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Do educational priority policies reduce educational inequity? Examining three education systems with PISA

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Educational Priority Policies and the Importance of Cross-National Comparisons

- Ensuring equal educational opportunities for all children is a shared objective across the world

→ Many countries implement educational priority policies (EPPs) to promote this goal

  - Demeuse et al. (2012): "... policies designed to have an effect on educationally disadvantaged groups through systems or programs of focused action (whether the focus be determined according to socioeconomic, ethnic, linguistic, geographic or educational criteria) by offering something more (or "better" or "different") to designated populations"

- **However…** despite these efforts, improving educational equity remains a struggle for many education systems

Why do some EPPs succeed better than others?

Compare the focus, scale, and nature of each EPP, as well as the characteristics and structures of each education system

Aim of Study

- Examining the effectiveness of three different EPPs implemented in distinct education systems: the Flemish Community of Belgium (Flanders), Chile, and England
  - Investigate whether educational inequity has changed since the implementation of the EPP

- This information allows us to gain some insights into:

  1) Which EPP, if any, has been effective

  2) The factors contributing to the varying effectiveness of EPPs

Equity in education

- Educational inequity can originate from various sources at different levels:
  - Student level (SES, language spoken at home, migration background, etc.)
  - Classroom level (teacher quality, teacher quantity, etc.)
  - School level (School SES, % students at school with a migration background, school competition, etc.)
  - System level (stratification mechanisms, standardization mechanisms, etc.)
    - Mons' typology
      - Mons distinguishes four models based on four system-level practices: tracking, ability grouping, grade retention, and individualized support

Educational Priority Policies per Educational System

- **Flanders: The Act of Equal Educational Opportunities (2002)**
  - **Aim:** ensure equal opportunities for all children to achieve their full potential, prevent exclusion, segregation, and discrimination, and promote social cohesion in primary and secondary schools in Flanders
  - Additional funding based on student-level indicators (such as language spoken at home, SES, etc.)
- **England: Pupil Premium (2011)**
  - **Aim:**
    - Narrowing the performance gap in mathematics and English between "disadvantaged" students and their peers in primary and secondary state-funded schools
    - Address the potential negative impact of social and economic segregation in school intakes
  - Additional funding based on student-level indicators (free school meals)

Educational Priority Policies per Educational System

- **Chile: Preferential School Subsidy Law (SEP) (2008)**
  - **Aim:**
    - Enhancing student achievement and reducing income-based achievement gaps by providing a subsidy linked to priority students in addition to the regular vouchers
    - Provide extra support to schools with a higher concentration of priority students. This was addressed through the SEP concentration voucher, which granted additional funding to schools based on the percentage of disadvantaged students they enrolled
  - Additional funding based on student- and school-level indicators

Data

- **Multiple cycles of PISA**:
  - Two cycles will be examined based on the implementation date of the EPP in each education system: one cycle before or at the beginning of the EPP implementation and one cycle several years after the implementation date

PISA Cycles used, per education system	
Flanders	2003, 2022
Chile	2006, 2022
England	2009, 2022

- **Missing data** (before aggregating):
  - 5 x imputation for each country, and each year
- Student and School **weights**

Data

- **Dependent Variable**: Mathematics Achievement
- **Independent Variables:**

Student Level	School Level
Index of Highest Occupational Status Parents (ISEI)	School ISEI
Index of Highest number of years of schooling of parents (PARED)	School PARED
Migration Background	% students with a migration background at school
Language Spoken at Home	% non-native speaking students at school
Age	School competition
Gender	Public vs Private schools
	School location

Method

- **Two-level hierarchical linear models** (students nested into schools) are employed for each education system in conjunction with the **difference-in-differences (DID)** technique
  - **Multilevel approach:**
    - Non-standardized estimates
    - Building models in an iterative fashion (null model, control variables, fixed effects, random intercepts, random slopes, and cross-level interactions)

Method

- **Difference-in-Difference approach:**
  - Estimate the impact of the EPP by comparing the outcomes of two groups (targeted and non-targeted students and/or schools) at two time points (one before the implementation of the EPP and one after the implementation)
  - The targeted group is exposed to the EPP during the 2nd time point but not during the 1st, while the non-targeted group was not exposed to the EPP during either time point
  - A dummy variable representing the two time points is interacted with our educational inequity measures (the focus of EPPs)

