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POLICY RESEARCH WORKING PAPER

The Effect of Household Wealth on Educational Attainment

Demographic and Health Survey Evidence

Deon Filmer
Lant Pritchett

While household wealth is strongly related to educational attainment of children nearly everywhere, the magnitude and pattern of the effect of wealth differs widely. The gap in attainment of children of the poor and rich ranges from only one or two years in some countries to nine or ten years in others. This attainment gap is the result of different patterns of enrollment and dropout: while in South America low attainment among the poor is almost entirely due to children who enroll then drop out early, in West Africa and South Asia many poor children never enroll.

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Summary findings

Using household survey data from 44 Demographic and Health Surveys in 35 countries, Filmer and Pritchett document different patterns in the enrollment and attainment of children from rich and poor households. They find that:

- Enrollment profiles of the poor differ across countries but fall into distinctive regional patterns. In some areas (including much of South America) the poor reach nearly universal enrollment in first grade but then drop out in droves. In others (including much of South Asia and West Africa), the poor never enroll. Both patterns lead to low attainment.
- There are enormous differences across countries in the “wealth gap” — the difference in enrollment and

educational attainment between the rich and the poor. In some countries the difference between the rich and poor in the median number of years of school completed is only a year or two; in others the gap is as great as nine or ten years.

- The attainment profiles can be used as diagnostic tools to examine issues in the educational system, including the extent to which enrollment is low because of the physical unavailability of schools.

Filmer and Pritchett overcome the lack of data on income and consumption expenditures in the surveys by constructing a proxy for long-run household wealth, using survey information on assets and using the statistical technique of principal components.

This paper — a product of Poverty and Human Resources, Development Research Group — is part of a larger effort in the group to inform education policy. The study was funded by the Bank’s Research Support Budget under the research project “Educational Enrollment and Dropout” (RPO 682-11). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Sheila Fallon, room MC3-638, telephone 202-473-8009, fax 202-522-1153, Internet address sfallon@worldbank.org. The authors may be contacted at dfilmer@worldbank.org or lpritchett@worldbank.org. September 1998. (38 pages)

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The Effect of Household Wealth on Educational Attainment

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The Effect of Household Wealth on Educational Attainment Around the World: Demographic and Health Survey Evidence¹

Introduction

In this paper we are interested not just in countries' average educational enrollment and attainment, for which there has been a great deal of examination both from official and academic sources, but in how educational attainment differs by household wealth *within* countries.² How much schooling are children from poor households India, Brazil, or Kenya receiving, both absolutely and relative to the rich in the same country?

Answering this question, especially in a way that produces valid comparisons across countries is hampered by the limited availability, difficulty of use, and comparability of household survey data. The Demographic and Health Surveys (DHS), having applied essentially the same survey instrument in 35 countries potentially overcomes these problems. One potential limitation of the DHS is that it lacks questions on household income or consumption expenditures, which are conventionally used as indicators of households' economic status. However, in a separate methodological paper (Filmer and Pritchett, 1998a) we show that an index constructed from the questions asked in the DHS about household assets and housing characteristics (e.g. construction materials, drinking water and toilet facilities) works as well, and arguably *better*, than consumption expenditures as a proxy for household long-run wealth. This finding allows us to use a comparable *method*, principal components, in

¹ This work is the result of research developed jointly with Jee-Peng Tan, and it has greatly benefited from her input. We would also like to thank Emilianita Vegas and seminar participants for helpful comments and suggestions. This research was funded in part through a World Bank Research support grant (RPO 682-11).

² Several recent estimates of the stocks of schooling years in many countries have been produced based on the UNESCO Yearbook series enrollment rates and labor force and census surveys (Nehru, Swanson and Dubey, 1993; Barro and Lee, 1993; Dubey and King, 1994; Ahuja and Filmer, 1996).

constructing a ranking of households within each country. The “poor” are simply *defined* as the bottom 40 percent in each country, so while levels of poverty are not comparable across countries, the rankings are constructed using a similar method.

An analysis of this data on education and wealth reveals three key findings. First, very low primary attainment by the poor is driven by two distinct patterns of enrollment and drop-out. There is a South Asian and Western/Central African pattern in which many of the poor never enroll in school. In these countries more than 40 percent of poor children never complete even grade 1 and typically only one in four complete grade 5. In contrast there is a Latin American pattern in which enrollment in grade 1 is (nearly) universal but drop-out is the key problem. In South American countries less than 10 percent of the poor never enroll, but drop-out is so high that median years of school completed is only between 4 and 6 years. Even though 92 percent of the poor in Brazil complete grade one, only 50 percent of those complete grade 5. The result is that median attainment of poor children in South America is less than that of poor children in Ghana, Kenya, or Zimbabwe.

Second, the wealth gaps vary enormously across countries and in most instances raising the enrollment of the poor will be the key to achieving universal basic education. The difference in median grade attainment between the poor and rich is very high in South Asia (10 years in India, 9 in Pakistan), high in Latin America and Western/Central Africa (4 to 6 years) and low in Eastern/Southern Africa (1 to 3 years). Where the wealth gap is large, increasing the educational attainment of the poor will play the key role in universalizing primary or basic education. In Colombia and Peru over 70 percent of the shortfall from primary completion is due to children from the bottom 40 percent of households.

Third, these data cast some doubt on the notion that physical availability of school facilities at the primary or secondary level is the key issue in many countries. In South America typically over 90 percent of the shortfall from primary completion is from children that complete grade 1 (hence likely *could* attend a school) but fail to complete primary school. In South Asia and Western/Central Africa a larger fraction is due to children that never enroll, but in those countries the wealth gap suggests that even poor children had physical access to schools. A companion paper examining differences within Indian states has estimates of school effects, which are quite small relative to household wealth impacts (Filmer and Pritchett, 1998b). This suggests that in many cases issues of the access to *quality* schooling and maintaining household demand are as important as the number of schools.

At the secondary level the smooth patterns of attainment do not suggest that high drop-out across the transition from primary to secondary is a major issue except in a small number of cases (e. g. Turkey, Indonesia, Tanzania).

In many ways this analysis confirms findings of previous studies. There are many country specific studies which look at the enrollment rates by wealth groups. In the context of benefit incidence analysis there is even some cross national compilation of those results (Castro-Leal, Dayton, Demery, and Mehra, 1997). The main value-added of this paper is the direct comparability across countries of educational data, the focus on not just enrollment but the entire attainment pattern (showing the importance of drop-out within levels), and a comparable methodology for documenting attainment differences due to household wealth.

1) Data and Methods

A) *The Demographic and Health Surveys*

The Demographic and Health Surveys (DHS) are large nationally representative household surveys.³ The surveys have been carried out using a nearly identical survey instrument in over fifty developing countries.⁴ While the main purpose of the surveys is to inquire about family planning and child and maternal health, the surveys also contain an educational history of all household members from a chosen respondent.

The education variables we analyze are based on four questions:

* Has [name] ever been to school?

* If attended school:

what is the highest level of school [name] attended?

what is the highest grade/years [name] completed at that level?

* If attended school:

Is [name] still in school?

These questions are used to construct an “attainment” history for a recent cohort, those aged 15 to 19 inclusive. This attainment profile is the proportion of the cohort who have completed any given grade or higher.

The analysis so far has covered 35 countries. Countries have been grouped into six regions. The groups, ranked from lowest to highest median attainment of the bottom 40

³ Table 1 shows that the samples of individuals in the 15-19 age range are usually above 2,000, but vary from 1,355 in Kazakhstan to over 50,000 in India.

⁴ There are three main designs of the survey instrument. DHS I surveys were carried out between 1985 and 1989, DHS II between 1990 and 1993, and DHS III are those that have been carried out since 1994.

percent are: Western/Central Africa, South Asia, Central America and Caribbean, South America, Eastern/Southern Africa, East Asia, and Central Asia / North Africa / Europe.

B) Constructing an “asset index”

The DHS do not ask about household income or consumption expenditures, but the DHS II and III survey instruments do include two sets of questions related to the economic status of the household. First, households are asked about their ownership of various assets, such as whether any member owns a radio, a television, a refrigerator, a bicycle, a motorcycle, or a car. Second, they are asked about characteristics of their housing, namely whether electricity is used, the source of drinking water, the type of toilet facilities, how many rooms there are for sleeping, and the type of materials are used in the construction of the dwelling. There is substantial overlap in the questions asked in each country, but the precise list varies. The number of variables constructed from these questions is usually 15 or 16 but varies from 12 to 21 (last column of Table 1).

In order to use these variables to rank households by their economic status, they need to be aggregated into an index and of course the main problem in constructing such an index is choosing appropriate weights.⁵ We use the statistical technique of principal components to derive weights. Principal components is a technique for summarizing the information contained in a set of variables to a smaller number by creating a set of mutually orthogonal components of the data. Intuitively, the first principal component is that linear index of the underlying variables that captures the most common variation among them.

⁵ If these assets were only to be used to examine the impact of some other factor (e.g., maternal education) as a “control” for wealth in a multivariate regression we would not need to aggregate the variables (Montgomery, Burke, Paredes, and Zaidi, 1997)

Table 1: Summary information

Country	Year	Number of households	Proportion of variance explained by 1st PC	Value of 1st eigen value	Difference between 1st and 2nd eigen values	Number of assets
<u>Western and Central Africa</u>						
Benin	1993	4499	0.268	4.293	2.722	16
Burkina Faso	1992-93	5143	0.276	4.005	2.270	15
Cameroon	1991	3358	0.247	3.809	2.032	15
C.A.R.	1994-95	5551	0.240	3.845	1.961	16
Cote d'Ivoire	1994	5935	0.223	3.341	1.670	15
Ghana	1993	5822	0.211	3.166	1.618	15
Mali	1995-96	8716	0.230	3.448	1.430	15
Niger	1992	5242	0.265	4.234	2.553	16
Nigeria	1990	8999				0
Senegal	1992-93	3528	0.237	3.554	2.043	15
<u>South Asia</u>						
Bangladesh	1993-94	9174	0.285	3.987	2.334	14
Bangladesh	1996-97	8682	0.309	4.018	2.460	13
India	1992-93	87175	0.256	5.368	3.713	21
Nepal	1996	8082	0.219	2.622	0.898	12
Pakistan	1990-91	7193	0.283	4.237	2.704	15
<u>Central America</u>						
Dominican Republic	1991	7144	0.249	4.227	2.676	17
Dominican Republic	1996	8831	0.241	3.848	2.372	16
Guatemala	1995	11297	0.264	3.958	2.534	15
Haiti	1994-95	4818	0.266	3.987	2.230	15
<u>South America</u>						
Bolivia	1993-94	9114	0.311	3.732	2.347	12
Northeast Brazil	1991	6064	0.263	4.204	2.860	16
Brazil	1996	13283	0.226	3.163	1.261	14
Colombia	1990	7412	0.216	3.246	1.970	15
Colombia	1995	10112	0.240	3.606	2.325	15
Paraguay	1990	6348				0
Peru	1991-92	13479	0.283	4.238	2.878	15
Peru	1996	28122	0.267	4.001	2.540	15
<u>Eastern and Southern Africa</u>						
Comoros	1996	2252	0.230	3.453	1.738	15
Kenya	1993	7950	0.264	3.961	2.362	15
Malawi	1992	5323	0.186	2.598	1.071	14
Namibia	1992	4101	0.300	4.499	3.051	15
Rwanda	1992	6252	0.200	2.798	1.308	14
Tanzania	1991-92	8327	0.187	2.798	1.001	15
Tanzania	1996	7969	0.202	3.036	1.114	15
Uganda	1995	7550	0.192	2.886	1.023	15
Zambia	1992	6209	0.259	3.879	2.108	15
Zambia	1996-97	7286	0.275	4.121	2.695	15
Zimbabwe	1994	5984	0.273	4.101	2.216	15
<u>East Asia and Pacific</u>						
Indonesia	1991	26858	0.296	2.665	1.051	9
Indonesia	1994	33738	0.258	3.352	1.585	13
Philippines	1993	12995	0.257	3.596	2.200	14
<u>Middle East, North Africa, and Europe</u>						
Egypt	1992	10760	0.266	3.452	1.943	13
Egypt	1995-96	15567	0.250	3.255	1.861	13
Kazakhstan	1995	4178	0.203	3.045	1.479	15
Morocco	1992	6577	0.286	4.571	3.163	16
Turkey	1993	8612	0.234	2.806	1.511	12
Unweighted average		10687	0.250	3.659	2.065	14
Unweighted std dev		13093	0.032	0.605	0.659	3.5
Median		7481	0.256	3.771	2.154	15

