Policy Studies Institute

When Quality Improvement Doesn't Raise Learning Outcomes:

Puzzles of Education Reform in Ethiopia

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General Education Quality Improvement Program (GEQIP-II): 2012-2018

- Building additional classrooms
- Furnishing schools and classrooms with key resources
- Increasing the supply of qualified primary school teachers
- Supporting continuous in-service training for teachers
- Providing students with textbooks for each subject

→ Enhance students' learning outcomes equitably by improving teaching and learning conditions in schools
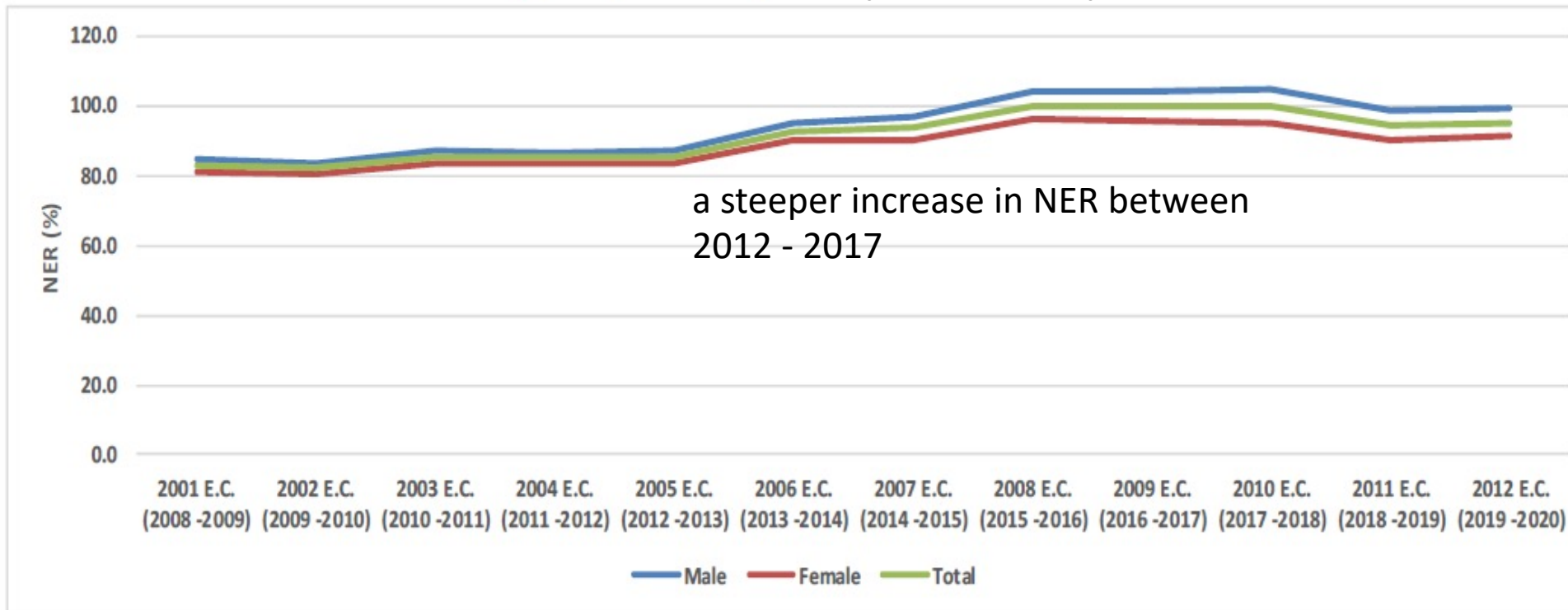
2012 ——————————————— 2018

RISE Ethiopia:

- to understand the impacts of the GEQIP-II educational reform on improving primary school students' learning outcomes

