

Educational Inequality under Different Types of Secondary School Curricular Differentiation

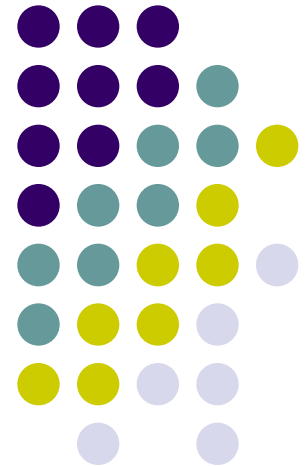
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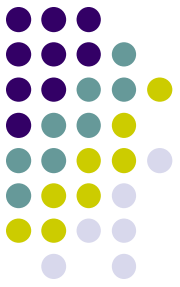
27 April 2016

University of Chile/Catholic University Seminar

Santiago, Chile



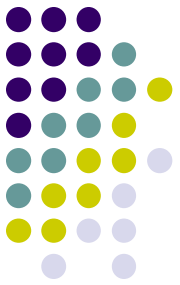
Secondary School Curricular Differentiation







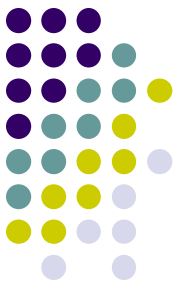
- Making different knowledge available to different groups of students, according to:
 - Ability
 - Prior achievement
 - Student interest
 - Parental preferences
 - Teacher/school judgment (Oakes, Gamoran & Page, 1992)
- Examples:
 - Tracking
 - Streaming
 - Ability grouping
- Criticized for exacerbating educational inequality (the association between socioeconomic origins and educational attainment)

Different Types of Curricular Differentiation in International Comparison



(Dupriez et al., 2008)



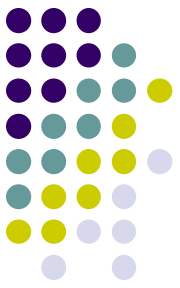
	Name	Examples
	<p>Separation Model</p> <p>Selection into academic/vocational streams at beginning of lower secondary school</p>	<p>Germany, Hungary, the Netherlands</p> <p>Chile?</p>
	<p>A la carte Integration Model</p> <p>Within comprehensive schools, students are grouped between classrooms for each subject</p>	<p>US, Canada, UK, Australia</p> <p>Chile?</p>
	<p>Uniform Integration Model</p> <p>Formal tracking at later ages, high rates of grade retention</p>	<p>France, Spain, Portugal</p> <p>Chile?</p>
	<p>Individualized Integration Model</p> <p>No formal tracking in lower secondary, individualized instruction within classrooms</p>	<p>Finland, Norway, Sweden</p>



Two Focal Models

	Name	Examples
	Academic and Vocational Streaming Selection into academic/vocational streams at beginning of lower secondary school	Germany, Hungary, the Netherlands Chile?
	Course-by-Course Tracking Within comprehensive schools, students are grouped between classrooms for each subject	US, Canada, UK, Australia Chile?

- Both models involve formally grouping students by achievement levels into differentiated curricula
- How different are they really? Do they differ in degree or in kind?
 - Do they have similar effects on educational inequality?



Significance

- Academic/vocational streaming appears to be decreasing worldwide
 - De-tracked in 1960s-70s: US, Sweden, Finland, England
 - De-tracked in 1990s-2000s: Spain, Poland
 - Delaying age of tracking
 - Increasing share of students in academic stream
- Within-school course-by-course tracking appears to be increasing worldwide
 - Are we substituting an explicitly unequal system for an implicitly unequal one?

Data



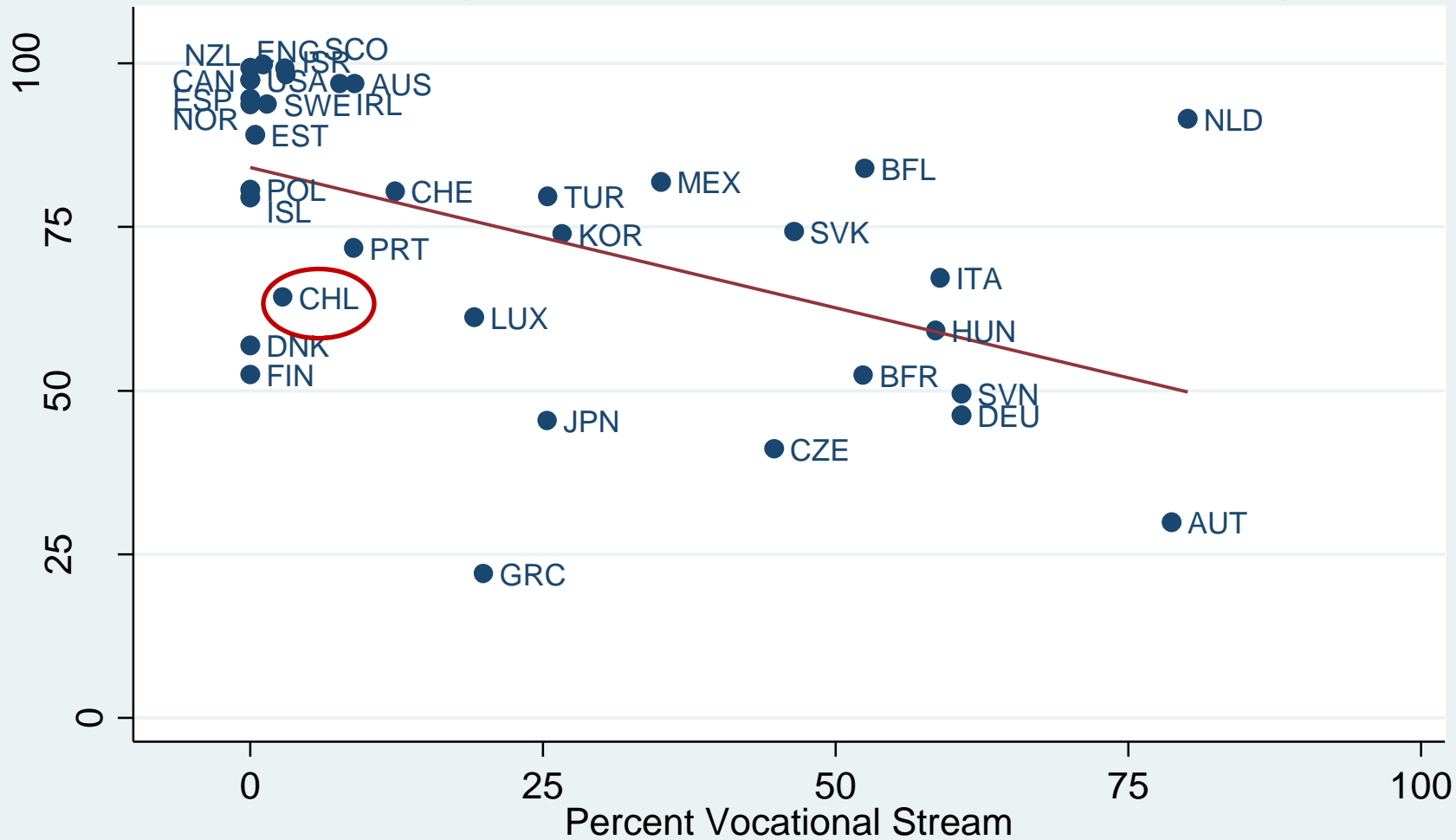
- Program for International Student Assessment (PISA)
 - 2003, 2006, 2009, 2012
 - 15-year old students
 - Tested in reading, mathematics, science
 - Academic/vocational streaming:
 - Student-reported study program (academic, high vocational, low vocational)
 - Course-by-course tracking:
 - Principal-reported between-classroom ability grouping for math courses
 - Student-reported level of math course (high, medium, basic)
 - 34 OECD countries



