

**Improving Education Outcomes in School in Developing Countries:
Evidence, Knowledge Gaps, and Policy Implications**

Paul Glewwe
University of Minnesota

Karthik Muralidharan
University of California at San Diego

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1. Introduction

Governments, international aid agencies, and almost all researchers agree on the need for education.

Developing country governments spend \$1 trillion per year on education.

Parents in these countries spend hundreds of billions of dollars more each year.

This spending, and several other factors, has led to **large increases in school enrollment at all levels in the past 25 years.**

Yet there is ample evidence that in many developing countries many students are not learning very much.

Also, in some countries, a large fraction of children still do not finish primary school

A large amount of research on good quality research has been conducted in the past 25 years. We summarize the findings, and draw policy conclusions.

2. Trends in Education Outcomes, 1990 to 2014

Table 1: Primary and Secondary Enrollment Rates, 1960 and 2010, by Region

Region	<i>Primary Gross Enrollment Rate and Completion Rate</i>				<i>Secondary Gross Enrollment Rate</i>		
	1960	2010	Comple- tion Rate 2010	Income Adjusted Residual (2010)	1960	2010	Income Adjusted Residual (2010)
OECD Countries	110	102	99	-8.0	52	102	-2.6
East Asia and Pacific	73	122	99	10.9	12	82	4.8
Eastern Europe and Central Asia	98	100	98	7.4	53	93	13.7
Latin America and Caribbean	88	108	98	4.2	14	85	3.1
Middle East & N.Africa	54	108	98	1.7	10	85	-0.3
South Asia	56	111	92	8.0	18	61	2.0
Sub-Saharan Africa	41	101	68	-10.4	3	44	-12.1