Method

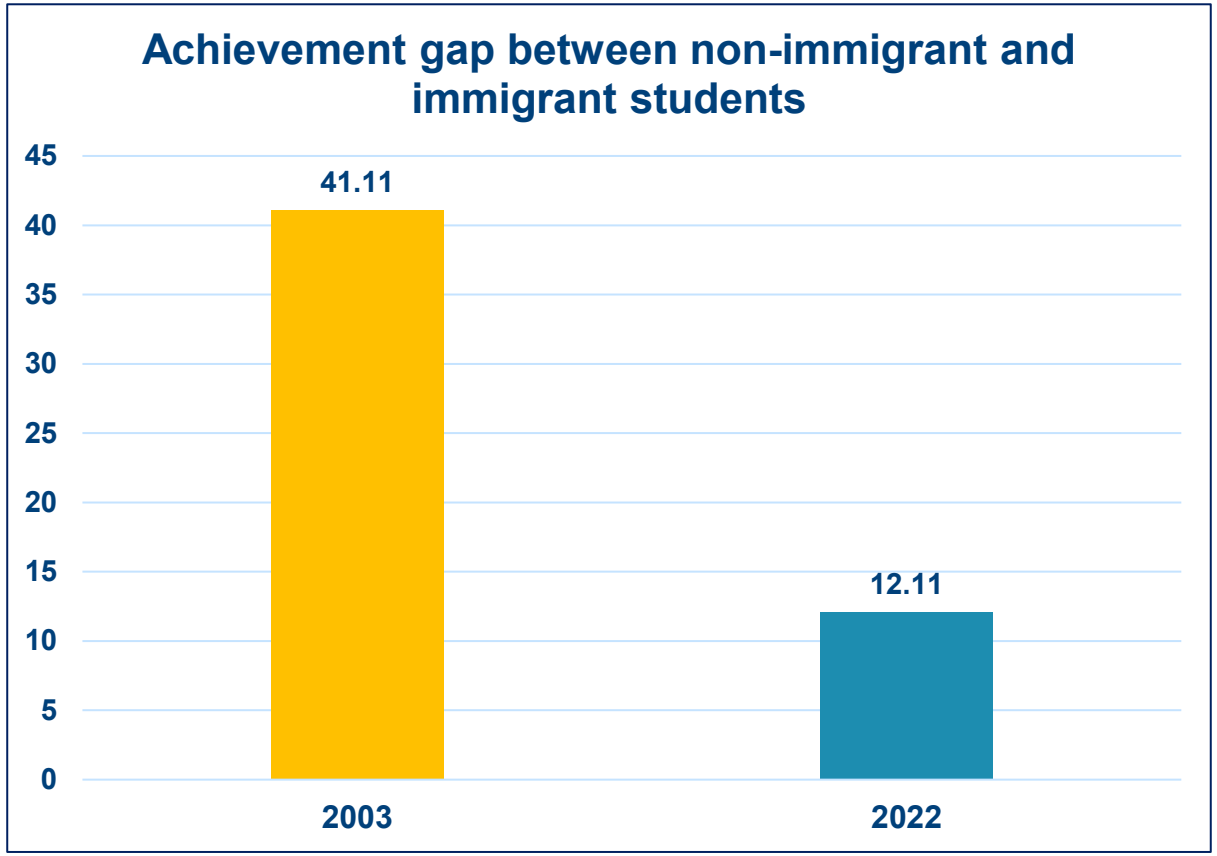
- **Certain assumptions of the DID technique are only partially fulfilled:**
  1) The determinants of educational inequity used in our analyses to define the target population are proxies to the indicators specified by each education system
  2) Several education systems (for instance Flanders) changed indicators over time, which is not accounted for
  3) DID method assumes that the EPP will not have any effect on the control group. BUT… sometimes this assumption does not hold true (targeting)
  4) We cannot isolate the effect of EPPs from other measures, events or shifts occurring during the observation period that may have affected equity in outcomes

Results: Flanders

- **General:**
  - Student level:
    - Student-level ISEI: Students with a higher ISEI, perform better than those with a lower score on the ISEI (advantaged vs disadvantaged) (B=0.62***)
    - Non-native speakers and immigrant students (both 1st and 2nd generation) perform considerably lower than native speakers and non-immigrant students (B=-36.53***, B=-41.11***)
  - School Level:
    - School-level ISEI: students enrolled into schools with a higher average ISEI outperform students enrolled into schools with a lower average ISEI (B= 3.94***)