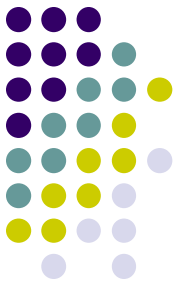
Evidence for Substitution: Country Level



Countries with Lower Rates of Vocational Streaming have Higher Rates of Math Course Tracking



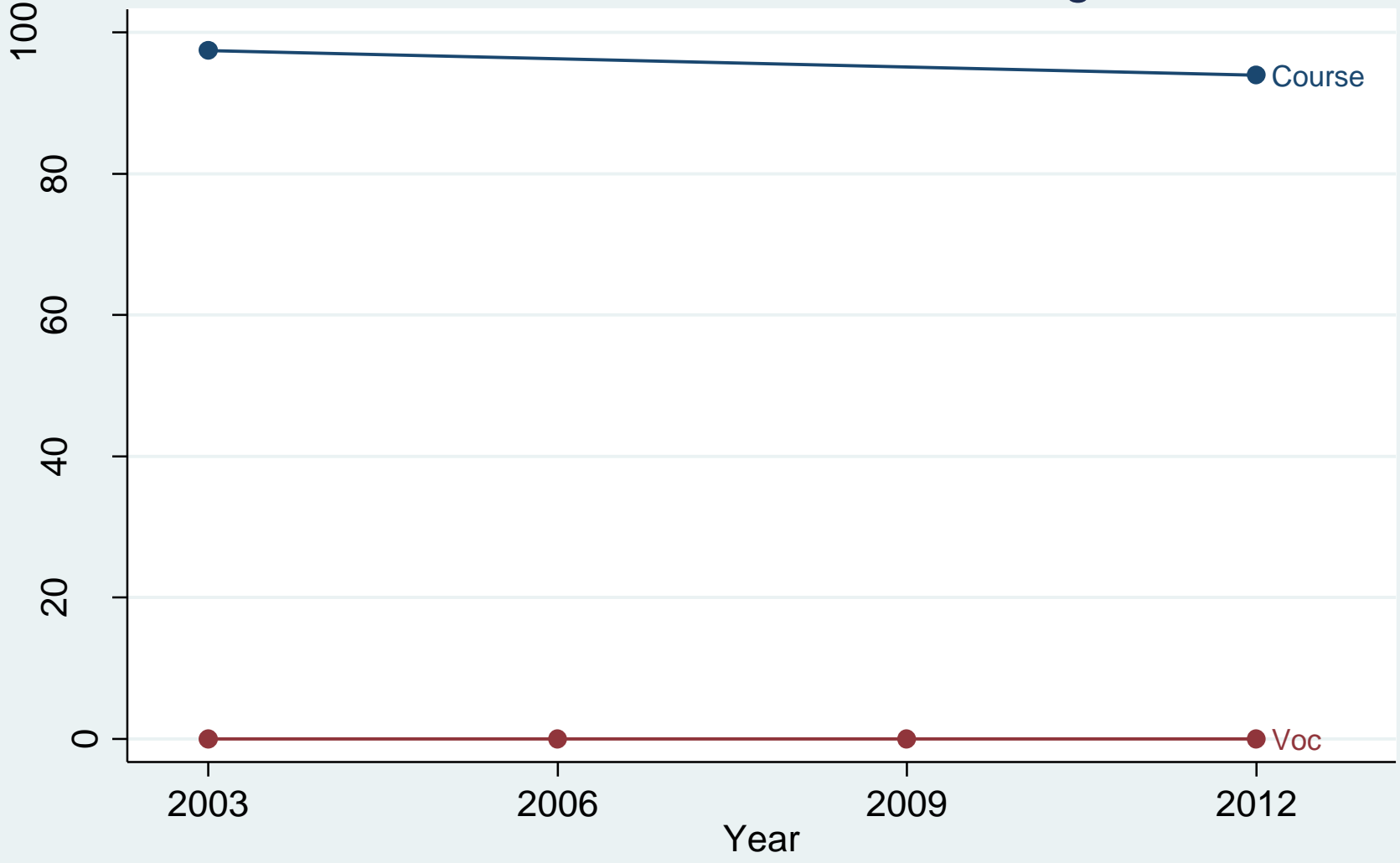
N = 35, corr = -0.49, p < 0.01



Evidence for Substitution: Within-Country Changes, 2003-2012

