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Cognitive Skills and Economic Development

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All figures in this presentation are based on the author's own calculations.

Importance of Human Capital Policy

Focus

- Traditional emphasis on school attainment
 - Development of access programs
 - Centerpiece of Millennium Development Goals
 - Education for All initiative
 - Some clear successes and some continuing challenges
 - New evidence that **QUALITY** is the primary issue
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Latin America Then

	GDP/pop 1960	Years schooling
Asia	1891	4.0
Sub-Saharan Africa	2304	3.3
MENA	2599	2.7
Latin America	4152	4.7
Europe	7469	7.4
Commonwlth OECD	11252	9.5

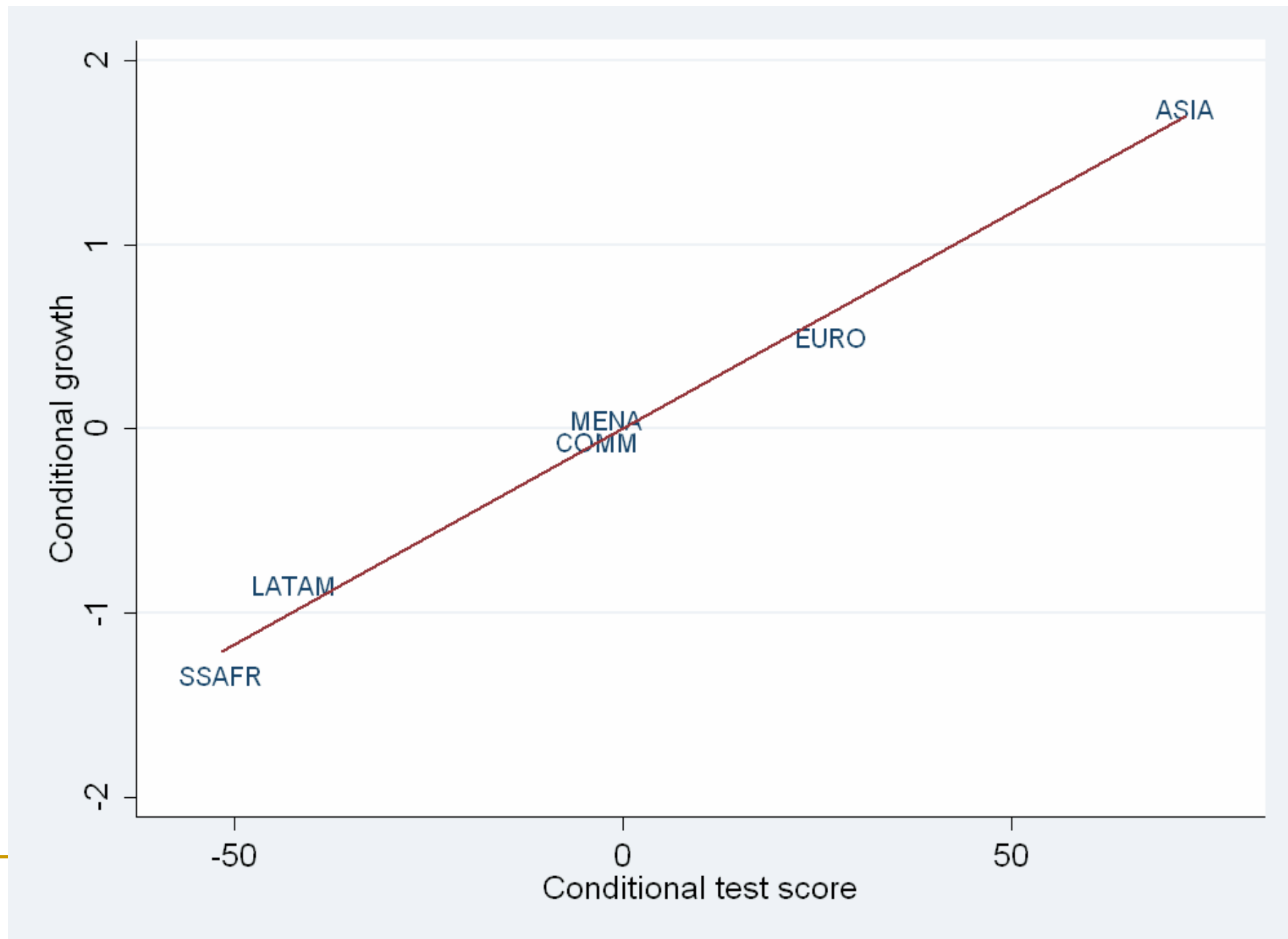
Latin America Then and Now

	GDP/pop 1960	Years schooling	Growth 1960-2000	GDP/pop 2000
Asia	1891	4.0	4.5	13571
Sub-Saharan Africa	2304	3.3	1.4	3792
MENA	2599	2.7	2.7	8415
Latin America	4152	4.7	1.8	8063
Europe	7469	7.4	2.9	21752
Commonwlth OECD	11252	9.5	2.1	26147

Latin America Then and Now

	GDP/pop 1960	Years schooling	Growth 1960-2000	GDP/pop 2000	Test score
Asia	1891	4.0	4.5	13571	480
Sub-Saharan Africa	2304	3.3	1.4	3792	360
MENA	2599	2.7	2.7	8415	412
Latin America	4152	4.7	1.8	8063	388
Europe	7469	7.4	2.9	21752	492
Commonwlth OECD	11252	9.5	2.1	26147	500

