

Problems Interpreting International Data to Inform Policy

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What Caused Poland's PISA Gains from 2000-2009

It's A Mystery....

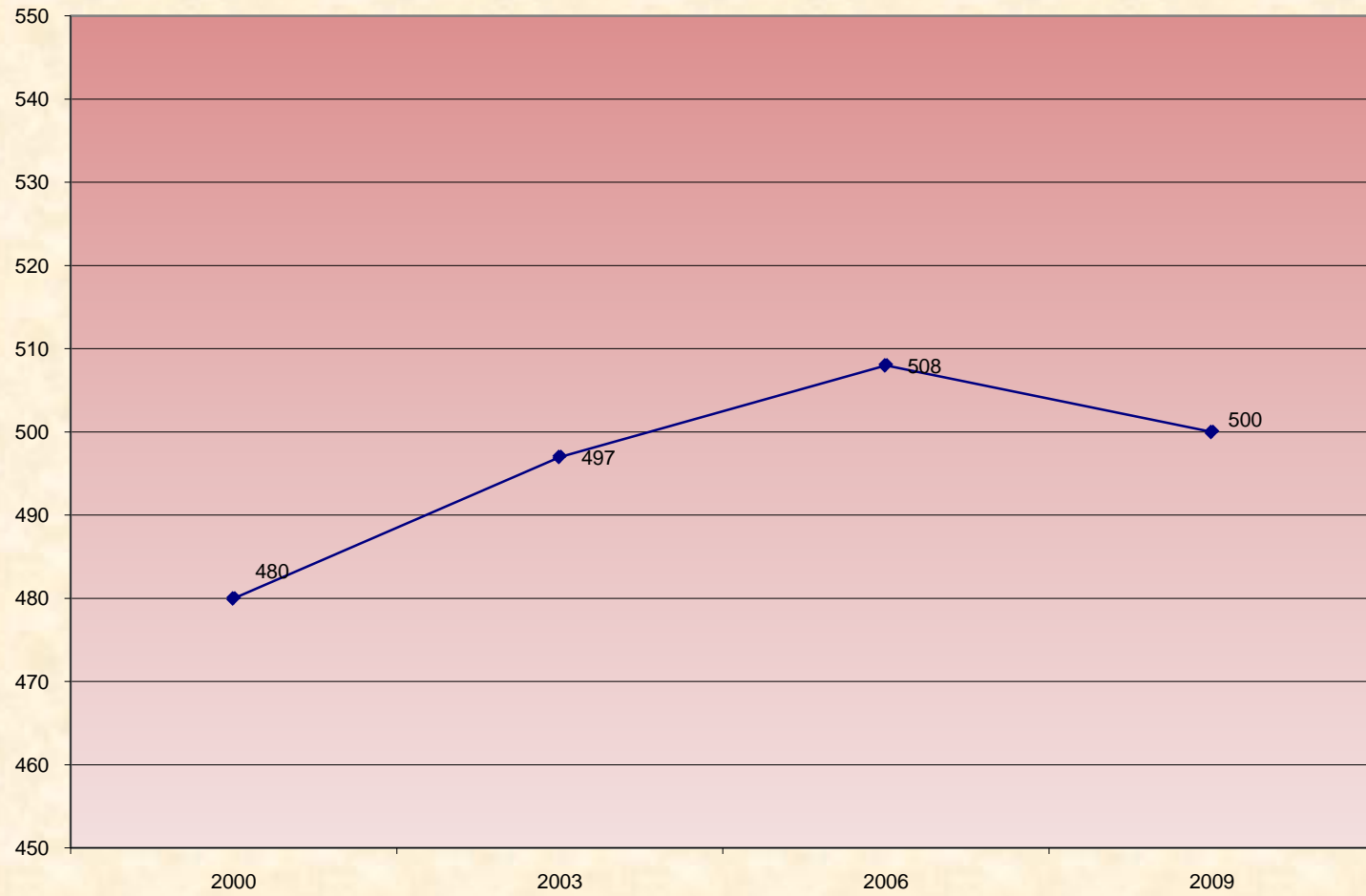
Let's go back to 2006



Poland

PISA Reading Scores

2000-2009



What was the most popular explanation for Poland's gains?






From the 2006 PISA Executive Summary:

“A long-term trend in OECD countries has been to reduce the amount of separation and tracking in secondary education. The most recent major example of this is Poland, whose reading results before and after this education reform are reported in PISA. “

Executive Summary, *PISA 2006: Science Competencies for Tomorrow's World*, page 39.



