How we generated out-of-school projections used in the GMR 2011

As in past GMRs, we use a simple methodology to extend observed trends in out-of-school numbers to 2015. These are not predictions of future performance but highlight one possible outcome should countries remain on their observed path. Projections of this kind are a crude tool and are sensitive to big country effects (small movements in countries with large populations can make large differences), outliers and the robustness of the underlying data. It is also important to recognise that greater caution needs to be exercised the shorter the trend period used to make the projection.

To project education indicators for the 2011 GMR, we used the methodology that was also employed for the 2008 and 2009 reports (see website for full details). Here we provide a brief overview of the steps taken in the 2011 GMR to project out-of-school numbers to 2015.

1. **Data**. Two variables are used in the projection of out-of-school numbers:
    a. UIS data for each country on adjusted net enrolment ratios (ANER) between 1999 and 2009.
    b. UIS data (sourced from United Nations Population Division) for each country on primary school age populations between 1999 and 2009, and projections between 2009 and 2015. The medium variant estimates and projections of population are used.
    Using these two variables, it is possible to calculate the out-of-school population.[1]
2. **Trend projections for individual countries**. Projections of out-of-school numbers were made using data from two different time periods:
    a. *1999-2009.* For each country separately, all available data over this period were used to project out-of-school numbers forward to 2015. Projections for this period were only generated if countries had at least three observations and at least one of these observations fell in the earlier 1999-2003 period.
    b. *2004-2009.* For each country separately, all available data over this period were used to project out-of-school numbers forward to 2015. Projections for this period were only generated if countries had at least three observations over this period.
3. **Projection method**. As with projection exercises undertaken for the 2008 and 2009 GMRs, observed ANER data were regressed against a year variable (indicating the year the data was observed). The estimated coefficient on the year variable was used to project the ANER to 2015. Different assumptions about the shape of the relationship between the ANER and time were used depending on the trend shown:
    a. *Logistic regression.* If the observed ANER data showed an increasing trend (i.e. ANER was increasing over time and out of school numbers were declining) then a logistic curve was used to fit the observed data. A logistic curve is bounded between 0 and 1 and provides a better fit to data on ANER where observations cannot exceed 100%.
    b. *Linear regression.* If the observed ANER data showed a decreasing trend (i.e. ANER was declining over time and out-of-school numbers were increasing) then simple linear

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[1] For example, the out-of-school population for 1998 is (1-ANER1998)*(primary school age population 1998)

regression was used. This avoided the potentially stronger decrease in projected ANER values (increases in out of school numbers) that can result from using the logistic regression.

Projections of this kind were made for each country and for both time trends (i.e. long-term trend using observed data between 1999 and 2009, short-term trend using observed data between 2004 and 2009). As this is a purely mechanical exercise, no further adjustments to the projections were made.

4. **Country selection for Table 1.3.** To ensure a consistent and valid comparison, only countries that had projections based on the long term (1999-2009) **and** short term (2004-2009) observed data were included in the calculations presented in Table 1.3 (see attached sheet for observed and projected out-of-school data by country). The United States of America was excluded by convention, which left 128 countries for inclusion in Table 1.3.

5. **Calculating a global out-of-school projection for 2015**. In 2008, the 128 countries included in Table 1.3 represented 60% of the global out-of-school populations. This proportion, along with the projected out-of-school population for the 128 countries, is used to calculate a rough estimate of global out-of-school numbers in 2015. It is assumed that the 128-country sample continues to represent 60% of the global of out-of-school population in 2015.