Figure 1: Primary Gross Enrollment Rate by Log Real GDP/Capita, 2010

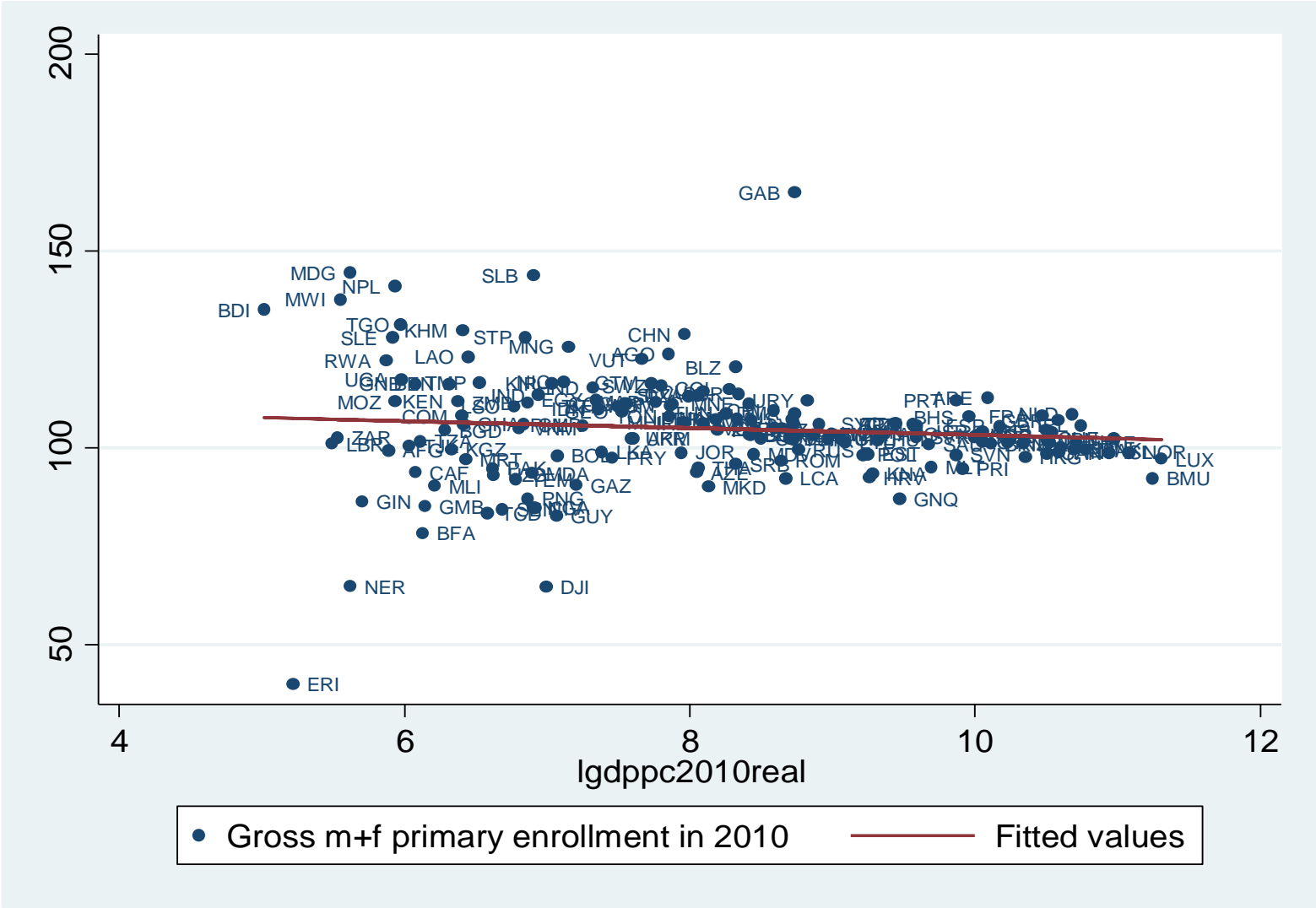


Figure 2: Primary Completion Rate by Log Real GDP/Capita, 2010

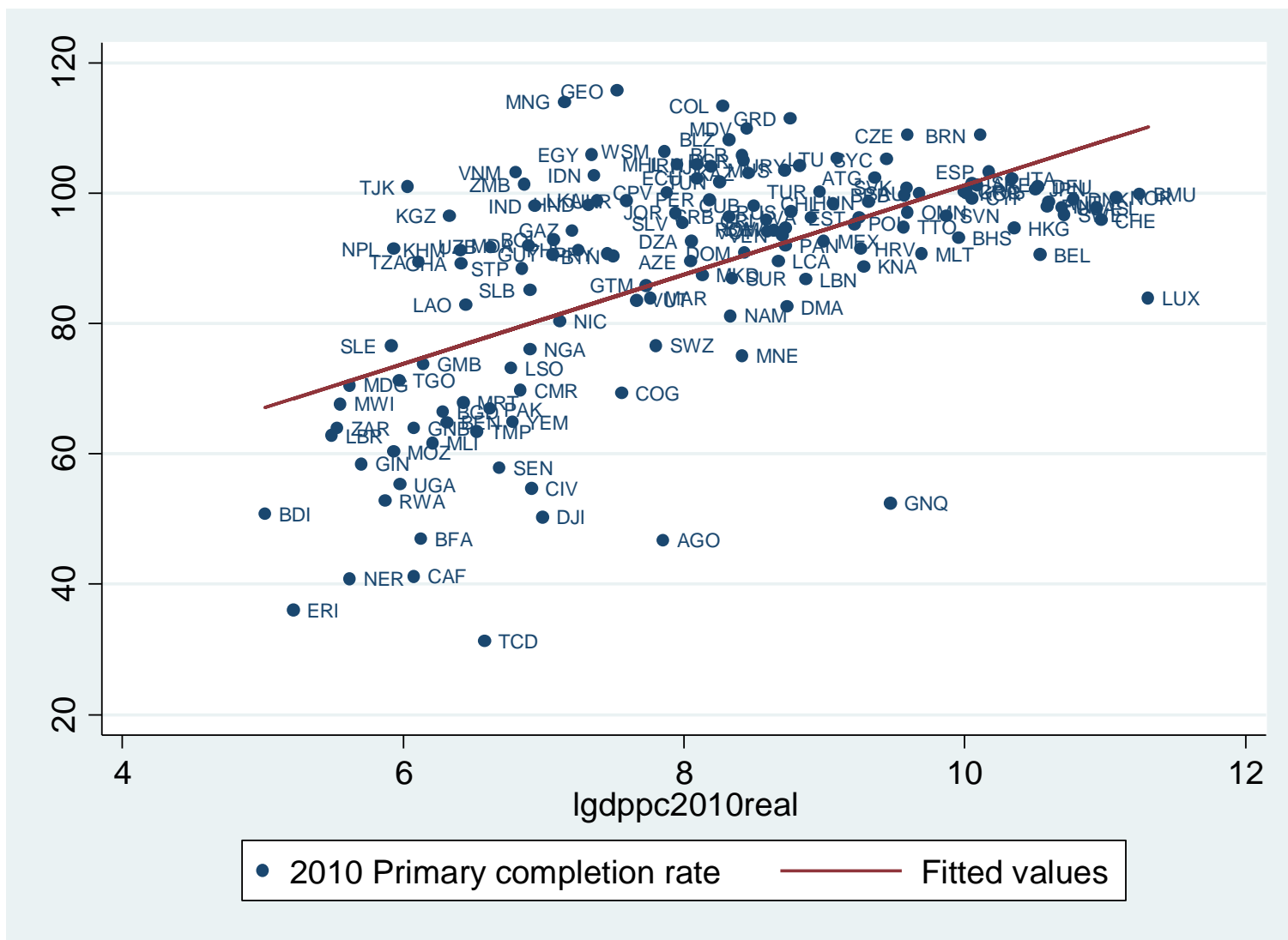


Figure 5: Mean Age 15 Reading Scores in 2012 (PISA), by 2010 Log Real GDP/capita

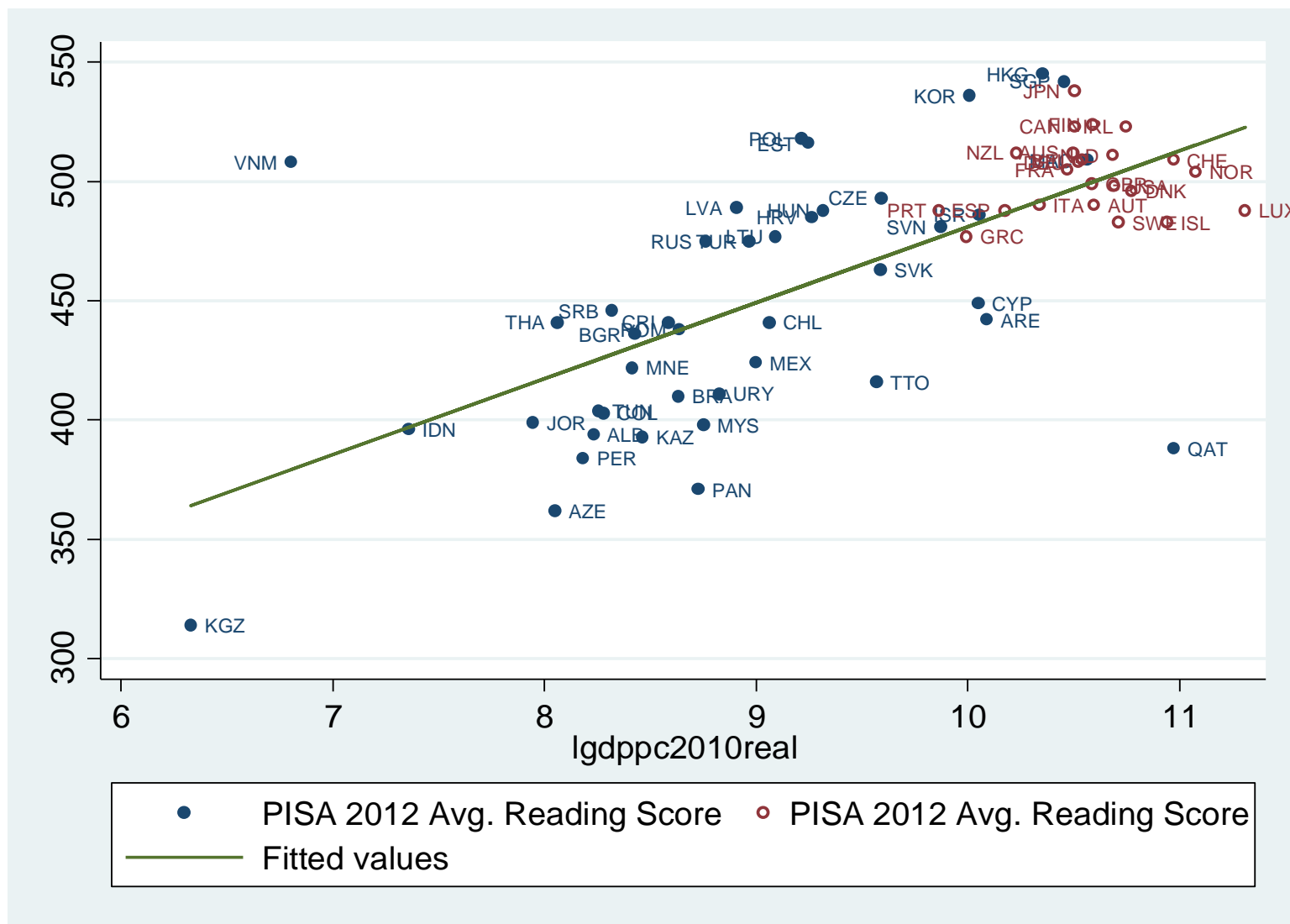


Figure 6: Mean Grade 4 Math Scores in 2011 (TIMSS), by 2010 Log Real GDP/capita

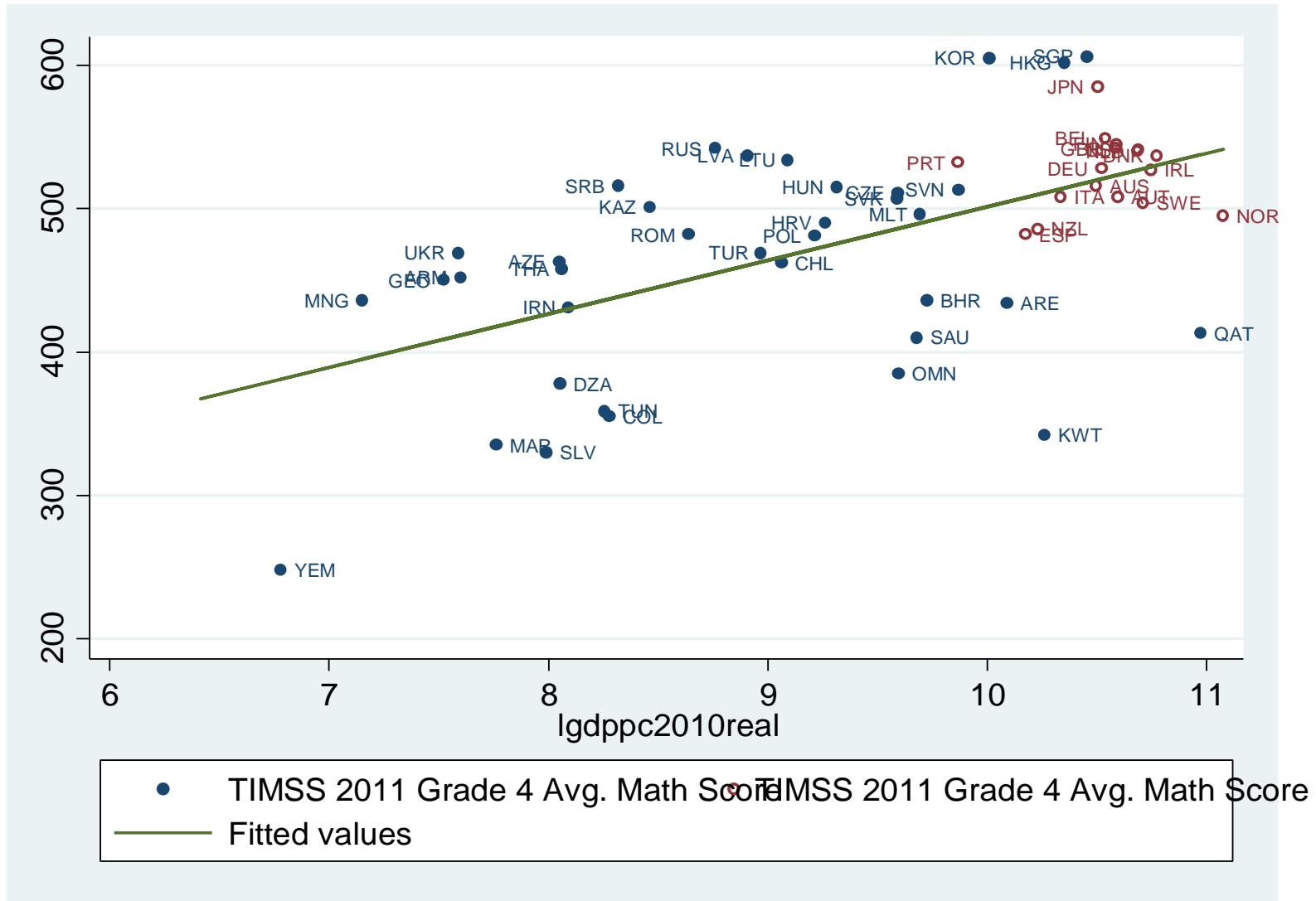