We assume that the most “common variation” in the set of asset variables is a good proxy for a household’s wealth. Filmer and Pritchett (1998a) defends this assumption, showing the asset index performs as well as a more traditional measures, such as household size adjusted consumption expenditures. Empirical estimates in that paper suggest that the asset index works as well, or *better*, as a proxy for long-run household wealth to predict children’s enrollment than consumption expenditures. There are two key findings that suggest assets might work “better”. First, the enrollment profile is consistently “flatter,” that is it shows smaller gaps between rich and poor, when using expenditures as opposed to assets, which is consistent with a large transitory component in expenditures. Second, in three countries with surveys where the results of asset index and consumption expenditures could be compared for the same households, the comparison of OLS and instrumental variables estimates and of bounds from reverse regression suggest that consumption expenditures has considerably more measurement error as a proxy for predicting enrollments than does the asset index. We wish to stress that we do *not* imply that the asset index is a proxy for current standards of living, nor that it is appropriate for poverty analysis.

The fourth column of Table 1 shows how well the first principal component of the asset variables (which is our asset index) “fits” the underlying variables, reporting the proportion of the variation captured. The proportion is remarkably stable, and reasonably high, at between 20 and 30 percent of the variance (from Uganda at .19 to Bolivia at .31)⁶.

There is a generic problem with principal components analysis. While it is relatively easy to interpret the first principal component, an intuitive explanation of the second and

higher order components is more problematic. Analysts generally hope for only one factor. In our case, although the first eigen value is relatively high, it is not as high as we would have liked and the value of the second eigen value is also generally above 1, the commonly used cut-off value for “significant” components. This suggests that the “co-movement” of the assets is explained by more than one factor. We have no idea how to interpret this second principal component (especially in a consistent way across countries) and will ignore it for now in an uneasy truce with the data. We do believe, however, that it is not an unreasonable assumption that the “factor” which explains the largest amount of the “co-movement” of the different assets can be interpreted as a household’s economic status⁷.

The asset index is calculated separately for each country. Within each country individuals are sorted by the asset index and cutoffs for the bottom 40 percent, the middle 40 percent, and the top 20 percent are derived. Households are then assigned to each of these groups on the basis of their value of the asset index. From here on we will refer to these groups, without further apology, as “poor”, “middle” and “rich”.⁸

Since the principal components procedure normalizes the mean of the index to zero for each country, the value of the index is zero for all countries. Therefore, in comparing the “poor” in Kenya to the “poor” in Turkey or India it is important to keep in mind that the measure is relative and 40 percent of the households are defined to be “poor” in every

⁶ Since random measurement error will tend to “flatten” the household wealth / enrollment relationship the fact that the fit is similar across countries is comforting as the cross-country comparisons are therefore not likely to be greatly affected by differing degrees of measurement error.

⁷ Since, by construction, principal components are orthogonal to one another, the “omitted variables” problem of ignoring the second principal component should not be severe. But this rationalization would not be true of omitted variable bias for additional control variables, such as urban residence, which may be correlated with either component.

⁸ While the cut-off is based on all individuals, the analysis is carried out only for those 15 to 19 so there can be more or less than 40 percent of that cohort in the bottom 40 percent of households.

country. Moreover, the gap between rich and poor could easily vary between countries so the Brazilian poor could well be relatively poorer than the Brazilian rich compared to the Egyptian poor relative to the Egyptian rich.

C) Attainment Profiles

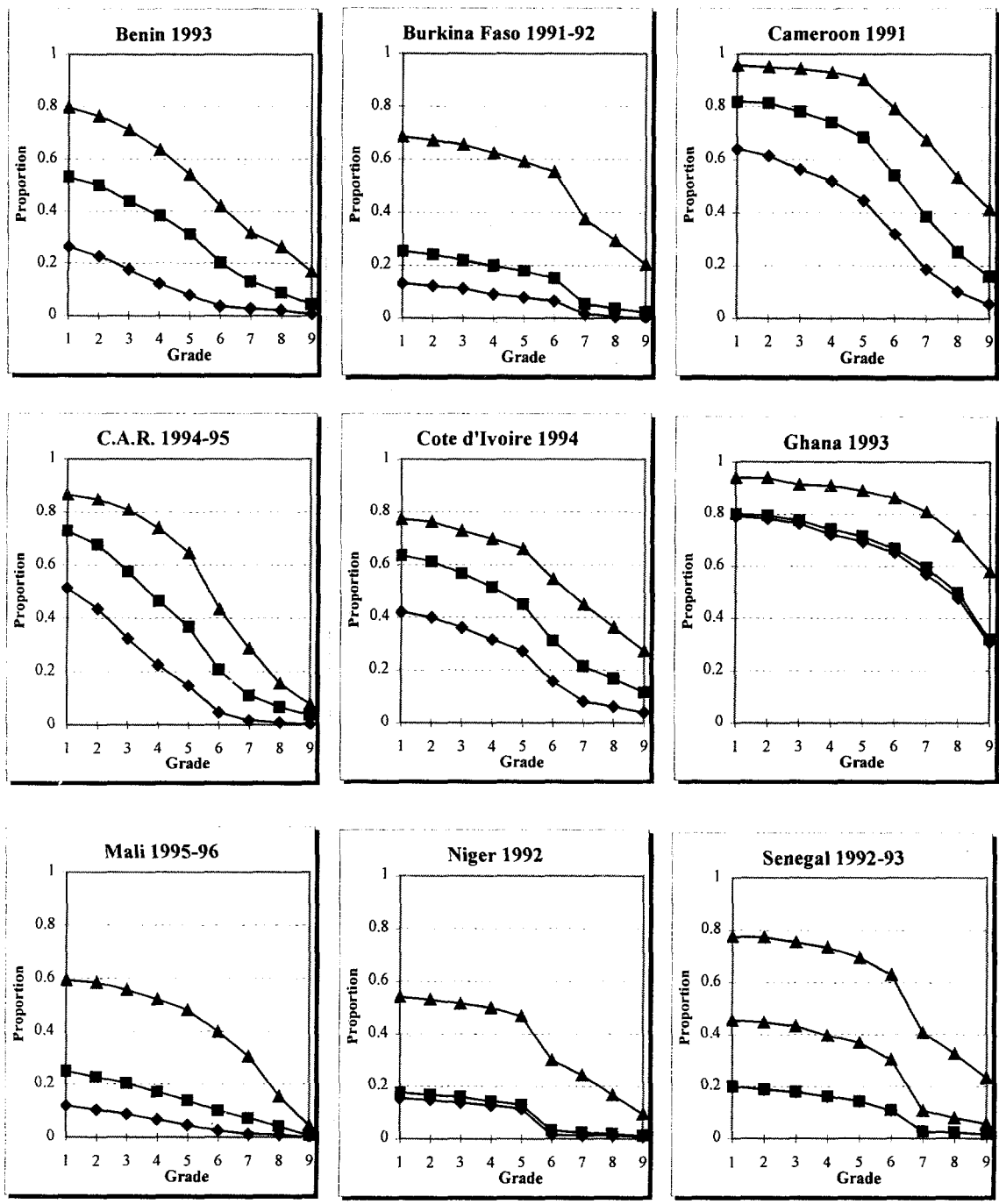
We use the data for children aged 15 to 19 to create an “attainment profile” which shows graphically the proportion of individuals that completed each grade or higher (Figure 1). For example this means that the level at grade 1 shows the proportion that ever attended school and completed first grade. One minus this proportion is the proportion that never completed even one year of schooling.⁹ The slope of the enrollment profile is a simulation of drop-outs.¹⁰ The difference between the proportion that completed grade 5 or higher and those that completed grade 6 or higher is an estimate of the proportion of all children that dropped out between 5th and 6th grade. This is not the usual drop-out *rate*, as the denominator is all children as opposed to the proportion of those reaching 5th. In the attainment profile figures the drop-out *rate* is the vertical drop between grades as a proportion of the absolute height.

Figure 1 shows the attainment profiles for each of the 35 countries (some with profiles for more than one survey) with the profile of the poor, middle and rich identified. Since much of the paper is an exploration of the interesting results and patterns that emerge from these graphs we’ll walk through the interpretation of the graphs by describing the first country, Benin in detail.

⁹ We are therefore not distinguishing between attending school but never completing even one grade and never having attended school at all.

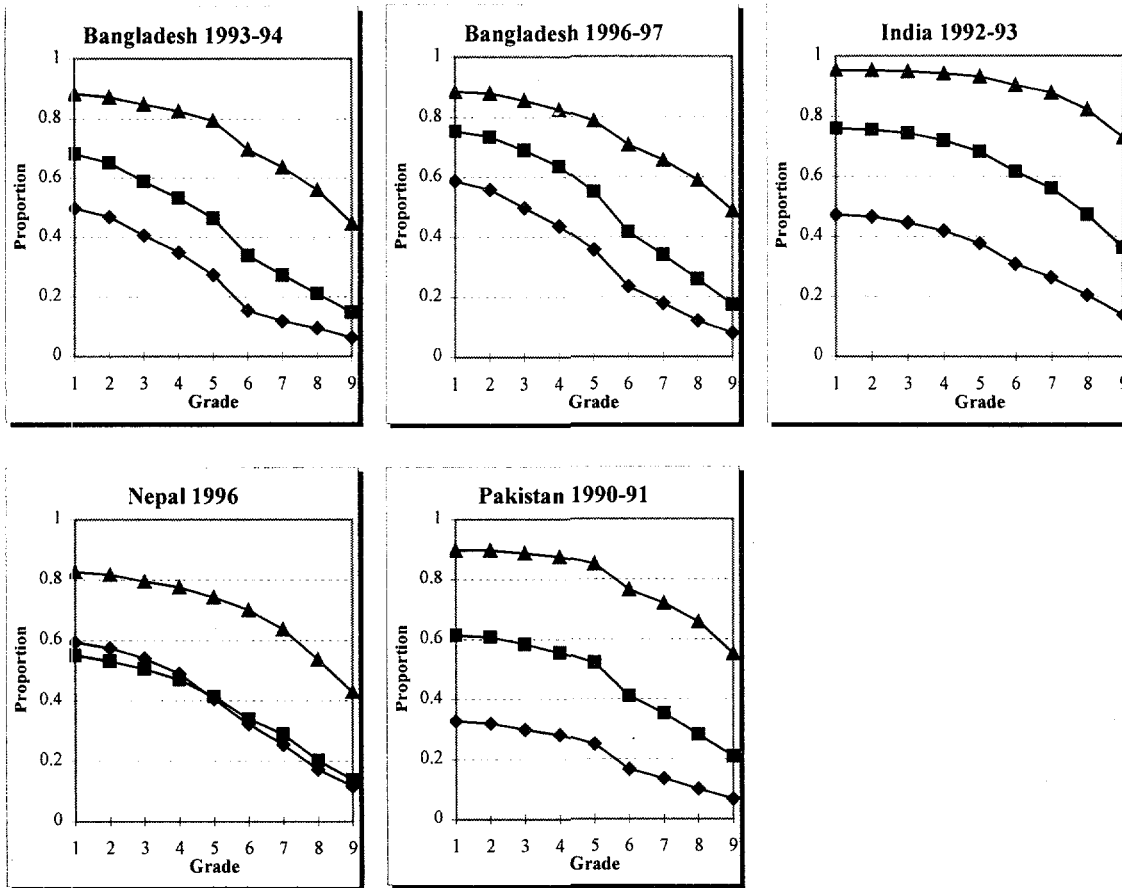
¹⁰ This is a simulation because we are not observing an individual’s progression through the school system but a cross section of attainments of this cohort.

