

The Role of International Assessments of Cognitive Skills in the Analysis of Growth and Development

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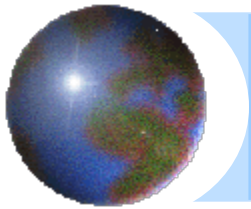
Ludger Woessmann

University of Munich, ifo Institute

International Large Scale Assessment Conference

Education Testing Service

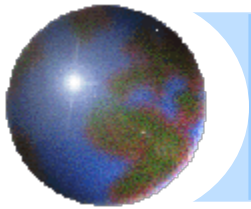
March 2011



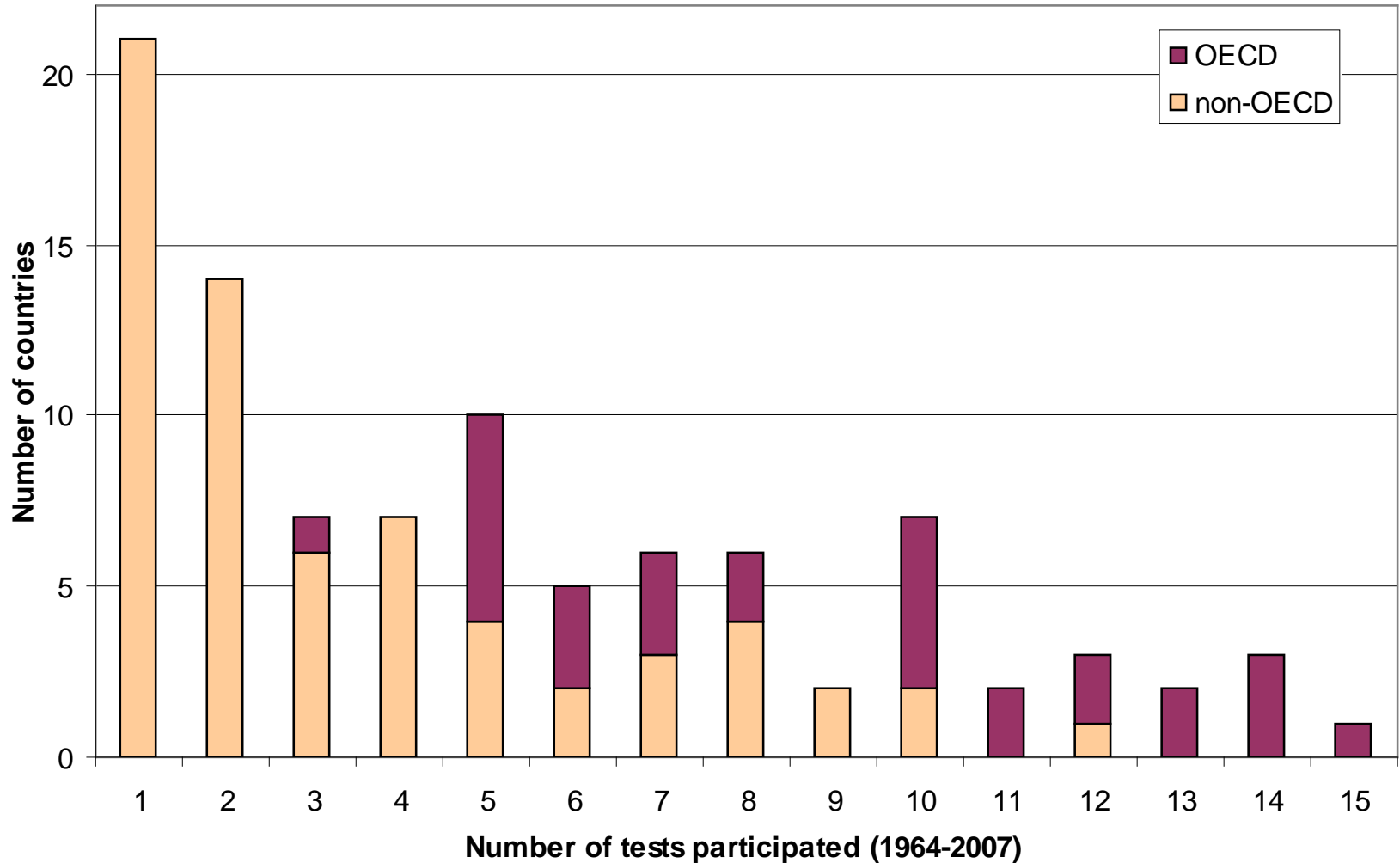
Elements of Discussion

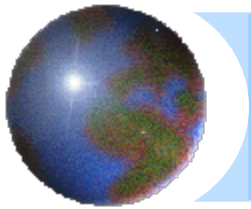
- Outcomes of education
- Determinants of education

Hanushek, Eric A., and Ludger Woessmann. "The economics of international differences in educational achievement." In *Handbook of the Economics of Education*, Vol. 3, edited by Eric A. Hanushek, Stephen Machin, and Ludger Woessmann. Amsterdam: North Holland, 2011: 89-200



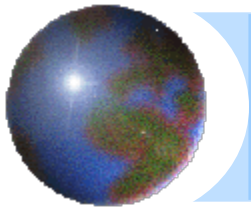
Participation in IEA and OECD tests (through 2007)