Cognitive Skills and Economic Growth



Overview of Discussion

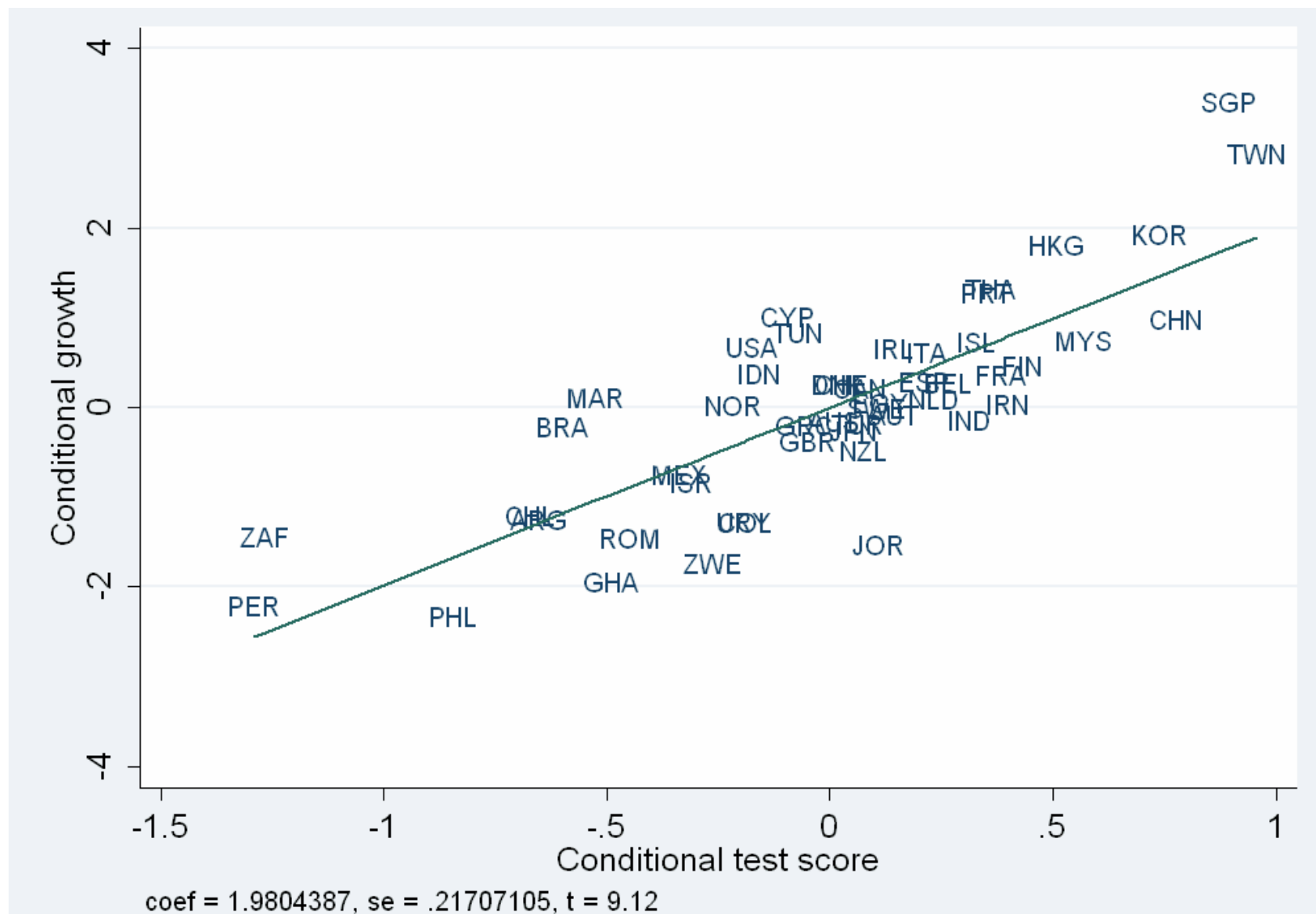
- Importance of quality (cognitive skills)
 - Economic growth
 - Individual earnings
 - Distributional outcomes
 - Policy actions and reform
 - Resource policies
 - Supply side incentives
 - Demand side incentives
 - Importance of information
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Cognitive Skills: International Student Achievement Tests

