Getting Progress Right: Measuring Progress Towards the MDGs Against Historical Trends[1]

(based on joined work with Stephan Klasen)

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Introduction I: MDGs as a Goal-setting Exercise

- MDGs will incentivize policy-makers if targets are
  - agreed-on,
  - country-specific,
  - relevant,
  - measurable, and
  - realistic.
- Some of the MDGs are not realistic or 'unfair' [Clemens, 2004, Clemens et al. 2007, Easterly, 2009]
  - Level-end goals (universal primary education, gender parity in education)
  - Targets defined as relative changes (e.g. two-thirds reduction in child mortality); unrealistic for countries with high initial levels of mortality!
- Unrealistic targets undermine accountability and might trigger aid-fatigue in donor countries.

Introduction II: This Paper

- We propose a new way of assessing progress realistically.
- Helpful in judging progress today, identifying success stories.
- Good way to derive targets for post-2015 MDG framework.

Changes in U5MR Depend on Initial Levels

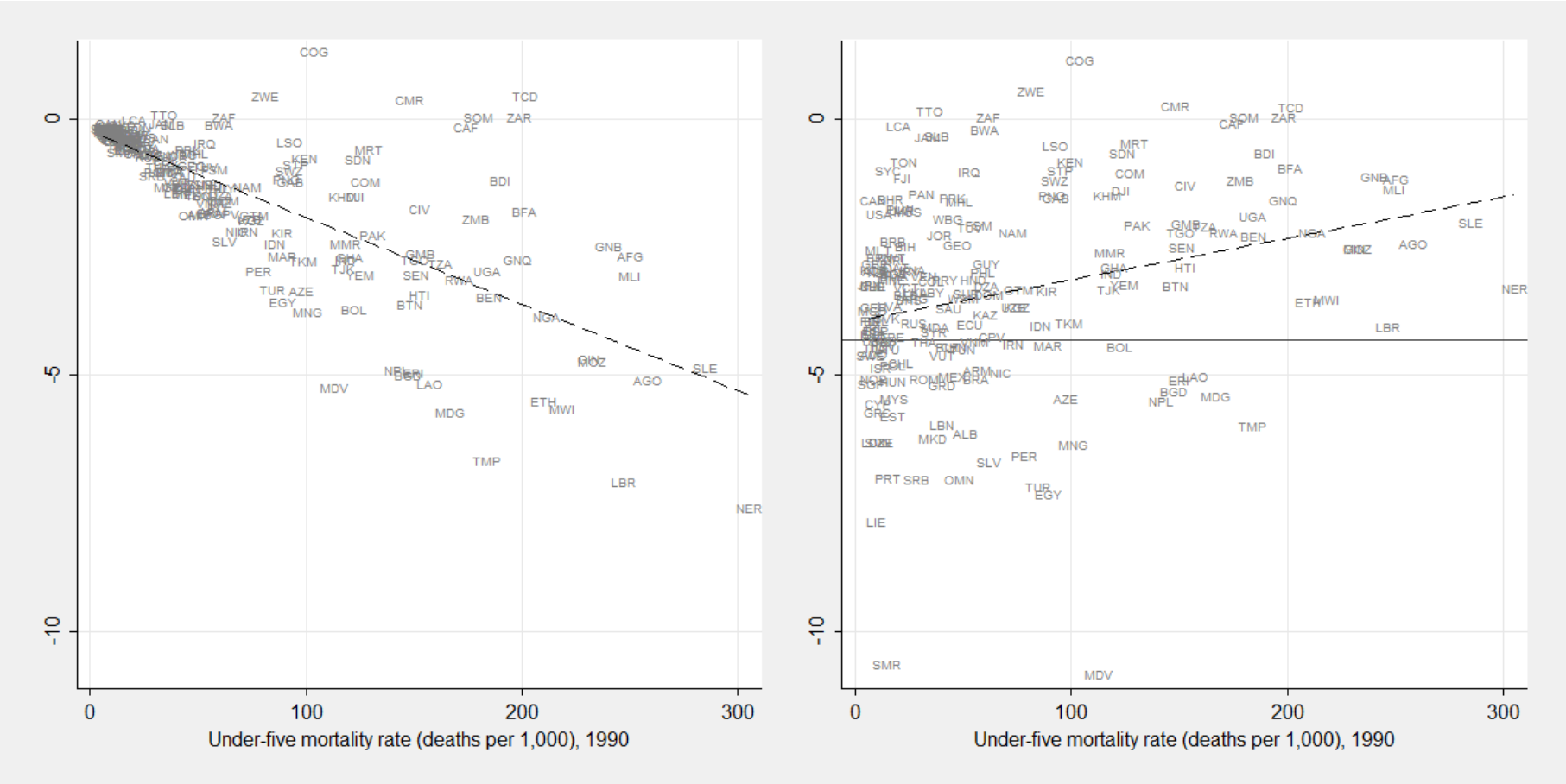

Figure: Abs. and rel. annual changes in U5MR against initial levels, 1990-2009, 191 countries; the horizontal line in the right panel indicates required annual rate of reduction to achieve MDG4 (circa 4.3 percent)

Logistic Model

- A model that is consistent with this pattern is the (s-shaped) logistic growth curve.
- We fit the same transition path across countries, albeit taking into account different initial values.