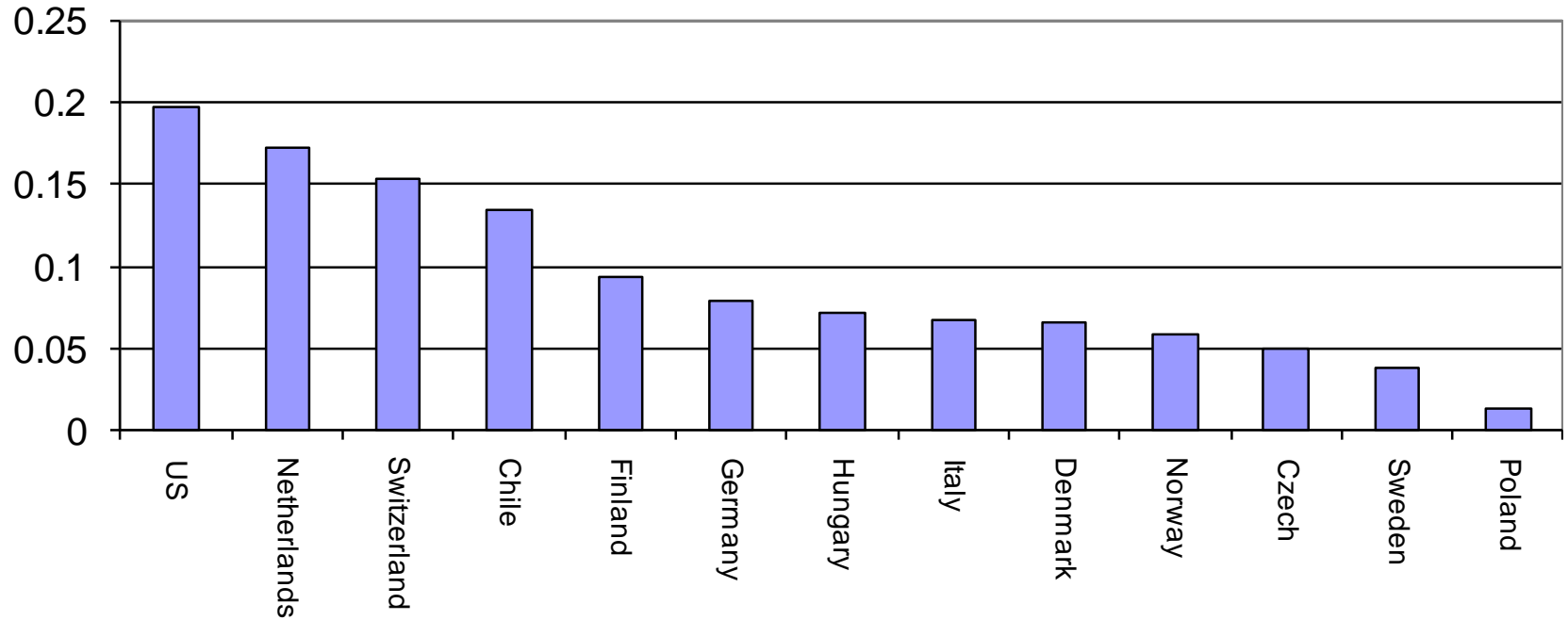


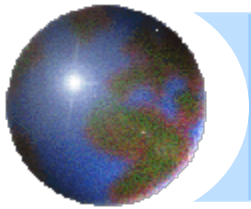
Studies of the Economic Consequences of Human Capital

Data source	Economic Consequences			TOTAL
	individual earnings	equity	aggregate outcomes	
IEA		1	1	2
OECD				
Other	6	3	1	10
Combined			13	13
TOTAL	6	4	15	25

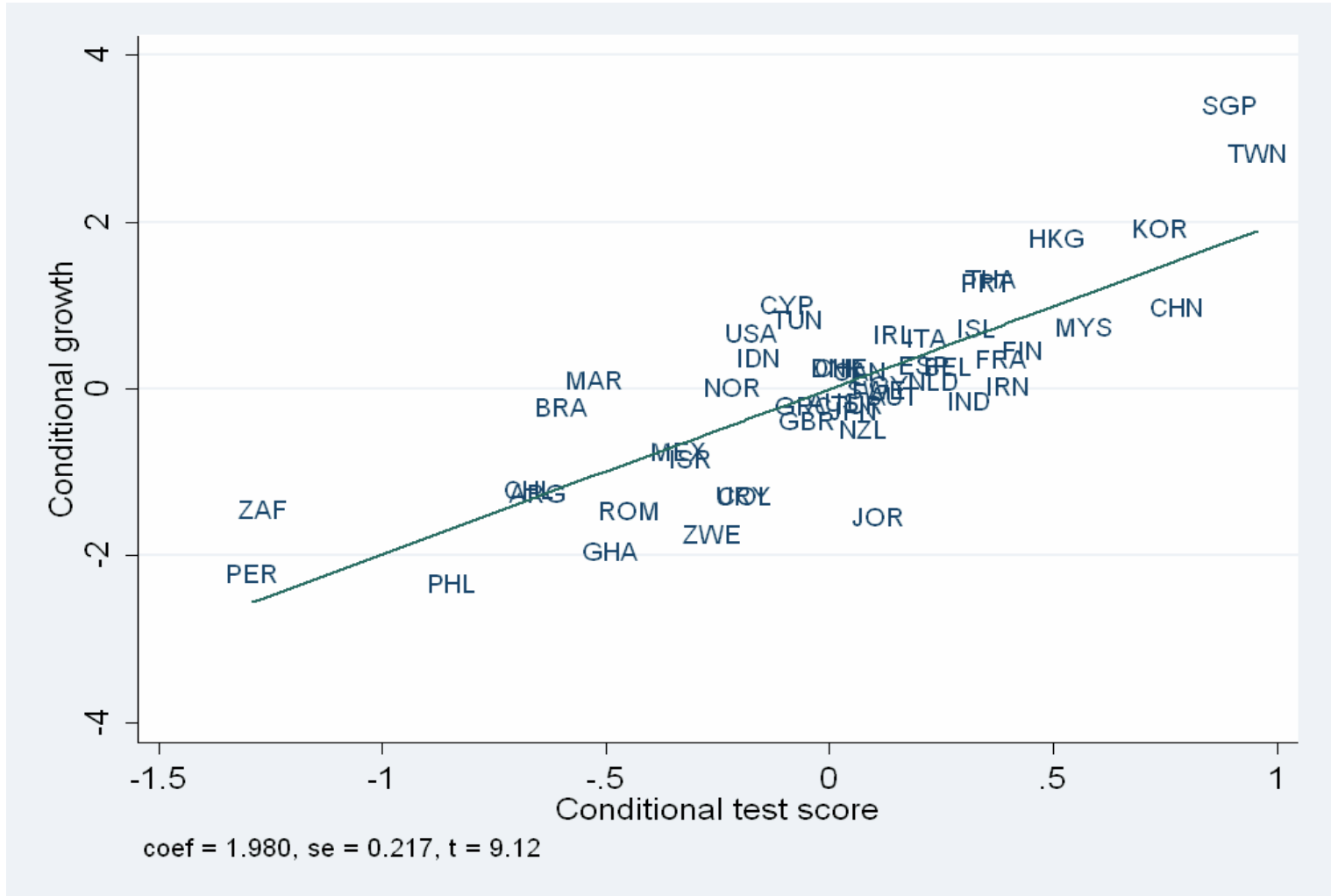


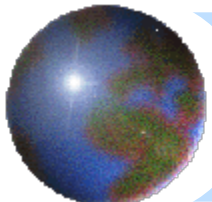
Returns to Cognitive Skills (International Adult Literacy Survey)