Figure 1
Attainment profiles for ages 15 to 19, by economic group:
Western and Central Africa



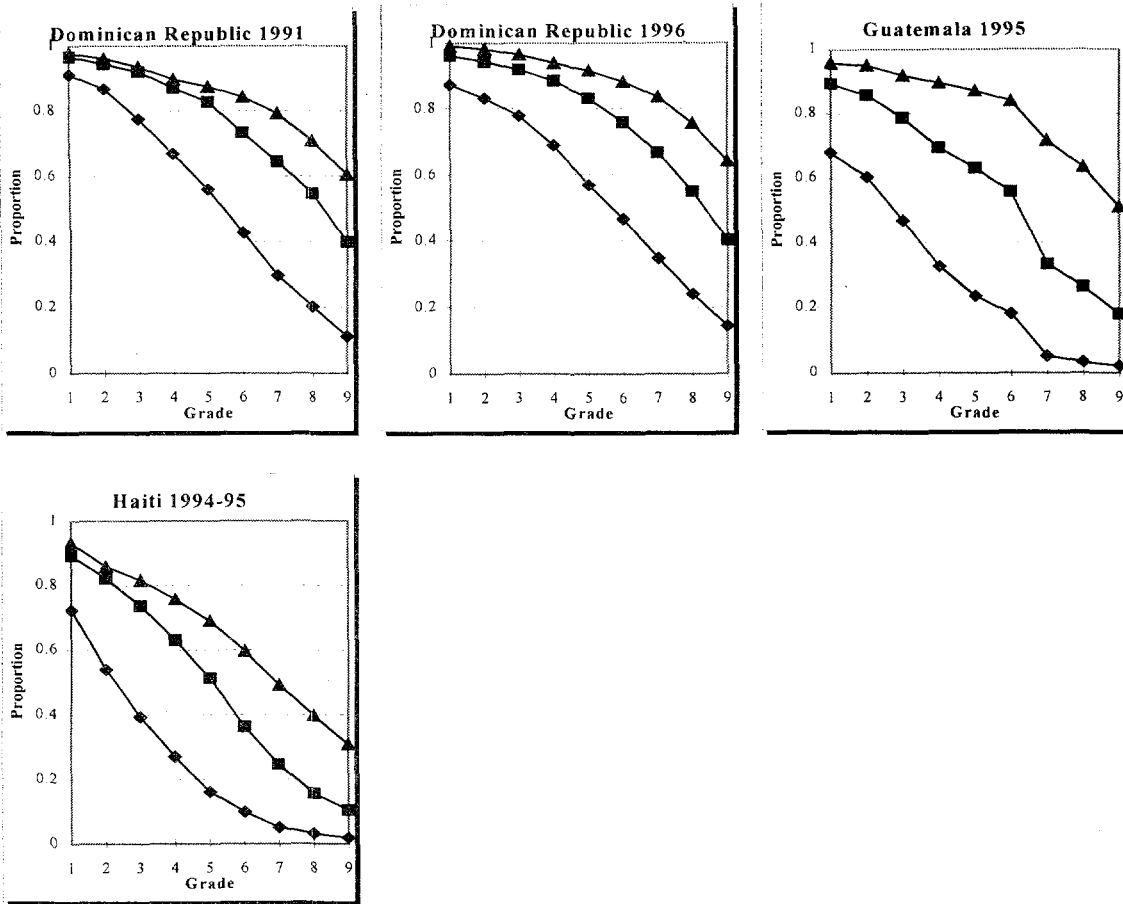
◆ Poorest ■ Middle ▲ Richest

Figure 1 continued
Attainment profiles for ages 15 to 19, by economic group:
South Asia



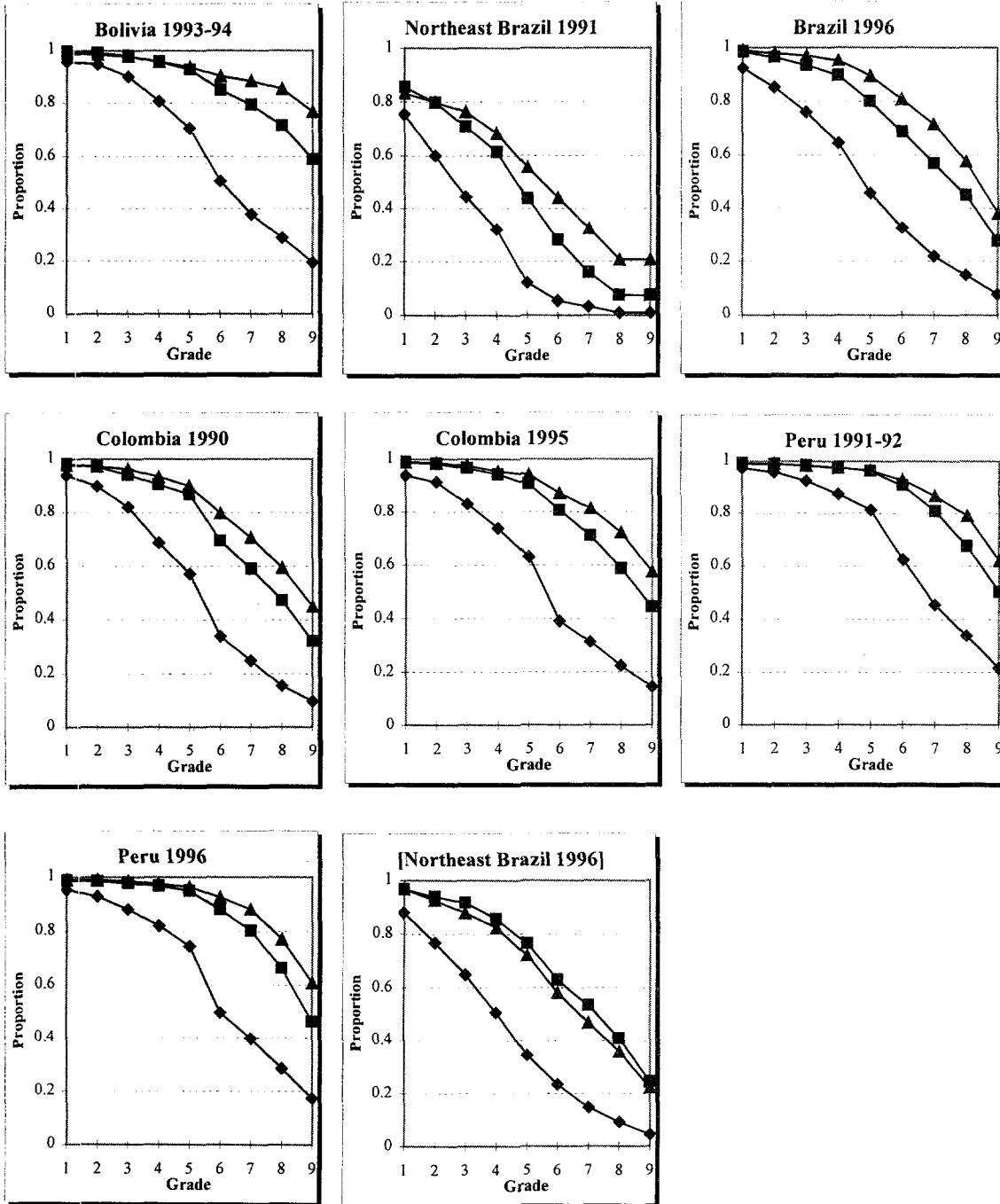
◆ Poorest ■ Middle ▲ Richest

Figure 1 continued
Attainment profiles for ages 15 to 19, by economic group:
Central America and Caribbean



◆ Poorest ■ Middle ▲ Richest

Figure 1 continued
Attainment profiles for ages 15 to 19, by economic group:
South America



◆ Poorest ■ Middle ▲ Richest

Figure 1 continued
Attainment profiles for ages 15 to 19, by economic group:
Eastern and Southern Africa