Transition Paths for U5M: Burkina Faso and Botswana

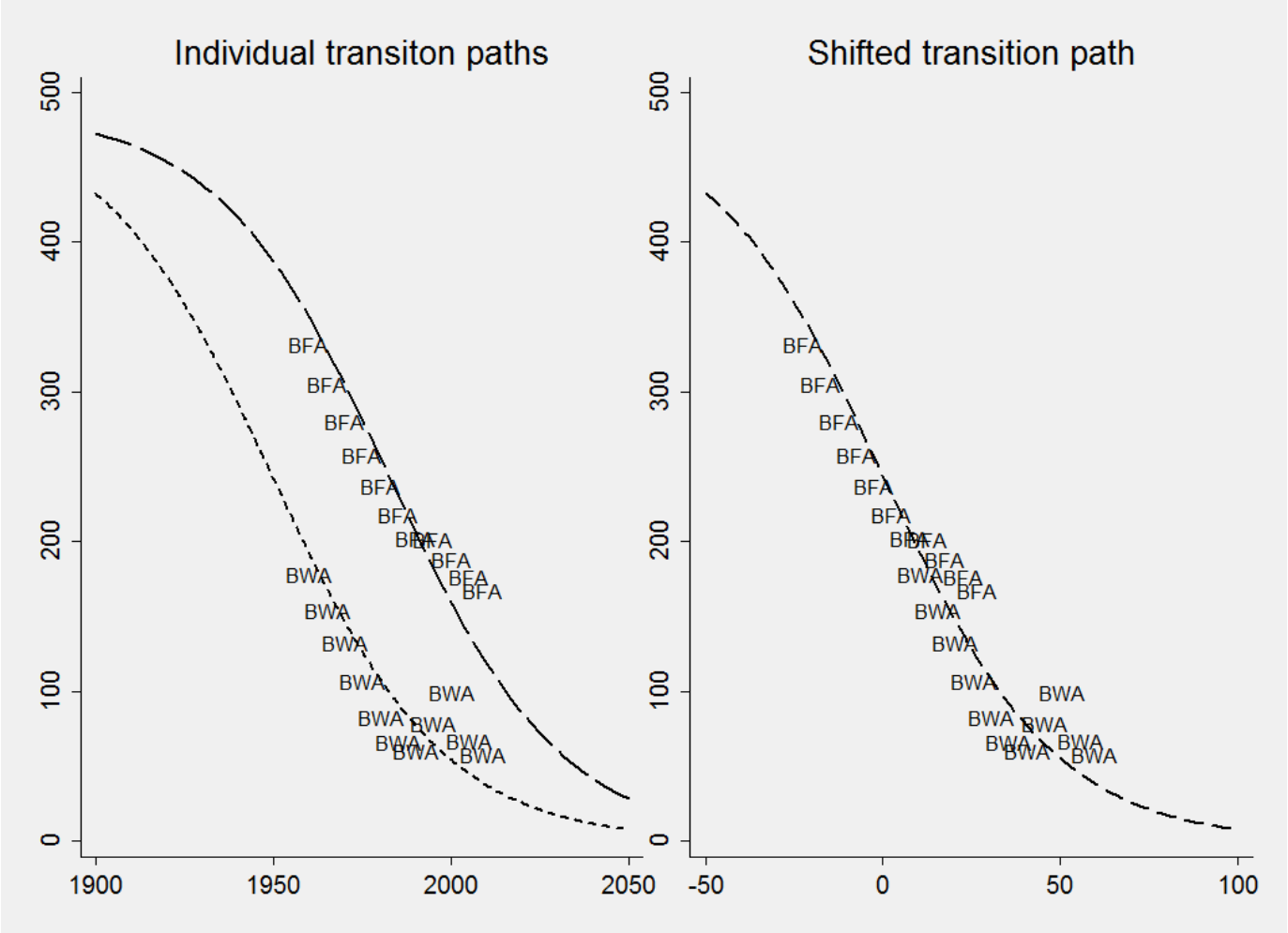

Figure: The left panel shows individual transition paths for BFA and BWA; we then shift observations horizontally so that all individual transition paths pass through 'adjusted year' zero at the point of inflection (right panel).