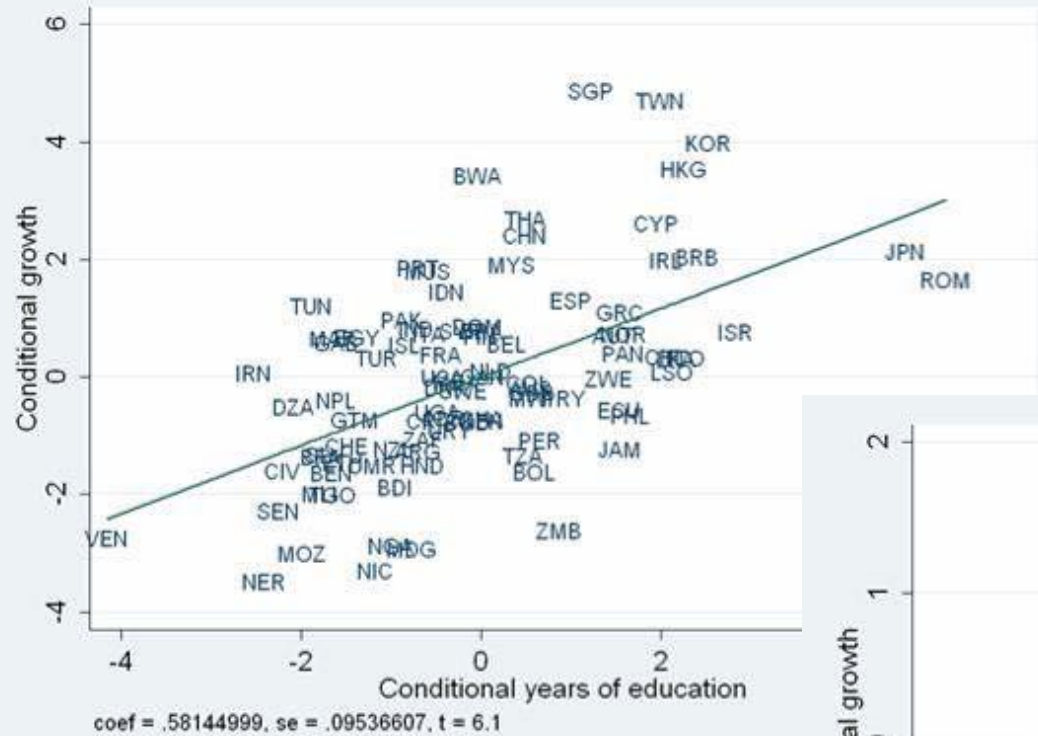


Cognitive Skills and Economic Growth



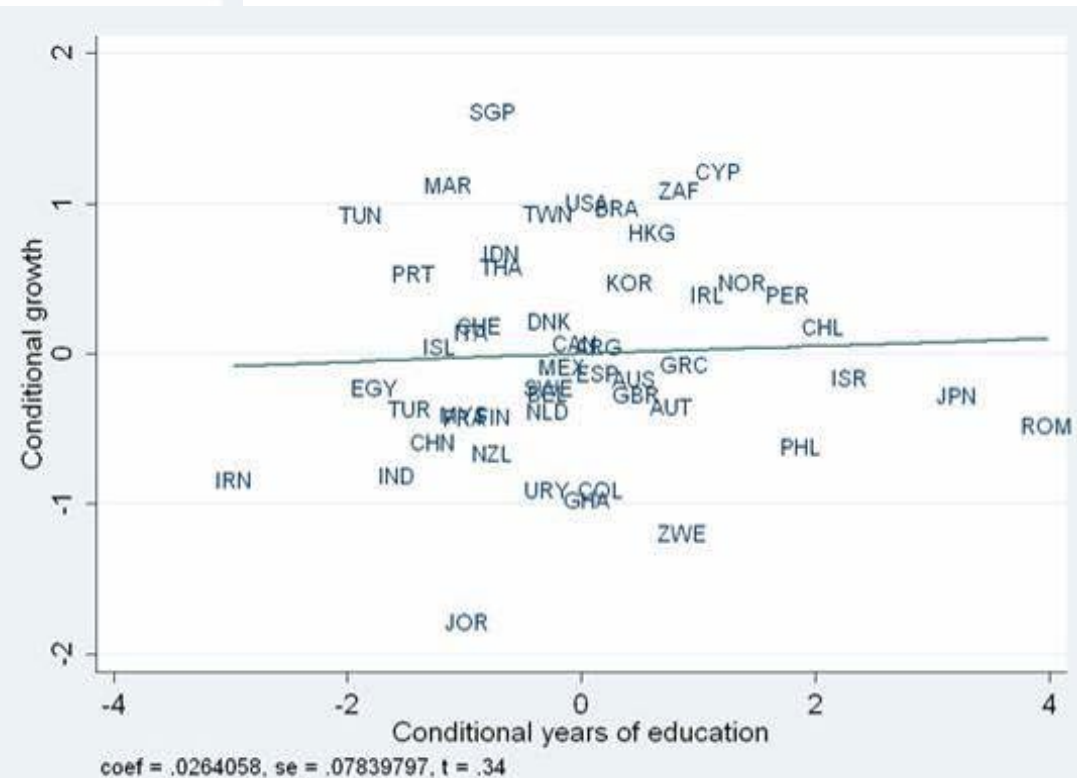


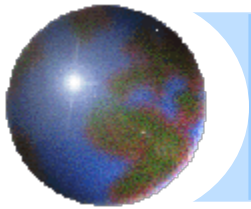
Years of Schooling and Economic Growth



Without quality control

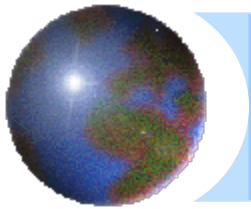
With quality control



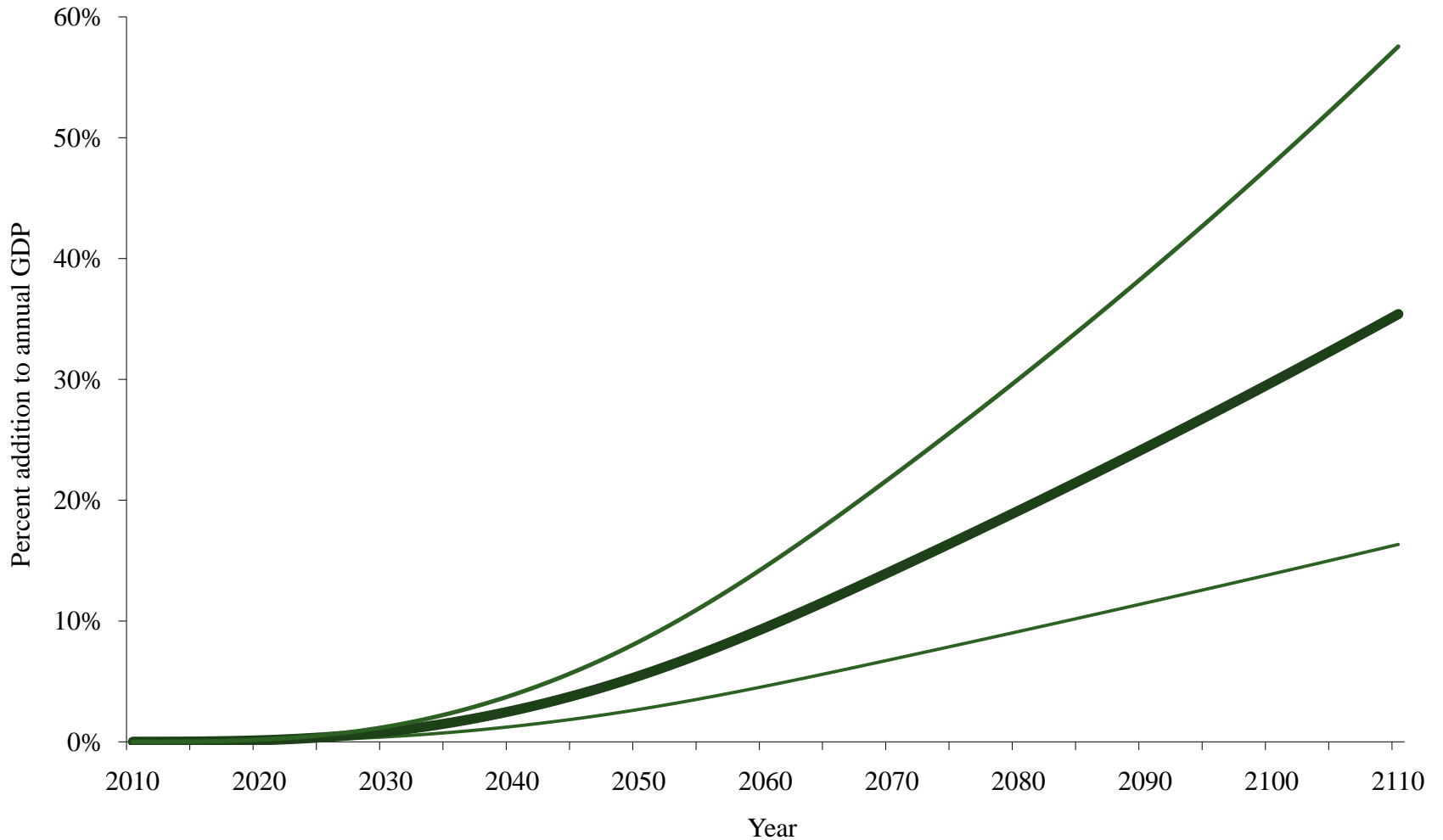


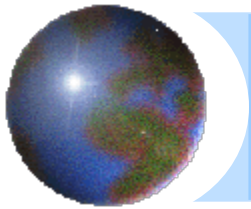
Growth Projections

- Scenario 1
 - Achievement improves by 25 points (1/4 s.d.)