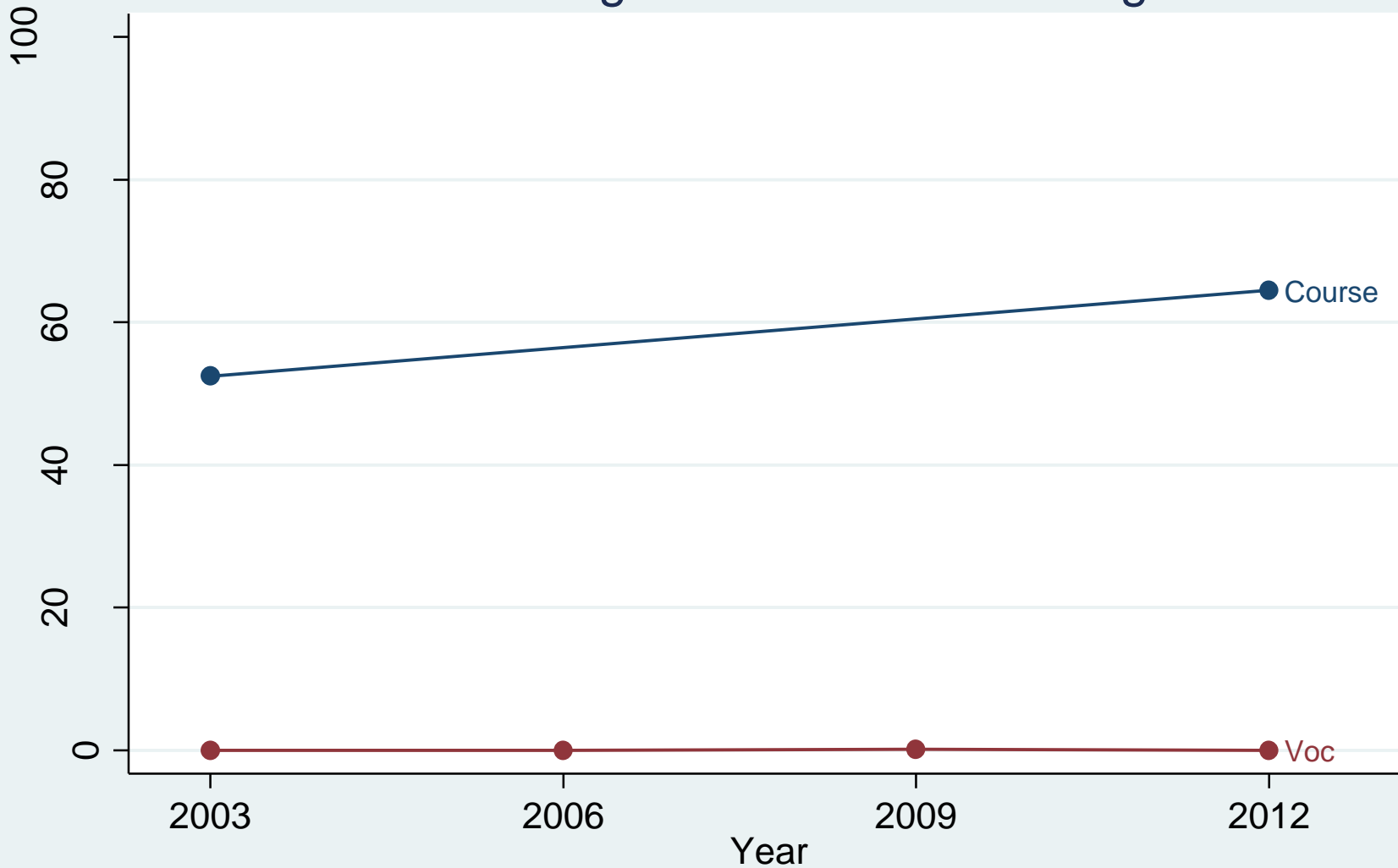


USA: No Vocational Streaming, Stable Math Course Tracking



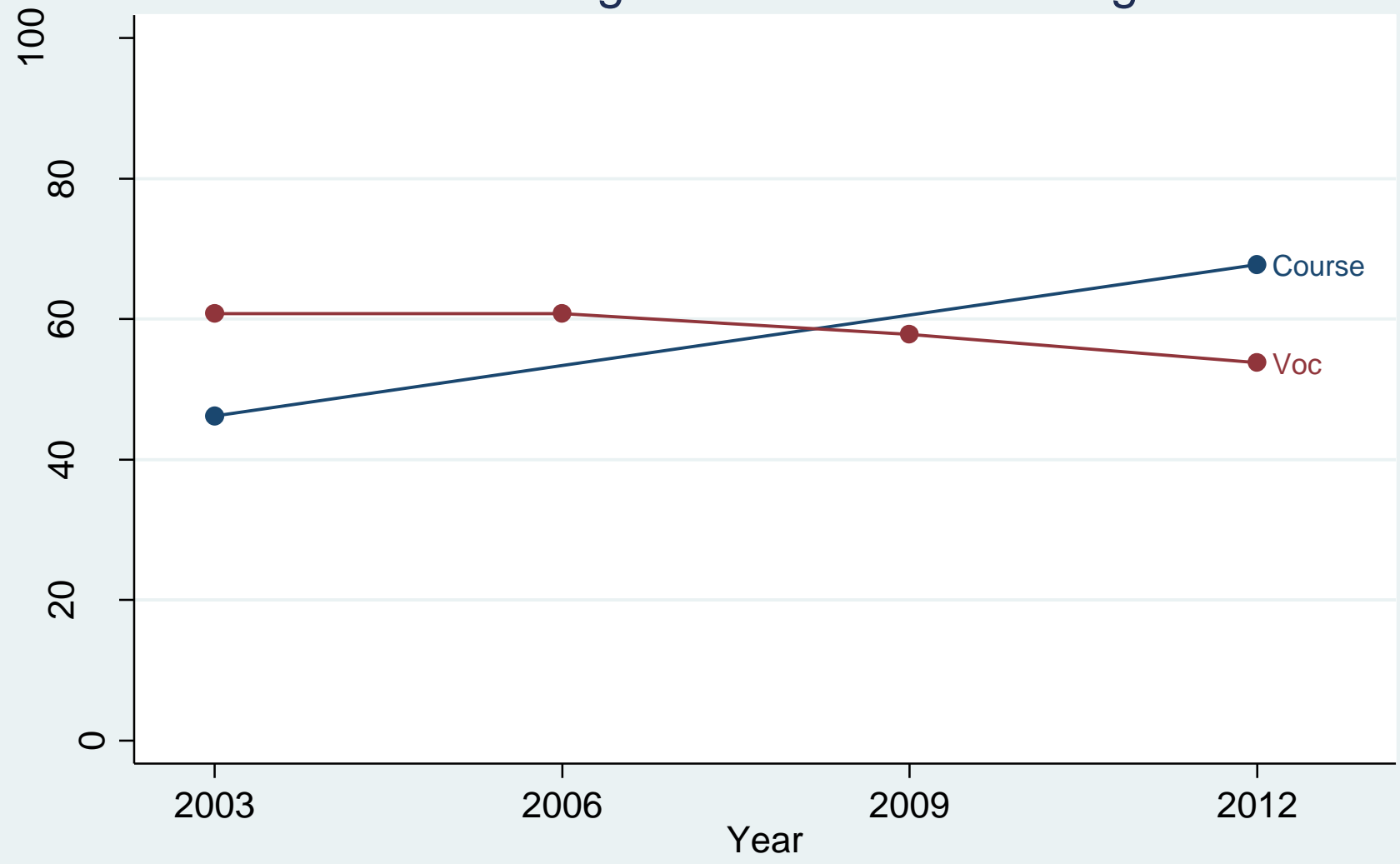


Finland: No Vocational Streaming, Increasing Math Course Tracking



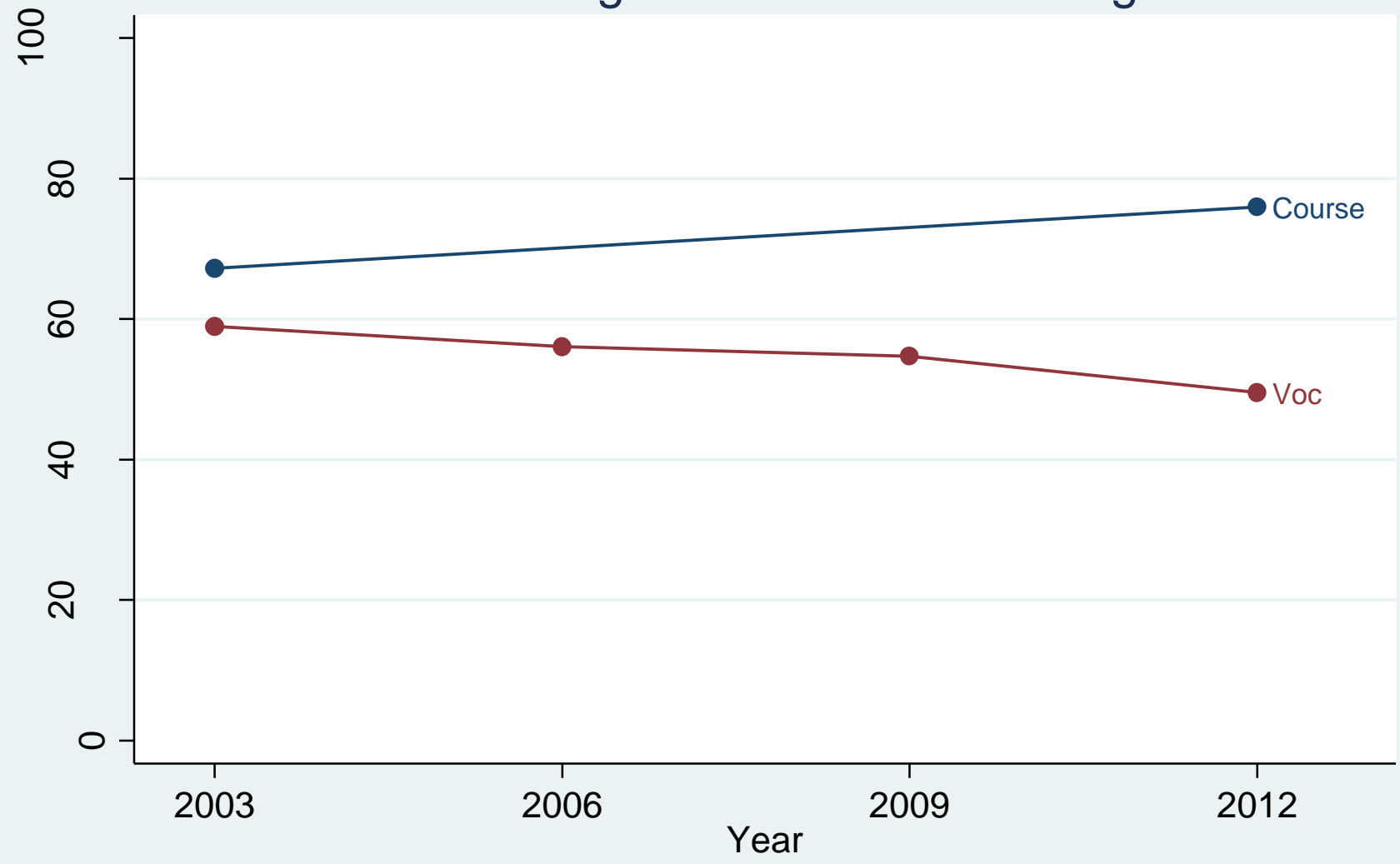


Germany: Decreasing Vocational Streaming, Increasing Math Course Tracking