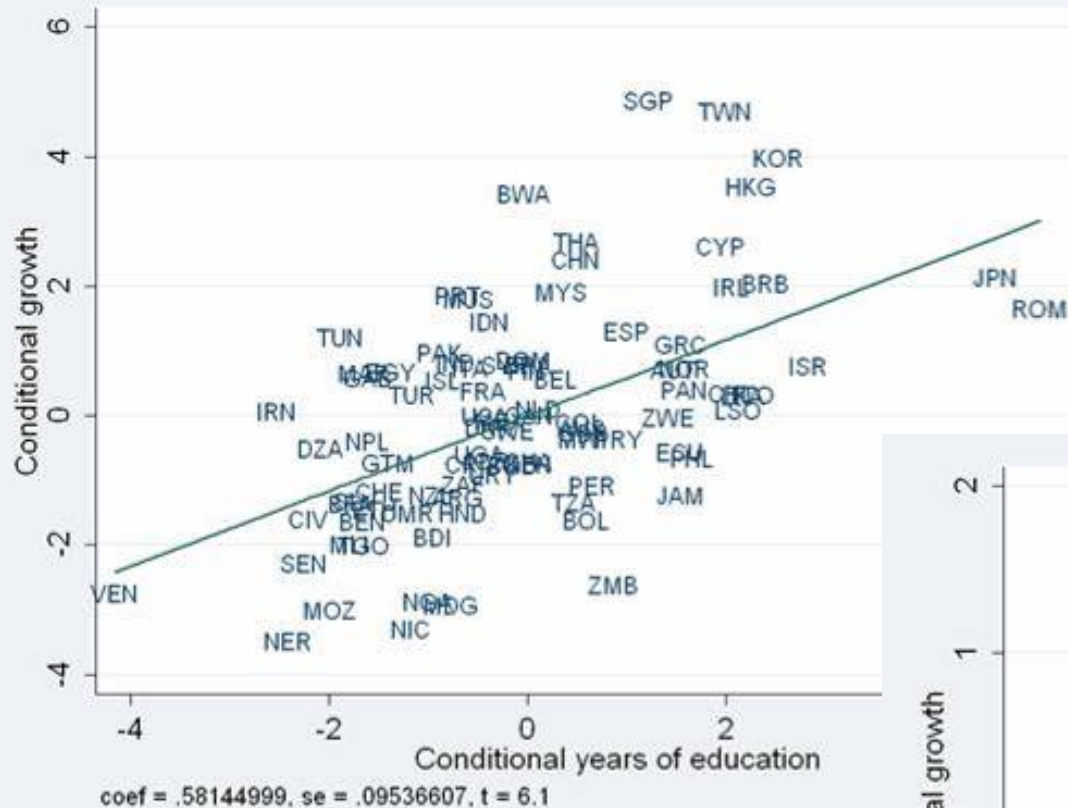
- Measuring knowledge, not sitting in the classroom
- International agencies have conducted many international tests of students' performance in cognitive skills since mid-1960s
 - 12 testing occasions
 - 36 separate test observations (age levels, subjects)
- Require rescaling to obtain combined measure
 - Adjust mean and variance of separate tests



