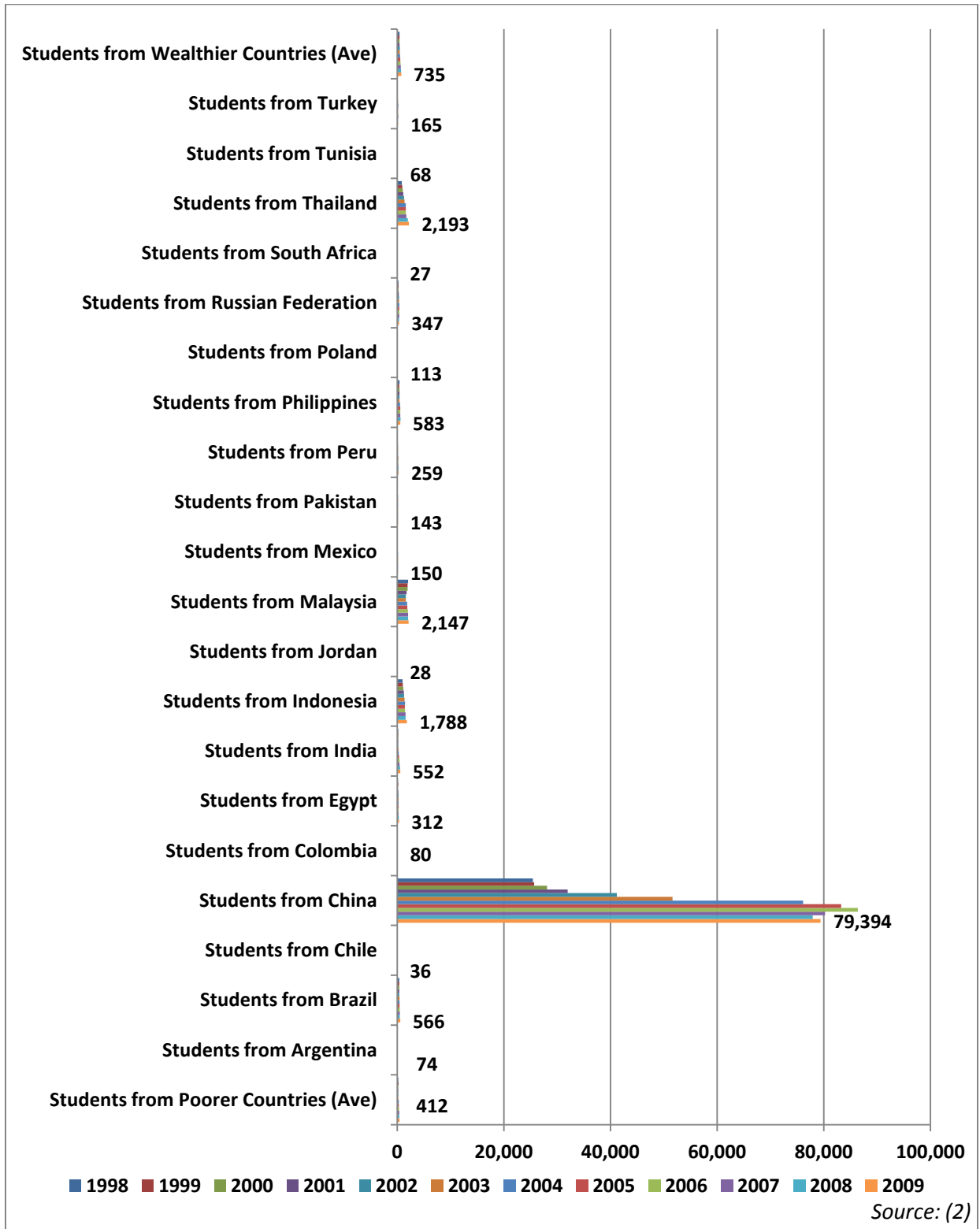
\*See definition of ISCED Levels 5 and 6 on Table 2 page 9.

Figure 94: Foreign Students in Tertiary Education (ISCED Levels 5 and 6\*) in India, 2000-2006 (numbers are for 2006).