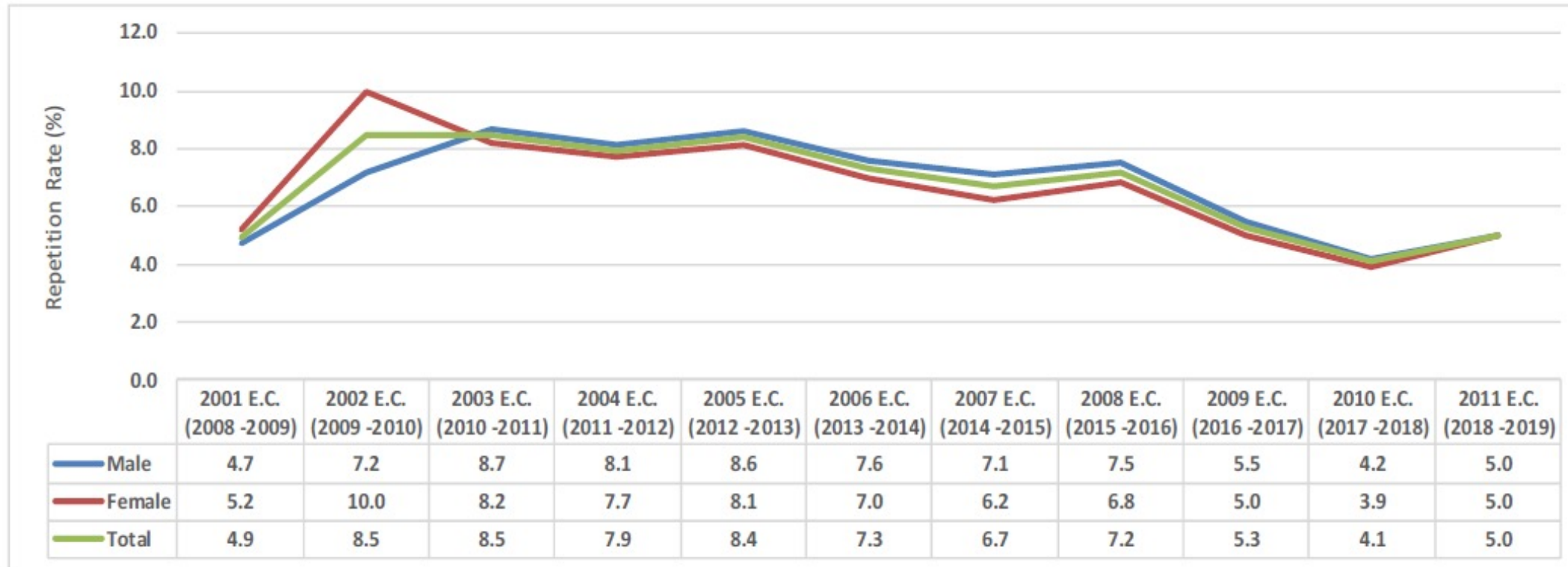# Context: the period between 2012 and 2018 in Ethiopia

- General economic development

- Enrolment and quality improvements were priorities for policy

NER - trend for Grades 1-8 (2012 to 2019)

a steeper increase in NER between 2012 - 2017

Reduction in the repetition rates for G1-G8

a steeper decline in repetition rates between 2012 – 2017!

	2001 E.C. (2008 -2009)	2002 E.C. (2009 -2010)	2003 E.C. (2010 -2011)	2004 E.C. (2011 -2012)	2005 E.C. (2012 -2013)	2006 E.C. (2013 -2014)	2007 E.C. (2014 -2015)	2008 E.C. (2015 -2016)	2009 E.C. (2016 -2017)	2010 E.C. (2017 -2018)	2011 E.C. (2018 -2019)
Male	4.7	7.2	8.7	8.1	8.6	7.6	7.1	7.5	5.5	4.2	5.0
Female	5.2	10.0	8.2	7.7	8.1	7.0	6.2	6.8	5.0	3.9	5.0
Total	4.9	8.5	8.5	7.9	8.4	7.3	6.7	7.2	5.3	4.1	5.0

Improving learning outcomes equitably remains a big challenge!

- Successes in enrolment and completion –
  - not accompanied by student acquisition of the basic skills of numeracy and literacy

  (NEAEA, 2011, 2016; Rolleston, 2014; Woldehanna et al., 2016)

Research questions:

1. How have learning outcomes among primary school students in Ethiopia changed over the period 2012-2018?

2. What explains changes in learning outcomes over time?

Data sources:
Young Lives (YL) 2012-13 and RISE ET 2018-19 School & HH surveys

Grade 4 students
in 33 schools
(*N*=2,190)

A different cohort of
Grade 4 students in
the same 33 schools
(*N*=689)

Longitudinal survey of schools

2012-13

2018-19

Six regions:
Addis Ababa

Amhara

Oromia

SNNP

Tigray

Somali

Instruments

Student questionnaire

Numeracy test (start and end of school year)