Figure 7: Mean Grade 8 Math Scores in 2011 (TIMSS), by 2010 Log Real GDP/capita

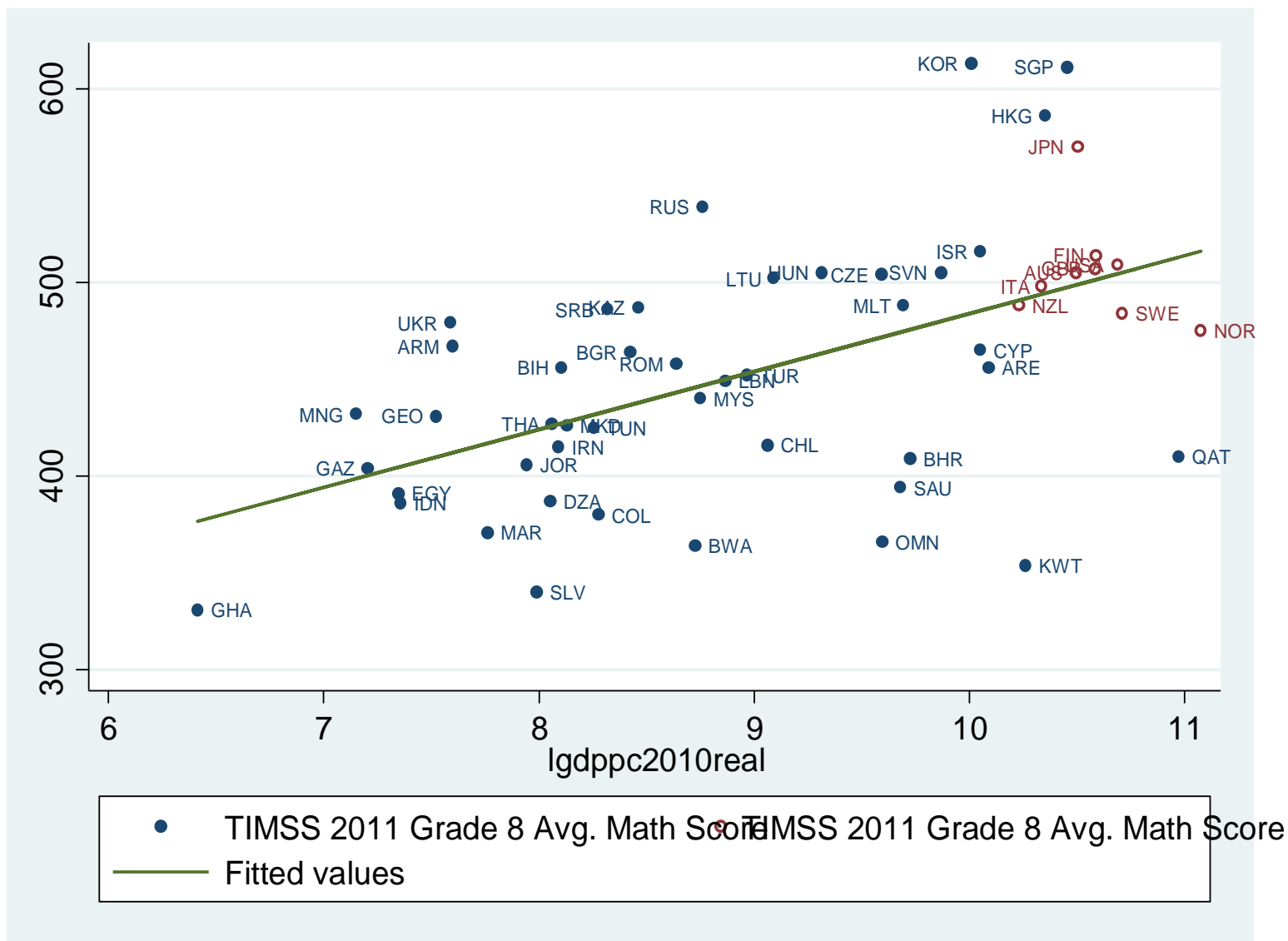


Table 2: Primary & Secondary School Enrollment Rates: A Historical Perspective

Country or Country Group	Year	GDP/Capita (2010 US\$)	Enrollment Rate	
			Primary	Secondary
Low Income Developing Countries	2010	1307	104	39
Middle Income Developing Countries	2010	6747	109	69
South Asian Countries	2010	3124	110	55
Sub-Saharan African Countries	2010	2148	100	36