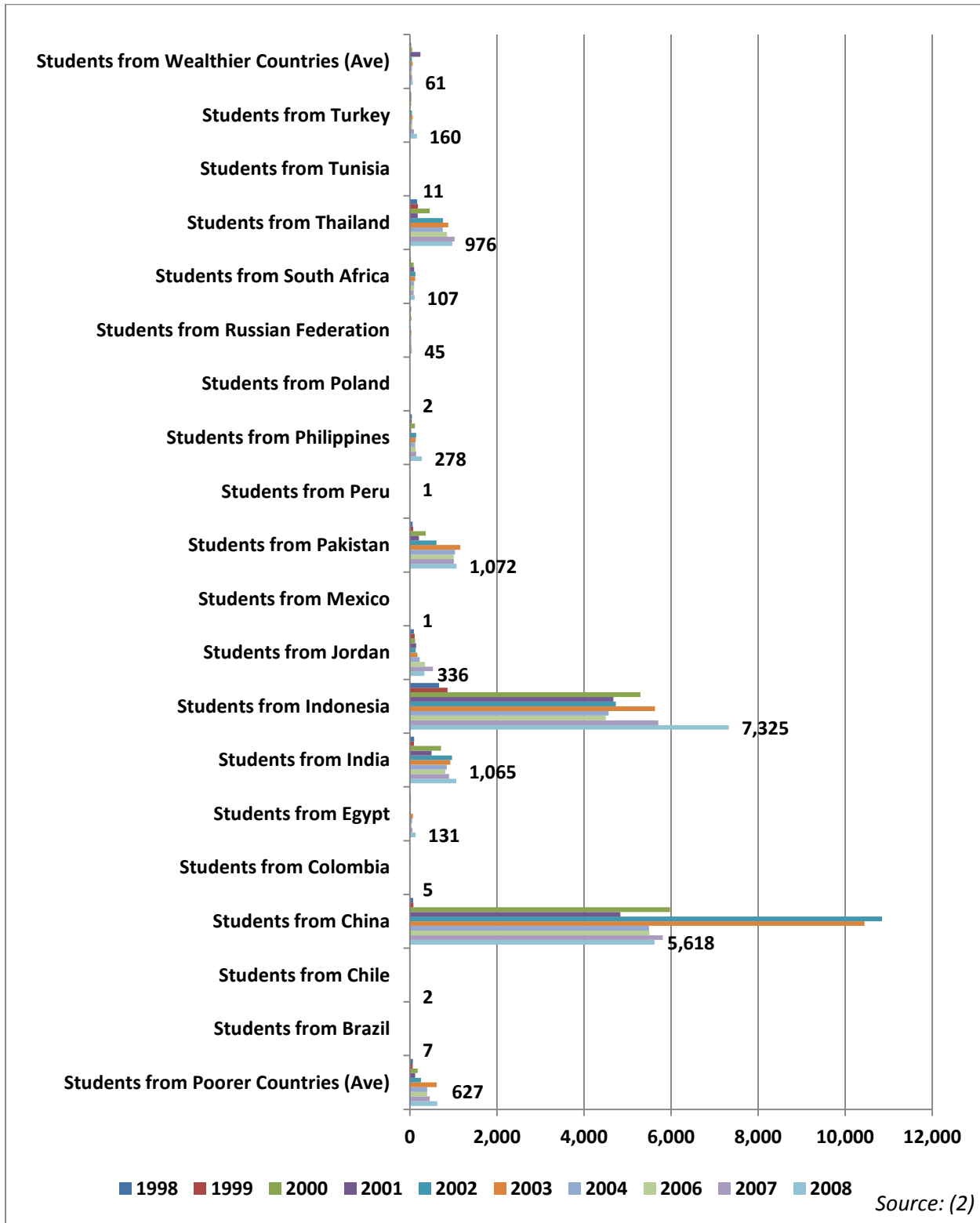
\*See definition of ISCED Levels 5 and 6 on Table 2 page 9.

Figure 95: Foreign Students in Tertiary Education (ISCED Levels 5 and 6\*) in Japan, 1998-2009 (numbers are for 2009).