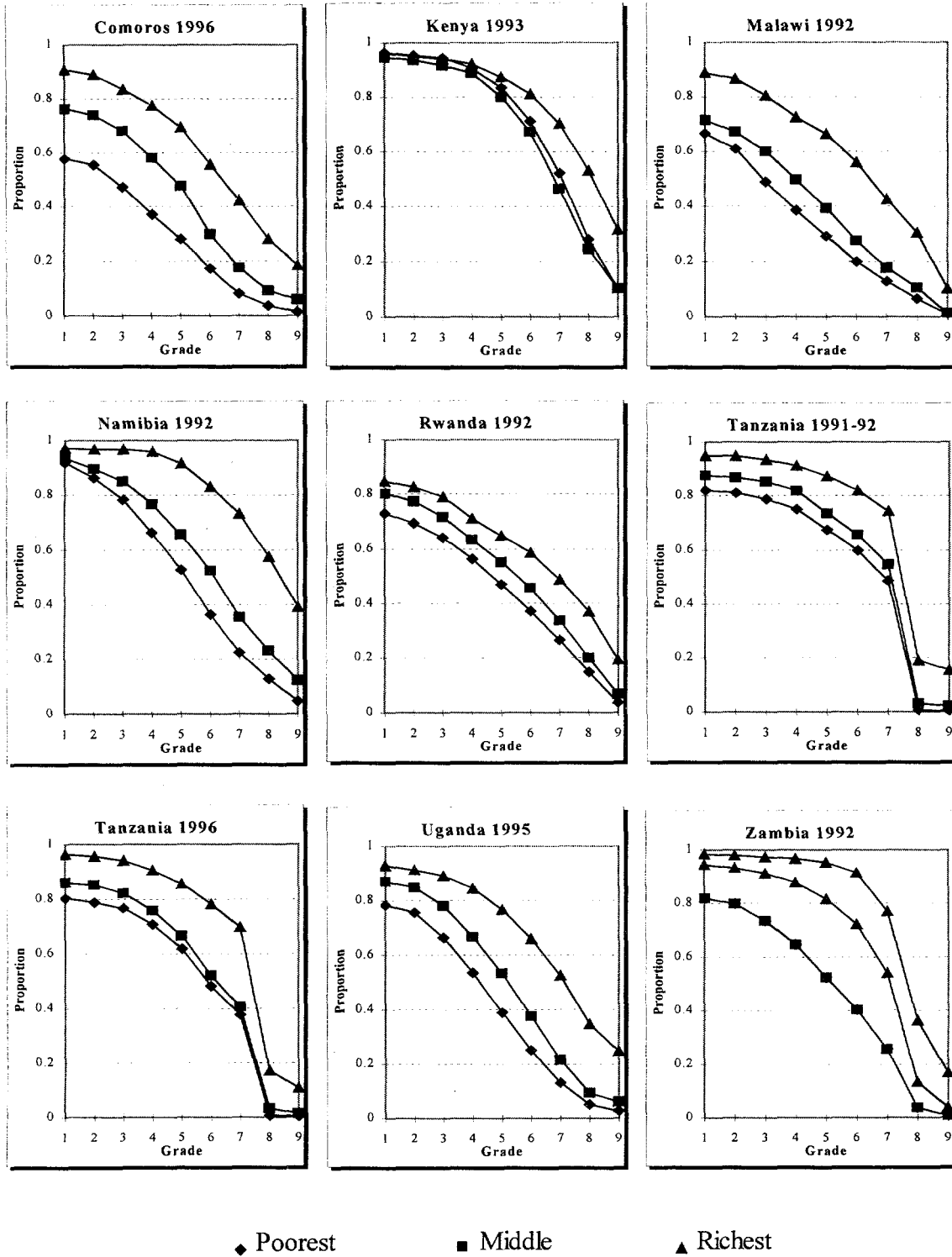
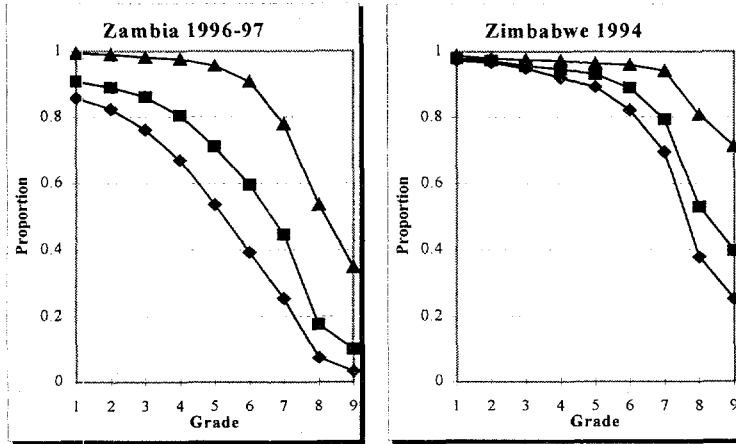
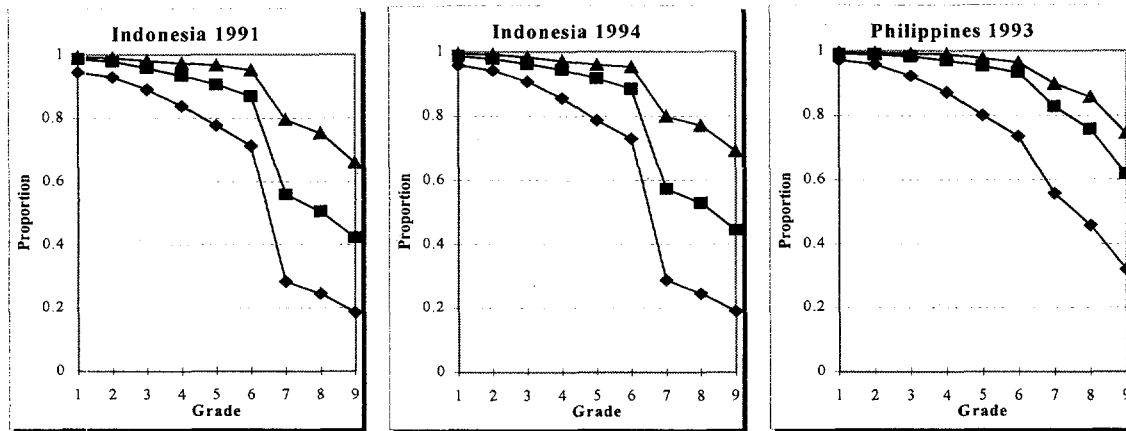


Figure 1 continued
Attainment profiles for ages 15 to 19, by economic group:
Eastern and Southern Africa continued

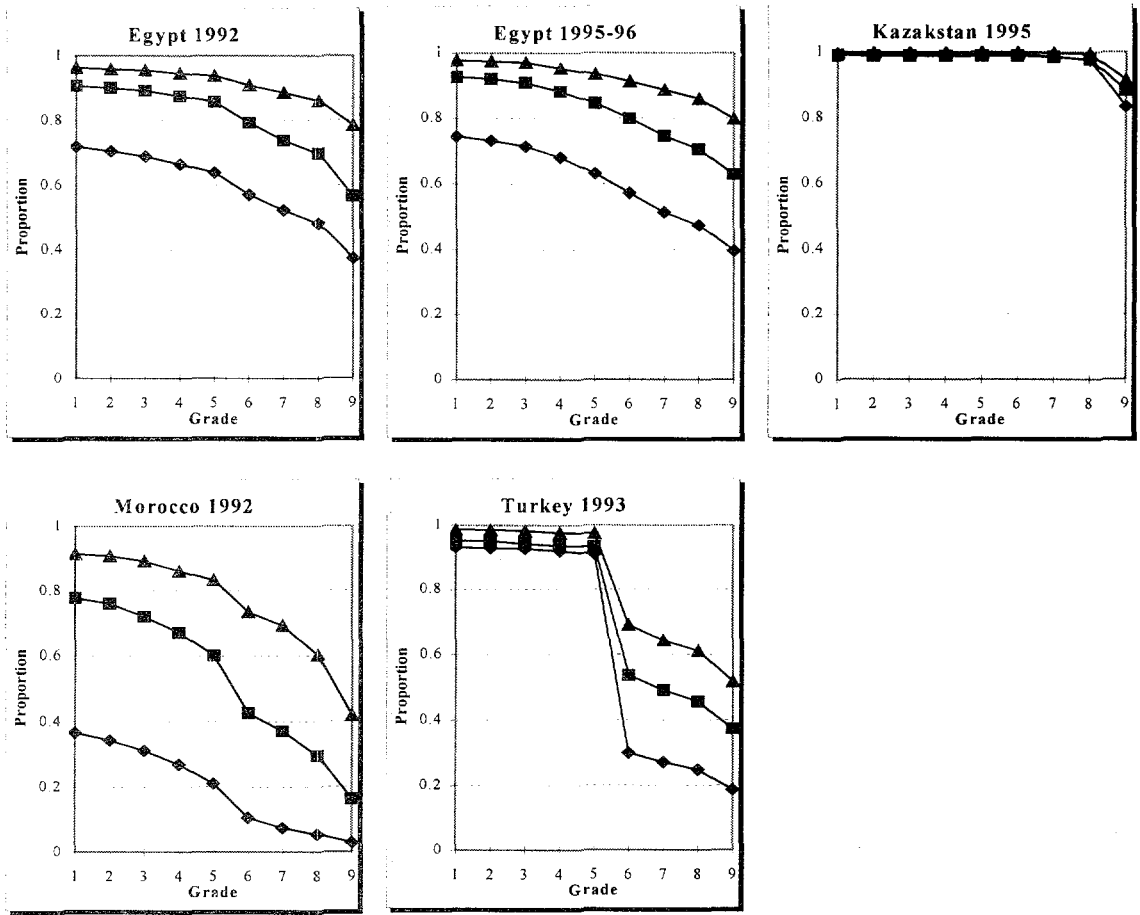


Attainment profiles for ages 15 to 19, by economic group:
East Asia and Pacific



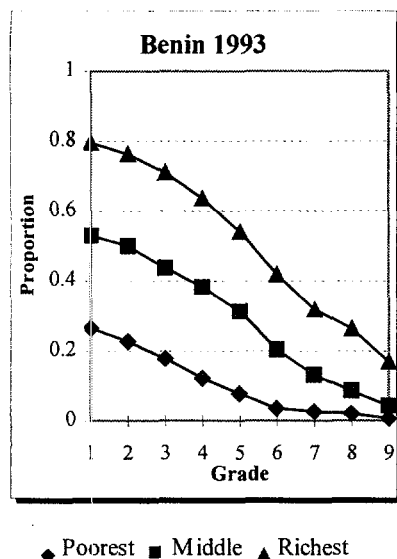
◆ Poorest ■ Middle ▲ Richest

Figure 1 continued
Attainment profiles for ages 15 to 19, by economic group:
Middle East, North Africa, Central Asia and Europe



◆ Poorest ■ Middle ▲ Richest

Figure 2



In Benin (whose attainment profile is reproduced in Figure 2) only 26 percent of the poor aged 15 to 19 have completed of grade 1 or higher, so 74 percent have either attended school (or more precisely, not completed even one year of schooling). Completion of grade 5 or higher is only 7.9 percent and only 0.7 percent complete grade 9. Among the rich, 80 percent complete grade 1 or higher but drop-out is such that only 54 percent complete grade 5. Even among the rich only 17 percent complete grade 9.

We define two “wealth gaps”. First, the wealth gap in the completion of any given grade (which, graphically, is the vertical distance between economic groups). For example, the wealth gap in grade 1 completion is .54 in Benin (.74 for the rich versus .20 for the poor with no schooling), while the wealth gap at grade 5 is .46. Second, the wealth gap in median grade completed. Visually the median is where a horizontal line at .5 would cross the attainment profile hence the gap is, graphically, the horizontal distance between the two groups. The median grade completed of the poor in Benin is zero, while that of the middle group is 2, and that of the rich is 5 years. The wealth gap in attainment is 5 years.

There are three main patterns that emerge from these figures and they are discussed in turn.

- First, the role of “ever enrollment” versus drop-out in explaining education outcomes,
- second, differing wealth gaps and attainment patterns across countries,

- and third, the use of the differences in attainment profiles as a diagnostic tool.

II) Enrollment and drop-out among the poor

Average attainment can be decomposed into two parts: the fraction of children that ever enroll and, conditional on having enrolled, the grade at which children leave school. We do not distinguish between those who never enrolled and those who may have enrolled but did not complete even one year of schooling, and in the following discussion the two descriptions are used interchangeably.

A) Patterns of enrollment and dropout

There are four patterns of enrollment and drop-out of the poor, which tend to follow regional patterns:

- low ever enrollment and high drop-out (Western/Central Africa)
- low ever enrollment and low drop-out (South Asia)
- high ever enrollment and early high drop-out (Latin America)
- high ever enrollment and late (East Africa) or very late drop-out (East Asia and Central Asia/North Africa/Europe).

Table 2 presents the proportion of 15 to 19 year olds from the poorest 40 percent who completed (at least) grade 1, grade 5, primary school, and grade 9. Because the lengths of the cycles (primary versus lower secondary --sometimes together called “basic”-- and upper secondary) differ across countries we show the results both for the comparable number of grades (grade 5) and for the comparable cycle (primary).¹¹ Grade 9 was chosen as the highest

¹¹ Presently we are using the UNESCO reporting of the structure of primary and secondary, which may or may not reflect country realities and moreover, may not have been relevant to the situation a decade ago.

grade to report because the truncation problem (that children are still in school and we are not observing completed spells of schooling) becomes more severe the higher the grade.

In Western/Central Africa only between 4.6 (Mali) and 27 (Cote d'Ivoire) percent of poor children complete grade 5. This is a combination of low ever enrollment and substantial drop-out. For instance, in Benin 74 percent never completed even grade 1 and of those that did, only 30 percent complete grade five leaving overall completion of grade 5 at only 8 percent.

In South Asia the fraction of poor children who didn't complete grade 1 is also very high, around 50 percent, but of those children that do start there is much higher retention. Having begun school between 55 (Bangladesh) and 80 (India) percent stay through to grade 5, but after that drop-out accelerates.