“Here, [Poland] an improvement in results among lower ability students immediately after the reform was not at the expense of higher ability students, whose results also rose in the subsequent period.”

Executive Summary, *PISA 2006: Science
Competencies for Tomorrow's World*, page 39.

From the World Bank:

“Poland’s reading score was below the OECD average in 2000, at the OECD average in 2003, and above the OECD average in 2006, ranking 9th among all countries in the world....

“With regard to the factors responsible for the improvement, the delayed tracking into vocational streams appears to be the most critical factor.”

Successful Education Reform: Lessons from Poland, 2010,
Europe and Central Asia Knowledge Brief (Nov. 2010,
Volume 34), page 3.



By 2009, even as Poland's PISA score in reading slipped,

The prevailing story was that tracking reform, more than anything else, had boosted Poland's reading scores.

In 1999, Poland had extended compulsory education from age 15 to age 16 and created a new lower secondary school that delayed tracking into vocational programs.

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- *Structural reforms of the late 1990s*
- *The results: A remarkable turnaround*

So did tracking or streaming reform have anything to do with Poland's success?

Answer is:

Maybe. But maybe not. We really don't know.



One of the strongest pieces of evidence:

- The significant gains made by Poland's low performing students.

These are students who would have been assigned to the vocational track and now, presumably, were benefitting from an additional year of exposure to an academic curriculum.

But after the 2009 PISA we learned.....

“In nearly all the countries that showed improved performance during the period, [2000-2009] the percentage of low performers dropped, meaning that the number of students who scored below the PISA baseline reading proficiency Level 2 was significantly smaller in 2009 than in 2000.”

(From: “*Improving Performance: Leading from the Bottom*,” OECD, 2011, page 1.)

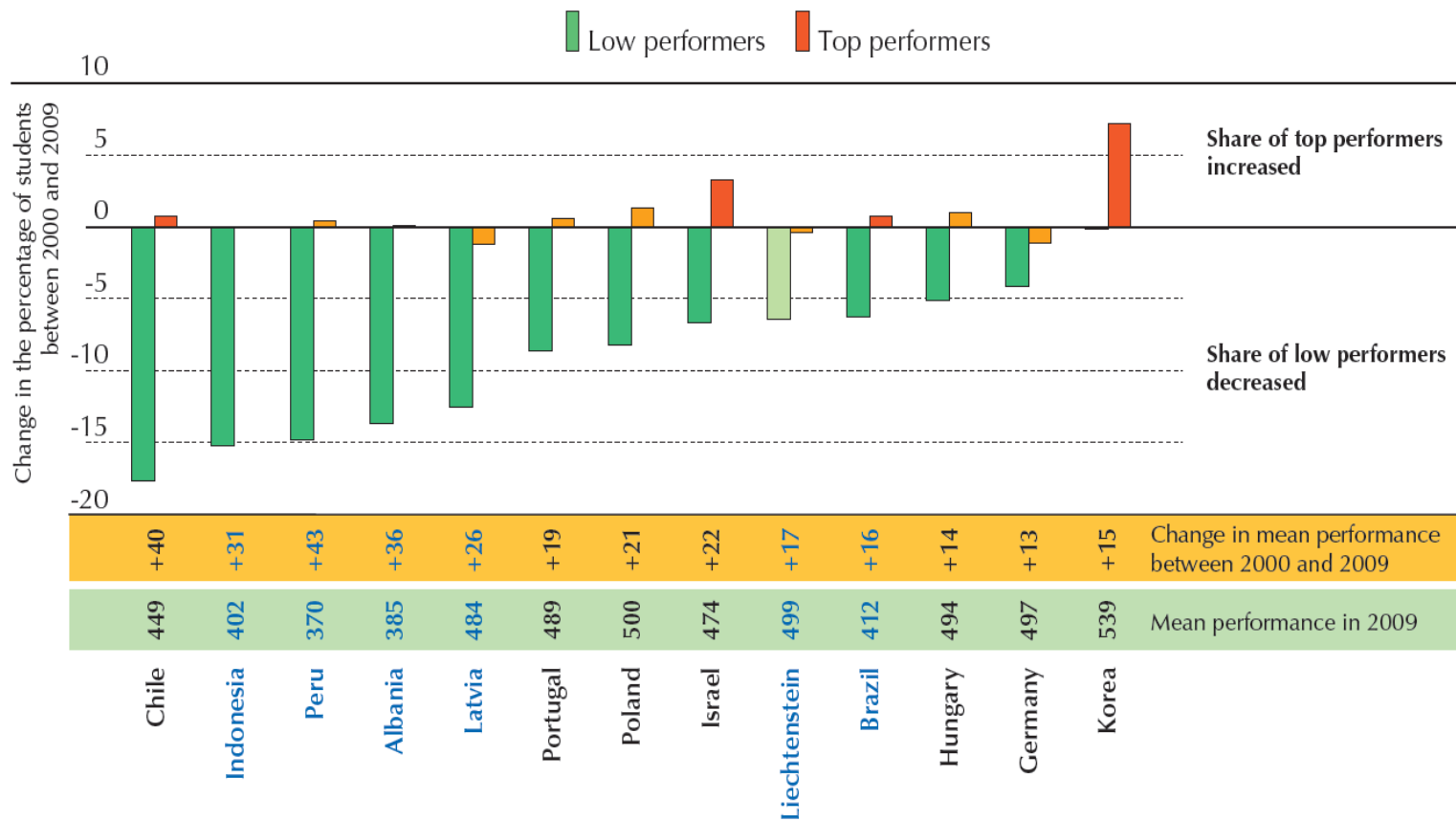
Quote continues:

“While the percentage of low performers changed only slightly, on average across OECD countries, it dropped from nearly half (48%) of all 15-year-old students to below one-third (31%) [in the countries with improving PISA scores].”

So Poland was not alone.

(From: *“Improving Performance: Leading from the Bottom,”*
OECD, 2011, page 1.)

Change in the percentage of low and top performers in reading since 2000



Note: Values that are statistically significant are marked in a darker tone.

Source: OECD, PISA 2009 Database, Tables V.2.1 and V.2.2.

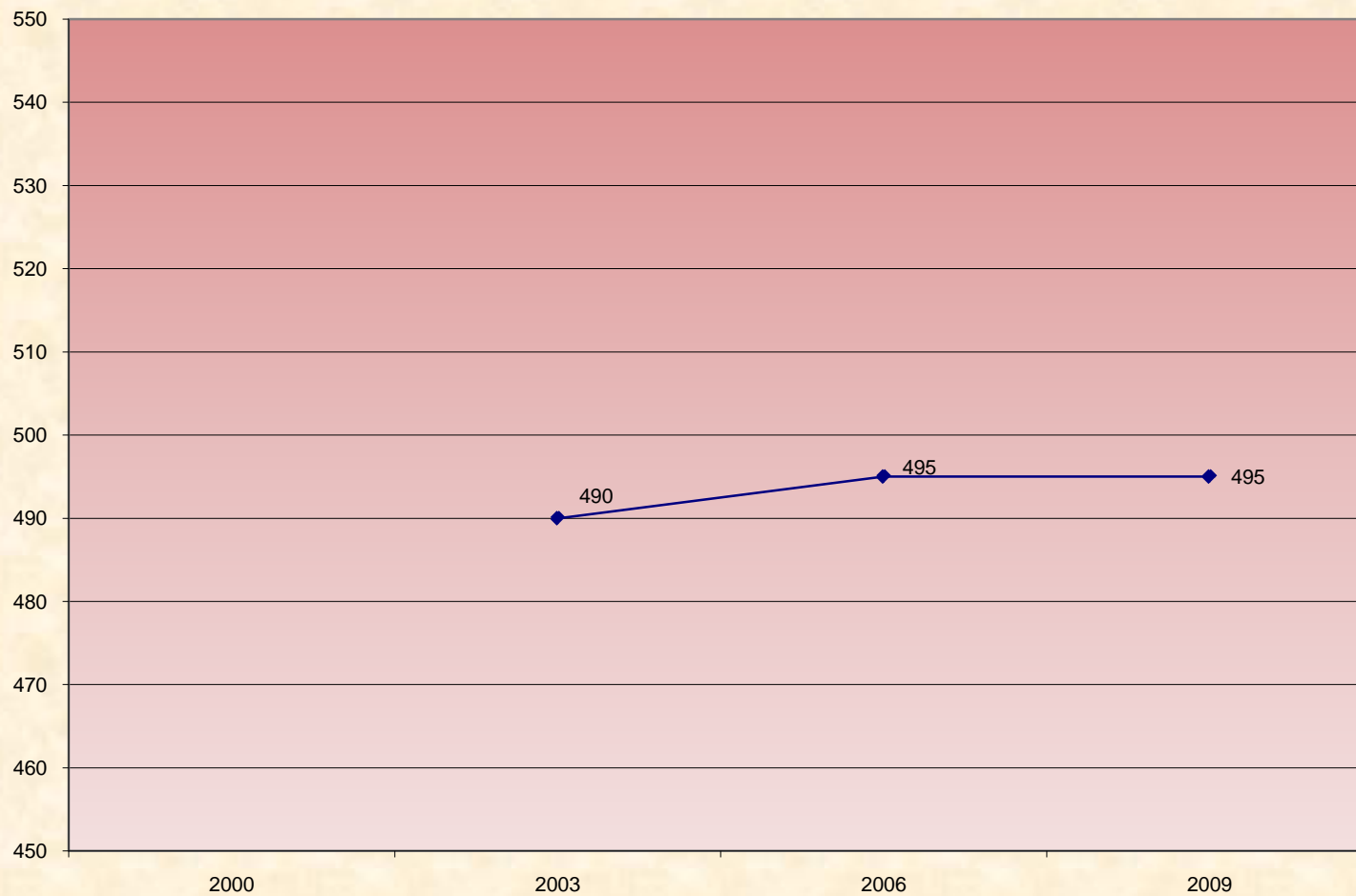
Two Doubts Creep into the Story

- True, low achieving students in Poland made big gains in reading. But low achievers made similar gains in all 13 countries with growth from 2000 