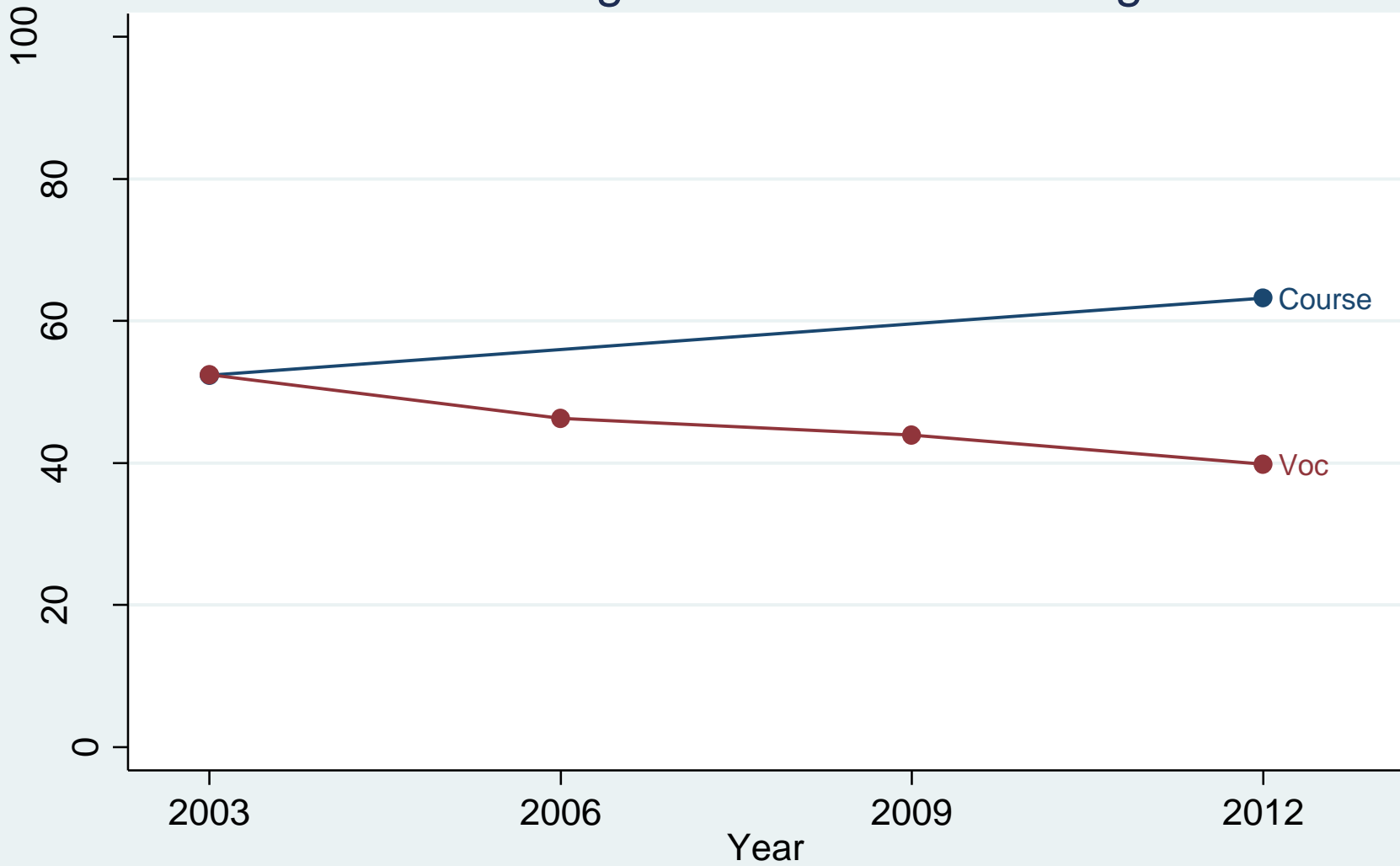


Italy: Decreasing Vocational Streaming, Increasing Math Course Tracking





Belgium-French: Decreasing Vocational Streaming, Increasing Math Course Tracking



Comparing Educational Outcomes



Course-by-Course Tracking



Academic/Vocational Streaming

Socioeconomic segregation