The Latin American pattern is one of high initial enrollment, but very steep drop-out among the poor. The situations are strikingly similar especially within South America where almost all poor children start school: the percent never enrolled ranges from 4.2 (Bolivia) to 7.6 (Brazil), but subsequent drop out is high. In all four South American countries the attainment profile of the poor drops sharply while the middle and rich children stay in school. In Brazil only 49 percent of those that complete grade 1 go on to complete grade 5. The situation is even bleaker when looking at the entire 6 to 8 years of primary school. Of those that complete grade 1 only 16 percent in Brazil go on to complete primary school, in Bolivia only 30 percent do so.

Table 2: Completion and simulated transition proportions for the poorest 40 percent

Country	Year	Years in primary cycle	Grade 1	Grade 5	Primary	Grade 9	Didn't complete even grade 1	Completed grade 5 of those who completed 1	Completed primary of those who completed 1	Completed grade 9 of those who completed 5
<u>Western and Central Africa</u>										
Benin	1993	6	0.264	0.079	0.036	0.007	0.736	0.300	0.136	0.091
Burkina Faso	1992-93	6	0.130	0.078	0.064	0.002	0.870	0.599	0.488	0.030
C.A.R.	1991	6	0.514	0.148	0.047	0.003	0.486	0.288	0.091	0.022
Cote d'Ivoire	1994-95	6	0.419	0.271	0.158	0.039	0.581	0.646	0.376	0.144
Cameroon	1994	6	0.640	0.446	0.318	0.055	0.360	0.697	0.497	0.124
Ghana	1993	6	0.791	0.694	0.652	0.306	0.209	0.877	0.825	0.441
Mali	1995-96	6	0.119	0.046	0.025	0.001	0.881	0.386	0.208	0.032
Niger	1992	6	0.154	0.113	0.016	0.007	0.846	0.739	0.102	0.062
Rwanda	1992	8	0.730	0.469	0.147	0.037	0.270	0.643	0.201	0.080
Senegal	1992-93	6	0.199	0.143	0.108	0.017	0.801	0.716	0.542	0.118
<u>South Asia</u>										
Bangladesh	1993-94	5	0.497	0.274	0.274	0.063	0.503	0.551	0.551	0.230
Bangladesh	1996-97	5	0.588	0.356	0.356	0.080	0.412	0.606	0.606	0.223
India	1992-93	5	0.472	0.376	0.376	0.139	0.528	0.797	0.797	0.369
Nepal	1996	5	0.594	0.406	0.406	0.116	0.406	0.683	0.683	0.287
Pakistan	1990-91	5	0.328	0.250	0.250	0.065	0.672	0.761	0.761	0.260
<u>Central America</u>										
Dominican Republic	1991	6	0.912	0.560	0.427	0.111	0.088	0.614	0.469	0.198
Dominican Republic	1996	6	0.873	0.569	0.466	0.143	0.127	0.652	0.534	0.251
Guatemala	1995	6	0.680	0.236	0.182	0.022	0.320	0.347	0.268	0.091
Haiti	1994-95	6	0.724	0.161	0.099	0.018	0.276	0.223	0.137	0.110
<u>South America</u>										
Bolivia	1993-94	8	0.958	0.705	0.288	0.195	0.042	0.737	0.301	0.276
Northeast Brazil	1991	8	0.754	0.121	0.009	0.009	0.246	0.160	0.012	0.074
Brazil	1996	8	0.924	0.457	0.150	0.078	0.076	0.494	0.162	0.172
[Northeast Brazil]	1990	8	0.879	0.344	0.093	0.046	0.121	0.392	0.106	0.133
Colombia	1990	5	0.941	0.571	0.571	0.096	0.059	0.607	0.607	0.168
Colombia	1995	5	0.939	0.630	0.630	0.145	0.061	0.671	0.671	0.230
Peru	1991-92	6	0.974	0.813	0.624	0.217	0.026	0.834	0.641	0.267
Peru	1996	6	0.954	0.746	0.496	0.175	0.046	0.781	0.520	0.235
<u>Eastern and Southern Africa</u>										
Comoros	1996	6	0.576	0.280	0.173	0.014	0.424	0.485	0.300	0.048
Kenya	1993	7	0.963	0.835	0.520	0.102	0.037	0.866	0.540	0.122
Malawi	1992	8	0.666	0.291	0.066	0.011	0.334	0.437	0.099	0.038
Namibia	1992	7	0.918	0.528	0.223	0.047	0.082	0.575	0.243	0.090
Tanzania	1991-92	7	0.821	0.676	0.486	0.004	0.179	0.824	0.592	0.006
Tanzania	1996	7	0.803	0.618	0.376	0.004	0.197	0.770	0.468	0.007
Uganda	1995	7	0.784	0.390	0.130	0.027	0.216	0.498	0.165	0.069
Zambia	1992	7	0.819	0.524	0.255	0.008	0.181	0.640	0.311	0.015
Zambia	1992	7	0.858	0.537	0.254	0.033	0.142	0.626	0.296	0.061
Zimbabwe	1994	7	0.973	0.892	0.696	0.252	0.027	0.917	0.716	0.283
<u>East Asia and Pacific</u>										
Indonesia	1991	6	0.946	0.778	0.713	0.186	0.054	0.822	0.753	0.240
Indonesia	1994	6	0.959	0.787	0.730	0.190	0.041	0.821	0.761	0.242
Philippines	1993	6	0.973	0.801	0.735	0.320	0.027	0.824	0.755	0.400
<u>Middle East, North Africa, and Europe</u>										
Egypt	1992	6	0.718	0.639	0.571	0.374	0.282	0.889	0.796	0.586
Egypt	1995-96	6	0.745	0.631	0.572	0.396	0.255	0.846	0.767	0.628
Kazakhstan	1995	4	0.995	0.994	0.995	0.833	0.005	0.999	1.000	0.838
Morocco	1992	6	0.366	0.211	0.106	0.029	0.634	0.576	0.289	0.136
Turkey	1993	5	0.932	0.910	0.910	0.186	0.068	0.976	0.976	0.204

One of the most striking findings to emerge from these results is that the level of attainment of the poor in Latin America is lower, not only than East Asia, but even than Eastern/Southern Africa. Grade 5 completion among the poor is 46 percent in Brazil, 57 percent in the Dominican Republic, 63 percent in Colombia, and peaks at 75 percent in Peru. In contrast, it is 89 percent in Zimbabwe, 84 percent in Kenya, 69 percent in Ghana, and 62 percent in Tanzania. The only Eastern/Southern African country with lower attainment for its poor than Brazil is Uganda.

The Eastern/Southern African countries have, by and large, relatively low drop out rates in the primary years. So, while the fraction who never enroll is similar to that in the South American countries, the better Eastern/Southern African countries retain higher proportions of the poor. This is especially clear in the flat portions in Figure 1 of the profile for the poor in Kenya, Tanzania, and Zimbabwe (and Ghana, which although it is in West Africa has the attainment patterns of Eastern/Southern Africa).

The final pattern is relatively high attainment countries with both high enrollment and high retention through primary and beyond into lower secondary. The patterns differ between Indonesia and Turkey with sharp drop-offs in attainment between primary and secondary and the Philippines and Egypt with less sharp changes across primary to secondary, a difference we return to below.

B) Reaching universal attainment and the poor

Nearly every country in the world has set a goal to reach universal educational attainment through some level: primary, “basic,” or even secondary. One important question is what remains to be accomplished to achieve this goal. Examining the attainment profiles in Figure 1 it is clear that in some countries it is practically *only* the poor who are not completing

primary school while in other countries it is both the middle and poorest groups who do not do so. In only a very few countries do the rich not already have universal basic attainment.

In Table 3 we report the deficit from universal completion of grade 5 and of primary school. In Figure 1 the shortfall is the vertical distance shown from the horizontal line at universal completion (value of 1) to the level who have completed the grade in question. We then decompose this deficit into that fraction due to shortfalls of the poor, the middle, and the rich children.¹²

Again, there are regional patterns in the absolute level of the shortfall and in the fraction of that shortfall due to the different groups. Western/Central Africa has high levels of deficit from grade 5 attainment (around 80 percent) which are nearly evenly distributed across wealth groups. This counter-intuitive result stems partially from the fact that the asset index is defined on a household, not per capita basis. In these cases there are substantially more than 20 percent of children in the top 20 percent of households (the percentage ranges from 23 percent in Comoros to 27 percent in Cote d'Ivoire).

In South Asia the attainment deficit is large but its distribution varies. In India and Pakistan the large wealth gaps are revealed in a concentration of the attainment deficit in the poor and middle groups. For India there is a 38 percent shortfall from completion of grade 5, of which 61 percent is due to children from the bottom 40 percent of households while only 4 percent is due to children from the richest 20 percent.

¹² That is, for example, the fraction due to the poor is $S_p \cdot p_p / S$ where S_p is the shortfall for the poorest group, p_p is the proportion of 15 to 19 year olds that are in the poorest group, and S is the total shortfall.

Table 3: Shortfall from grade 5 and primary completion, and the proportion of that shortfall due to the shortfall in each economic group

Country	Year	Shortfall from grade 5 completion			Shortfall from primary completion				
		Total	Proportion due to poorest 40 percent	Proportion due to middle 40 percent	Proportion due to richest 20 percent	Total	Proportion due to poorest 40 percent	Proportion due to middle 40 percent	Proportion due to richest 20 percent
<u>Western and Central Africa</u>									
Benin	1993	0.706	0.443	0.385	0.172	0.797	0.411	0.395	0.193
Burkina Faso	1992-93	0.749	0.443	0.414	0.143	0.775	0.435	0.413	0.152
C.A.R.	1991	0.643	0.478	0.388	0.134	0.796	0.432	0.393	0.175
Cote d'Ivoire	1994-95	0.552	0.434	0.395	0.171	0.674	0.410	0.403	0.187
Cameroon	1994	0.350	0.569	0.365	0.065	0.481	0.509	0.389	0.101
Ghana	1993	0.251	0.440	0.456	0.103	0.292	0.429	0.457	0.112
Mali	1995-96	0.804	0.411	0.422	0.167	0.848	0.398	0.418	0.184
Niger	1992	0.800	0.394	0.456	0.150	0.914	0.383	0.444	0.173
Rwanda	1992	0.455	0.417	0.403	0.180	0.780	0.391	0.421	0.188
Senegal	1992-93	0.640	0.498	0.390	0.112	0.694	0.478	0.398	0.124
<u>South Asia</u>									
Bangladesh	1993-94	0.524	0.463	0.447	0.090	0.524	0.463	0.447	0.090
Bangladesh	1996-97	0.465	0.500	0.394	0.106	0.465	0.500	0.394	0.106
India	1992-93	0.378	0.606	0.357	0.037	0.378	0.606	0.357	0.037
Nepal	1996	0.512	0.442	0.441	0.117	0.512	0.442	0.441	0.117
Pakistan	1990-91	0.500	0.531	0.403	0.066	0.500	0.531	0.403	0.066
<u>Central America and Caribbean</u>									
Dominican Republic	1991	0.264	0.636	0.266	0.099	0.360	0.607	0.301	0.092
Dominican Republic	1996	0.254	0.668	0.262	0.070	0.329	0.638	0.286	0.076
Guatemala	1995	0.450	0.589	0.345	0.066	0.508	0.559	0.368	0.073
Haiti	1994-95	0.557	0.494	0.361	0.145	0.663	0.446	0.396	0.158
Bolivia	1993-94	0.145	0.684	0.211	0.106	0.395	0.608	0.301	0.091
<u>South America</u>									
Northeast Brazil	1991	0.649	0.495	0.337	0.169	0.917	0.395	0.393	0.214
Brazil	1996	0.322	0.698	0.236	0.066	0.649	0.542	0.325	0.133
[Northeast Brazil]	1996	0.517	0.810	0.162	0.028	0.808	0.716	0.238	0.045
Colombia	1990	0.232	0.674	0.234	0.092	0.232	0.674	0.234	0.092
Colombia	1995	0.191	0.737	0.196	0.068	0.191	0.737	0.196	0.068
Peru	1991-92	0.091	0.741	0.169	0.090	0.189	0.710	0.202	0.088
Peru	1996	0.118	0.756	0.173	0.071	0.244	0.723	0.207	0.071
<u>Eastern and Southern Africa</u>									
Comoros	1996	0.543	0.463	0.406	0.130	0.686	0.421	0.429	0.149
Kenya	1993	0.171	0.388	0.470	0.143	0.467	0.412	0.464	0.124
Malawi	1992	0.584	0.461	0.409	0.130	0.865	0.411	0.408	0.182
Namibia	1992	0.350	0.549	0.408	0.043	0.633	0.500	0.425	0.075
Tanzania	1991-92	0.255	0.477	0.409	0.116	0.430	0.449	0.414	0.138
Tanzania	1996	0.306	0.445	0.442	0.113	0.535	0.415	0.448	0.136
Uganda	1995	0.478	0.531	0.368	0.101	0.756	0.479	0.391	0.130
Zambia	1992	0.256	0.667	0.290	0.042	0.508	0.526	0.366	0.107
Zambia	1992	0.295	0.565	0.400	0.036	0.546	0.492	0.415	0.094
Zimbabwe	1994	0.078	0.551	0.358	0.092	0.216	0.563	0.384	0.053
<u>East Asia and Pacific</u>									
Indonesia	1991	0.125	0.622	0.317	0.061	0.166	0.605	0.328	0.067
Indonesia	1994	0.118	0.627	0.289	0.084	0.153	0.615	0.309	0.076
Philippines	1993	0.093	0.738	0.205	0.057	0.127	0.716	0.217	0.066
<u>Middle East, North Africa, and Europe</u>									
Egypt	1992	0.214	0.688	0.248	0.064	0.272	0.642	0.284	0.074
Egypt	1995-96	0.220	0.673	0.258	0.069	0.265	0.646	0.277	0.077
Kazakhstan	1995	0.007	0.396	0.568	0.037	0.007	0.356	0.605	0.039
Morocco	1992	0.495	0.599	0.327	0.073	0.627	0.536	0.372	0.091
Turkey	1993	0.068	0.551	0.368	0.080	0.068	0.551	0.368	0.080