Transition Path for U5M: 1960-2009, 192 Countries

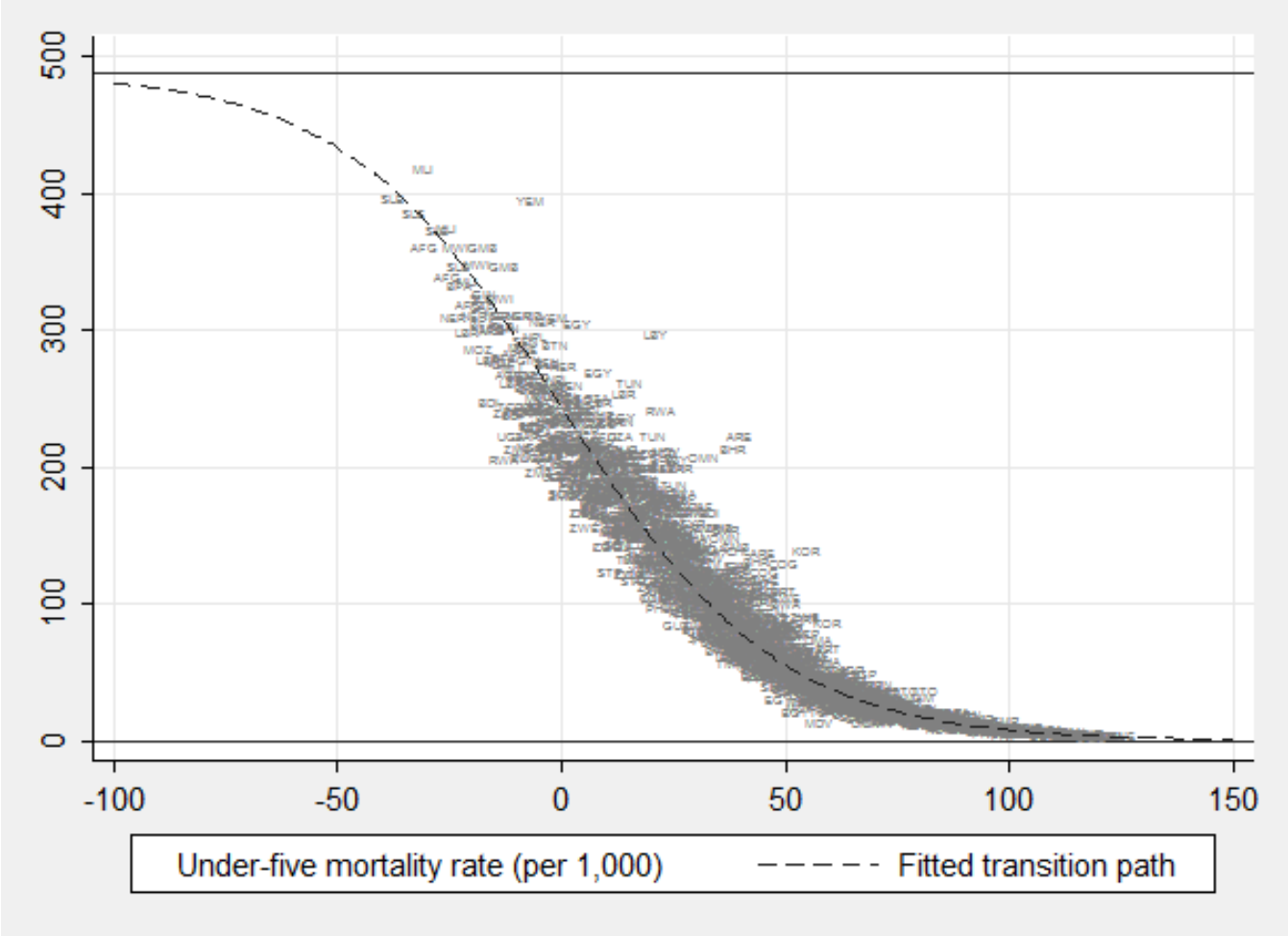

Figure: Under-five mortality rates (per 1,000 live births), 1960-2009, against adjusted years and fitted transition path. Based on WDI 2010 data for 192 countries.

Transition Path for U5M: 1960-2009, 192 Countries

- Development takes time: on average about 40 years to achieve reduction by two-thirds when inital level is 200 per 1,000.
- Changes over time fairly similar: changing the sample (time period and countries) doesn't change results.

Performance Indices

- Construct performance indices on the basis of transition path:

$$performance\ index = \frac{actual\ change}{projected\ change}$$

- Main advantage: PIs will not depend on initial level:

Performance Index Does Not Depend on Initial Levels

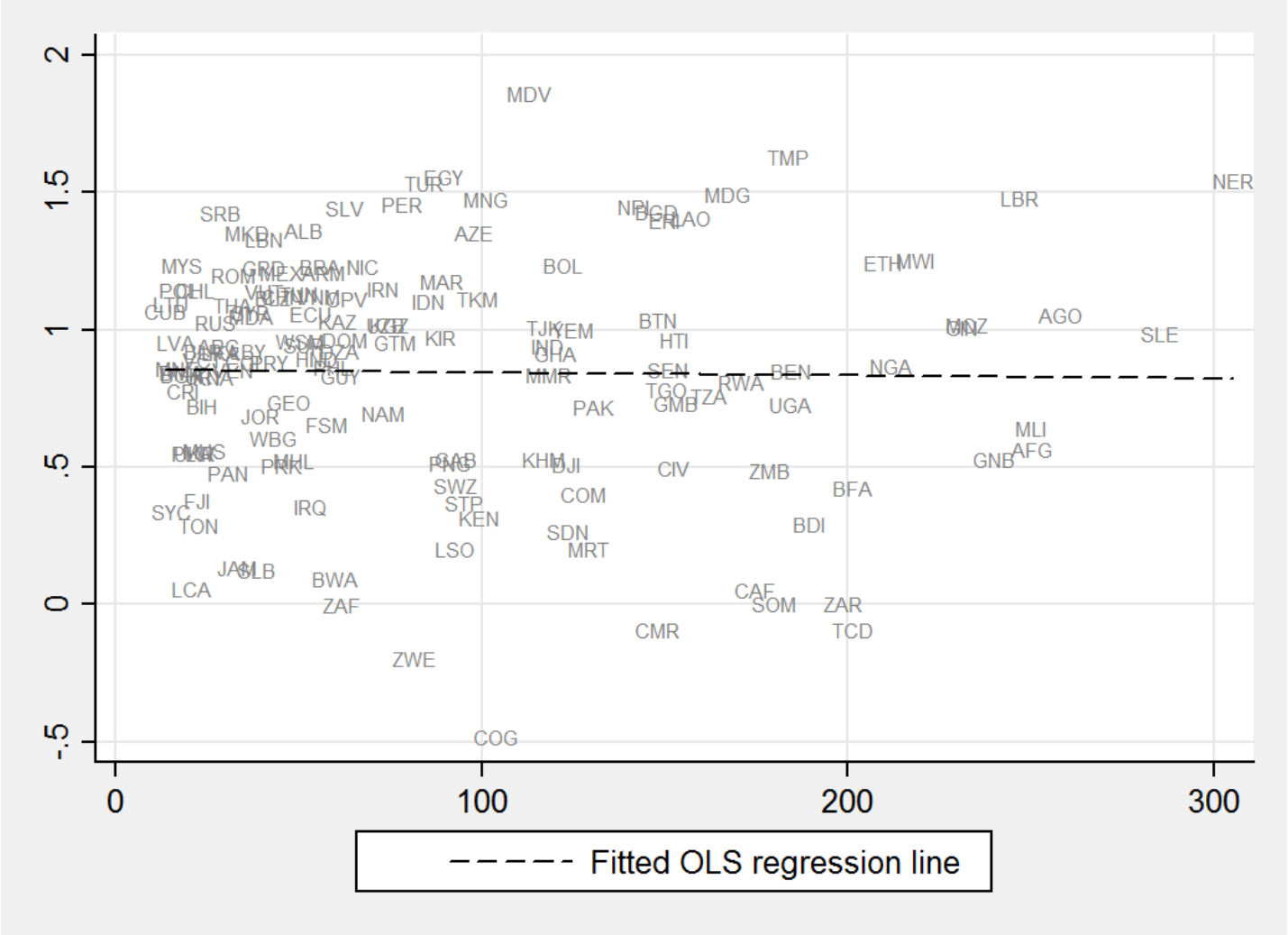

Figure: Performance index for under-five mortality rates, 1990-2009, against initial levels, 141 countries (LICs & MICs).

Regional Patterns: MDG4 Performance

Table: Initial levels of under-five mortality, average annual rate of reduction, and performance indices by region, 1990-2009

Region	No.	Initial level 1990	Annual rate of reduction	Performance Index 1990-2009	1990-2000	2000-2009
West & Central Africa	20	152.4	2.0	0.69	0.37	1.00
South & East Africa	27	192.0	1.5	0.59	0.39	0.79
MENA	12	73.9	4.6	1.13	1.16	1.23
South Asia (excl. India)	7	140.0	3.7	1.06	1.06	1.14
India		118.2	3.1	0.94	0.77	1.09
East Asia (excl. China)	11	70.9	3.8	1.02	1.10	0.91
China		45.5	4.5	1.12	0.66	1.60
Oceania	10	75.1	1.6	0.51	0.55	0.39
Latin America	19	49.4	4.6	1.14	1.17	1.18
Caribbean	10	63.5	3.4	0.92	1.01	0.82
Europe & Central Asia	23	40.4	4.3	1.06	0.77	1.36

Notes: Population weights based on 1990 populations.

Country Experiences: Misclassified?