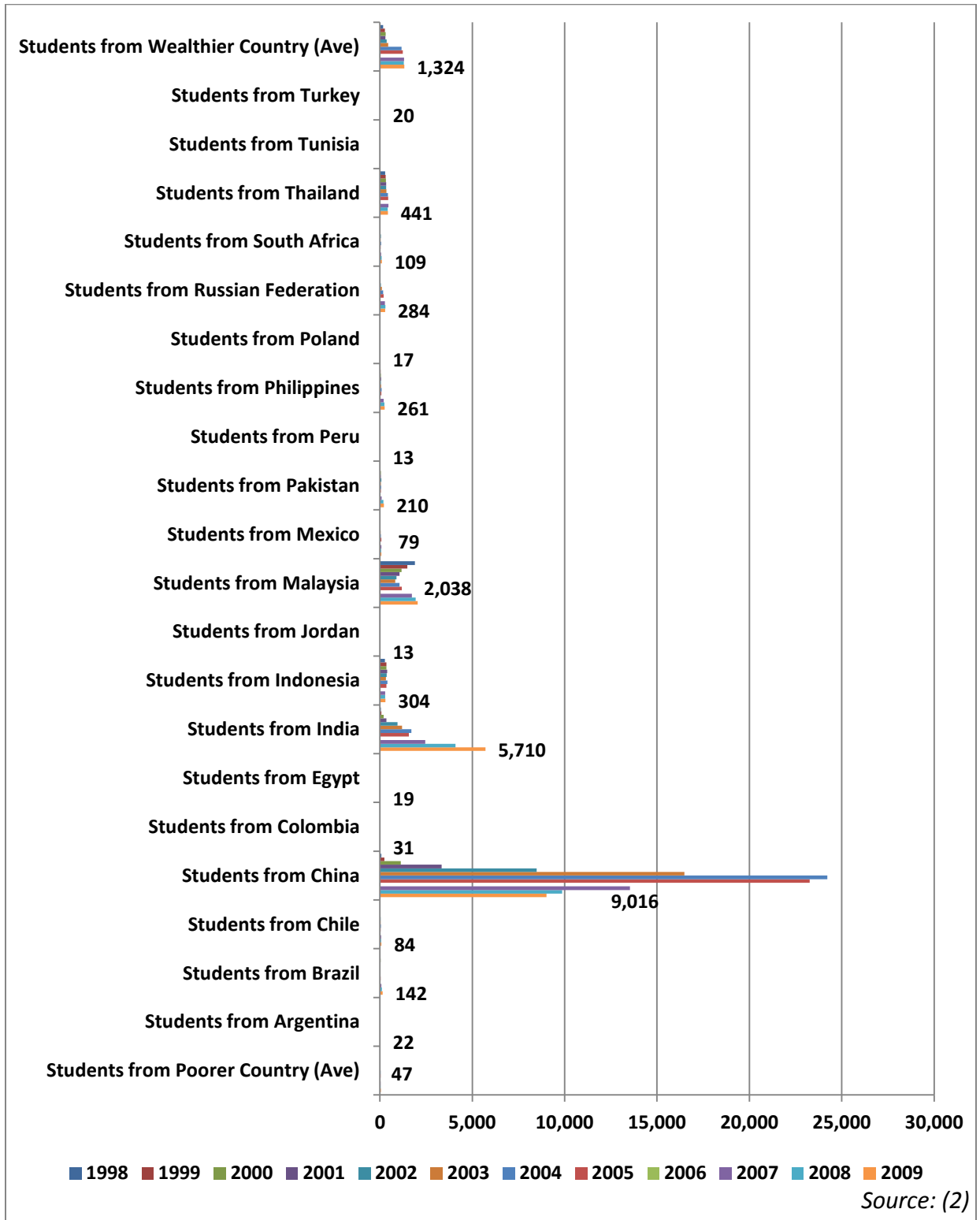
\*See definition of ISCED Levels 5 and 6 on Table 2 page 9.

Figure 96: Foreign Students in Tertiary Education (ISCED Levels 5 and 6\*) in Malaysia, 1998-2008 (numbers are for 2008).



\*See definition of ISCED Levels 5 and 6 on Table 2 page 9.

Figure 97: Foreign Students in Tertiary Education (ISCED Levels 5 and 6\*) in New Zealand. 1998-2009, (number are for 2009).



\*See definition of ISCED Levels 5 and 6 on Table 2 page 9.

#### 4.4 Graduate Migration

Figure 98: Total Number of Physician Emigrants by Country of Education/Training, 1991-2004 (numbers are for 2004).