Consistent with the previous observations, the large drop-out rates of the poor in Latin America are revealed in the large proportions of the deficit that is due to the poor. In South America the fraction that do not complete grade 5 is between 12 (Peru) and 32 (Brazil) percent but over 70 percent of that shortfall is due to the poor. The attainment deficit problem for these countries is essentially keeping the poor in school.

The Eastern/Southern African countries are again a contrast with those in both Western/Central Africa and Latin America. The shortfalls from grade 5 completion are much lower than those in Western/Central Africa or South Asia and somewhat higher than those in South America, but the distribution of the shortfall is more even. This is true especially when looking at the entire primary school cycle, where the fraction due to the poorest and middle groups is roughly equal.

Finally, in East Asia the gaps are smaller, but concentrated among the poor. In the Philippines there is only a 13 percent shortfall from universal primary completion, of which 72 percent is due to the shortfall of the poor.

III) "Wealth gaps" across countries

The second prominent feature of the country profiles in Figure 1 is the uniform ranking of the rich, middle and poorest groups in terms of educational attainment. As discussed above there are two ways to define a wealth gap. First, the difference in the proportion of each group who complete any given grade. Second, the difference in the median attainment of rich and poor groups.

Table 4: Wealth gaps in attainment

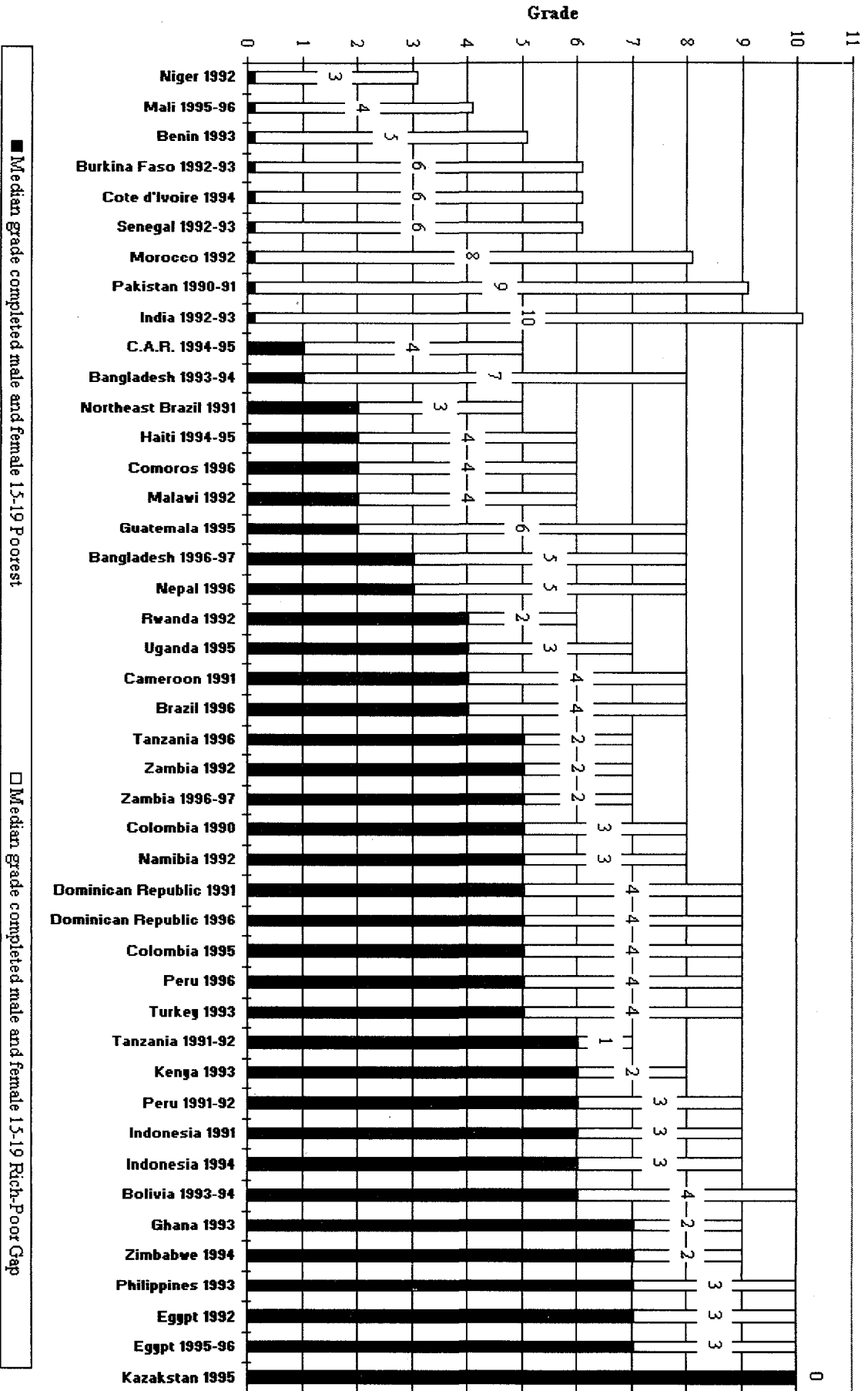
Country	Year	Wealth gaps (rich-poor) in the proportion who completed				Median grade completed			Wealth gap (top - bottom)
		Grade 1	Grade 5	Primary	Grade 9	Bottom 40	Middle 40	Top 20	
<u>Western and Central Africa</u>									
Benin	1993	0.532	0.462	0.383	0.162	0	2	5	5
Burkina Faso	1992-93	0.556	0.514	0.490	0.200	0	0	6	6
C.A.R.	1991	0.354	0.499	0.386	0.073	1	3	5	4
Cote d'Ivoire	1994-95	0.353	0.389	0.387	0.233	0	4	6	6
Cameroon	1994	0.316	0.457	0.474	0.358	4	6	8	4
Ghana	1993	0.150	0.197	0.210	0.273	7	7	9	2
Mali	1995-96	0.476	0.436	0.374	0.041	0	0	4	4
Niger	1992	0.388	0.355	0.281	0.086	0	0	4	4
Rwanda	1992	0.117	0.180	0.224	0.155	4	5	6	2
Senegal	1992-93	0.576	0.550	0.522	0.216	0	0	6	6
<u>South Asia</u>									
Bangladesh	1993-94	0.386	0.520	0.520	0.384	0	4	8	8
Bangladesh	1996-97	0.296	0.431	0.431	0.407	2	5	8	6
India	1992-93	0.483	0.556	0.556	0.592	0	7	10	10
Nepal	1996	0.233	0.338	0.338	0.314	3	3	8	5
Pakistan	1990-91	0.570	0.602	0.602	0.487	0	5	9	9
<u>Central America and Caribbean</u>									
Dominican Republic	1991	0.066	0.316	0.415	0.495	5	8	9	4
Dominican Republic	1996	0.118	0.348	0.417	0.498	5	8	10	5
Guatemala	1995	0.279	0.635	0.656	0.489	2	6	9	7
Haiti	1994-95	0.208	0.529	0.498	0.291	2	5	6	4
<u>South America</u>									
Bolivia	1993-94	0.032	0.232	0.565	0.573	6	9	10	4
Northeast Brazil	1991	0.078	0.435	0.199	0.199	2	4	6	4
Brazil	1996	0.068	0.438	0.426	0.302	4	7	8	4
[Northeast Brazil]	1996	0.089	0.421	0.315	0.199	4	6	7	3
Colombia	1990	0.039	0.330	0.330	0.353	5	7	8	3
Colombia	1995	0.049	0.311	0.311	0.429	5	8	9	4
Peru	1991-92	0.017	0.152	0.304	0.404	6	9	9	3
Peru	1996	0.037	0.219	0.430	0.432	5	8	9	4
<u>Eastern and Southern Africa</u>									
Comoros	1996	0.331	0.414	0.382	0.169	2	4	6	4
Kenya	1993	-0.002	0.040	0.182	0.213	7	6	8	1
Malawi	1992	0.223	0.372	0.238	0.092	2	3	6	4
Namibia	1992	0.052	0.387	0.509	0.345	5	6	8	3
Tanzania	1991-92	0.128	0.197	0.259	0.149	6	7	7	1
Tanzania	1996	0.160	0.238	0.321	0.102	5	6	7	2
Uganda	1995	0.147	0.377	0.396	0.219	4	5	7	3
Zambia	1992	0.166	0.430	0.515	0.160	5	7	7	2
Zambia	1992	0.137	0.418	0.526	0.315	5	6	8	3
Zimbabwe	1994	0.015	0.071	0.245	0.461	7	8	9	2
<u>East Asia and Pacific</u>									
Indonesia	1991	0.046	0.190	0.239	0.475	6	8	9	3
Indonesia	1994	0.036	0.173	0.224	0.501	6	8	9	3
Philippines	1993	0.024	0.177	0.230	0.424	7	9	10	3
<u>Middle East, North Africa, and Europe</u>									
Egypt	1992	0.245	0.299	0.337	0.410	7	9	10	3
Egypt	1995-96	0.233	0.304	0.342	0.401	7	10	11	4
Kazakhstan	1995	0.004	0.005	0.004	0.082	10	10	10	0
Morocco	1992	0.548	0.622	0.630	0.390	0	5	8	8
Turkey	1993	0.054	0.064	0.064	0.332	5	6	9	4

Table 4 reports the gap in the proportion of the 15 to 19 year old cohort who have completed grade 1, grade 5, primary school, and grade 9. In Western/Central-Africa there are large gaps at the primary level but by grade 9 attainment has fallen for the rich so the wealth gap closes. In South Asia the wealth gap starts large and stays large ranging from .34 (Nepal) to .60 (Pakistan) for primary school completion and from .31 (Nepal) to .59 (India) for grade 9 completion. In South America the wealth gap is less than .10 at grade 1, but gets progressively larger. For example, by the end of primary school the wealth gap in completion has reached .43 in Brazil, while in Bolivia by grade 9 it has reached .57. The wealth gaps in the Eastern/Southern African countries are relatively small, even through primary completion (except for Zambia and Uganda).