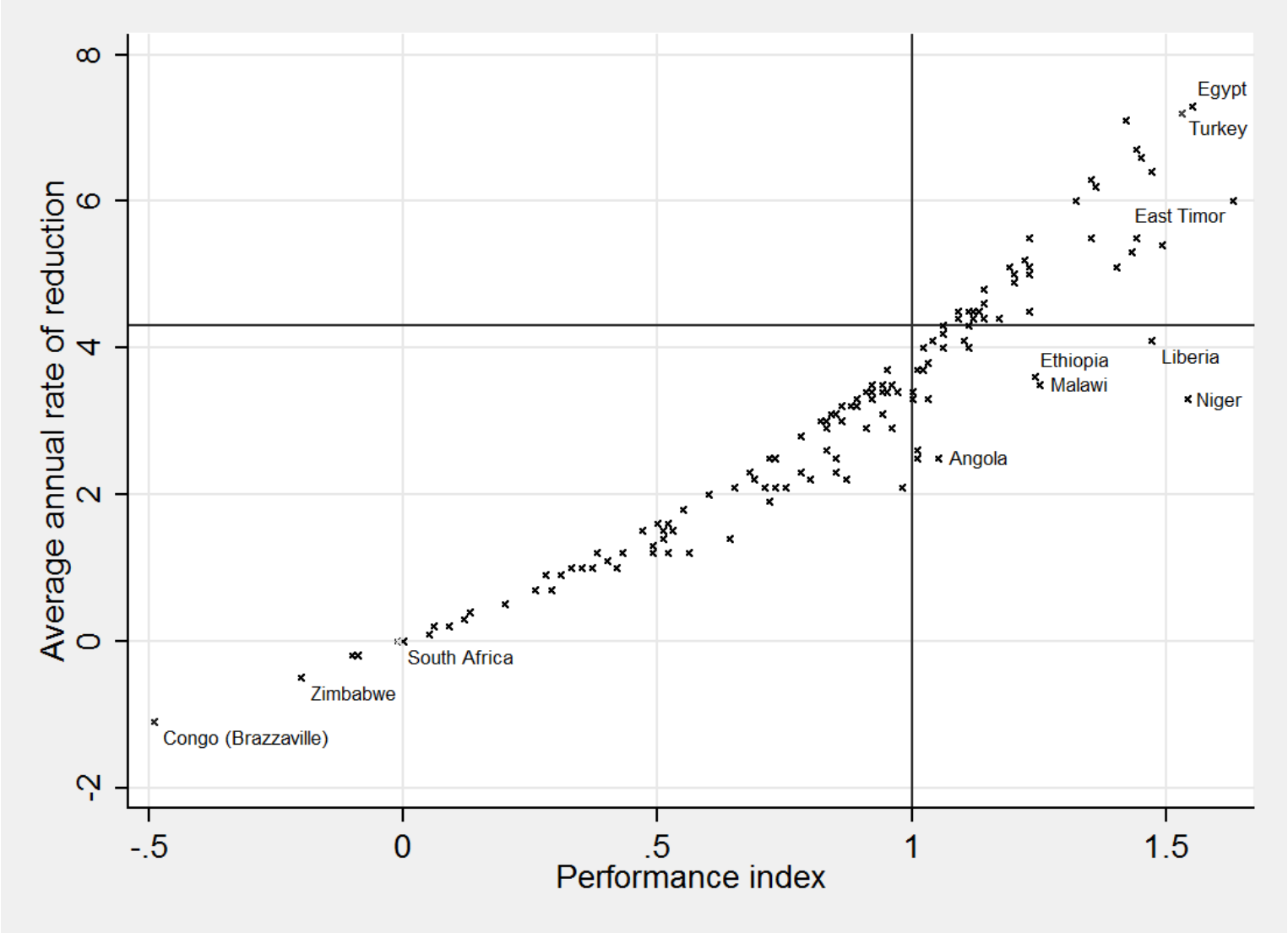

Figure: Annual rate of reductions against performance index for under-five mortality rates, 1990-2009, 141 countries.

Table: Determinants of MDG4 Performance

	(1)	(2)	(3)	(4)	(5)	(6)
growth	0.05***	0.05***	0.04**	0.05***	0.04*	0.05*
	(3.01)	(3.08)	(2.51)	(2.65)	(1.87)	(1.84)
Δ*educ*	0.06	0.07	0.05	0.05	0.05	0.06
	(1.19)	(1.61)	(1.16)	(0.90)	(0.97)	(0.92)
Δ*ratio*		1.14***	1.03***	0.82**	0.77*	0.59
		(3.72)	(3.34)	(2.30)	(1.92)	(1.25)
Δ*mepv*			−0.04**	−0.04**	−0.03**	−0.03*
			(−2.35)	(−2.47)	(−2.03)	(−1.96)
av.mepv			−0.04**	−0.06**	−0.04**	−0.05*
			(−2.08)	(−2.26)	(−2.05)	(−1.91)
HIV prevalence, 2005				−1.40		−1.08
				(−1.52)		(−1.17)
Δ*DPT vaccination coverage*					0.63**	0.58
					(2.15)	(1.65)
Region dummies jointly significant?						
F-statistic	5.94***	7.19***	7.55***	2.83**	8.72***	3.36**
p-value	0.00	0.00	0.00	0.02	0.00	0.01
N	88	88	86	78	76	68
R^2	0.40	0.48	0.51	0.51	0.58	0.56
adj. R^2	0.34	0.43	0.45	0.43	0.50	0.47

Notes: Clustered standard errors in parentheses. *, **, and *** denote significance at the ten-, five-, and one-percent level, respectively. All regressions include a full set of region dummies not reported.

Conclusion I: Summary of Results

- Transition paths provide good fit to the data and are robust to variations in the underlying sample;
- Application to other indicators: low height-for-age (MDG1), primary completion rates (MDG2), gender ratio in education (MDG3);
- Achieving MDGs not realistic for many countries.
- Some countries (with low initial levels of attainment) wrongly classified as being 'off-track';
- Regional distribution for MDG4 progress as expected;
- Regression results point to growth, female education, political stability as main drivers of progress;

Conclusion II: Outlook

- Use transition paths to arrive at realistic targets within a reformed MDG framework;
- Better way to monitor progress, set realistic goals, identify success stories and failures;
- 'Aspirational' vs. 'realistic' goals;
- Performance index difficult to sell?

Thanks!

Thank you for your attention!

Logistic Model

Table: Fixed effects-estimates for under-five mortality

	(1)	(2)	(3)	(4)
Dep. variable:		$-\ln(1/u5mr^*_{it} - 1)$		
	All	LICs & MICs		DHS data
	1960-2009	1960-2009	1990-2009	1985-2010
t	-0.041^{***}	-0.039^{***}	-0.037^{***}	-0.035^{***}
	(0.001)	(0.001)	(0.002)	(0.005)
R^2	0.96	0.94	0.98	0.99
Within-R^2	0.83	0.81	0.69	0.59
Obs.	1,835	1,358	705	186
No. of groups	192	141	141	55

Notes: Clustered standard errors in parentheses. *, ** and *** denote significance at the ten-, five-, and one-percent level, respectively.