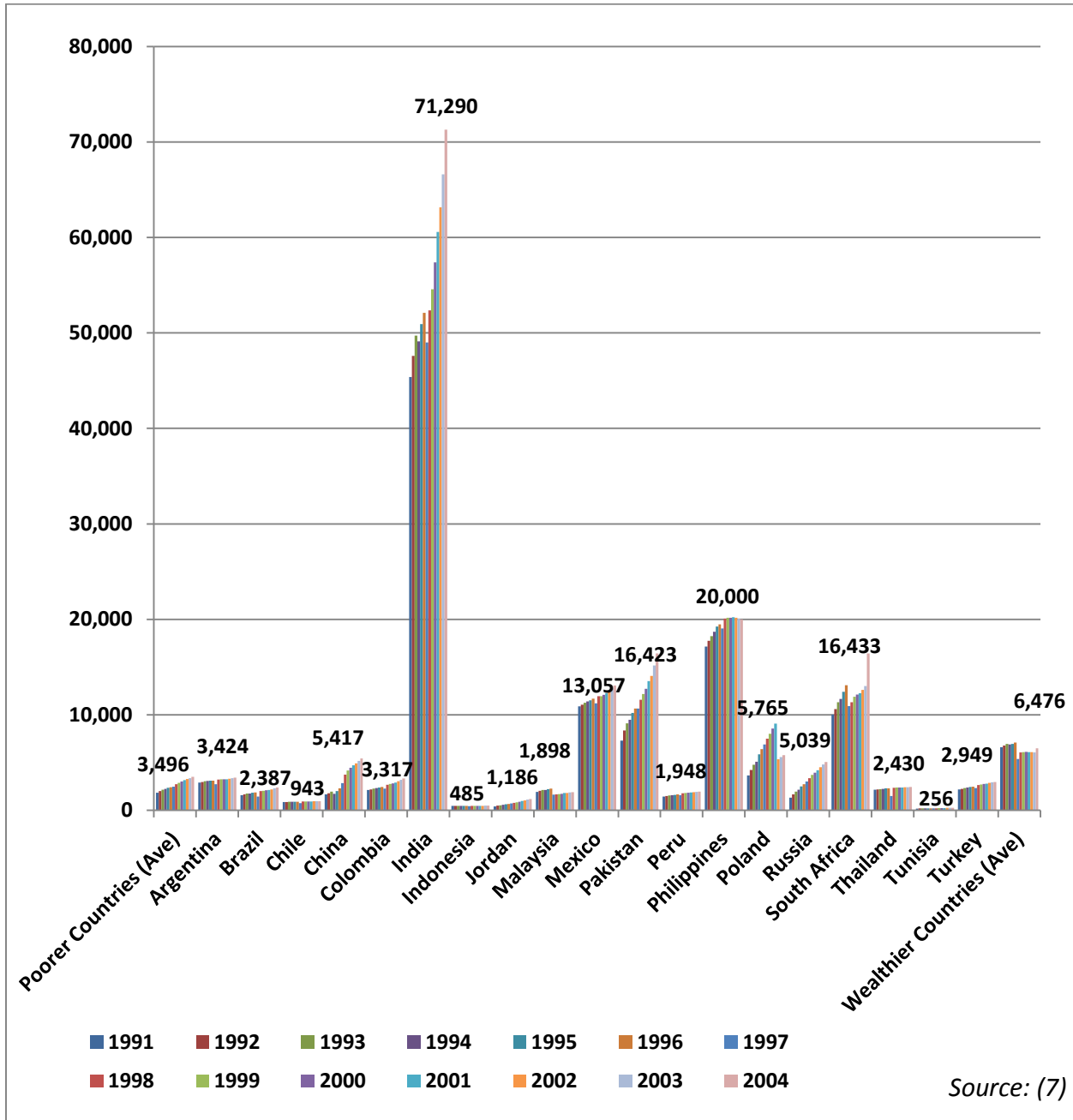


Figure 99: Stock of Total and Highly-Skilled Emigrants to America ('000), 1990 and 2000 (numbers are for total emigrants).