USA	1830	2582	55	< 1
	1850	3085	68	< 1
	1900	6827	88	37
UK	1890	6691	72	1
France	1830	1987	39	1
	1870	3130	74	1
	1930	7563	80	3

3. Methodology

Table 3 – Steps Used to Select Papers Used in Conducting Synthesis

Review Step	Procedures Used	Number of Papers
1	Search EconLit and ERIC databases.	13,437
	Review abstracts to eliminate duplicate papers and papers that did not estimate the impacts of school or teacher characteristics for a developing country.	1,017
2	Review full papers, eliminate papers based on lack of relevance or lack of quantitative analysis.	320
3	Exclude papers that are not “high quality” (RCT, RDD, DD).	118
4	Number of high quality studies that are RCT studies	80

4. Results

Education Interventions were divided into 4 types:

1. **Demand Side Policies:** Policies that make schooling less expensive or more attractive to induce more children to enroll, and stay, in school.
2. **Input Policies:** Provide educational materials, improved school buildings, more teachers, and other “inputs”.
3. **Pedagogy Policies:** Policies that affect the way in which inputs are used in practice and the way in which teaching and learning is organized.
4. **Governance Policies:** personnel policy (hiring, training, retention, and promotions), accountability and monitoring, performance management, decentralization, the extent of choice and competition in school markets, and the regulatory structure for private schools.