Gaps in achievement



Gaps in opportunity to learn



Gaps in academic self-concept



Gaps in educational expectations

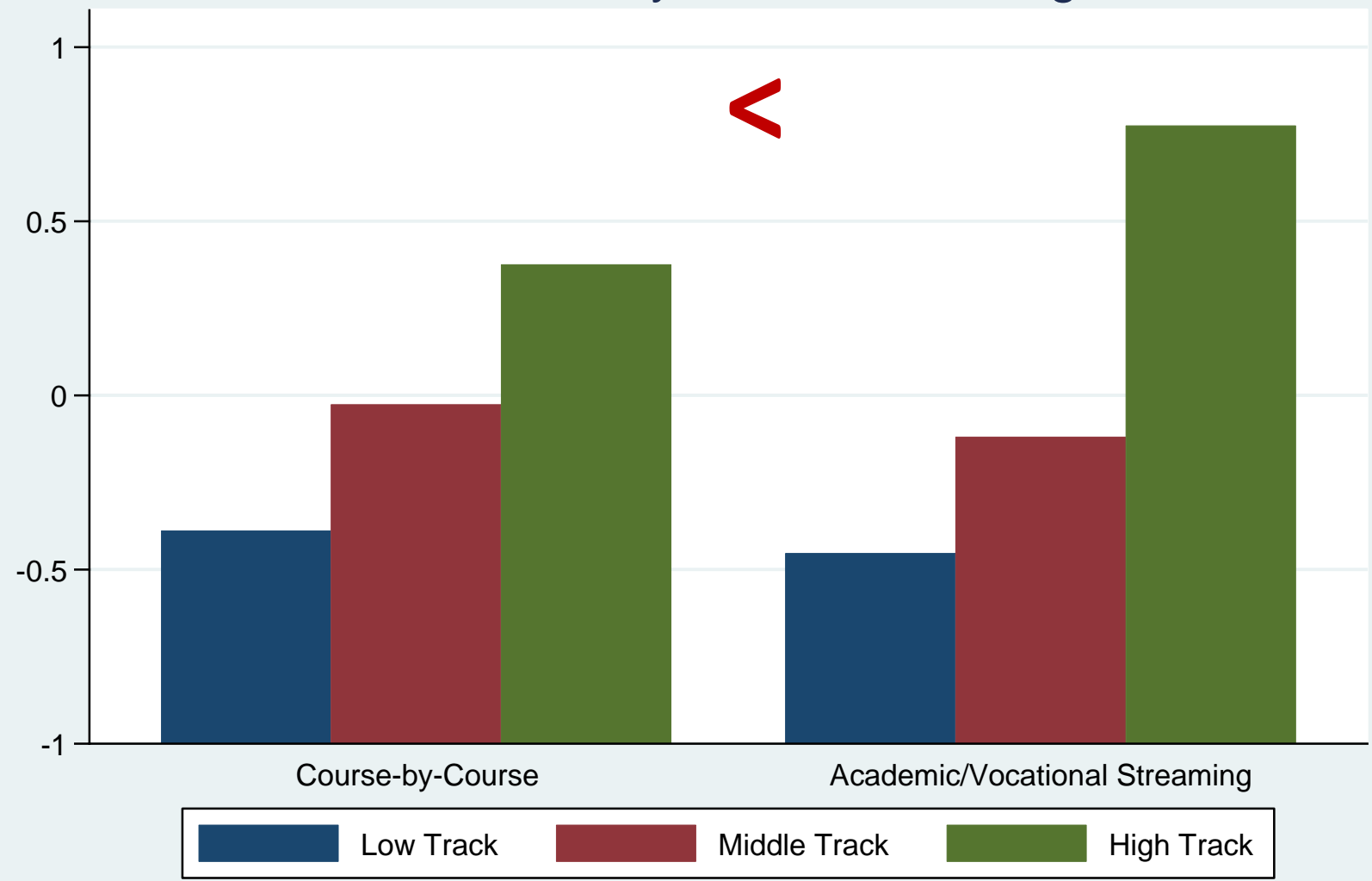


Realism of expectations





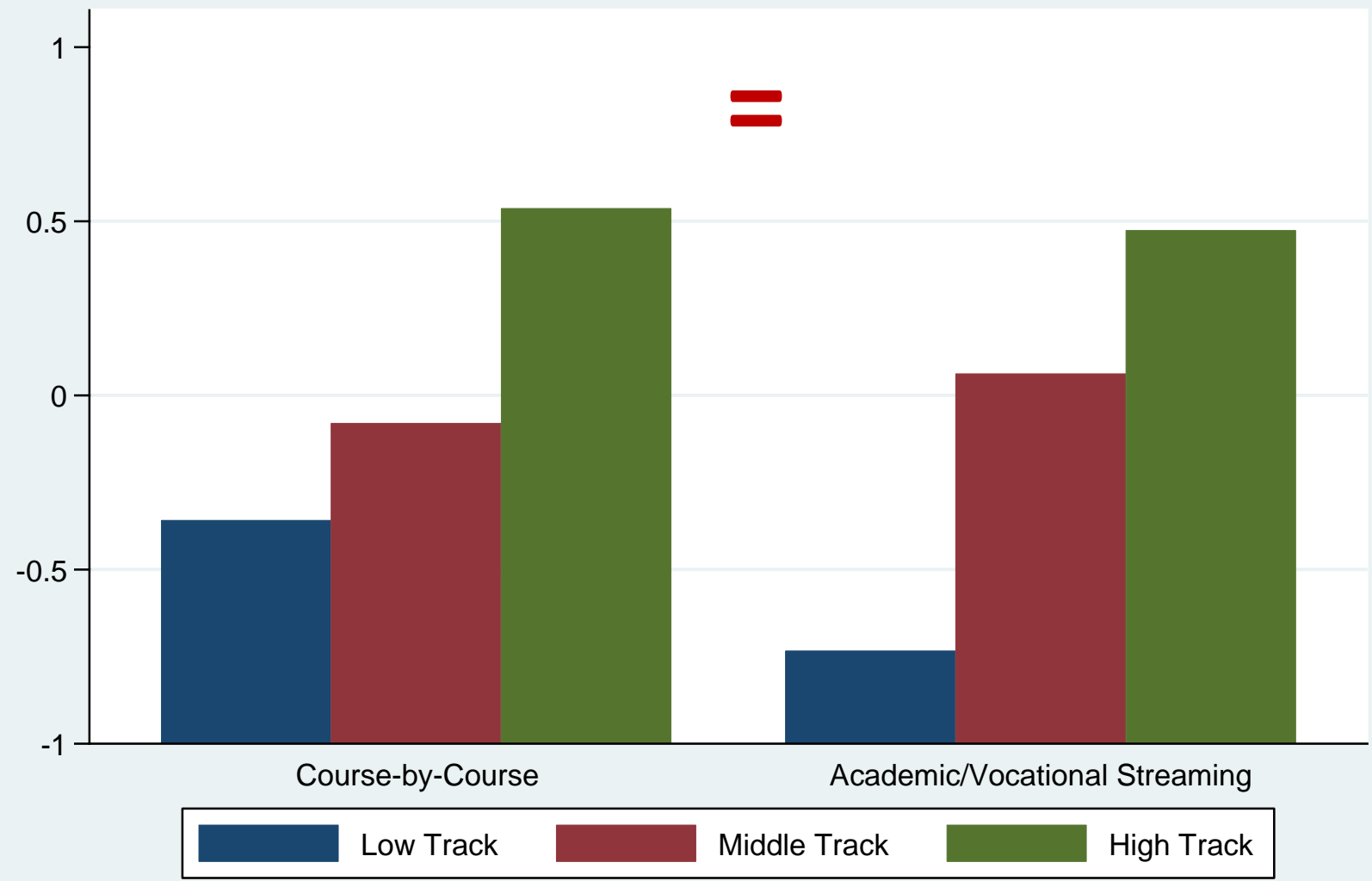
Smaller Socioeconomic Gaps between Tracks in Course-by-Course Tracking