Education Quality and Economic Growth

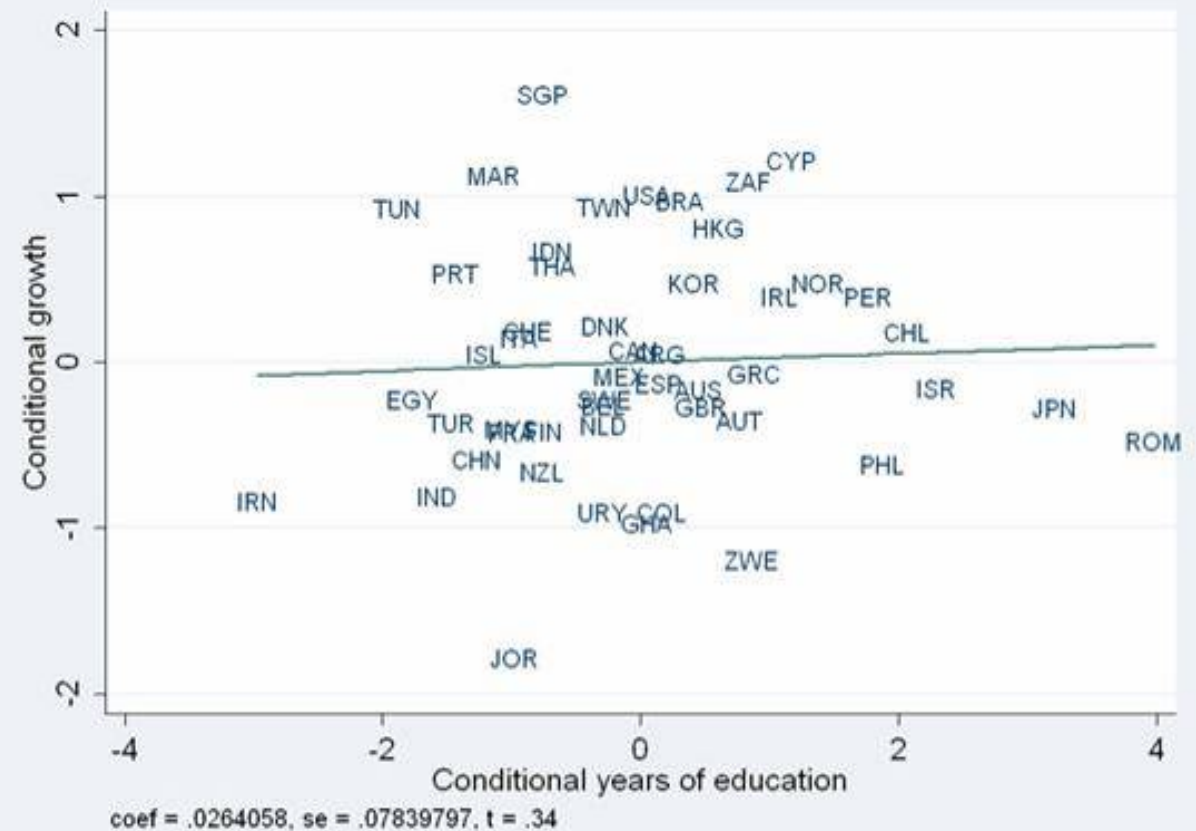


Quantity of Schooling

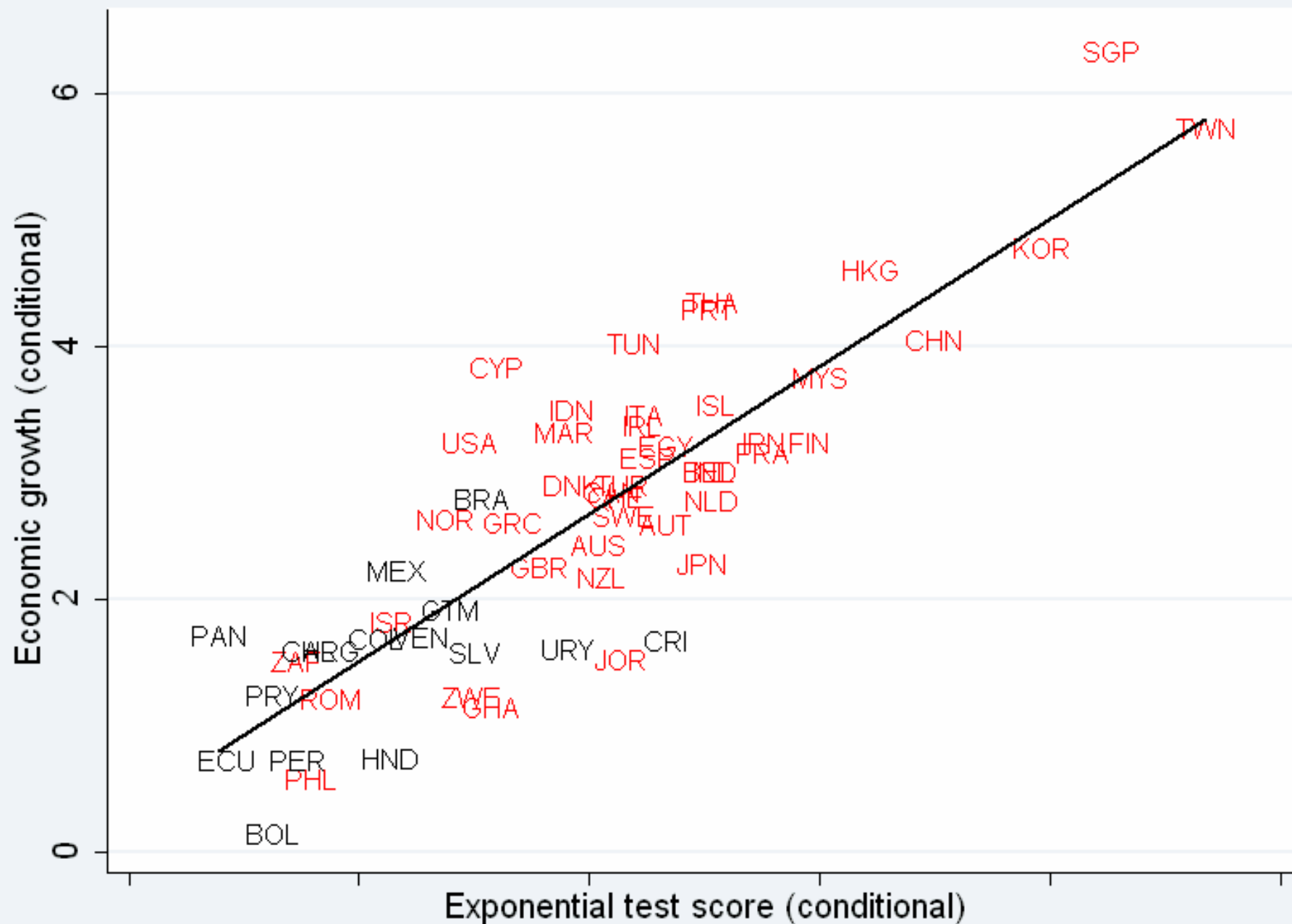


With quality control

Without quality control



Extension to Latin American Tests



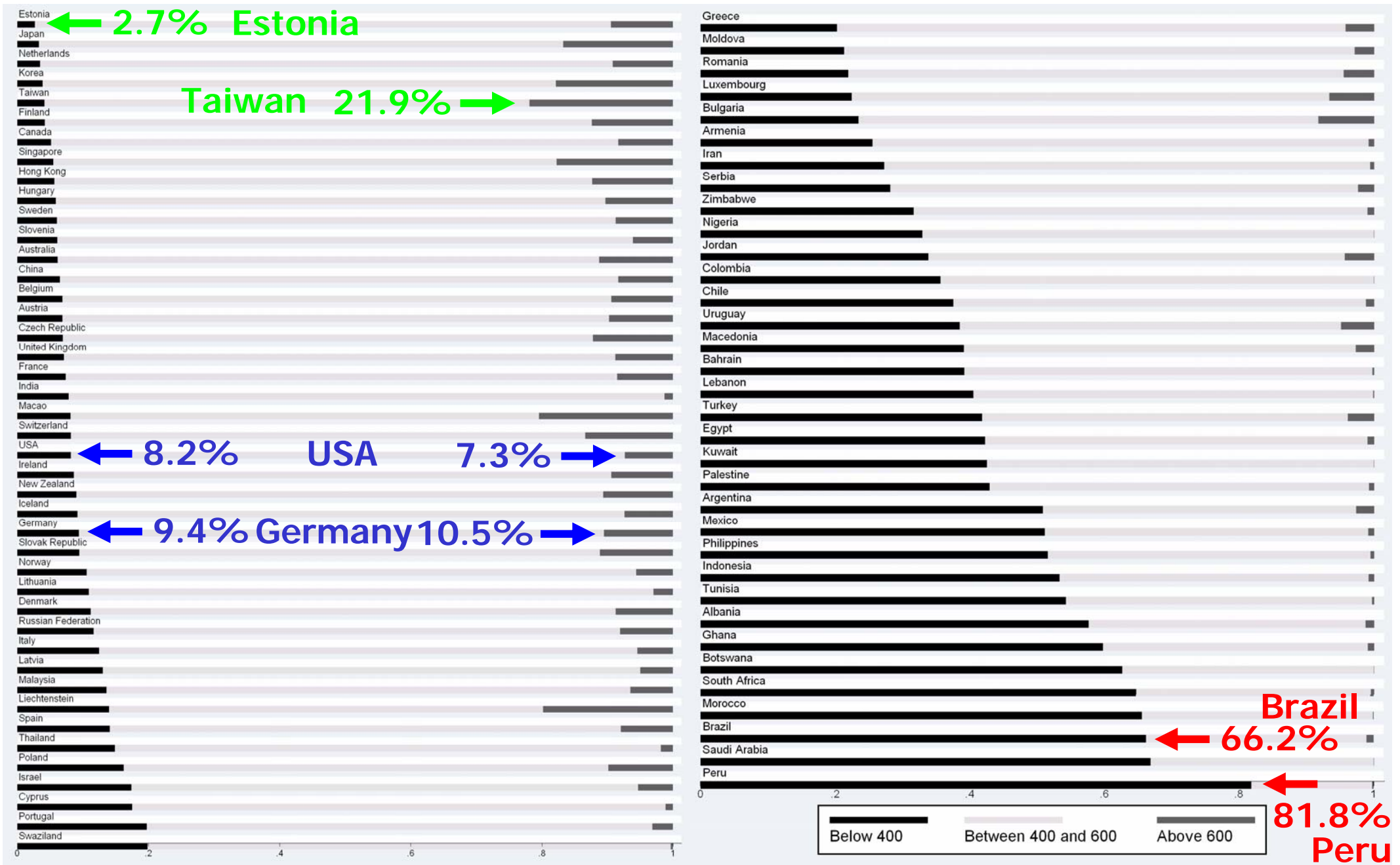
Other Benefits of Improved Cognitive Skills

- Improvement in individual earnings
 - True for developed countries
 - True for developing countries
- Improvement in income distribution

Conclusions on Economic Impacts

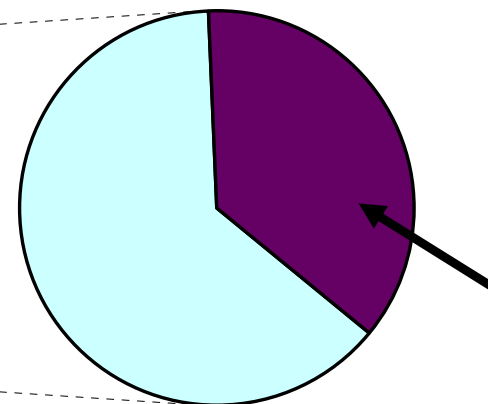