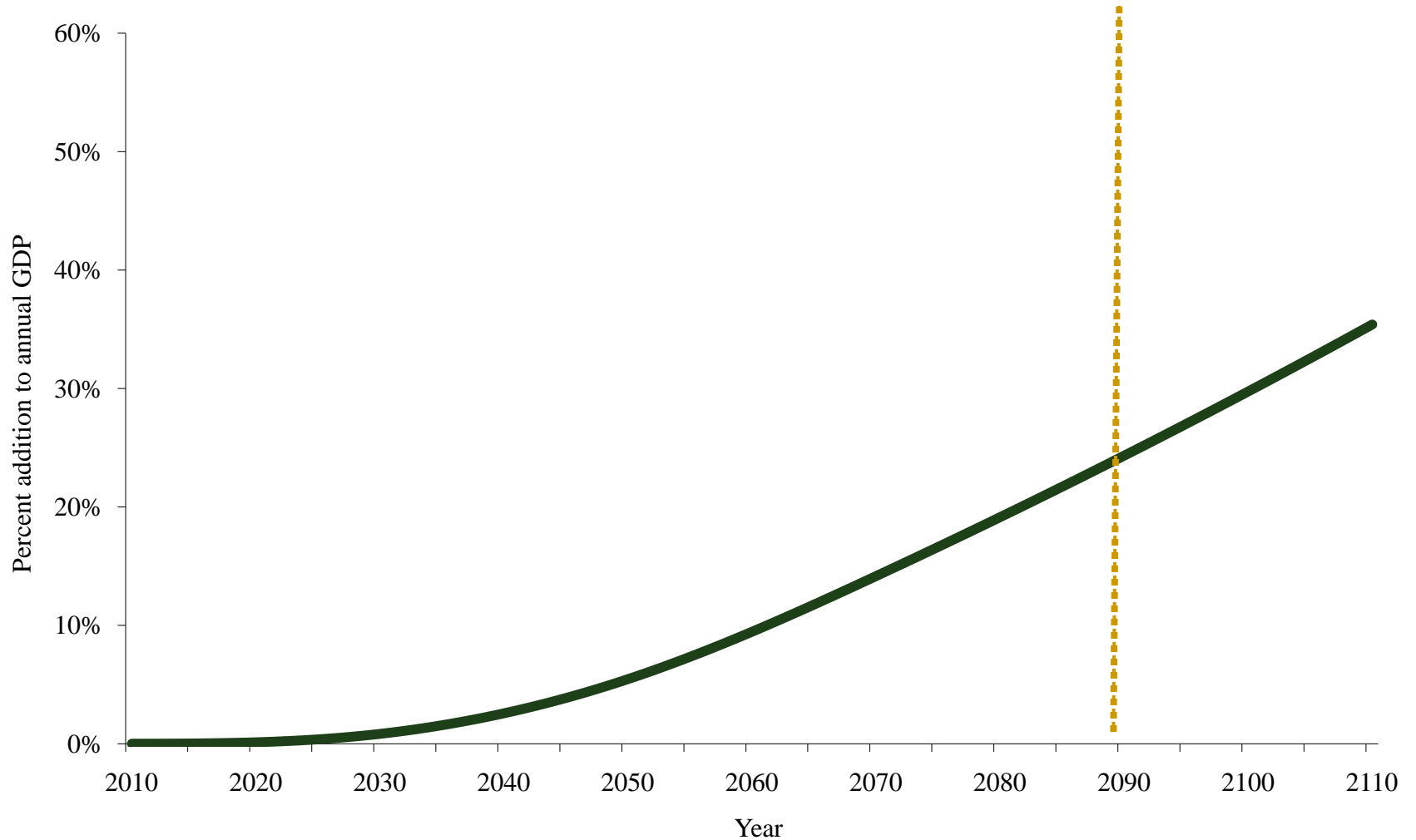


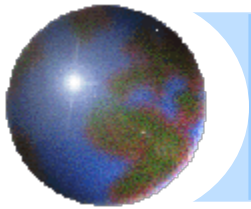
Annual Gains from 25 PISA-Points Improvement



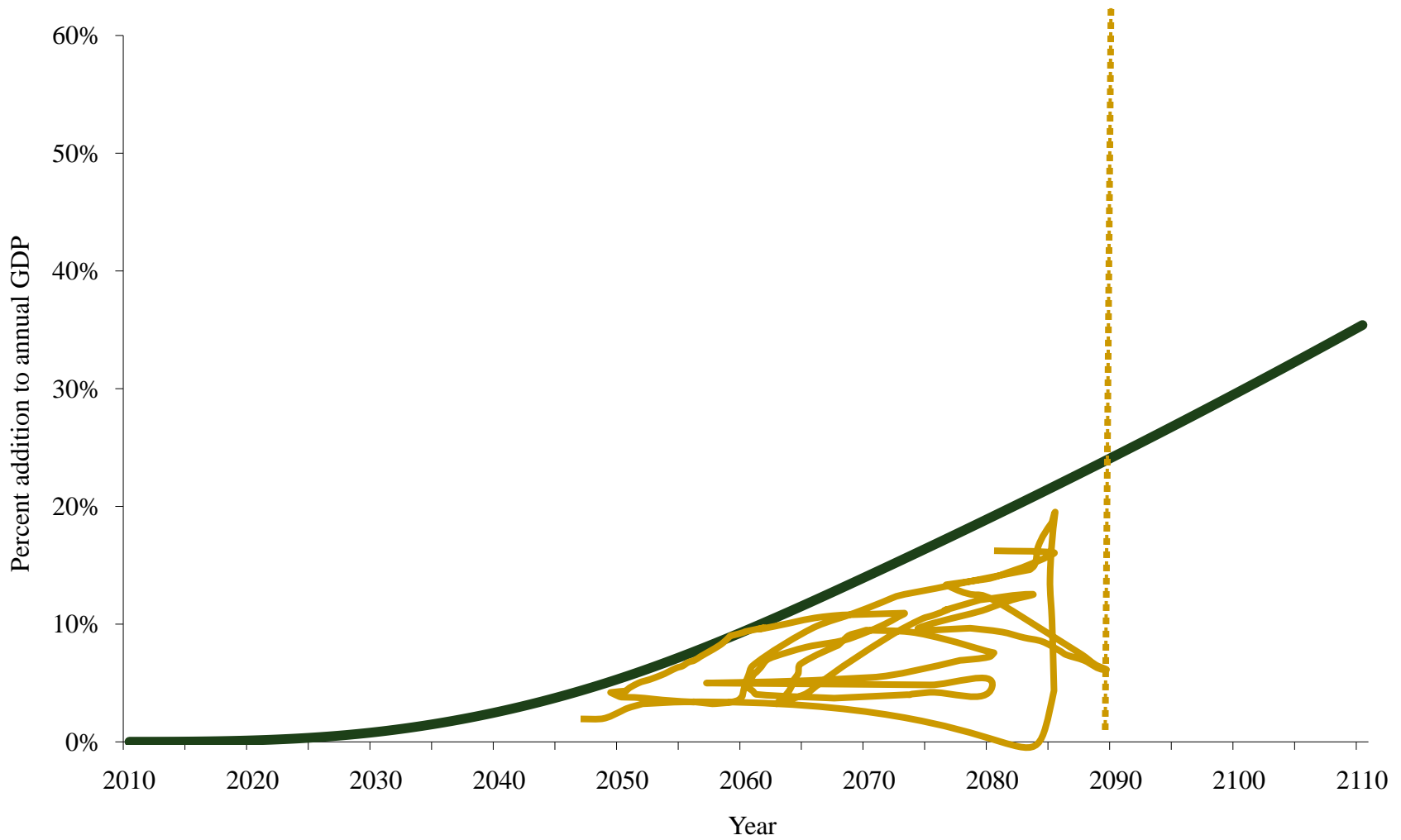


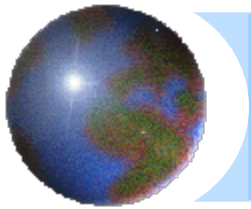
Annual Gains from 25 PISA-Points Improvement