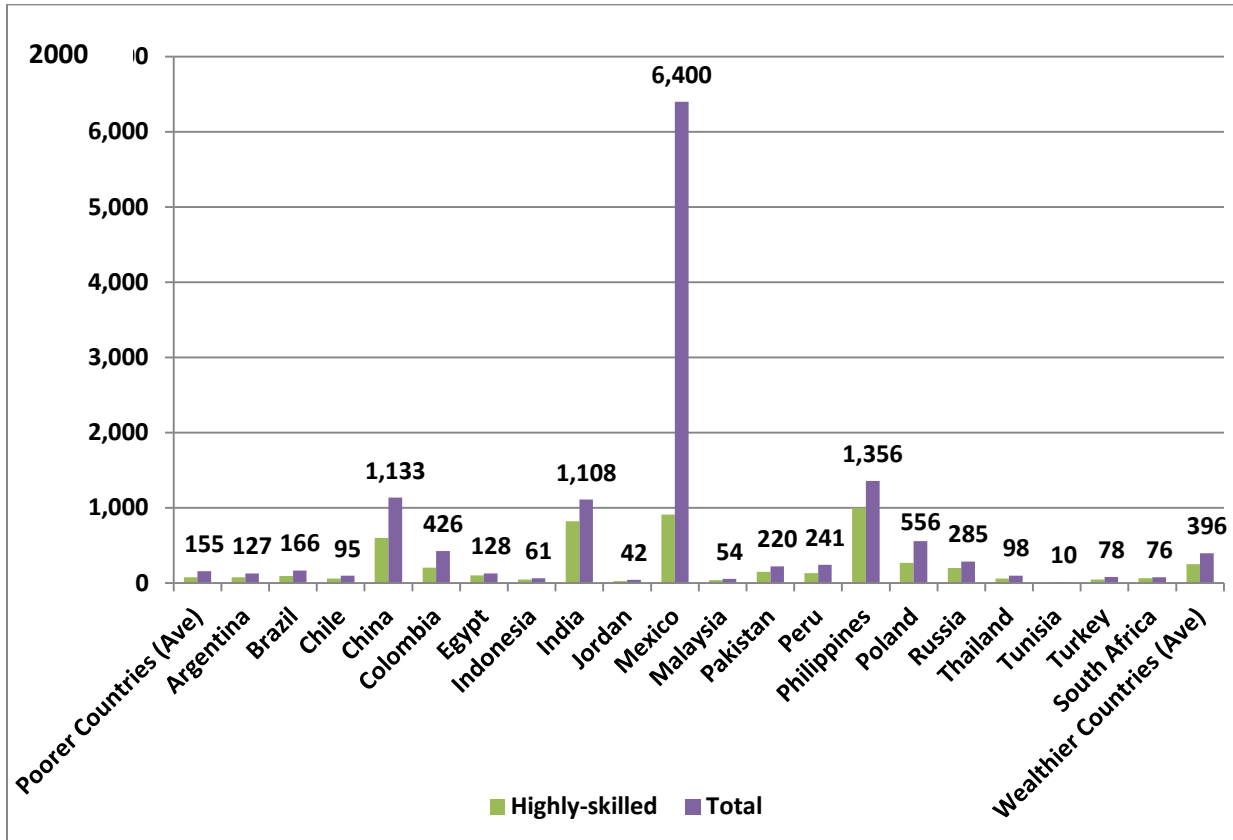
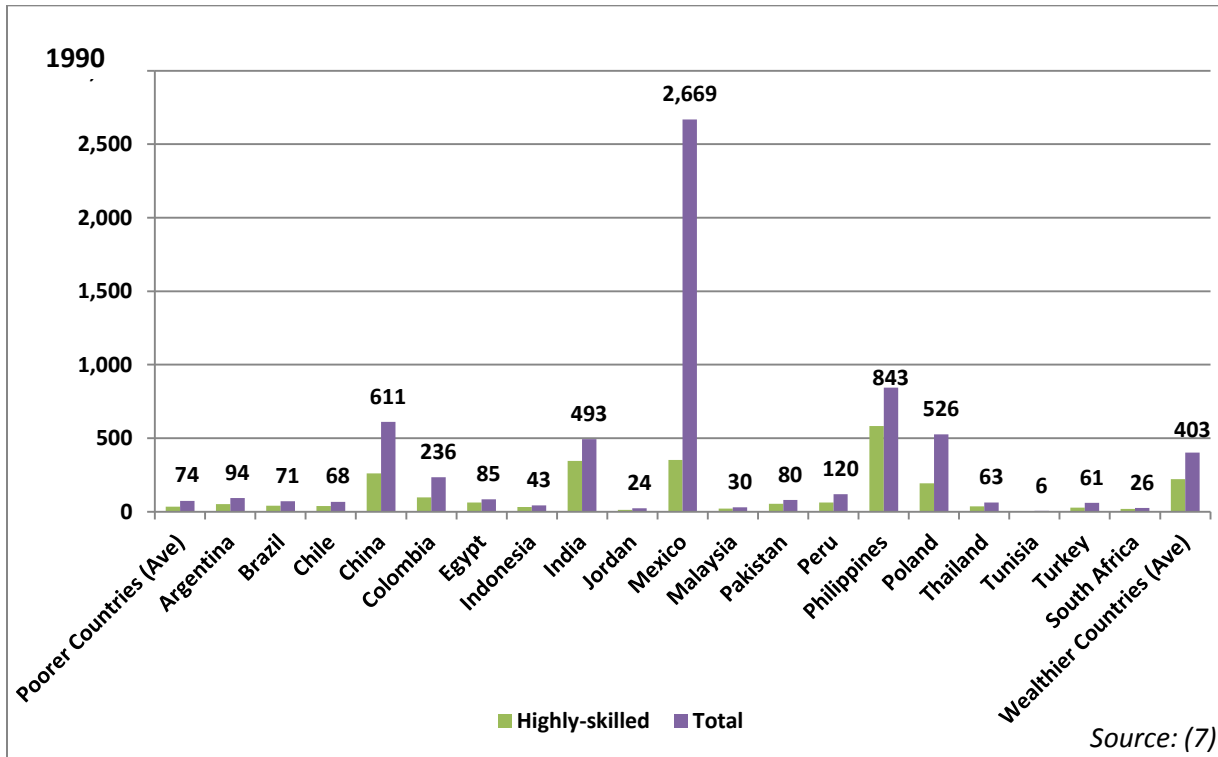


Figure 100: Stock of Total and Highly-Skilled Emigrants to Europe ('000), 1990 and 2000 (numbers are for total emigrants).