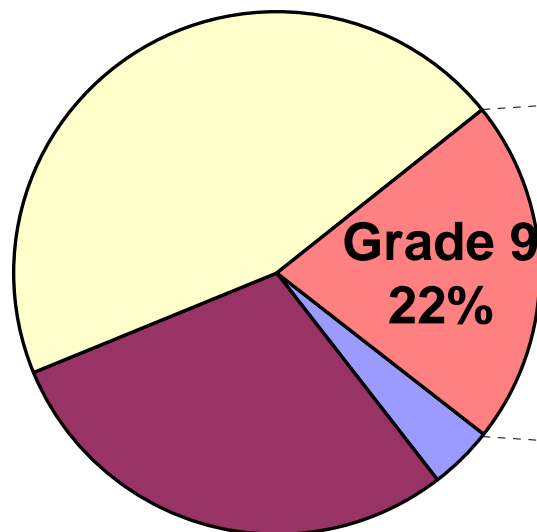
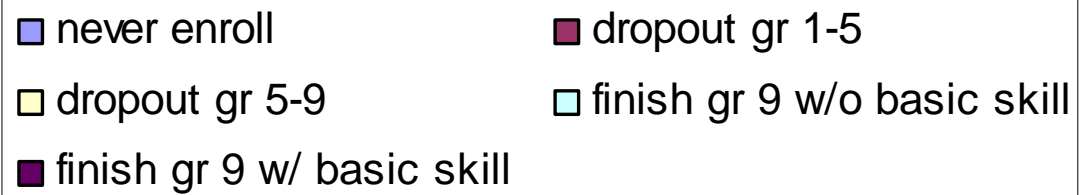
- Powerful effects of cognitive skills on individual earnings, on the distribution of income, and on economic growth
 - Support for causal interpretation
 - The current situation in developing countries is much worse than generally pictured on the basis just of school enrollment and attainment
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Lack of Educational Quality – Share of students below 400 test points (“illiterate”), between 400 and 600 and above 600 test points