Source: Chmielewski, 2014



Similar Achievement Gaps between Tracks under Both Models



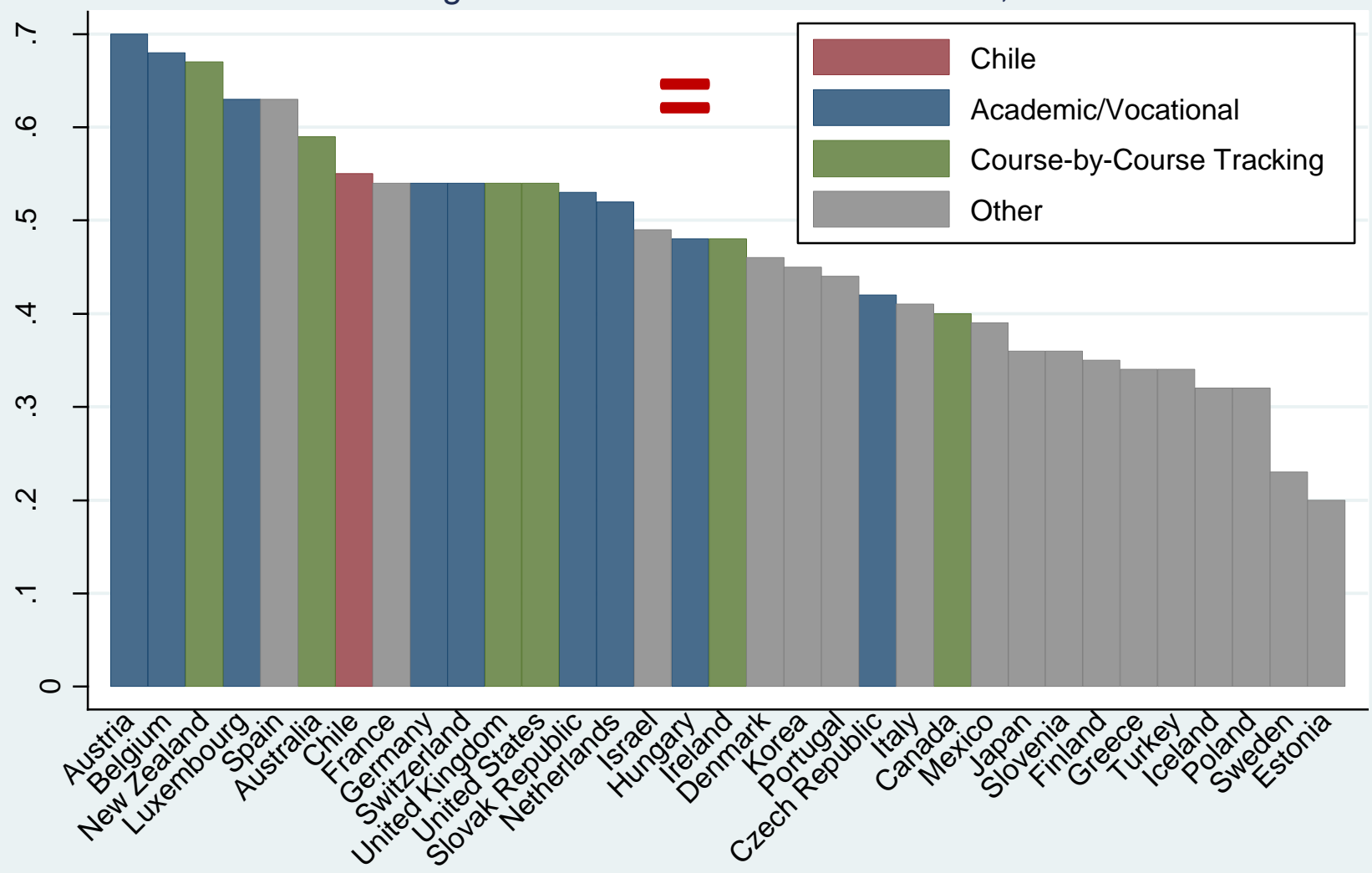
Opportunity to Learn Formal Mathematics



- Student responses to the questions:
 - How familiar are you with the following 7 terms?
 - Exponential function, linear equation, vector, etc.
 - Never heard of it / heard of it once or twice / heard of it a few times / heard of it often / know it well, understand the concept
 - How often have you encountered these types of problems in your mathematics lessons?
 - Solve $2x + 3 = 7$
 - Find the volume of a box with sides 3m, 4m and 5m
 - Frequently / Sometimes / Rarely / Never

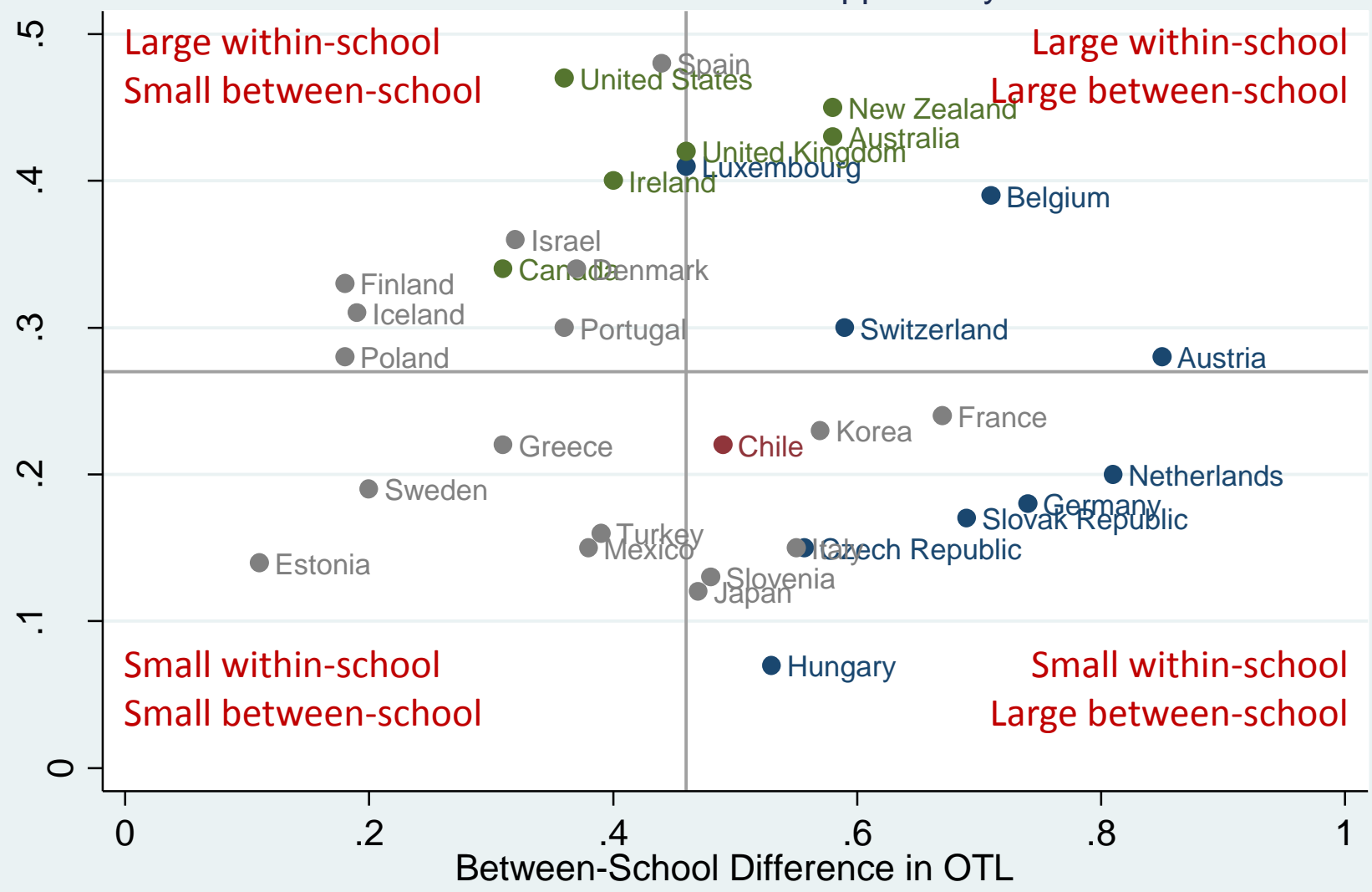


Difference in Opportunity to Learn between High and Low Socioeconomic Status, PISA 2012





Within-School Versus Between-School Socioeconomic Differences in Opportunity to Learn