The second way of defining the wealth gap highlights striking differences across countries. In the attainment profiles, the difference in median grade completed is the horizontal gap at .5 (i.e. half the population).¹³ Figure 3 shows the median attainment of rich and poor for each country. The last four columns of Table 4 report the median grade attainment of the poor, middle and rich, as well as the difference between the rich and the poor for each country. Perhaps not surprisingly, as countries move from low to high levels of attainment, the gap starts out high, grows, peaks, and then falls when the entire population enrolls and stays in school.

¹³ This is calculated from the data and is not truncated at grade 9 as in the figures. This does imply that the differences are, if anything larger due to upper censoring of those still enrolled.

Figure 3: Median grade completed for ages 15-19 year olds from the poorest 40 percent and richest 20 percent of households



In Western/Central Africa the median grade completed of the bottom 40 percent is *zero*, as less than half of the poor in these countries ever finish even one year of schooling. However, since the rich do not achieve very high levels of schooling either the wealth gap ranges from 4 to 6 years.

The wealth gap is the highest in the world in South Asia where the poor are not going to, nor staying in, school. The median grade completed is zero in all countries but Nepal (3 years) and Bangladesh in 1996-97 (2 years). However, the richer groups in these countries have high levels of attainment. India has the world's largest gap of 10 years with the poor having median grade completed of *zero*, while for the rich attainment is 10 years. This is followed closely by Pakistan at 9 years, and Bangladesh in 1996-97 at 5.

The Latin American countries have smaller, but for their average attainment, enormous wealth gaps. Haiti has a pattern similar to those in Western/Central Africa with median grade completed of 2 for the poor and only 6 for the rich, while Guatemala has a pattern like that in South Asia with a gap of 7 (2 for the poor versus 9 for the rich). The inequality in attainment in South America results in a wealth gap of 4 years in all four countries with the median grade completed ranging from 4 to 6 for the poor, and from 8 to 10 for the rich.

Again there is the striking comparison between Latin America and the much poorer countries in Eastern/Southern Africa. The bottom 40 percent in Eastern/Southern Africa have considerably higher educational attainment than the bottom 40 percent in Central or South America. The median grade completed in Kenya, Ghana, and Zimbabwe is 7 in contrast to 4 in Brazil, and 5 in Colombia and Peru.

The Eastern/Southern African pattern of high initial enrollment and high retention of all groups through primary leads to low wealth gaps ranging from 1 (Kenya) to 3 (Uganda and

Zambia). The wealth gap is equal to 3 for the two East Asian countries. This is due not to especially low attainment for the poorest and middle groups, but rather to higher levels of attainment of the richest group. The wealth gap in median grade completed is 4 in Egypt and Turkey, again due largely to the high attainment of the richest group.

IV) Attainment profiles as a diagnostic

The attainment profiles are also useful as a diagnostic as to where key concerns in the system are. When the issue of increasing enrollment rates or educational attainment is discussed there is often a tendency to talk about “access” to schooling, where access is narrowly defined as the physical availability of schools. This was almost certainly the key issue some years ago when there just were not enough schools or teachers to go around. However, it is increasingly unlikely that in many countries the physical presence or absence of schools is a major constraint on expanding enrollment and attainment, particularly of the poor. Many analysts have concluded that even in very poor countries improving the *quality* of schooling is now the critical dimension for expanding enrollments. The figures presented here provide three stylized facts that are consistent with this conjecture, two from the primary level and one from the transition from primary to secondary.

A) Primary

First, if a child went to school and then stopped going it is very likely that he or she could have continued to go to school. The first column of Table 5 presents the proportion of the shortfall in primary completion that is due to drop-out (i.e. the ratio of the difference between grade 1 and primary completion and the shortfall in primary completion).

Table 5: Attainment and dropout rates

Country	Year	Shortfall due to dropout, bottom 40 percent	Proportion who completed at least grade 1		Bottom 40 percent only, simulated dropout rates		
			All	Top 20 rural male	in the last year of primary	between primary secondary	in the second year of secondary
<u>Western and Central Africa</u>							
Benin	1993	0.237	0.510	0.777	0.546	0.250	0.229
Burkina Faso	1992-93	0.071	0.323	0.603	0.186	0.735	0.651
C.A.R.	1991	0.490	0.686	0.946	0.684	0.629	0.506
Cote d'Ivoire	1994-95	0.310	0.602	0.830	0.417	0.488	0.248
Cameroon	1994	0.472	0.787	0.964	0.287	0.417	0.458
Ghana	1993	0.399	0.830	1.000	0.060	0.128	0.165
Mali	1995-96	0.097	0.294	0.484	0.461	0.509	0.259
Niger	1992	0.140	0.250	0.412	0.862	0.169	0.037
Rwanda	1992	0.683	0.786	0.826	0.444	0.746	0.538
Senegal	1992-93	0.102	0.434	0.417	0.243	0.750	0.156
<u>South Asia</u>							
Bangladesh	1993-94	0.307	0.666	0.881	0.215	0.437	0.231
Bangladesh	1996-97	0.360	0.725	0.890	0.185	0.341	0.240
India	1992-93	0.153	0.695	0.956	0.100	0.180	0.145
Nepal	1996	0.317	0.632	0.894	0.173	0.206	0.212
Pakistan	1990-91	0.104	0.577	0.936	0.111	0.331	0.192
<u>Central America and Caribbean</u>							
Dominican Republic	1991	0.846	0.948	1.000	0.237	0.308	0.317
Dominican Republic	1996	0.761	0.933	1.000	0.181	0.256	0.308
Guatemala	1995	0.609	0.835	0.986	0.228	0.716	0.342
Haiti	1994-95	0.694	0.848	0.824	0.387	0.482	0.397
<u>South America</u>							
Bolivia	1993-94	0.940	0.981	1.000	0.239	0.323	0.449
Northeast Brazil	1991	0.752	0.813	0.661	0.716	0.000	0.493
Brazil	1996	0.911	0.962	1.000	0.321	0.476	0.496
[Northeast Brazil]	1996	0.866	0.911	1.000	0.367	0.507	0.474
Colombia	1990	0.863	0.967	0.741	0.168	0.407	0.270
Colombia	1995	0.836	0.970	0.972	0.147	0.379	0.200
Peru	1991-92	0.931	0.986	1.000	0.232	0.273	0.253
Peru	1996	0.909	0.977	1.000	0.334	0.195	0.288
<u>Eastern and Southern Africa</u>							
Comoros	1996	0.488	0.731	0.917	0.382	0.529	0.542
Kenya	1993	0.923	0.956	0.943	0.269	0.461	0.637
Malawi	1992	0.643	0.736	0.895	0.487	0.834	0.529
Namibia	1992	0.894	0.933	0.773	0.390	0.430	0.628
Tanzania	1991-92	0.652	0.872	0.921	0.189	0.985	0.415
Tanzania	1996	0.685	0.865	0.952	0.219	0.980	0.424
Uganda	1995	0.751	0.847	0.940	0.481	0.615	0.462
Zambia	1992	0.757	0.909	0.925	0.367	0.856	0.791
Zambia	1992	0.809	0.911	1.000	0.352	0.703	0.567
Zimbabwe	1994	0.911	0.978	0.890	0.153	0.457	0.333
<u>East Asia and Pacific</u>							
Indonesia	1991	0.813	0.974	0.988	0.083	0.602	0.137
Indonesia	1994	0.847	0.979	0.996	0.073	0.605	0.144
Philippines	1993	0.898	0.987	0.996	0.083	0.240	0.177
<u>Middle East, North Africa, and Europe</u>							
Egypt	1992	0.342	0.842	0.984	0.105	0.082	0.079
Egypt	1995-96	0.406	0.866	0.988	0.093	0.100	0.076
Kazakhstan	1995	0.000	0.994	1.000	0.000	0.001	0.000
Morocco	1992	0.291	0.652	1.000	0.499	0.295	0.262
Turkey	1993	0.249	0.951	1.000	0.011	0.671	0.098

The striking results here are the high numbers for Latin America (60 to 94 percent), Eastern/Southern Africa (excluding Ghana, 75 to 92 percent) and East Asia (85 and 90 percent). In these countries, the main explanation for why children do not complete primary school *is not that* they don't start school, it is the fact that they drop-out. In the Western/Central African and South Asian countries, dropout explains less than half the shortfall from universal primary education for the poor, with values ranging from 10 percent in India to 49 percent in Comoros (which although it lies off the Eastern coast has the attainment patterns of Western/Central Africa).

Of course this approach can only address the question of the physical *availability* of schools, not true *access* to education. In particular it is possible that children did attend first grade, but in classes of 100 or more, with no materials, indifferent (or worse) teaching, and deteriorating buildings. Not surprisingly there will be high drop-out, due not to physical availability but to access to an education, which when properly defined, includes quality.

A second approach to the impact of school availability would be to look directly at the relationship between the presence of schools and enrollment. For example, using the DHS data from India, Filmer and Pritchett (1998b) found in state by state regressions that there was only a weak relationship between the availability of schools and enrollment rates. In this paper we don't replicate the analysis country by country but, as a heuristic indication, we report the proportion of "Rich Rural Males" (RRM) who have completed at least grade 1. Since poverty is not completely regionally concentrated this group is likely to suffer from a similar lack of physical access to schools as less socially favored groups (the poor and females). If RRM have high enrollment this provides some evidence on the degree to which other groups are falling short due to their status, not school availability.

Table 5 shows large gaps in the low enrollment countries between rich rural males and the average enrollment. In Pakistan RRM enrollment is 94 percent while the average is 58 percent (a 36 percentage point gap), in India RRM enrollment is 96 percent while average is 69 percent (a 37 percentage point gap), in Cote d'Ivoire RRM enrollment is 83 percent versus 60 percent (a 23 percentage point gap), and in C.A.R RRM enrollment is 95 percent versus an average of 69 percent (a 36 percentage point gap). Expanding enrollment of the average to that of RRM would nearly eliminate the proportion of children who completed less than 1 year of schooling in most countries, except for the very lowest performers such as Mali or Benin.

B) Transition to secondary

The third point about availability is that the attainment profiles do not suggest that the lack of availability of secondary schools, or rationing of secondary places, plays a large role in most countries, although it is a central phenomenon in some. Table 5 reports the simulated drop-out rate of the poor between the second-to-last and the last year of primary, between the end of primary and the end of the first year of secondary, and between the first and second years of secondary.¹⁴ If secondary school places were rationed (either officially by an exam or in practice by the lack of facilities) one would expect to see the drop-out across the transition between primary and secondary to be much larger than either before or after the transition point.