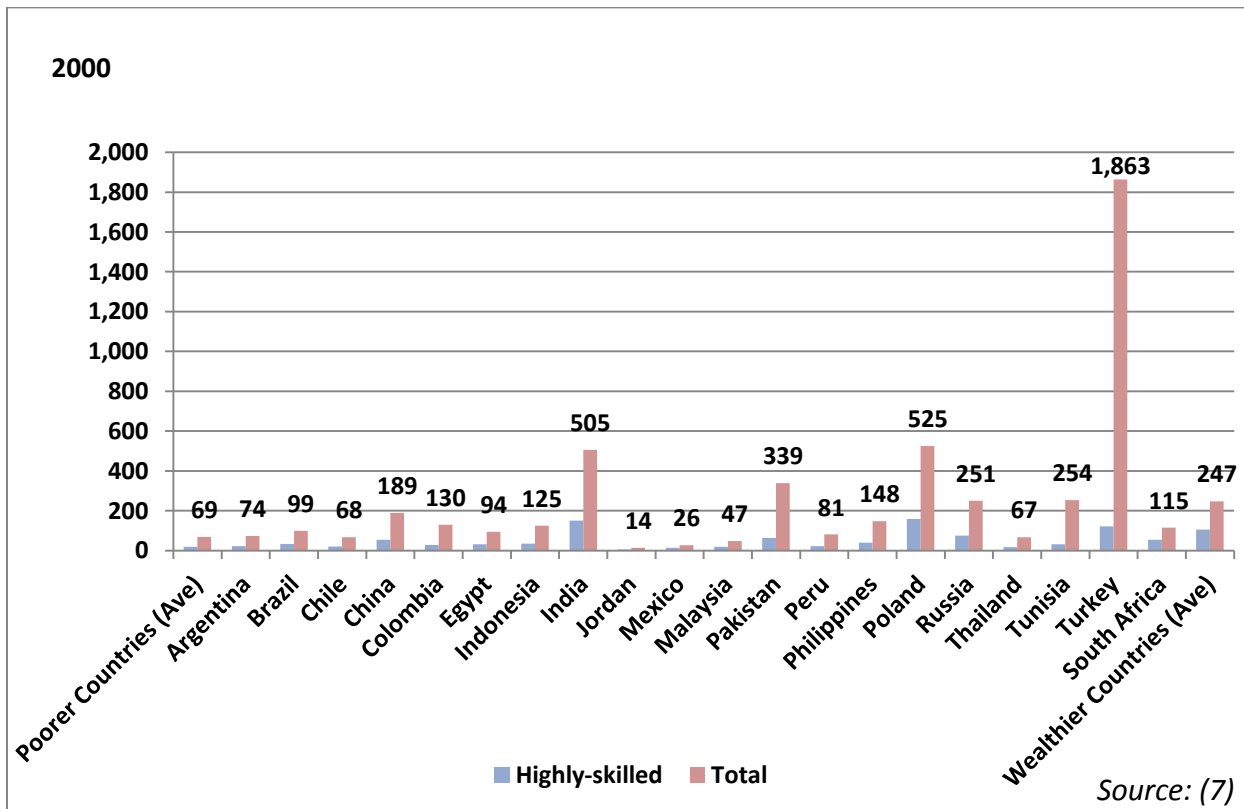
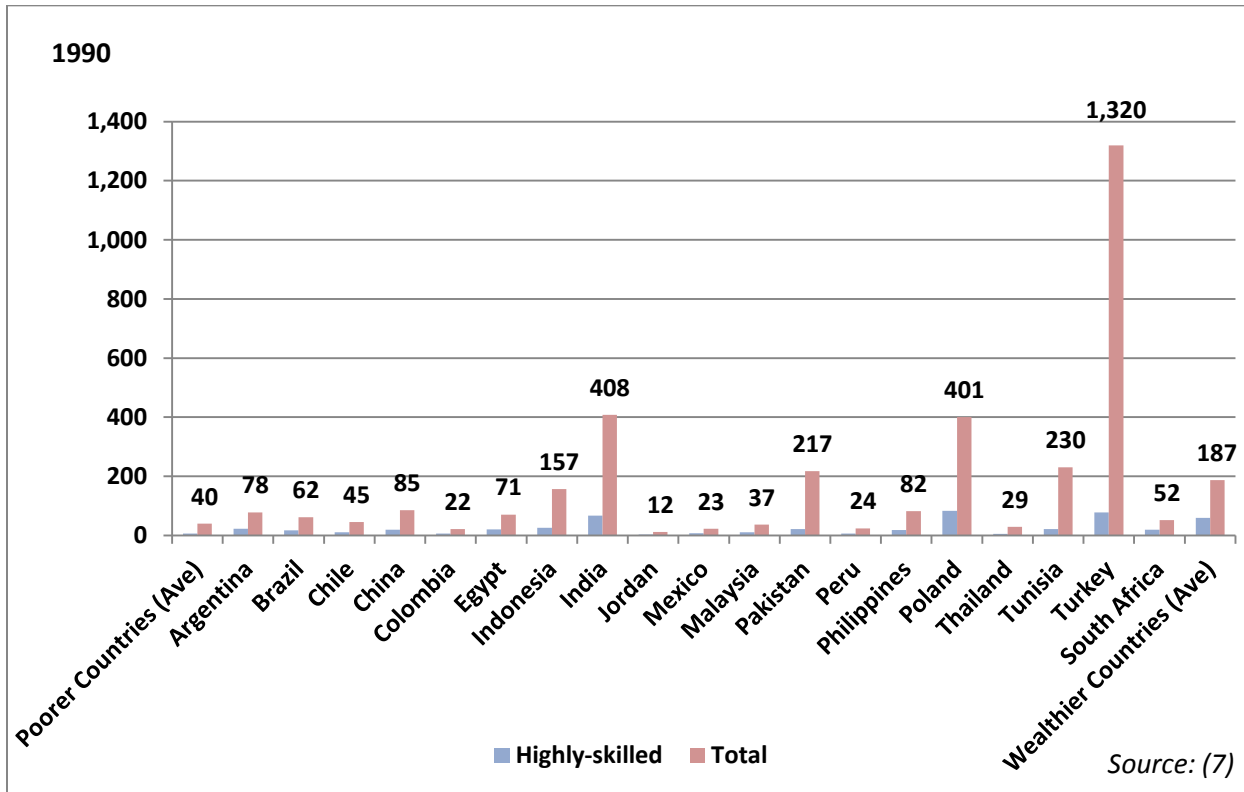
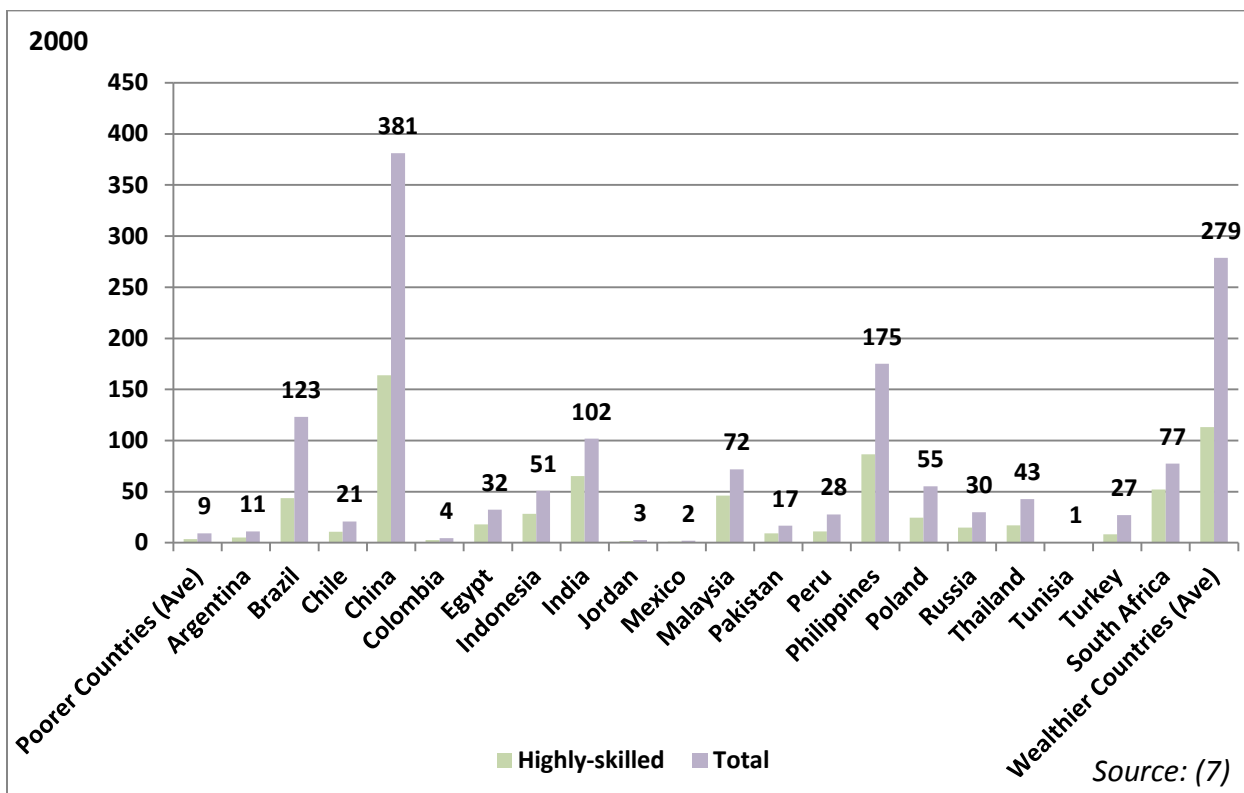