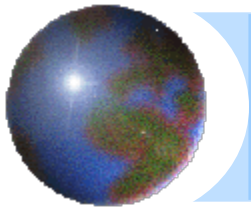
Annual Gains from 25 PISA-Points Improvement





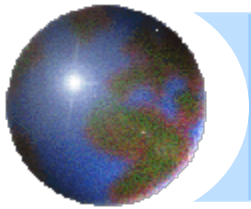
Growth Projections

- Scenario 1
 - Achievement improves by 25 points (1/4 s.d.)
 - PV = 288% of current GDP
 - \$123T for OECD
 - **\$43T for United States**



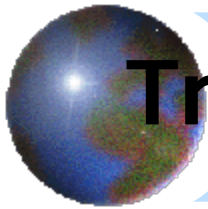
Growth Projections

- Scenario 1
 - Achievement improves by 25 points (1/4 s.d.)
- Scenario 2
 - Everybody Achieves at Level of Finland
 - PV = 645% of current GDP in OECD
 - \$275T for OECD
 - **\$112 trillion for United States**

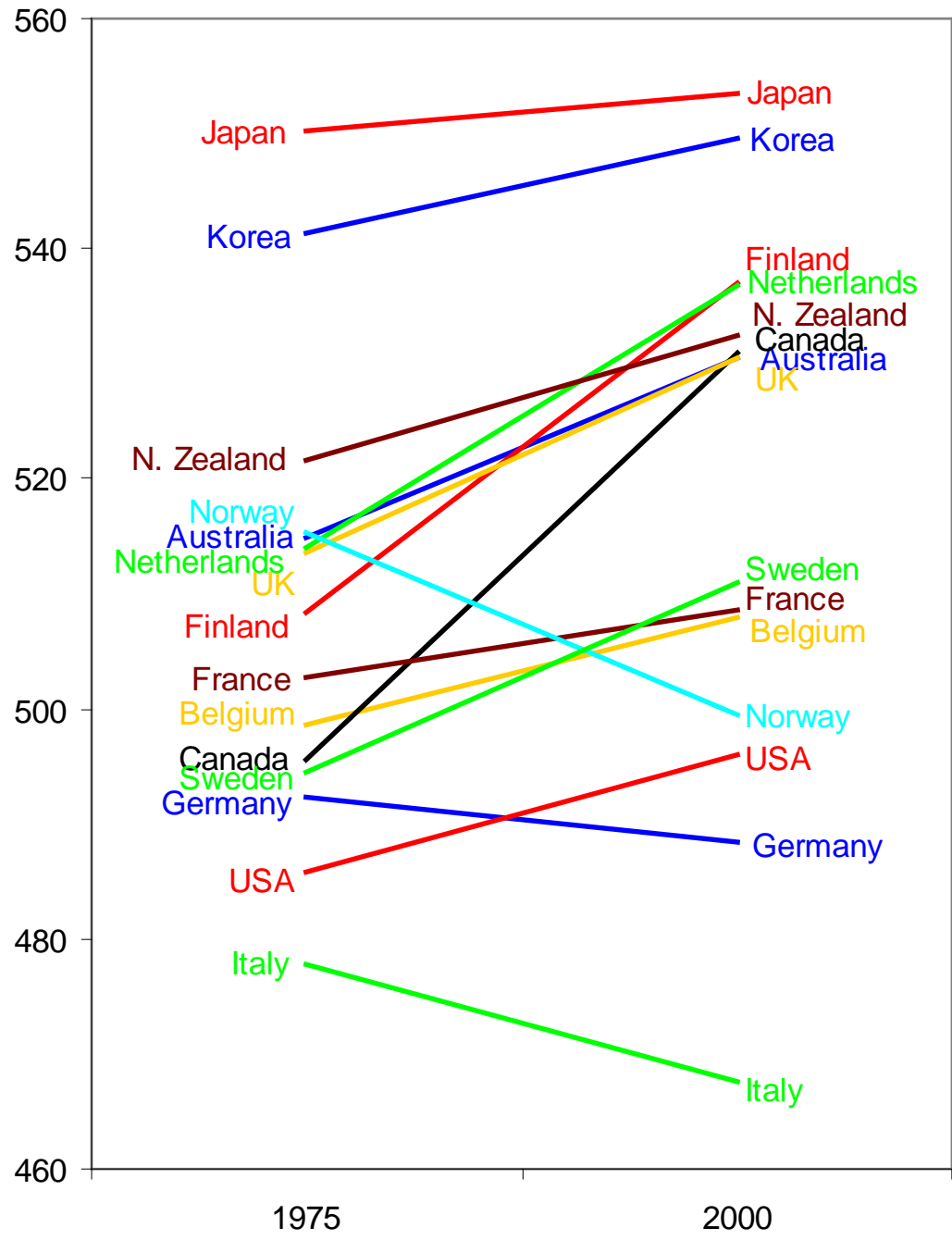


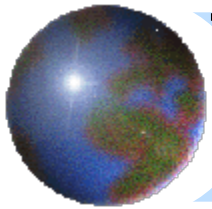
Growth Projections

- Scenario 1
 - Achievement improves by 25 points (1/4 s.d.)
- Scenario 2
 - Everybody Achieves at Level of Finland
- Scenario 3
 - All students to 400 points (basic skills)
 - PV = 530% of current GDP in OECD
 - \$226T for OECD
 - **\$86 trillion for United States**