Results: Flanders

- **Shifts between 2003-2022**:



Migration Background:

- In 2003: non-immigrant students outperform students with a migration background with 41.11 points

- In 2022: non-immigrant students outperform students with a migration background with 12.11 points

- Declined ethnic inequity: the performance gap between students with and without a migration background declined by 29 points between 2003 and 2022

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Results: Flanders

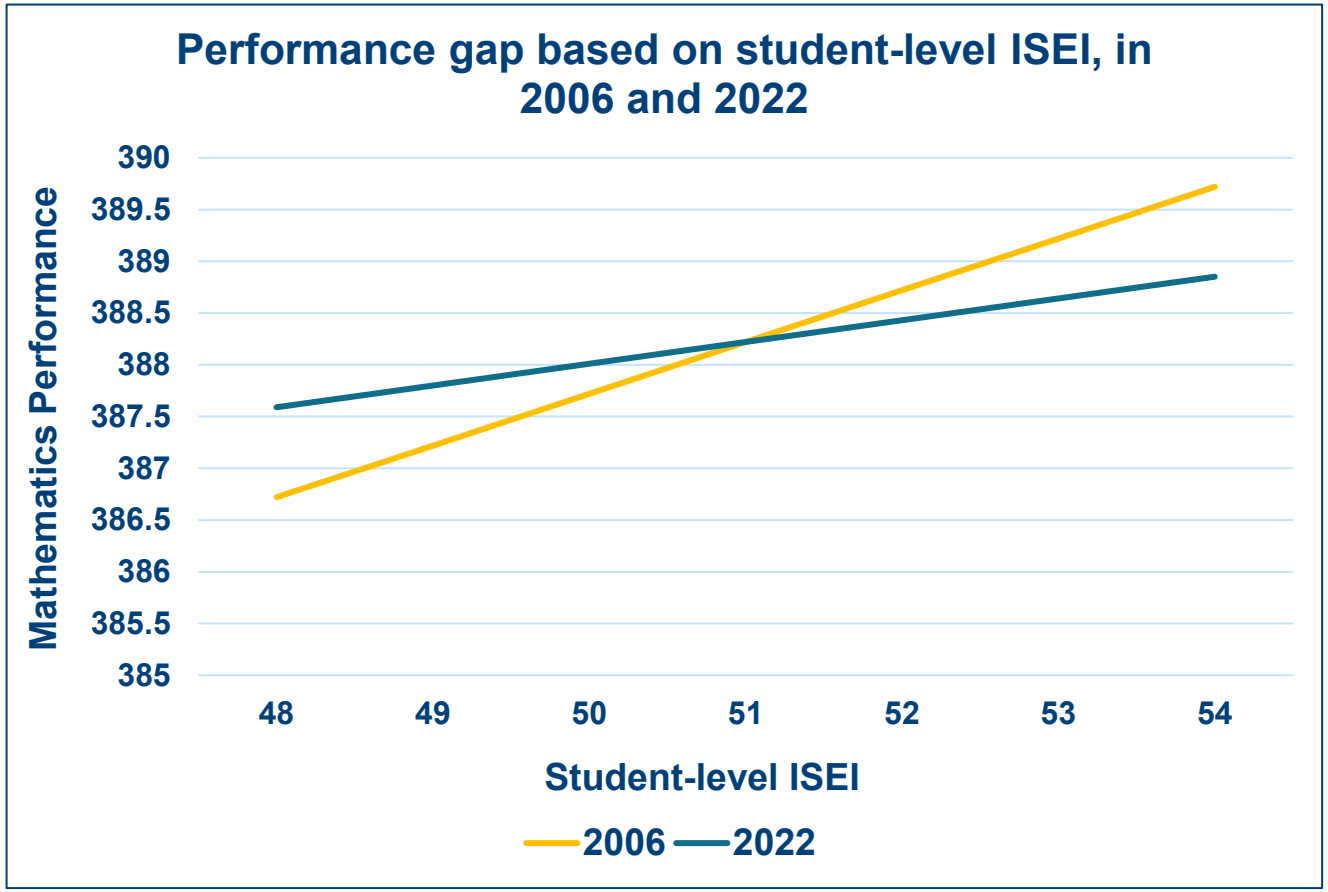
- **General conclusion:**
  - Promising results in reducing student-level ethnic inequities
    - Consistent with earlier research
  - No impact on student-level socioeconomic inequity (despite being one of the main target criteria)
    - Potential explanation: schools in Flanders receive additional funding but lack detailed information about which students are considered ‘disadvantaged’. As a result, it is easier to identify students with a migration background (who are often disadvantaged in Flanders) than to pinpoint students with a low SES