Table 4 – Summary of Impacts on **Time in School of **Demand Side Interventions****

	Negative, Significant	Negative, Insignificant	Positive, Insignificant	Positive, Significant	Total Studies
Inform. on returns to ed. (all RCTs)	0 (0)	1 (1)	1 (1)	2 (1)	2
Conditional cash transfer					
RCTs	0 (0)	0 (0)	3 (2)	24 (13)	13
Other high quality studies	0 (0)	0 (0)	0 (0)	16 (7)	7
Eliminating school fees (non-RCT)	0 (0)	2 (2)	1 (1)	1 (1)	2
Merit-based scholarship (all RCTs)	0 (0)	0 (0)	1 (1)	3 (2)	2
Build new schools					
RCTs	0 (0)	0 (0)	0 (0)	3 (2)	2
Other high quality studies	0 (0)	0 (0)	0 (0)	3 (3)	3

Table 5 – Summary of Impacts on Test Scores of Demand Side Interventions

	Negative, Significant	Negative, Insignificant	Positive, Insignificant	Positive, Significant	Total Studies
Inform. on returns to schooling (RCT)	0 (0)	1 (1)	0 (0)	0 (0)	1
Conditional cash transfer					
RCTs	0 (0)	1 (1)	1 (1)	3 (3)	5
Other high quality studies	0 (0)	1 (1)	1 (1)	0 (0)	2
Merit-based scholarship (all RCTs)	0 (0)	1 (1)	0 (0)	5 (3)	4
Build new schools					
RCTs	0 (0)	0 (0)	0 (0)	2 (1)	1
Other high quality studies	0 (0)	0 (0)	0 (0)	1 (1)	1

Table 6 – Summary of Impacts on **Time in School of **School Inputs****

	Negative, Significant	Negative, Insignificant	Positive, Insignificant	Positive, Significant	Total Studies
Textbooks (all RCTs)	0 (0)	0 (0)	2 (2)	0 (0)	2
School meals RCTs	0 (0)	0 (0)	2 (2)	1 (1)	3
Other high quality studies	0 (0)	3 (2)	1 (1)	0 (0)	2
Take home rations RCTs	0 (0)	0 (0)	0 (0)	1 (1)	1
Other high quality studies	0 (0)	0 (0)	1 (1)	0 (0)	1
Deworming Medicine (RCT)	0 (0)	0 (0)	0 (0)	1 (1)	1

Table 7 – Summary of Impacts on Test Scores of School Inputs

	Negative, Significant	Negative, Insignificant	Positive, Insignificant	Positive, Significant	Total Studies
Hours per school day (all other high quality studies)	0 (0)	1 (1)	0 (0)	3 (2)	2
Textbooks (all RCTs)	0 (0)	2 (1)	1 (1)	0 (0)	2
Pupil-teacher ratio					
RCTs	0 (0)	1 (1)	0 (0)	0 (0)	1
Other high quality studies	3 (2)	1 (1)	0 (0)	0 (0)	2
School meals					
RCTs	0 (0)	0 (0)	0 (0)	2 (1)	2
Other high quality studies	0 (0)	2 (1)	1 (2)	1 (1)	2
Iron supplements (all RCTs)	0 (0)	1 (1)	2 (2)	1 (1)	2

Table 8 – Summary of Impacts on **Time in School of **Pedagogy** Interventions**

	Negative, Significant	Negative, Insignificant	Positive, Insignificant	Positive, Significant	Total Studies
Teaching at the Right Level (RCT)	0 (0)	1 (1)	0 (0)	0 (0)	1
Computer, Electronic Games, and Access to Technology (RCT)	0 (0)	0 (0)	2 (1)	0 (0)	1

Table 9 – Summary of Impacts on Test Scores of Pedagogy Interventions

	Negative, Significant	Negative, Insignificant	Positive, Insignificant	Positive, Significant	Total Studies
Teaching at right level/ Supplemental Instruction (all RCTs)	0 (0)	1 (1)	1 (1)	4 (3)	3
Tracking/Streaming RCTs	0 (0)	0 (0)	0 (0)	2 (1)	1
Computers/Electronic games RCTs	1 (1)	0 (0)	3 (3)	10 (6)	8
Other high quality studies	3 (1)	0 (0)	0 (0)	0 (0)	1
Reading-intensive pedagogy and reading materials (RCT)	0 (0)	0 (0)	2 (1)	2 (1)	1