MDG1: Chronic Undernutrition

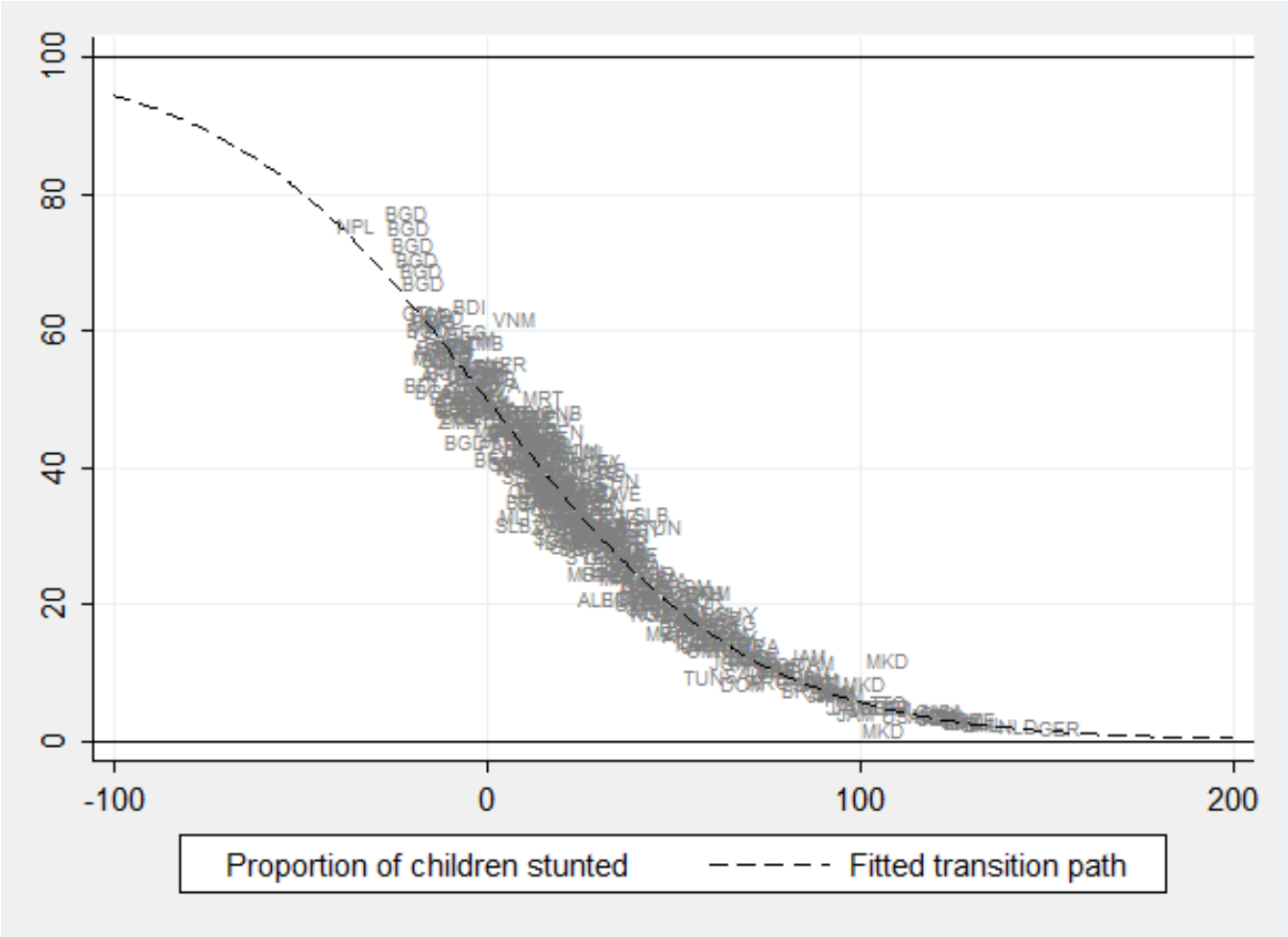

Figure: Proportion of children showing low height-for-age, 1985-2009, against adjusted years and fitted transition path. Based on WDI 2010 data.

Performance Indices for MDG2 & MDG3 Targets

- In principal, possible and desirable [Clemens, 2004].
- Results similar to U5MR results (takes time); fit is somewhat less good, but still good; robust.
- However, several problems with the data:
  - gaps in time series, sample selectivity bias (likely), measurement error;
  - targets not relevant to many countries (good news, but reduces variation over time);
  - conceptual problems: gender gap vs. gender ratio, sex ratios;
  - output vs. outcomes: indicators mostly do not account for quality of education.