This is indeed the pattern in some countries, identifiable graphically by a steep drop at the end of the primary cycle. In Turkey the drop-out rate is 1.1 percent before the transition,

¹⁴ Again, simulated as we are not observing the dropout behavior on an individual child, rather this is the value implied from the cross section of 15 to 19 year olds. For example, in a country in which the primary cycle is 6 years, the simulated drop-out rate in the last year of primary is the ratio of the completion of grade 5 to the completion of grade 6, the rate between primary and secondary cycles is the ratio of the completion of grade 6 to the

67 percent across the transition, and 9.8 percent after it. In Tanzania the drop-out rate is 22 percent the year before, but 98 percent across the transition as almost no poor child made it to secondary¹⁵. High drop-out rates across the primary transition are also prominent in Indonesia and Guatemala.

In nearly every other country, however, drop-out is noticeably higher, but not dramatically so, across the transition than in the year before or after. Most of the graphs are characterized by very smooth slopes that make it difficult to distinguish visually which is the transition year. For example, in Nepal the drop-out rate is 17 percent, 21 percent and 21 percent in the three years.

In the Philippines the drop-out rate is 8.3 before the end of primary, increases to 24 percent across the transition, and then falls slightly to 18 percent. This pattern of a higher rate in the transition followed by a high, but lower, subsequent rate is true of Haiti, C.A.R., Zambia, and Uganda.

In the Dominican Republic the drop-out rate is 18 percent, 26 percent and 31 percent, so drop-out is higher after the first year of secondary than in the transition before. This pattern true of Bolivia and Brazil as well. The analysis reveals the importance of the entire attainment profile. Looking only at average enrollment between primary and secondary one might be tempted to conclude that the large gap indicated the problem was across the transition. However, examining the profile might reveal that drop outs within primary imply that the "excess" of primary school leavers over secondary entrants is quite low.

completion of grade 7, and the rate in the second year of secondary is the ratio between the completion of grade 7 and the completion of grade 8.

¹⁵ Keep in mind these are 15-19 year olds in the year of the survey and hence reflects the situation some years prior.

Figure 4

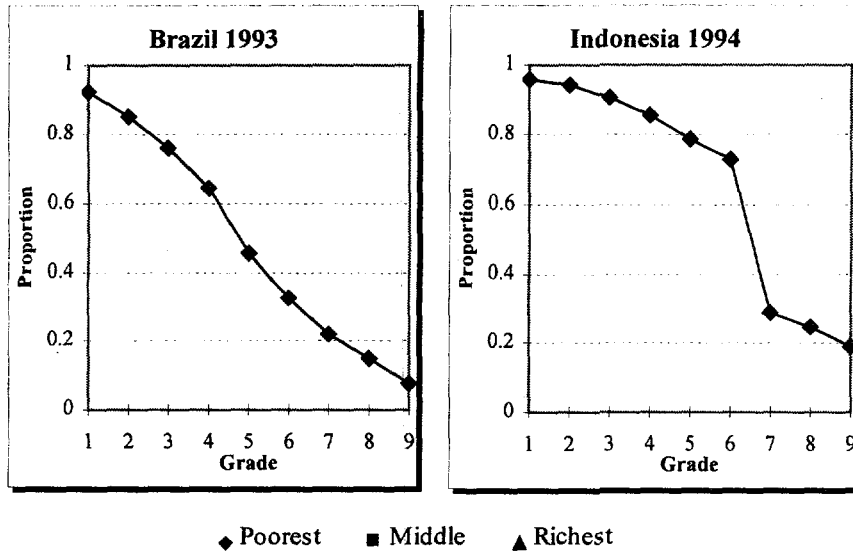


Figure 4 illustrates the point by showing the average profiles for the poorest 40 percent in Brazil and Indonesia. In Brazil, dropout across the transition may be high (48 percent), but it is high all throughout

the primary school years. In Indonesia, dropout is ten percentage points higher across the transition (61 percent) but the underlying profile is vastly different as there is a very small amount of dropout within the primary school years and virtually all of the drop-off is across the transition.

Of course this use of the attainment profile is diagnostic and can only point to issues for more detailed examination. For instance Lavy (1997) has shown that the lack of secondary school facilities can influence drop-out at the primary levels even before the end of primary by lowering the expected return to additional primary years. Therefore, we cannot conclude from high primary drop-out that the physical lack of secondary facilities is not an important issue.

Conclusion

In this paper we have documented striking cross-country patterns in education enrollment and attainment in 35 countries.

While many others have examined the differences in enrollment rate behavior between the rich and poor, a major advantage of this analysis is that the data are comparable. The attainment data are derived consistently and, while the levels of the asset index are not directly comparable across countries, they are derived using an identical methodology.

There are two overall conclusions that emerges from these results. First, many (if not most) countries the bulk of the deficit from universal enrollment up to primary (or basic) comes from the poor. The achievement of higher levels of enrollment for this group is an exercise in social inclusion, reaching out and bringing the poorest into what is already the norm for the rich and, in many cases, the middle class. Second, the evidence suggests that, except in the very poorest settings, the key to closing wealth gaps in enrollment and attainment will require actions which raise the demand for schooling of the poor. Raising the *quality* of schooling received at the primary level is likely to be the key ingredient to attract and retain poor children in school.

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Table A-1: Proportion who have completed grade or higher

Year	Bottom 40 percent				Middle 40 percent				Top 20 percent				
	Grade 1	Grade 5	Primary	Grade 9	Grade 1	Grade 5	Primary	Grade 9	Grade 1	Grade 5	Primary	Grade 9	
Western and Central Africa													
Benin	1993	0.264	0.079	0.036	0.007	0.530	0.312	0.203	0.043	0.797	0.541	0.419	0.169
Burkina Faso	1992-93	0.130	0.078	0.064	0.002	0.252	0.178	0.150	0.023	0.686	0.592	0.553	0.203
C.A.R.	1991	0.514	0.148	0.047	0.003	0.729	0.367	0.206	0.037	0.868	0.647	0.433	0.076
Cote d'Ivoire	1994-95	0.419	0.271	0.158	0.039	0.635	0.447	0.311	0.115	0.772	0.660	0.545	0.272
Cameroon	1994	0.640	0.446	0.318	0.055	0.819	0.685	0.540	0.156	0.956	0.903	0.792	0.413
Ghana	1993	0.791	0.694	0.652	0.306	0.799	0.714	0.666	0.319	0.941	0.891	0.862	0.579
Mali	1995-96	0.119	0.046	0.025	0.001	0.248	0.139	0.100	0.006	0.595	0.482	0.399	0.043
Niger	1992	0.154	0.113	0.016	0.007	0.175	0.129	0.032	0.011	0.541	0.468	0.297	0.093
Rwanda	1992	0.730	0.469	0.147	0.037	0.802	0.552	0.199	0.067	0.846	0.649	0.371	0.192
Senegal	1992-93	0.199	0.143	0.108	0.017	0.454	0.367	0.301	0.057	0.776	0.693	0.630	0.232
South Asia													
Bangladesh	1993-94	0.497	0.274	0.274	0.063	0.682	0.464	0.464	0.148	0.883	0.794	0.794	0.447
Bangladesh	1996-97	0.588	0.356	0.356	0.080	0.755	0.550	0.550	0.174	0.885	0.788	0.788	0.487
India	1992-93	0.472	0.376	0.376	0.139	0.761	0.684	0.684	0.363	0.954	0.932	0.932	0.730
Nepal	1996	0.594	0.406	0.406	0.116	0.551	0.414	0.414	0.139	0.827	0.743	0.743	0.430
Pakistan	1990-91	0.328	0.250	0.250	0.065	0.614	0.522	0.522	0.209	0.898	0.852	0.852	0.552
Central America and Caribbean													
Dominican Republic	1991	0.912	0.560	0.427	0.111	0.967	0.828	0.734	0.399	0.978	0.876	0.843	0.606
Dominican Republic	1996	0.873	0.569	0.466	0.143	0.962	0.831	0.760	0.402	0.991	0.917	0.883	0.641
Guatemala	1995	0.680	0.236	0.182	0.022	0.894	0.632	0.557	0.181	0.959	0.871	0.839	0.511
Haiti	1994-95	0.724	0.161	0.099	0.018	0.894	0.512	0.363	0.105	0.932	0.690	0.597	0.308
South America													
Bolivia	1993-94	0.958	0.705	0.288	0.195	0.995	0.927	0.716	0.588	0.989	0.937	0.853	0.768
Northeast Brazil	1991	0.754	0.121	0.009	0.009	0.855	0.438	0.074	0.074	0.832	0.556	0.208	0.208
Brazil	1996	0.924	0.457	0.150	0.078	0.986	0.801	0.449	0.277	0.992	0.895	0.576	0.381
[Northeast Brazil]	1996	0.879	0.344	0.093	0.046	0.968	0.721	0.358	0.223	0.967	0.766	0.408	0.245
Colombia	1990	0.941	0.571	0.571	0.096	0.983	0.870	0.870	0.321	0.980	0.902	0.902	0.449
Colombia	1995	0.939	0.630	0.630	0.145	0.989	0.906	0.906	0.443	0.989	0.942	0.942	0.574
Peru	1991-92	0.974	0.813	0.624	0.217	0.993	0.963	0.907	0.502	0.991	0.965	0.928	0.621
Peru	1996	0.954	0.746	0.496	0.175	0.988	0.951	0.879	0.462	0.991	0.964	0.926	0.608
Eastern and Southern Africa													
Comoros	1996	0.576	0.280	0.173	0.014	0.762	0.475	0.299	0.059	0.907	0.694	0.555	0.183
Kenya	1993	0.963	0.835	0.520	0.102	0.946	0.801	0.463	0.103	0.961	0.875	0.702	0.315
Malawi	1992	0.666	0.291	0.066	0.011	0.715	0.393	0.106	0.014	0.889	0.664	0.304	0.103
Namibia	1992	0.918	0.528	0.223	0.047	0.933	0.657	0.355	0.122	0.970	0.915	0.732	0.392
Tanzania	1991-92	0.821	0.676	0.486	0.004	0.876	0.736	0.548	0.023	0.949	0.873	0.744	0.153
Tanzania	1996	0.803	0.618	0.376	0.004	0.861	0.665	0.406	0.014	0.964	0.857	0.697	0.107
Uganda	1995	0.784	0.390	0.130	0.027	0.871	0.533	0.215	0.060	0.930	0.767	0.525	0.246
Zambia	1992	0.819	0.524	0.255	0.008	0.946	0.816	0.540	0.038	0.985	0.954	0.770	0.168
Zambia	1992	0.858	0.537	0.254	0.033	0.909	0.711	0.445	0.100	0.995	0.955	0.779	0.347
Zimbabwe	1994	0.973	0.892	0.696	0.252	0.979	0.930	0.794	0.397	0.988	0.963	0.941	0.713
East Asia and Pacific													
Indonesia	1991	0.946	0.778	0.713	0.186	0.987	0.905	0.869	0.423	0.993	0.967	0.952	0.661
Indonesia	1994	0.959	0.787	0.730	0.190	0.987	0.916	0.884	0.445	0.995	0.960	0.953	0.691
Philippines	1993	0.973	0.801	0.735	0.320	0.992	0.954	0.933	0.618	0.997	0.978	0.965	0.744
Middle East, North Africa, and Europe													
Egypt	1992	0.718	0.639	0.571	0.374	0.907	0.857	0.792	0.565	0.963	0.938	0.909	0.784
Egypt	1995-96	0.745	0.631	0.572	0.396	0.927	0.845	0.799	0.628	0.978	0.935	0.913	0.798
Kazakhstan	1995	0.995	0.994	0.995	0.833	0.991	0.989	0.989	0.883	0.999	0.999	0.999	0.915
Morocco	1992	0.366	0.211	0.106	0.029	0.777	0.601	0.426	0.164	0.914	0.833	0.735	0.419
Turkey	1993	0.932	0.910	0.910	0.186	0.953	0.933	0.933	0.372	0.986	0.974	0.974	0.517

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