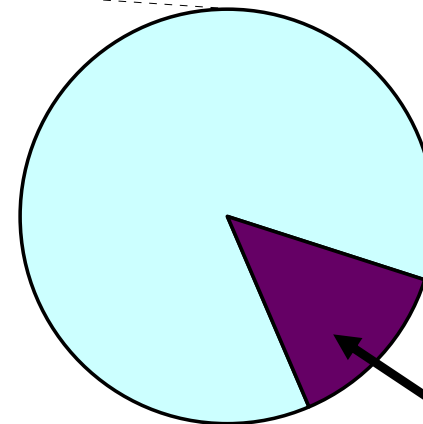
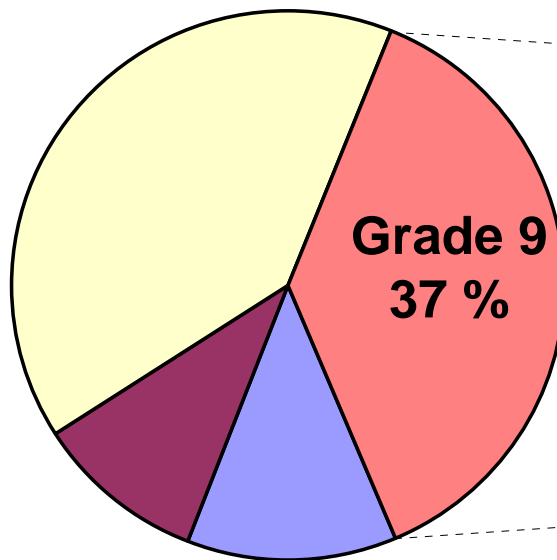
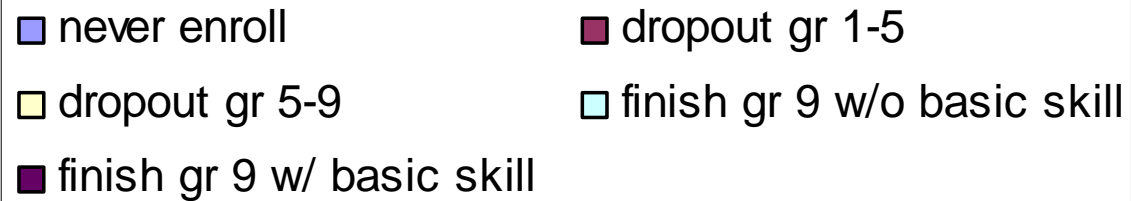
Basic Skills

Brazil



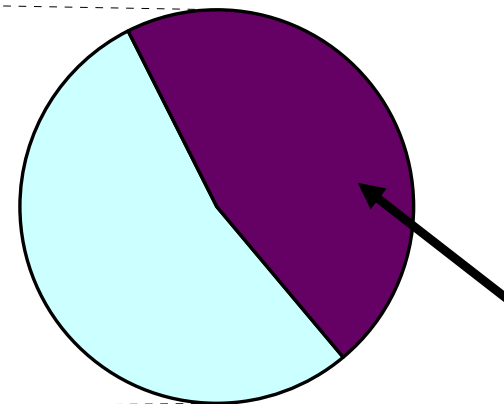
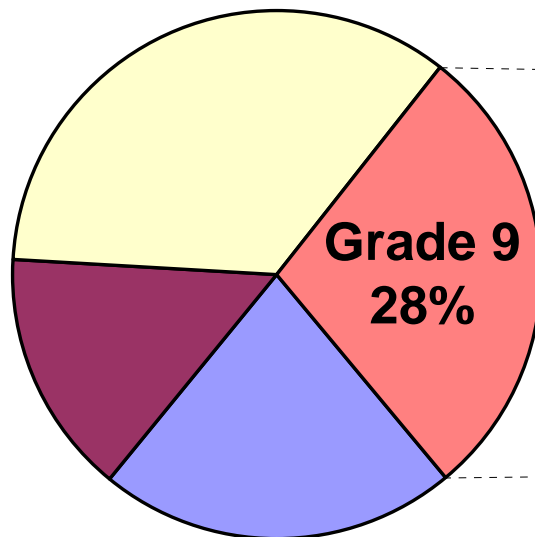
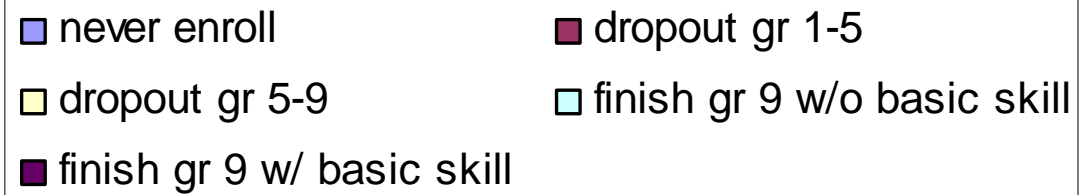
Basic Skills