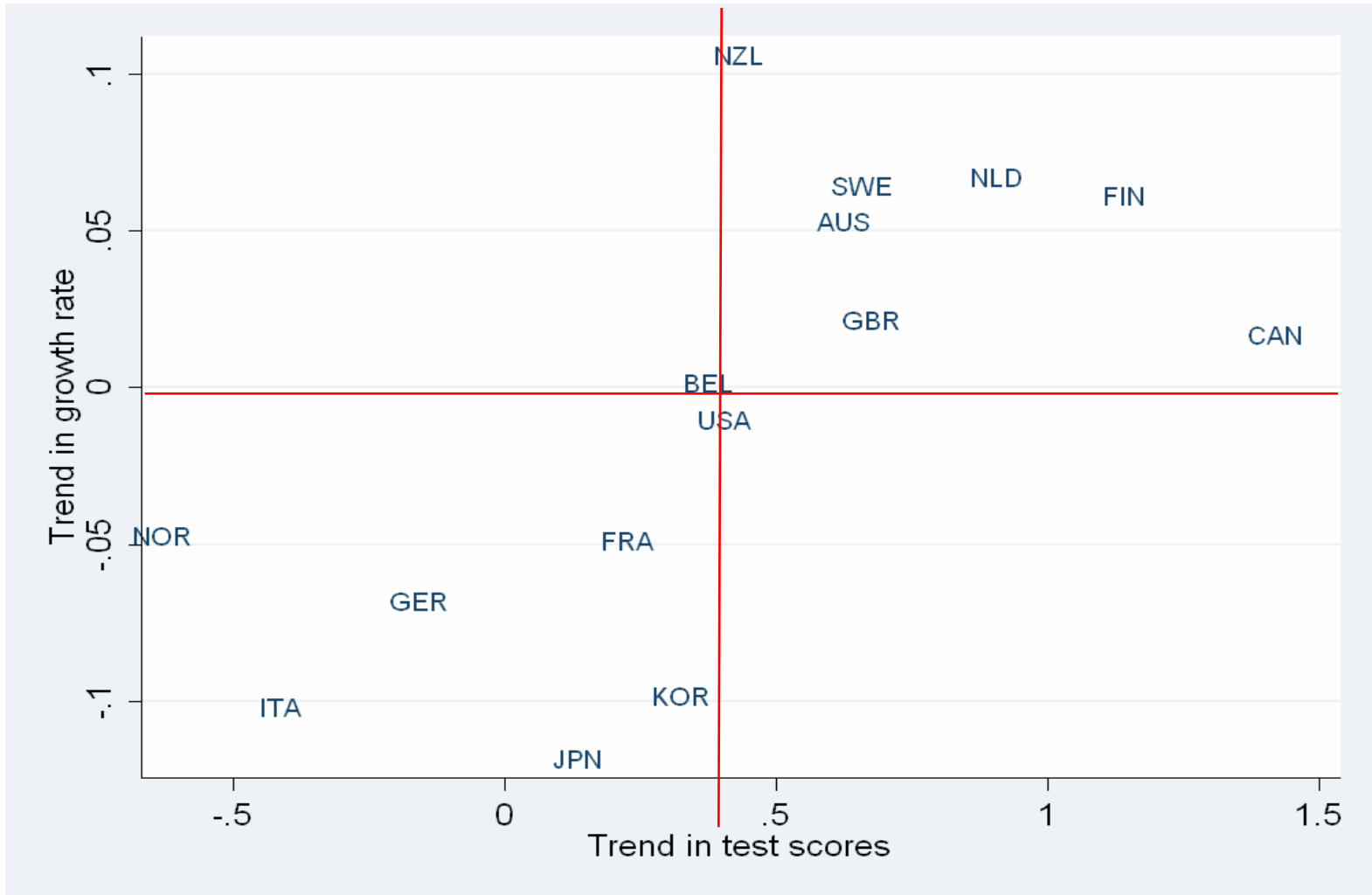


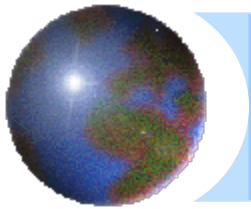
Trends in Test Scores



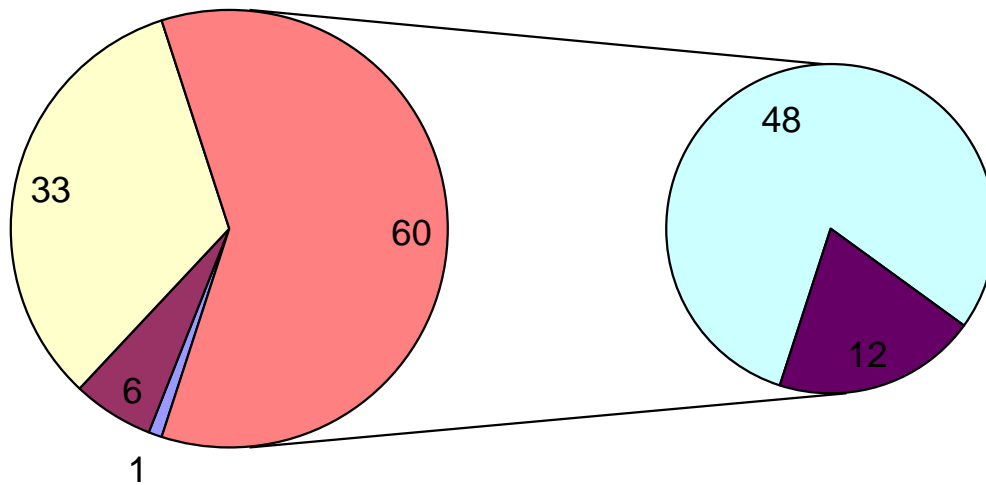


Trends in Growth Rates vs. Trends in Test Scores

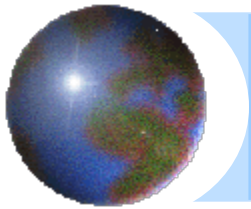




School Performance in Peru

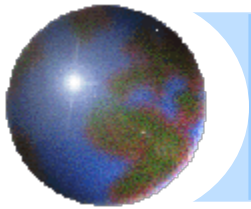


- Never enrolled
- dropout gr 1-5
- dropout gr 5-9
- finish gr 9 w/o basic skills
- finish gr 9 with basic skills