Transition Path for Primary Completion Rate

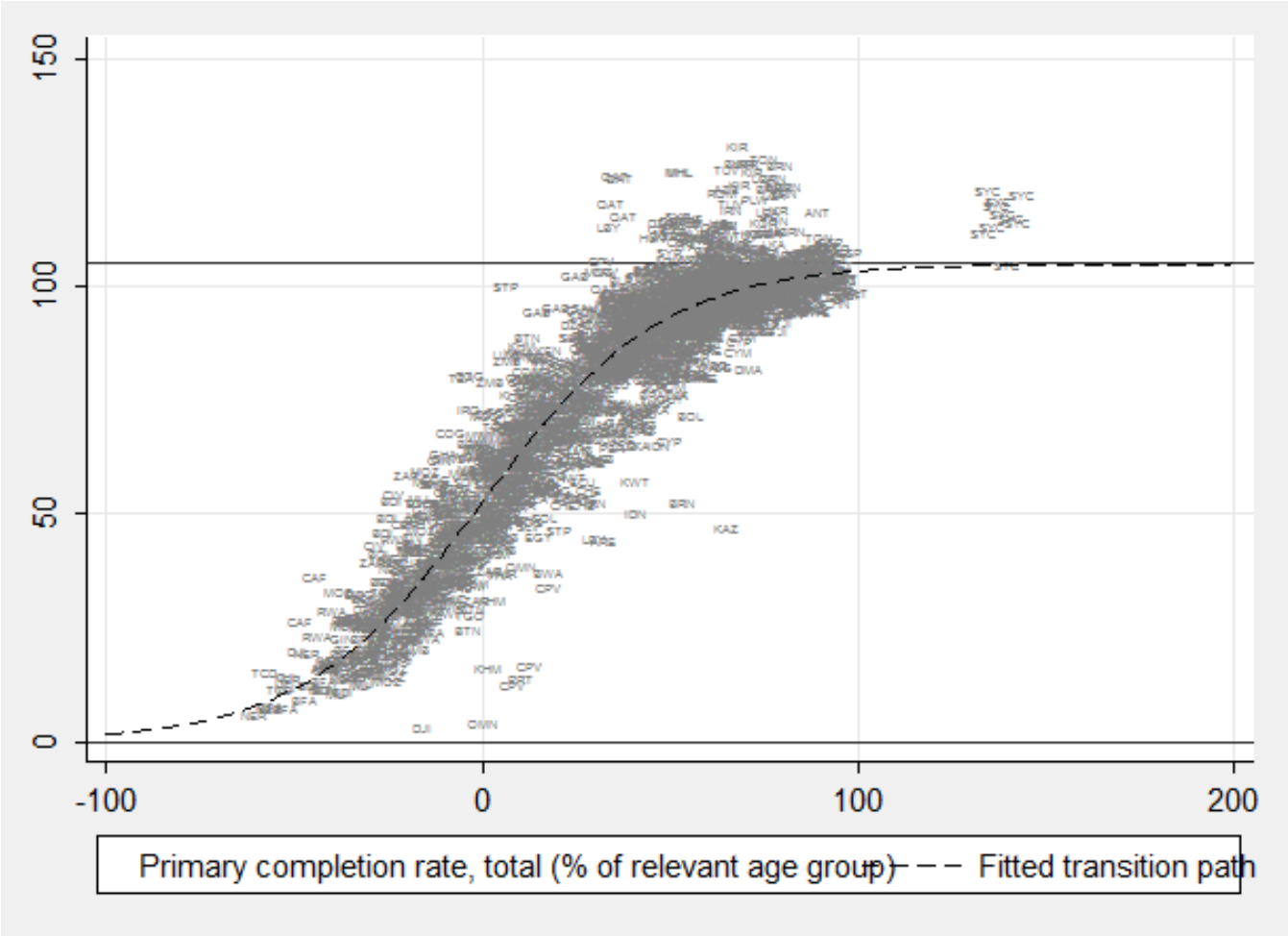

Figure: Primary completion rates, 1970-2009, against adjusted years and fitted transition path. Based on WDI 2010 data.

Perf. Index for Primary Compl. Rate Against Current Level

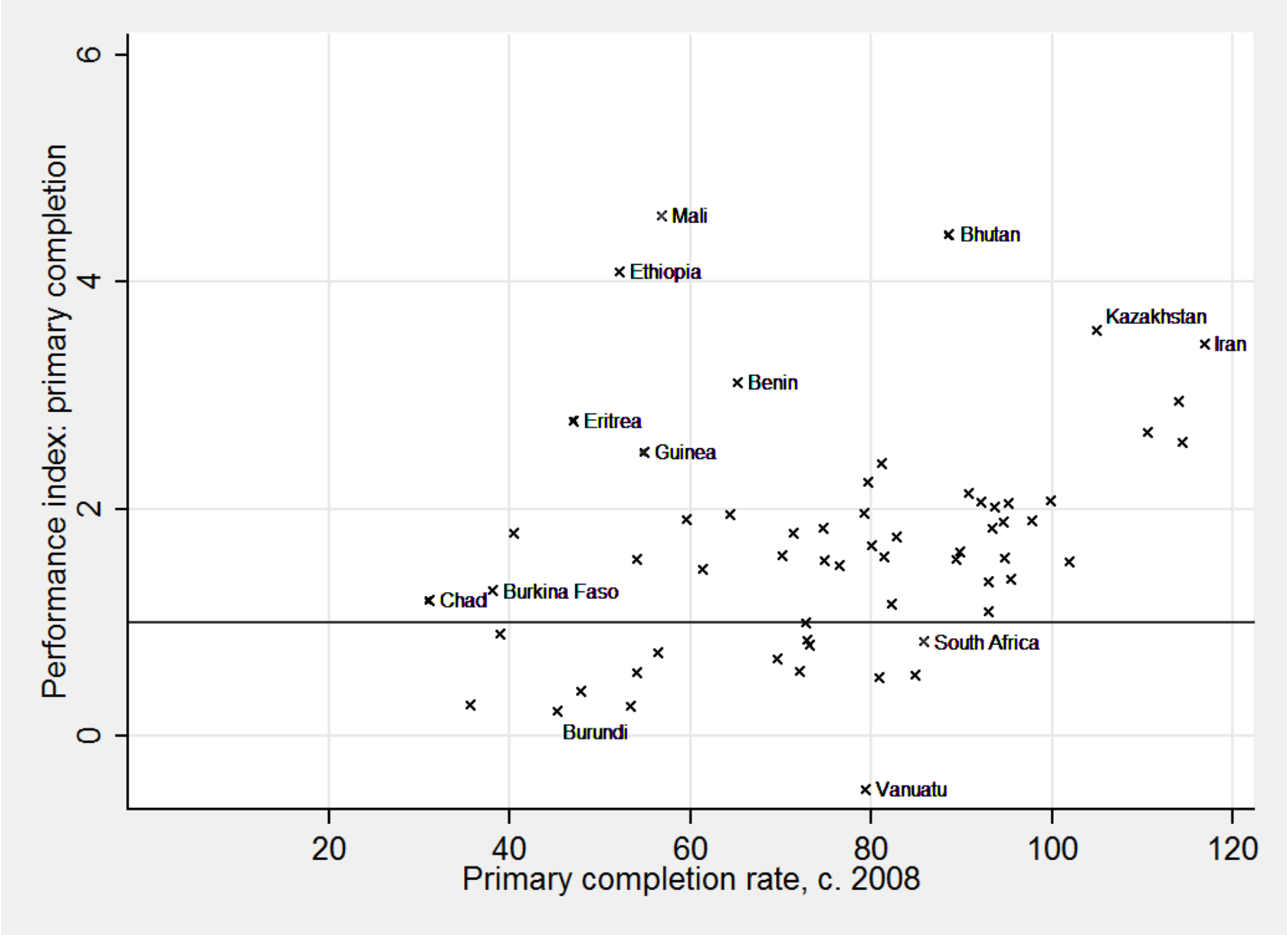

Figure: Perf. index for primary completion rate against final year levels, c. 1990-2009, 65 LICs & MICs. Included are only countries for which the inital level is below 85 percent.