Table 10 – Summary of Impacts on **Time in School of **Governance** Interventions**

	Negative, Significant	Negative, Insignificant	Positive, Insignificant	Positive, Significant	Total Studies
Monitoring (all RCTs)	0 (0)	1 (1)	1 (1)	0 (0)	2
School-based Mgmt. RCTs	0 (0)	7 (3)	5 (3)	1 (1)	3
Other high quality Studies	0 (0)	2 (1)	1 (1)	0 (0)	2
Priv. School (vouchers) RCTs	0 (0)	1 (1)	1 (1)	1 (1)	2
Other high quality Studies	0 (0)	1 (1)	0 (0)	0 (0)	1
Teacher incentive (pupil tests) (RCT)	0 (0)	1 (1)	2 (1)	0(0)	1

Table 11 – Summary of Impacts on Test Scores of Governance Interventions

	Negative, Significant	Negative, Insignificant	Positive, Insignificant	Positive, Significant	Total Studies
Monitoring (All RCTs)	0 (0)	1 (1)	4 (3)	1 (1)	4
School-based Mgmt. RCTs	0 (0)	9 (3)	7 (3)	2 (2)	5
Other high quality studies	0 (0)	1 (1)	1 (1)	1 (1)	2
Teacher perform. pay RCTs	0 (0)	1 (1)	2 (1)	5 (2)	3
Other high quality studies	0 (0)	0 (0)	1 (1)	1 (1)	1
Contract tchers (all RCTs)	0 (0)	0 (0)	0 (0)	3 (2)	2
Priv. School (vouchers) RCTs	0 (0)	0 (0)	3 (2)	2 (2)	3
Other high quality Studies	0 (0)	2 (1)	2 (1)	0 (0)	2

5 Interpreting the Evidence, and Implications for Policy & for Future Research

The following interventions are most **successful at increasing time in school**:

- Conditional cash transfers (although they are relatively expensive)
- Merit-based scholarships (although there are many different variants)
- Building new schools (Afghanistan and Burkina Faso)

The following interventions are most **successful at increasing test scores**:

- Conditional cash transfers (although they are relatively expensive)
- Merit-based scholarships (although there are many different variants)
- Building new schools (Afghanistan and Burkina Faso)
- Longer school day (Chile and Ethiopia)
- Reducing pupil-teacher ratio (although also relatively expensive)
- School meals (although also relatively expensive)
- “Teaching at the right level”
- Tracking/Streaming (but only 1 study, from Kenya)
- Computers, internet connections, etc. (although not always, can even hurt)
- Maybe school based management (3 of 7 studies, but 3 of 21 estimates)
- Teacher performance pay based on student learning (India & Chile, not Kenya)
- Contract teachers (Kenya and India)
- Maybe vouchers for private schools (2 out of 5 studies)

Some Caveats/Elaboration on the Above Findings

- Some policies didn't work because of bad implementation (e.g. textbooks)
- There is great “heterogeneity” in countries and in the way that these policies are implemented, so:
 - Something that works well in one country may not work well in another, and something that does not work well in one country may work well in another country (i.e. **big problems of external validity**)
 - A policy or program that worked well in a given country may not work well in that country if changes are made to the policy, and a policy or program that did not work well in a given country may work well in that country if changes are made to the policy

- **Five different possible reasons why a policy “does not work”:**
 - **Poor implementation**
 - **Parents, teachers, or others “substitute away” in other dimensions**
 - **The “problem” addressed is not the “binding constraint”**
 - **Need for “complementary reforms” (e.g. train teachers to use computers)**
 - **It really is an ineffective policy**
- Our intuition and experience suggest that “governance” problems may be the binding constraint in many contexts