Results: Chile

- **General:**
  - Student level:
    - No significant effect of language spoken at home and migration background on performance
    - Student-level ISEI: Students with a higher ISEI, perform better than those with a lower ISEI (advantaged vs disadvantaged) (B=0.50***)
  - School level:
    - School-level ISEI: students enrolled into schools with a higher average ISEI outperform students enrolled into schools with a lower average ISEI (B=3.46***)
    - Private schools outperform public schools (B=34.48***)
    - A higher degree of school competition brings down the average mathematics performance (B=-19.84***)

Results Chile

- **Shifts between 2006-2022:**



Student-level ISEI:
In 2006, an increase of 1 on the ISEI, was associated with an increase of 0.5 points in mathematics achievement

In 2022, an increase of 1 on the ISEI, was associated with an increase of 0.21 points in mathematics achievement

→ Declined inequity: the steepness of the line in 2022 is flatter than in 2006

Results Chile

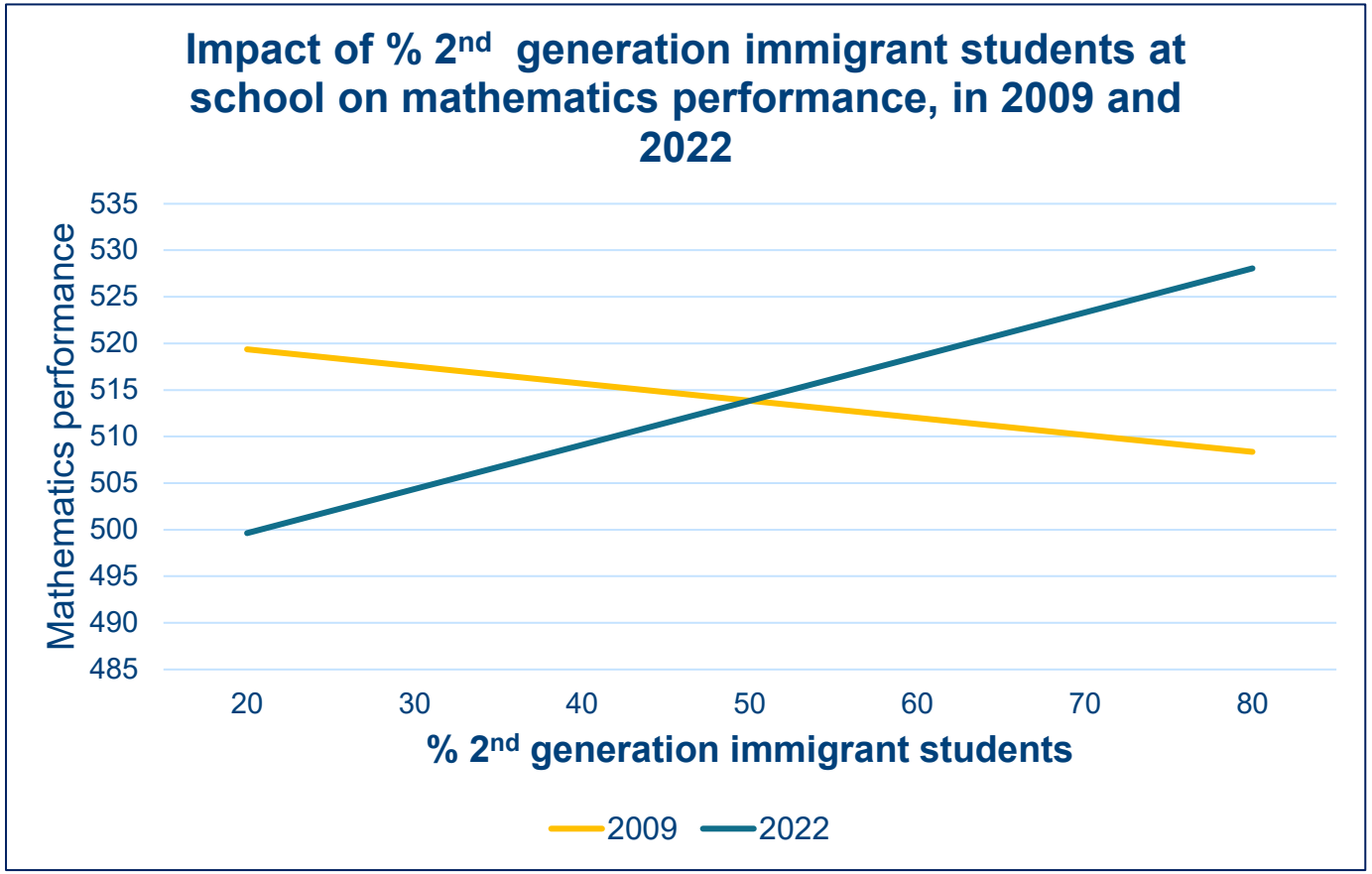
- **General conclusion:**
  - Shows potential in reducing student-level inequity based on ISEI
    - Consistent with other studies
    - Target population of the SEP
  - Despite explicitly investing in reducing school-level inequity, no significant change is observed in school-level inequities over time
    - Potential explanation: persistent segregation mechanisms between schools and high levels of residential segregation