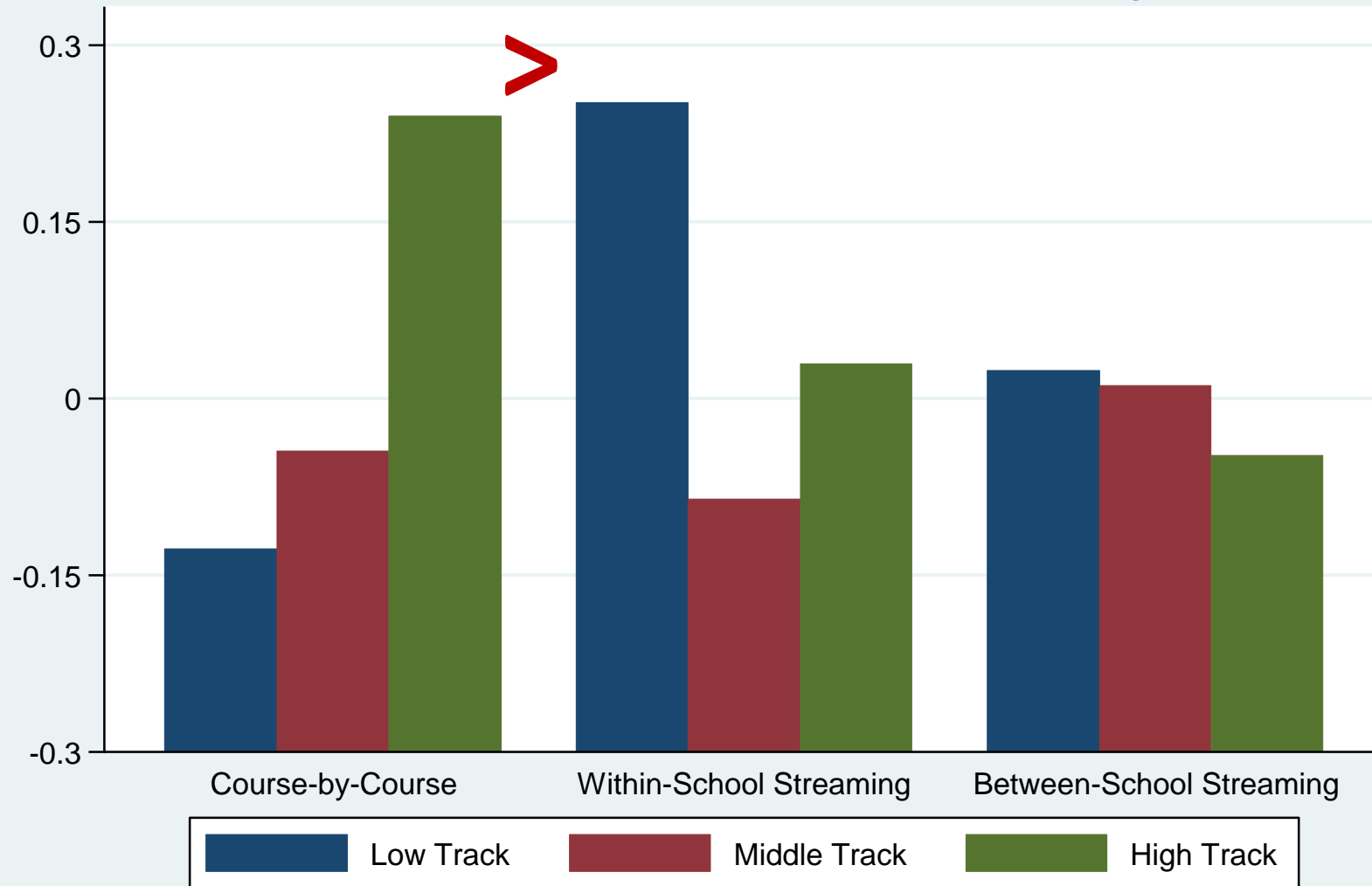
Self-Concept in Mathematics



- Student ratings for the questions:
 - I get good grades in mathematics
 - I learn mathematics quickly
 - I have always believed that mathematics is one of my best subjects
 - In my mathematics class, I understand even the most difficult work
 - I am just not good at mathematics (reversed)
 - Strongly agree
 - Agree
 - Disagree
 - Strongly disagree

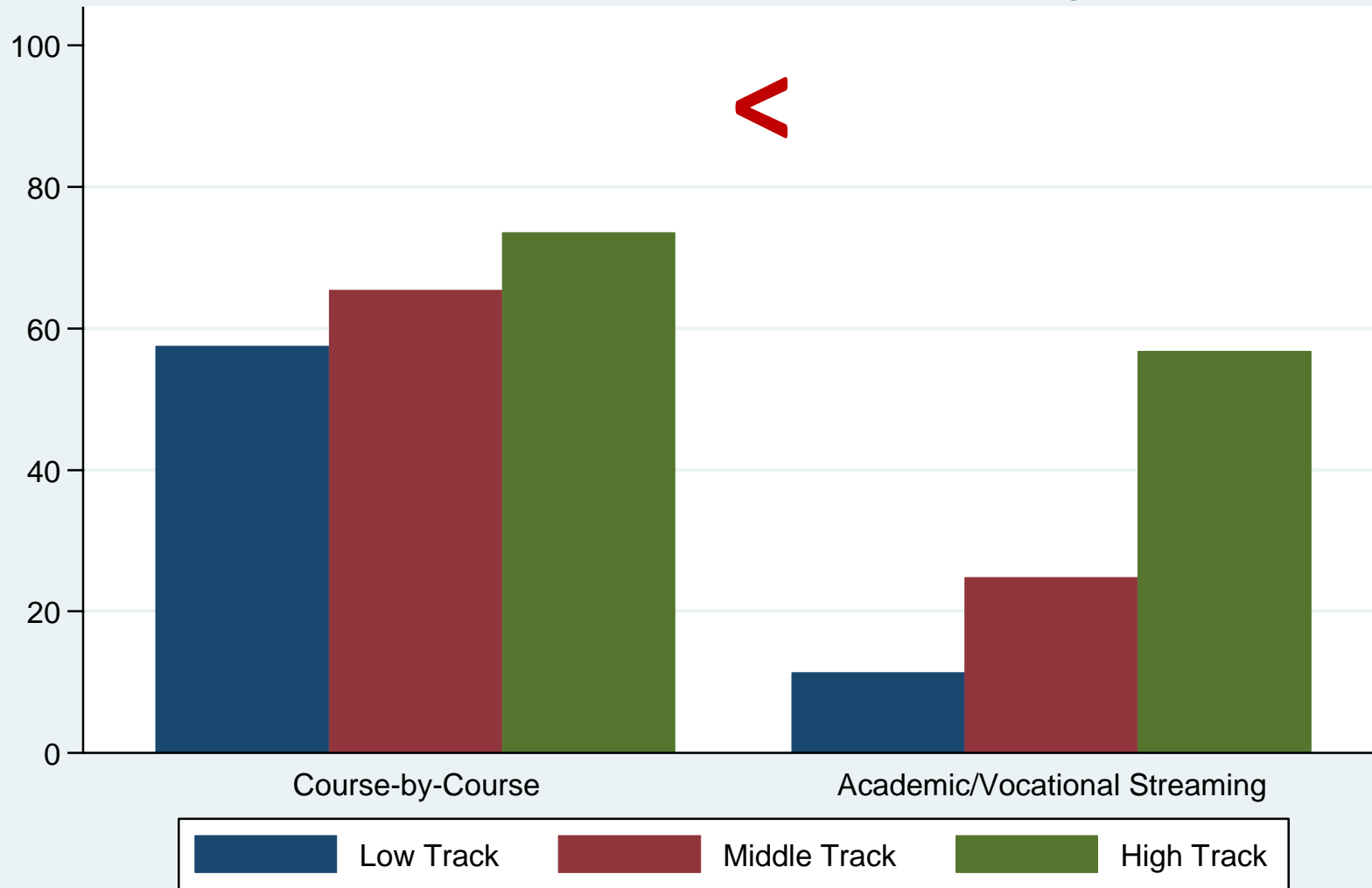


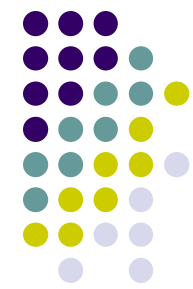
Reversed Self-Concept Gaps between Tracks in Academic/Vocational Streaming