Ghana



Basic Skills

Morocco



**Fully literate
13%**

Cognitive Skill Production

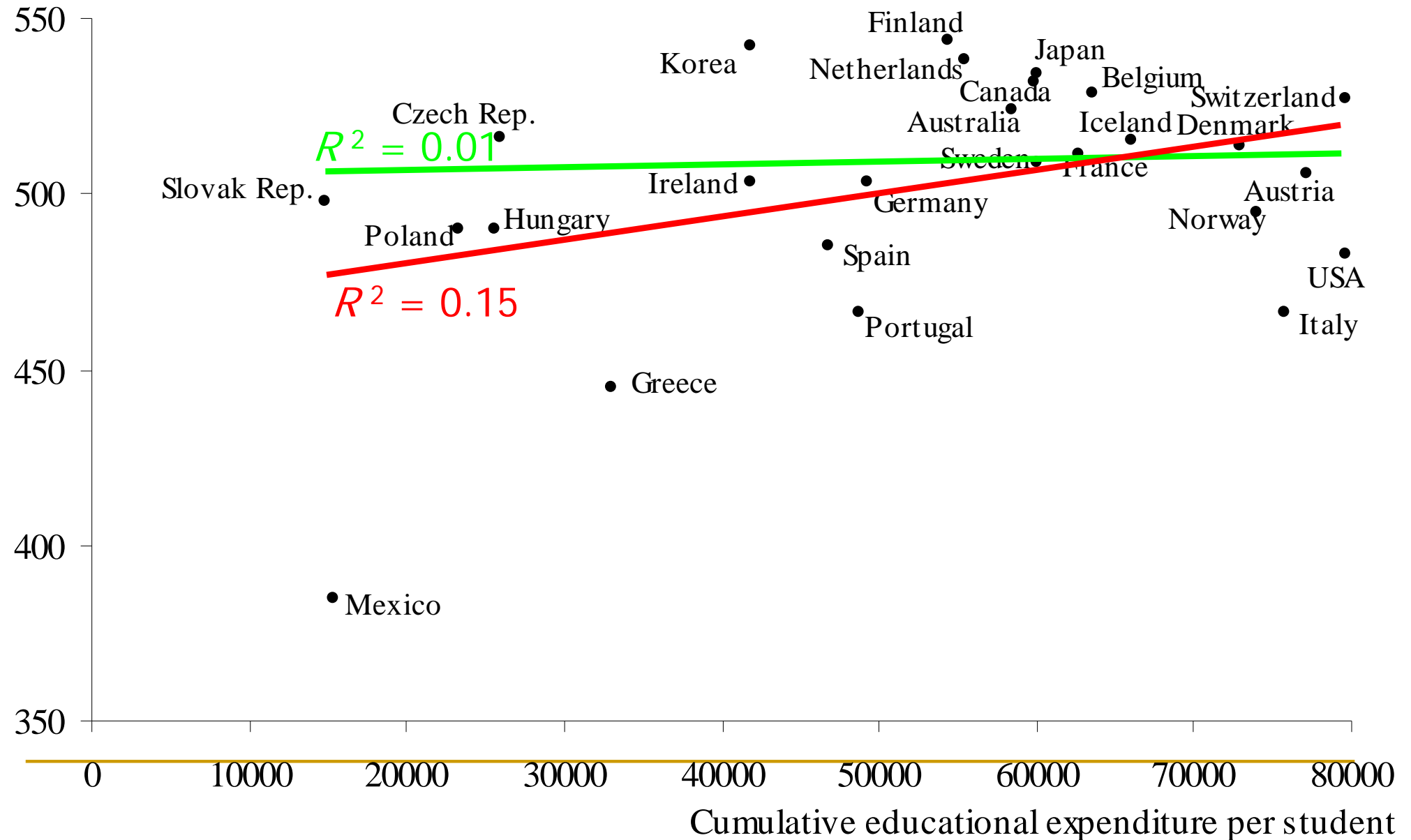
- Families
 - Peers
 - Community and neighborhood
 - Schools
-
- Policy largely around schools
 - but other interventions such as health programs

Resource Policies

- Little evidence of success
- Cross country evidence

Resources and Performance across Countries

Math performance in PISA 2003



Resource Policies

- Little evidence of success
- Cross country evidence
- Within country – developed
- Within country – developing

Resource Policies

- Little evidence of success
 - Cross country evidence
 - Within country – developed
 - Within country – developing
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- Does not say “resources never have effect”
 - Does not say “resources cannot have effect”
- No expectation within current incentive structure***