to 2009. The other 12 countries didn't implement tracking reform, and many made even larger gains in reading than Poland.
 - In addition, Poland didn't make the same gains in Math as in Reading. Wouldn't tracking reform affect both subjects?
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Poland

PISA Math Scores

2003-2009



Poland's 1999 Reforms

Much More Than Tracking

Key elements:

- Decentralization
- Greater Autonomy for schools
- Increase in Teacher salaries
- New system of national assessment
- Adoption of a core curriculum and national standards
- Teacher education reform at university level
- New system of teacher promotion



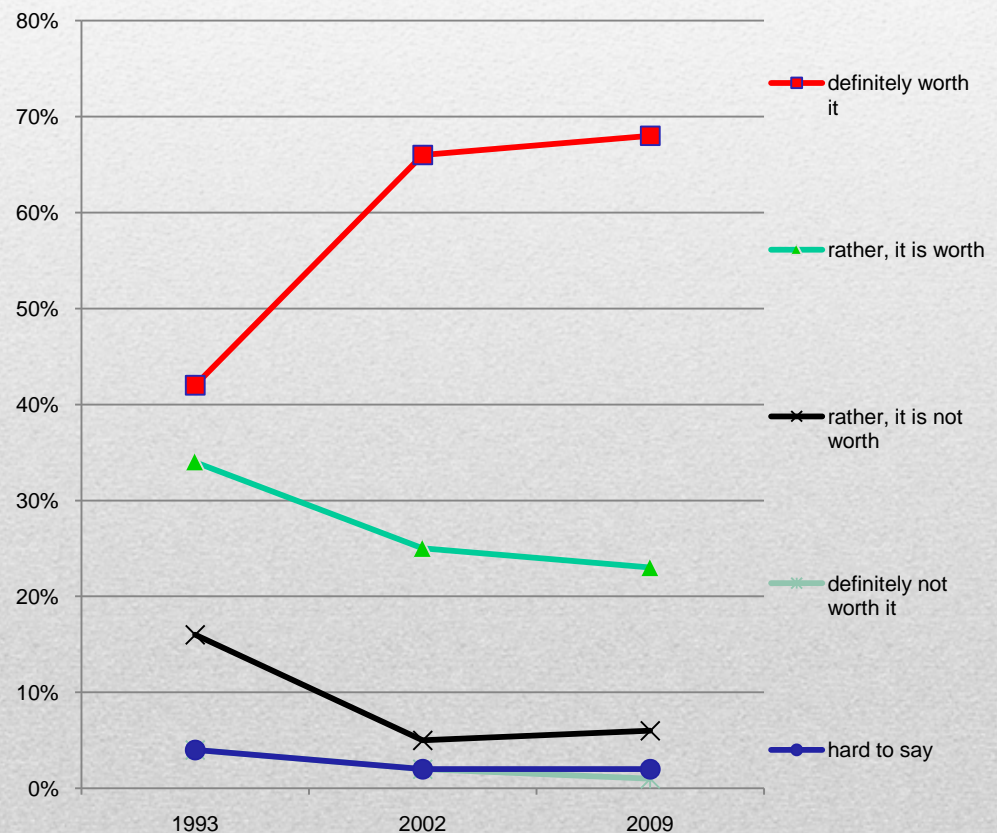
Another possible factor:

➤ Public attitudes towards education were shifting.