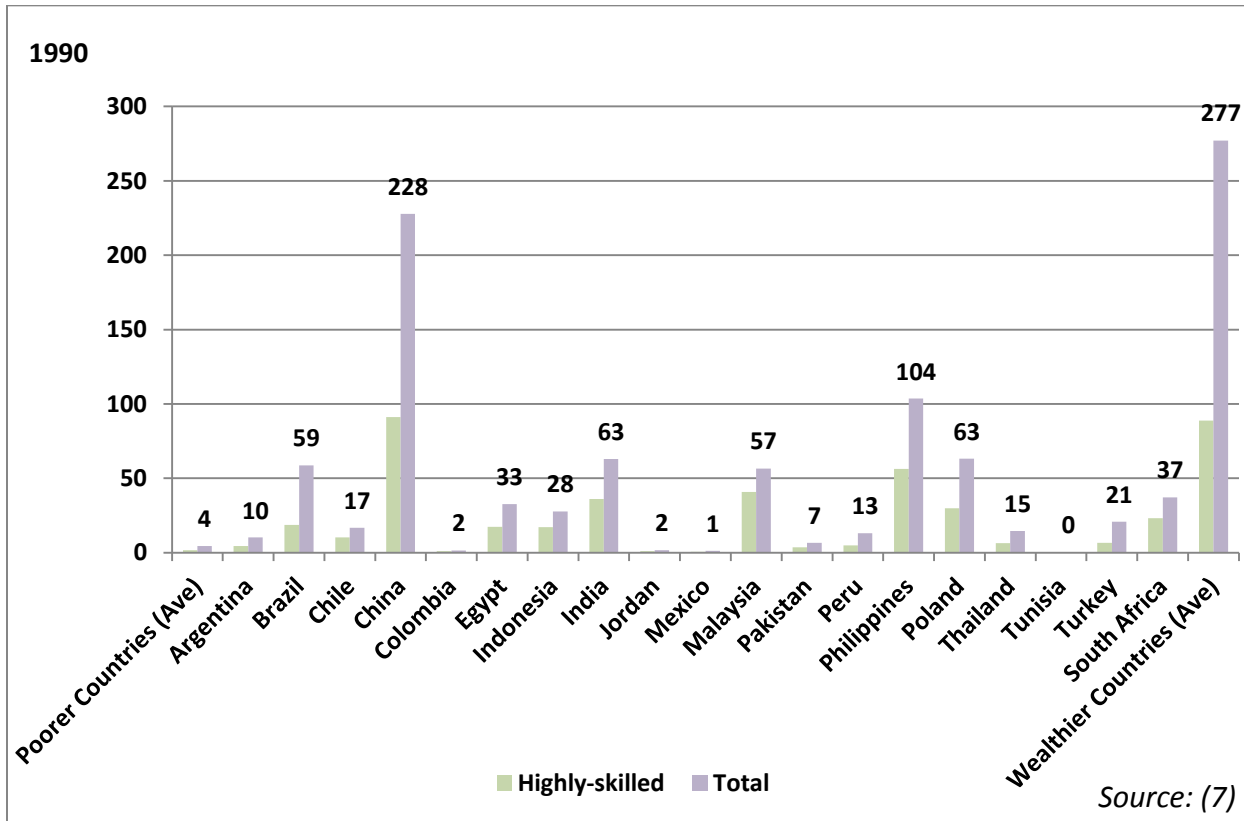


Figure 101: Stock of Total and Highly-Skilled Emigrants to Asia and Oceania ('000), 1990 and 2000 (numbers are for total Emigrants).



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