Implications: Is MDG4 Realistic?

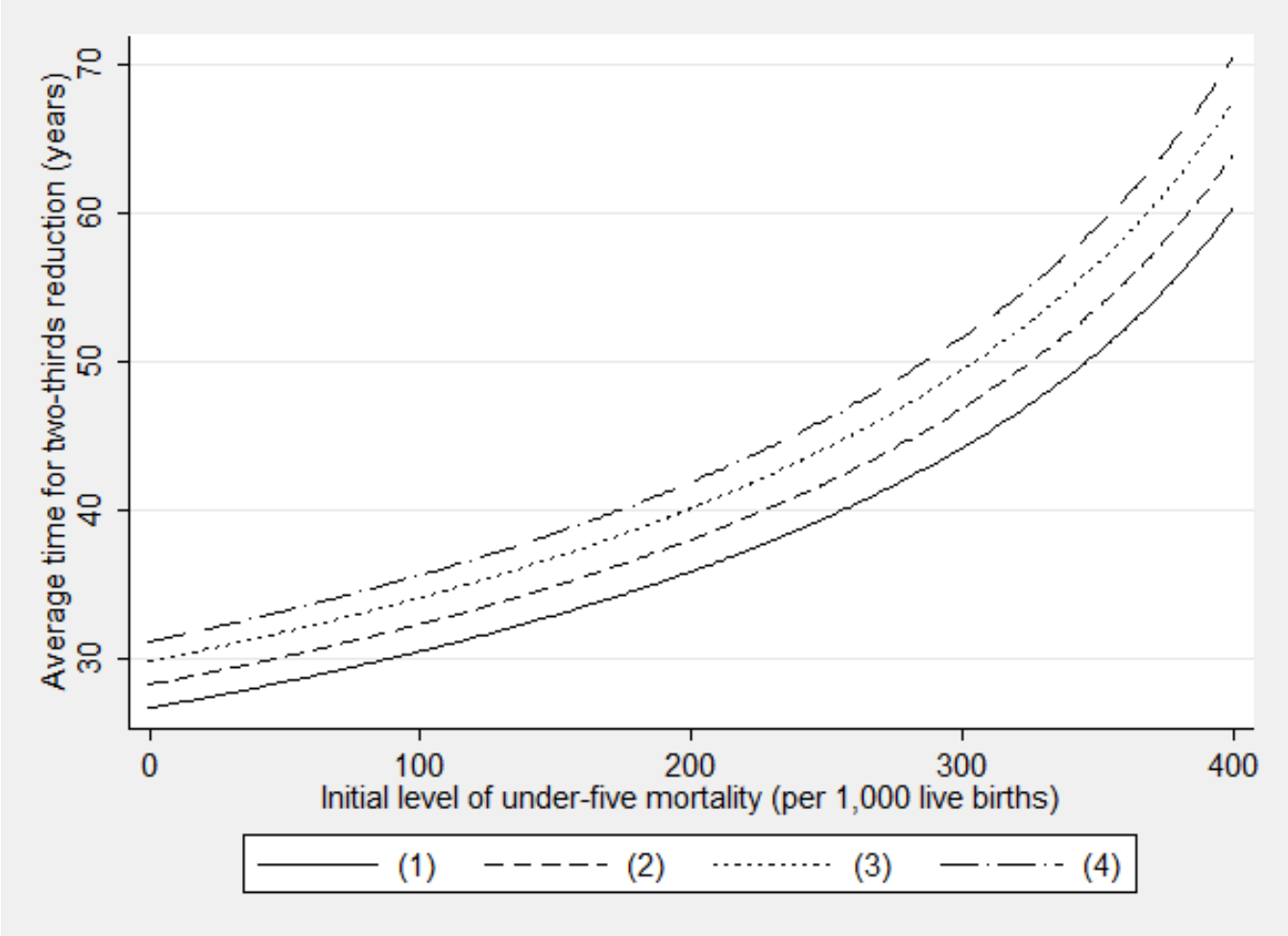

Figure: Average time to achieve MDG4 for different starting levels: for example, a country starting from a level of 200 deaths per 1,000 will need on average 35-40 years to attain a two-thirds reduction.

Explaining Performance

- Subject performance index to multivariate regression analysis:
  - annual growth rate of GNI per capita (*growth*),
  - changes in years of education and the ratio of of female to male years of education ($\Delta educ$ and $\Delta ratio$),
  - level and changes of intensity of political violence ($av.mepv$ and $\Delta mepv$),
  - changes in the vaccination rates (here: DPT vaccination rate),
  - proxy for severity of HIV/AIDS epidemic (prevalence in 2005),
  - other variables: Gini coefficient, geography, ethnic fractionalization, fragility, democratic institutions, etc.

Explaining Performance

- Structural variables mostly are insiginficant and often enter with the wrong sign.
- Good predictors of levels but bad predictors of performance?
- Growth in per capita public health spending enters with the right sign but insignificant (correlated with *growth*).

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