Context of the comprehensive reform – educational aspiration

Significant growth of citizens' educational aspirations in 1993 - 2009:
91% of adult Poles believe that it is important to get an education, of which 68% are strong supporters of this idea

Is it worth gaining education?
1993 – 2009



Did Tracking Reform Lead to Poland's Gains on PISA in Reading from 2000 to 2009?

Answer: Maybe, but there are reasons for doubt

1. Gains in math are not as large.
 2. Other countries show gains among low performers, too, without tracking reform.
 3. Besides tracking reform, several big reforms were put in place at the same time. Difficult to tease out the effects of one policy.
 4. Attitudes towards education were changing at the same time.
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Lessons for Policy Analysts and Policymakers

1. It is not a good idea to single out one policy as causing test score changes when several policies are being implemented at the same time.
 2. It is not a good idea to single out one country. Others may be trying the same policies and failing or experiencing even greater success while trying other policies.
 3. Singling out one policy in one country as a model combines the problems of #1 and #2. It is a doubly bad idea.
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Two More Vignettes

➤ The Problem with Rankings



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Edu Watch: Japanese students improve in PISA rankings & other news;

December 11, 2010 in [1](#)

Hello to readers old and new of the EIJ blog,

The spotlight on educational news this month is dominated by introspection by various educational agencies over the results from 2010 PISA study reports.

Here's our rundown on the news on the J. educational scene:

[Academic rankings bring tempered praise / Japanese students fare better in latest international tests, but alarm over declining standards persists \(Dec.9, 2010\)](#)

"Japanese students in 2009 showed improved reading, math and science skills in international academic aptitude tests compared to three years earlier, but were outdone by their counterparts in Shanghai who ranked top in all three fields, the Organization for Economic Cooperation and Development reported Tuesday...

Japan's rankings in the 2003 and 2006 PISA tests for 15-year-old students caused wide public concern about a general decline in the academic ability of Japanese children.

In 2009, however, Japan's rank in reading rose to eighth among the 65 countries and regions involved in the program, which saw 470,000 students take the exams. Japan was ranked 15th in reading in 2006.

The nation's students were ranked fifth in applied scientific skills, up from sixth in 2006, and ninth in applied mathematical skills, rising from 10th.

Asian countries and regions featured in the upper rankings in all three skill sets, with Shanghai claiming top position in all of them, the results of the triennial tests show.

“The nation’s students were ranked fifth in applied scientific skills, up from sixth in 2006, and ninth in applied mathematical skills, rising from 10th.”

This is misleading.

Exhibit 1.3 Trends in Mathematics Achievement – 1995 Through 2007

TIMSS2007
Mathematics 4th Grade

Country		Average Scale Score	2003 to 2007 Difference	1995 to 2007 Difference	Mathematics Achievement Distribution
Hong Kong SAR	2007	607 (3.6)			
	† 2003	575 (3.2)	32 (4.8) ▲		
	1995	557 (4.0)		50 (5.4) ▲	
Singapore	2007	599 (3.7)			
	2003	594 (5.6)	5 (6.7)		
	1995	590 (4.5)		9 (5.9)	
Chinese Taipei	2007	576 (1.7)			
	2003	564 (1.8)	12 (2.5) ▲		
Japan	2007	568 (2.1)			
	2003	565 (1.6)	4 (2.6)		
	1995	567 (1.9)		1 (2.8)	

Lesson: Don't Misuse Rankings

1.The difference between two close rankings may not be statistically significant. Check the “Multiple Comparisons” tables.

2.A change in ranking from one test to the next may not be statistically significant. Check the “Trends” tables.

3.Rankings are not equal interval. A 19 point gain may move a nation up one ranking, several rankings....or no ranking at all.

A Final Vignette:

➤ The Problem of “A+” Countries

Pointing to a handful of top scoring countries and saying, “They are doing Policy X, therefore Policy X is good.”

Lessons for Avoiding the “A+” Problem

1. Check the entire distribution of nations—top, middle, and bottom—to see if they are doing Policy X.
 2. Need variation on the policy in question. If all countries are doing Policy X, then the fact the top scoring countries are doing Policy X is not very meaningful.
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