Teacher Quality

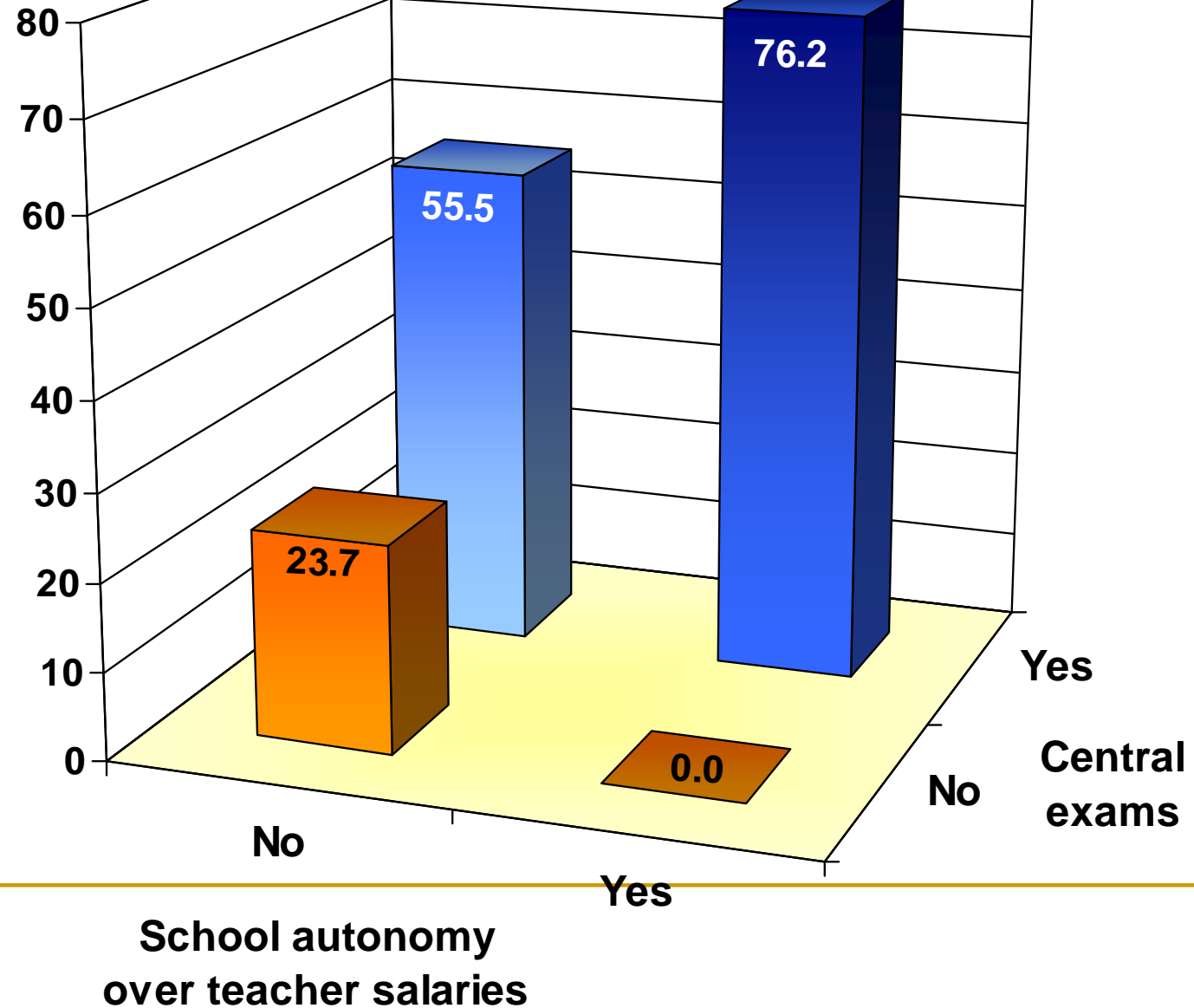
- Strongest evidence on systematic effects
 - Not related to common measures
 - Observable through both student performance *and* supervisor ratings
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Institutional Reforms Supported by Evidence

- Centralized exams
 - Accountability
 - Autonomy/decentralization
 - Choice
 - Direct performance incentives
-

Complementarity of External Exams and School Autonomy

Math performance in TIMSS/TIMSS-R test scores (relative to lowest category)



Demand Side Incentives

- Application mainly in developing countries
 - Motivated by access/attainment issues
 - Work through changing student and family behavior
 - Programs carefully evaluated
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Range of Demand Side Programs

- Aimed generally at encouraging attendance/completion
- Conditional cash transfers
 - Mexico, Brazil, Columbia, Nicaragua
- Fee reduction
 - Indonesia, Cambodia, Taiwan, Kenya*
- Food and nutrition supplements
 - Bangladesh, India, Kenya

Results of Demand Side Incentives

- Each has positive (and significant) impact on attendance and attainment
 - But, with exception of Kenyan merit scholarship, little or no apparent impact on achievement
-

Conclusions on Demand Side Incentives

- Incentives have impact on behavior
- Requires care in structuring incentives
 - Ensure that goals are correct
 - Do not assume other outcomes
- May be perverse effects
 - Access and quality trade-offs
- Access viewed as “equity”
 - Equity not supported by low quality

Information and Feedback

- Assessments have been very bad
 - Limited national assessments
 - International assessments problematic
 - No regular evaluation function
 - Local variation in effectiveness
 - No simple solutions
-

Conclusions

- Powerful economic impacts of ***education quality***
- The current situation in developing countries is dismal
- School quality is not easily changed
- Focus on ***incentives*** but be careful
- Information shortage critical
 - ❑ Student performance
 - ❑ Program feedback