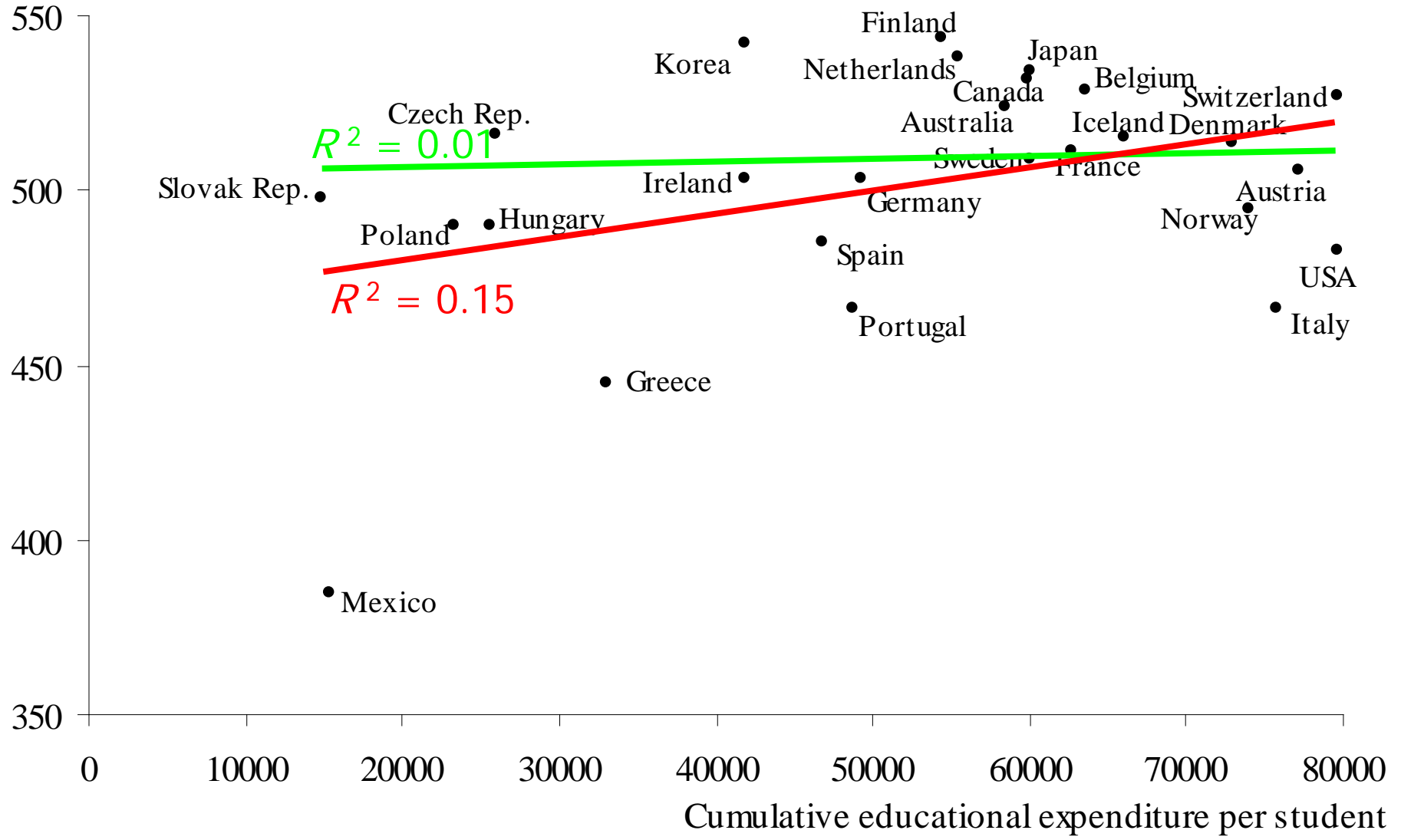
Determinants of Human Capital

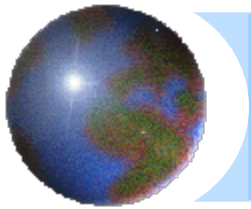
Data source	Determinants of Student Achievement				Achievement equity	TOTAL	Unique Studies
	family background plus school inputs		Institutions				
	within country	cross-country	within country	cross-country			
IEA	15	2	1	2	1	21	20
OECD	6	4	3	7	2	22	20
Other		2	2	1		5	4
Combined	3	3		4	6	16	16
TOTAL	24	11	6	14	9	64	60



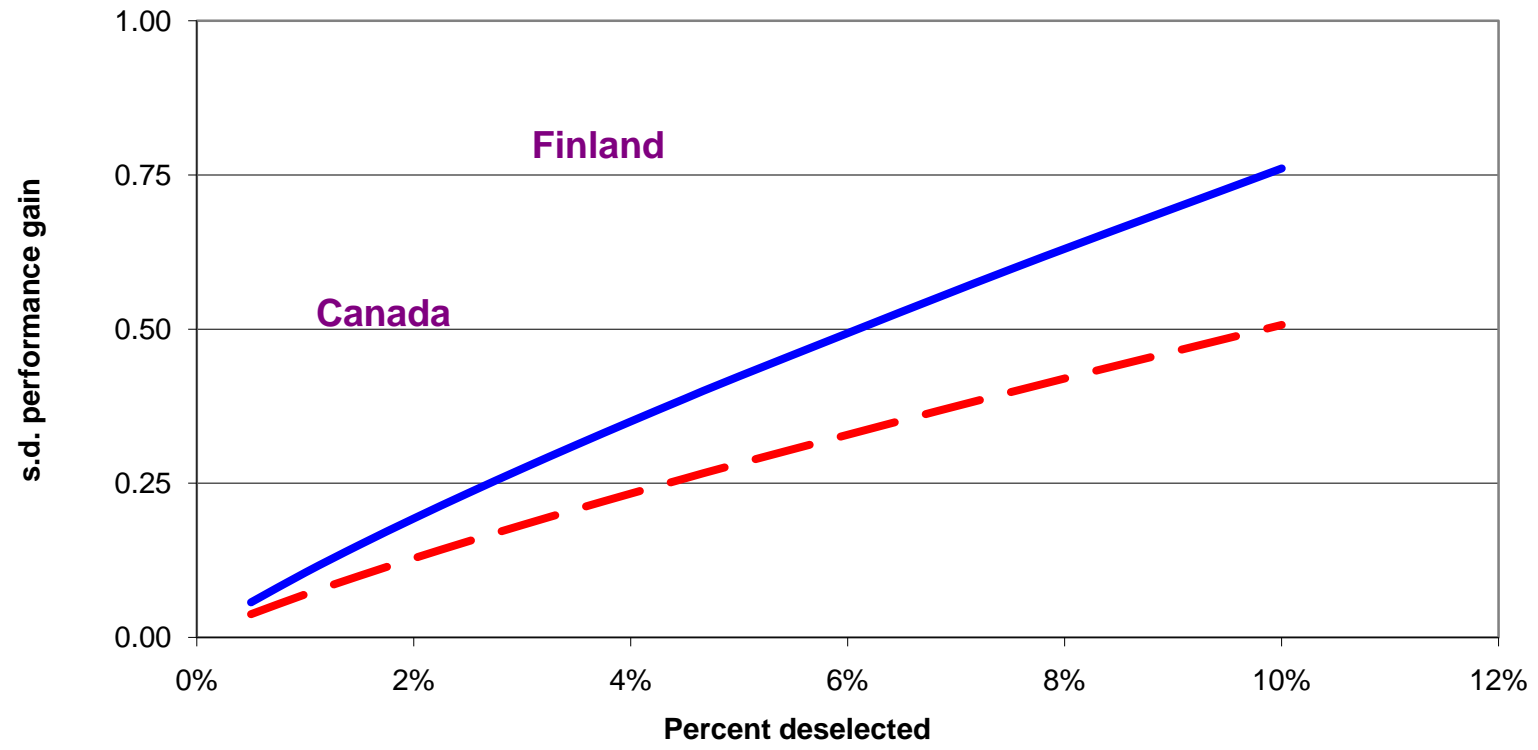
Resources and Performance across Countries