Results England

- **General:**
  - Student level:
    - Student-level ISEI: Students with a higher score on the ISEI, perform better than those with a lower score on the ISEI (advantaged vs disadvantaged) (B=0.87***)
    - First generation immigrant students score 15.71 points lower than non-immigrant students
  - School Level:
    - School-level ISEI: students enrolled into schools with a higher average ISEI outperform students enrolled into schools with a lower average ISEI (B=2.82***)
    - School-level PARED: students enrolled into schools with a higher average PARED outperform students enrolled into schools with a lower average PARED (B=12.51*)
    - Proportion 1st generation students at school: students enrolled into schools with a higher proportion of 1st generation immigrant students perform considerably lower than students enrolled into schools with a low proportion of 1st generation immigrant students (B=-6.50*)

Results England

- **Shifts between 2009-2022:**



Proportion of 2nd generation immigrant students at school:

In 2009, attending schools with a higher proportion of 2nd generation immigrant students is associated with lower mathematics performance

In 2022, attending schools with a higher proportion of 2nd generation immigrant students is associated with higher mathematics performance

Results England

- **General conclusion:**
  - Pupil Premium appears to have fallen short of its objectives in our analysis
    - BUT: Analyzing earlier cycles (up to 2018), we do observe reductions in the socioeconomic and/or ethnic student-level inequity
    - Partly attributed to the repercussions of the COVID-19 crisis?

Conclusion

- Indications that EPPs can be an effective tool in reducing inequity
- The varying or sometimes limited effectiveness may be attributed to several factors:
  - **External contextual influences**: migration trends and socioeconomic shifts can significantly impact outcomes, making it challenging to fully interpret and understand the findings, as it is impossible to account for all these contextual influences
  - **Unclear or ineffective targeting**: the lack of precise identification of target groups may reduce policy impact.
  - **Systemic causes of inequality**: structural issues, such as a high degree of stratification, remain insufficiently addressed, limiting the potential for meaningful change.

Lessons for other PISA participating education systems to increase the effectiveness of their EPP

- **Ensure transparent and up-to-date targeting**:
  - Policies should directly address the most significant sources of inequity, with frequent re-evaluations to adapt to evolving challenges and ensure effectiveness

- **Address deeply rooted systematic structures that perpetuate inequity:**
  - Tackle deeply entrenched educational structures, such as stratification and segregation, as their detrimental impact on equity is profound and long-lasting

- **Consider broader societal and cultural contexts:**
  - Recognize challenges such as increasing multiculturalism and multilingualism, which introduce new complexities in education and classroom management

Lessons for other PISA participating education systems to increase the effectiveness of their EPP

- **Foster awareness and accountability at the local level:**
  - Provide schools and communities with the tools to recognize inequities and implement proven strategies, supported by accountability mechanisms to track progress

- **Promote collaboration between stakeholders:**
  - Encourage partnerships between schools, families, and local communities to create holistic approaches that address inequity both inside and outside the classroom

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