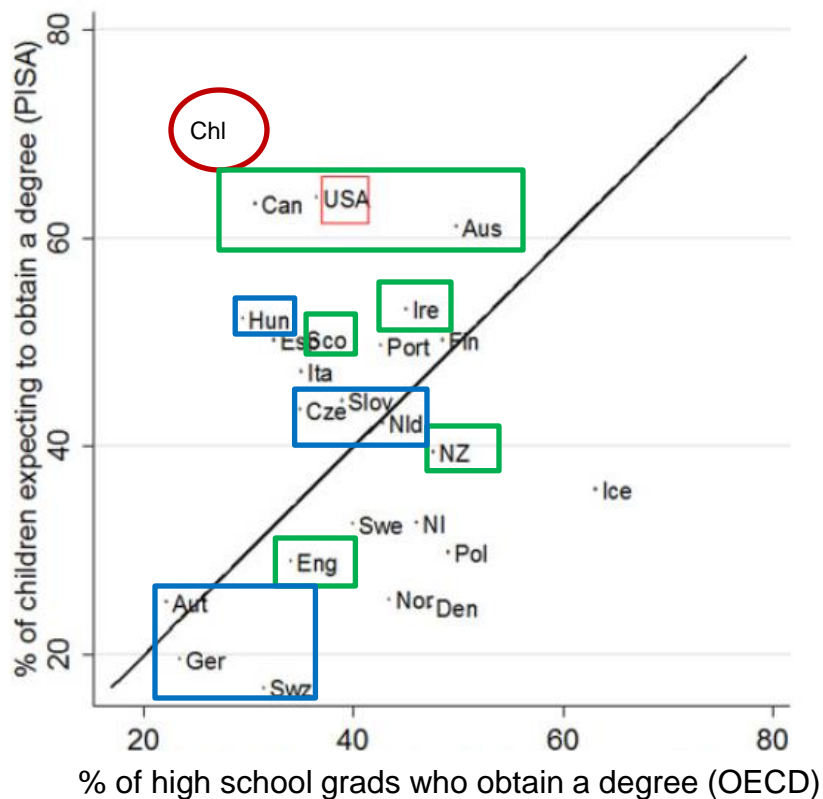
Smaller Expectations Gaps between Tracks in Course-by-Course Tracking



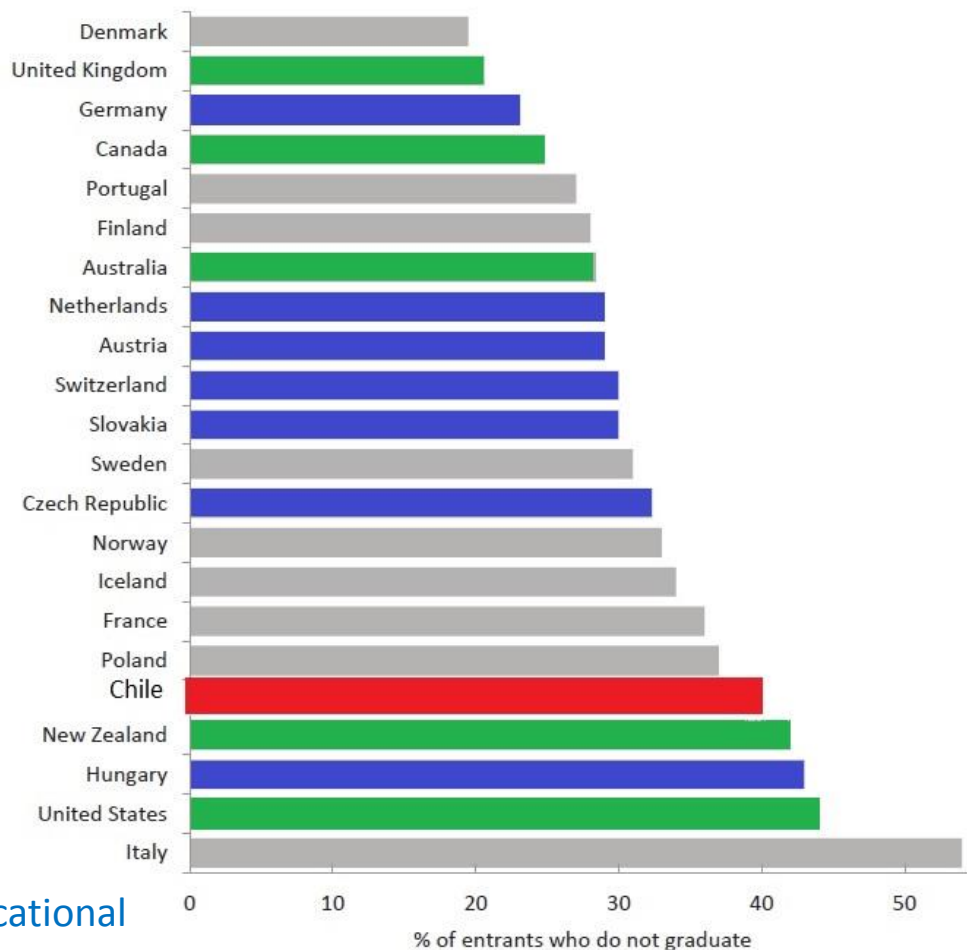


Realism of Expectations

% Children Expecting University vs. Actual Graduation Rates



% University Entrants who Do Not Graduate



■ Course-by-Course Tracking
 ■ Academic/Vocational Streaming

Source: Jerrim, 2014

Comparing Educational Outcomes

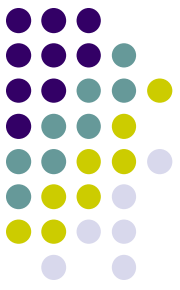


Course-by-Course Tracking



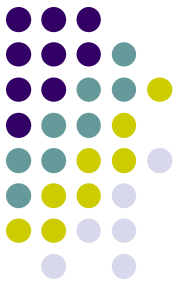
Academic/Vocational Streaming

Socioeconomic segregation	But high segregation of neighborhoods/sectors	<
Gaps in achievement		=
Gaps in opportunity to learn		=
Gaps in academic self-concept		>
Gaps in educational expectations	But unrealistic	<
Realism of expectations		>



Policy Implications

- Within-school course-by-course tracking is not necessarily more equitable than between-school academic/vocational streaming
- In reforming subsidized private schooling, Chile faces a unique opportunity – ensure that within-school segregation does not replace between-school segregation
- Countries with declining vocational streaming *and* course-by-course tracking (and declining grade repetition): Poland, Czech Republic, Greece, Mexico
- More equitable practices for curricular differentiation:
 - Begin at older ages, objective sorting (tests, not parental choice), group separately for each subject, opportunities for transfer, teach same content at different level
- Pay attention to:
 - Opportunity to learn, preparation for higher education
 - Socioemotional outcomes for low-achieving students (self-concept)



Thank you!