Math performance in PISA 2003

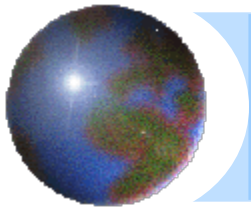




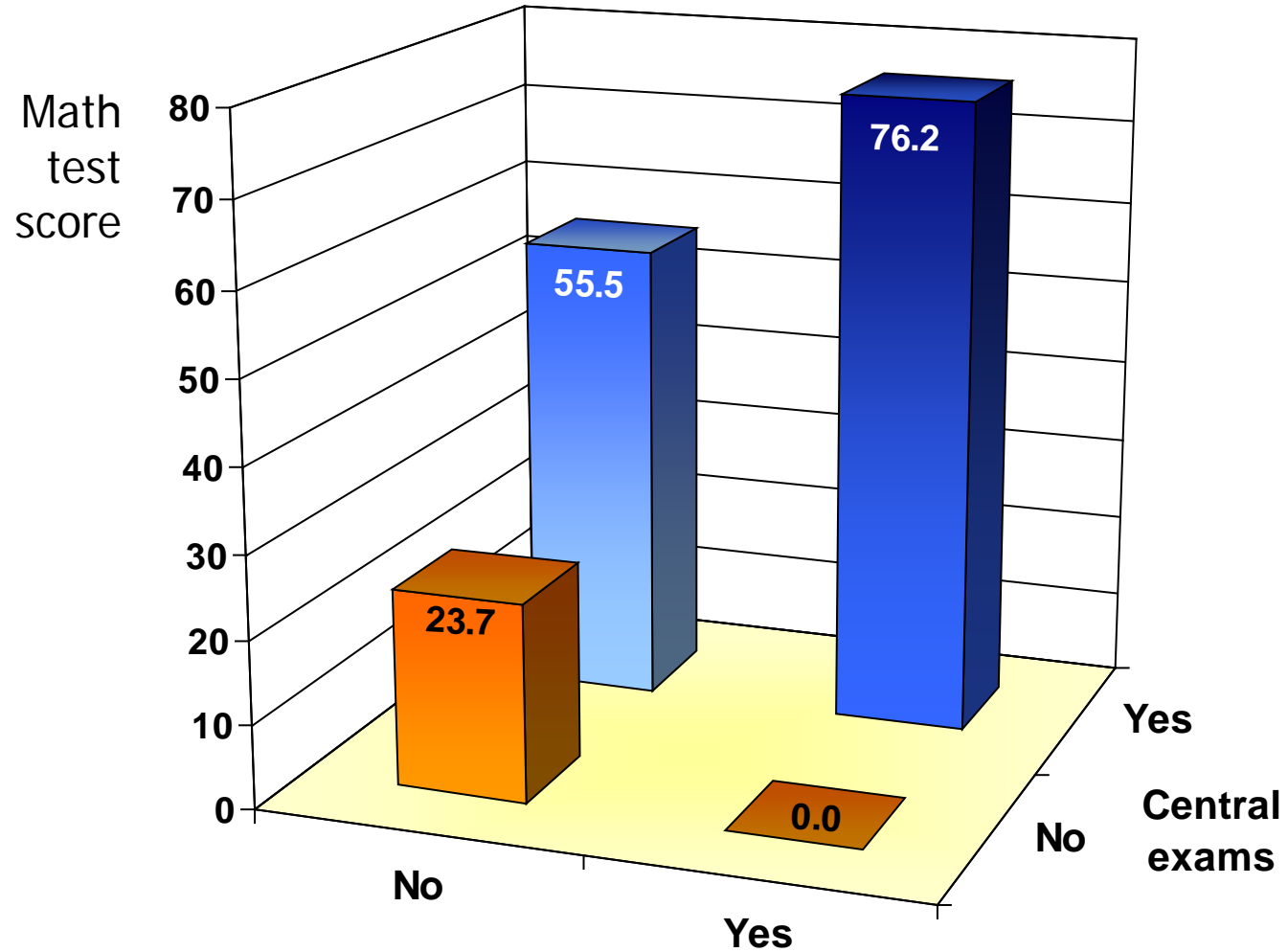
Alternative Estimates of Least Effective U.S. Teachers on Student Achievement



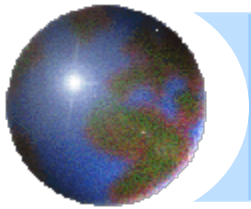
— high estimate of teacher effectiveness - - low estimate of teacher effectiveness



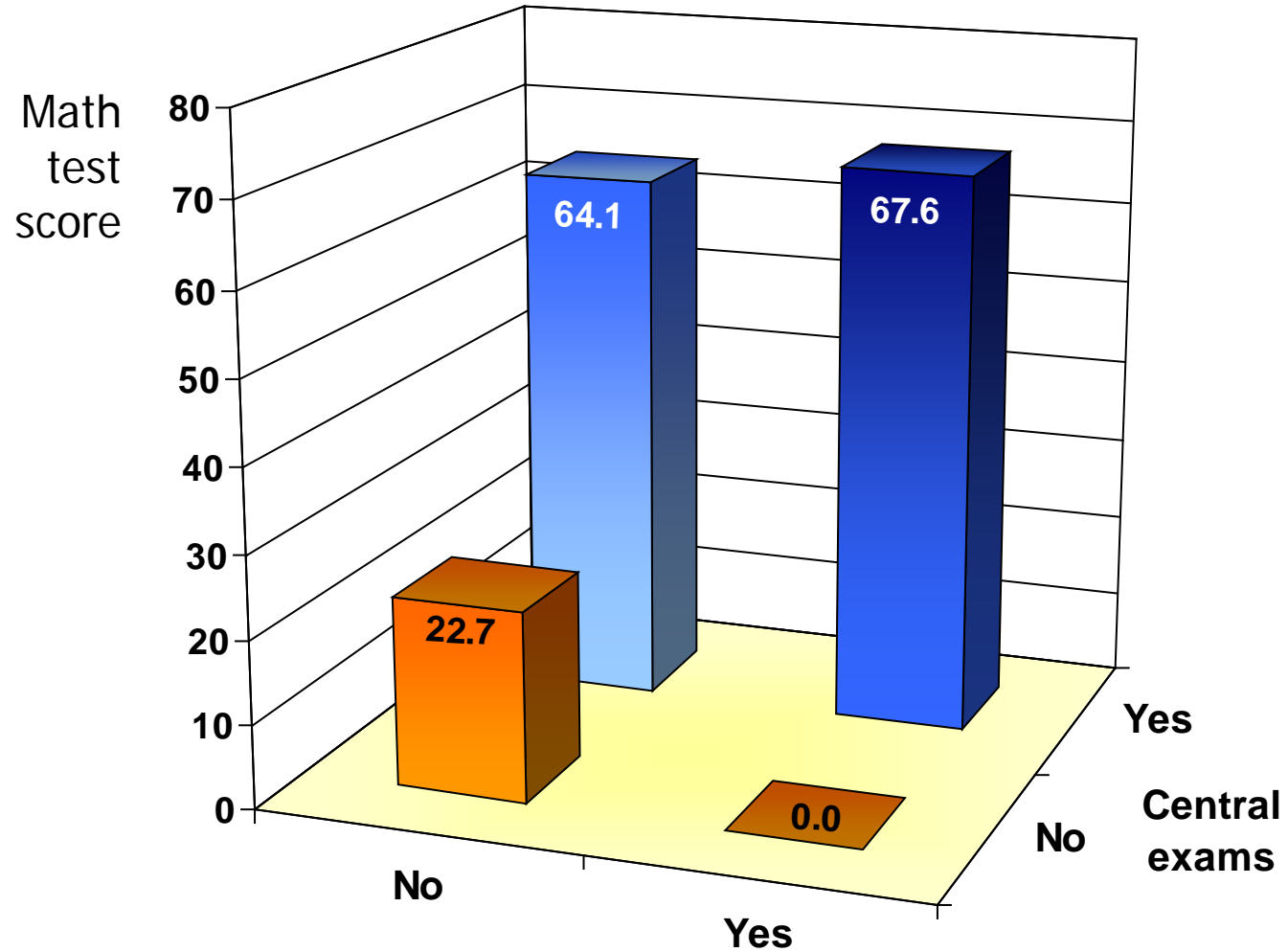
Central Exams, School Autonomy, and Student Performance



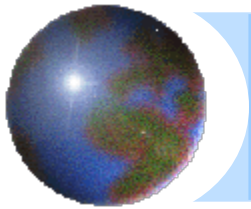
**School autonomy
over teacher salaries**



Central Exams, School Autonomy, and Student Performance



**Teacher influence
on resource funding**



Issues to be Addressed

Measurement

- Reliability at extremes (e.g., Peru)
- Intertemporal linkages

Causation

- Panel of individuals

Economic outcomes

- Labor market results
- Further schooling