Household questionnaire

Teacher mathematics knowledge test

School Principal questionnaire

Sample were NOT
perfect
representative both
nationally and
regionally

1. Decline in numeracy achievement over time, but students in 2018-19 made a slightly higher learning progress within the school year than those in 2012-13
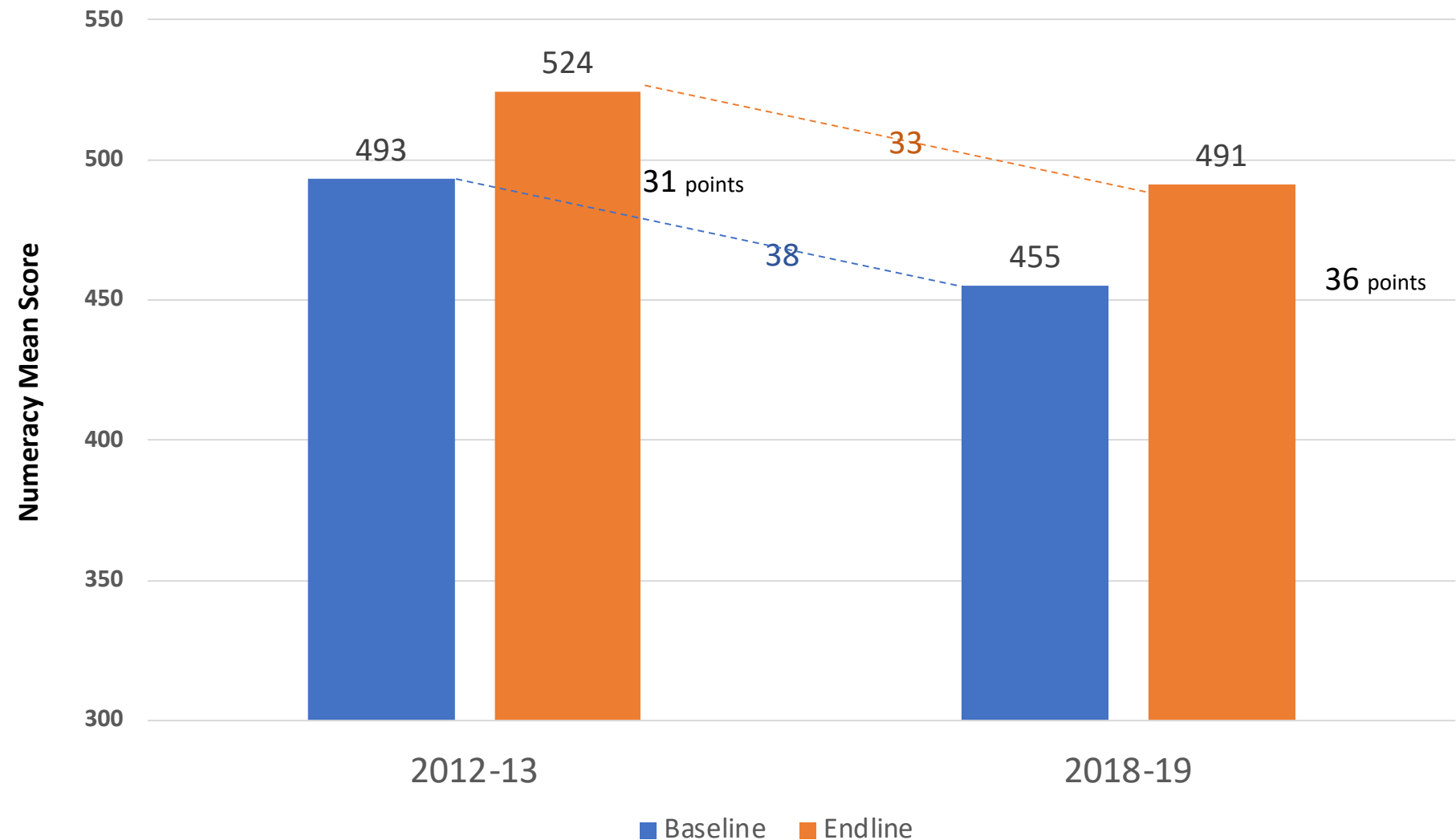

The 2012-2018 drop of 0.38SD in start-of-school-scores is equivalent to one year of instruction in math!

Students at the start of G4 in **2018** were approximately one year of math schooling behind their predecessors in **2012**

Biggest puzzle is why did learning levels at the start of Grade 4 decline so steeply bn 2012 and 2018?

Note: Average scores were transformed into 500 mean & 100 SD

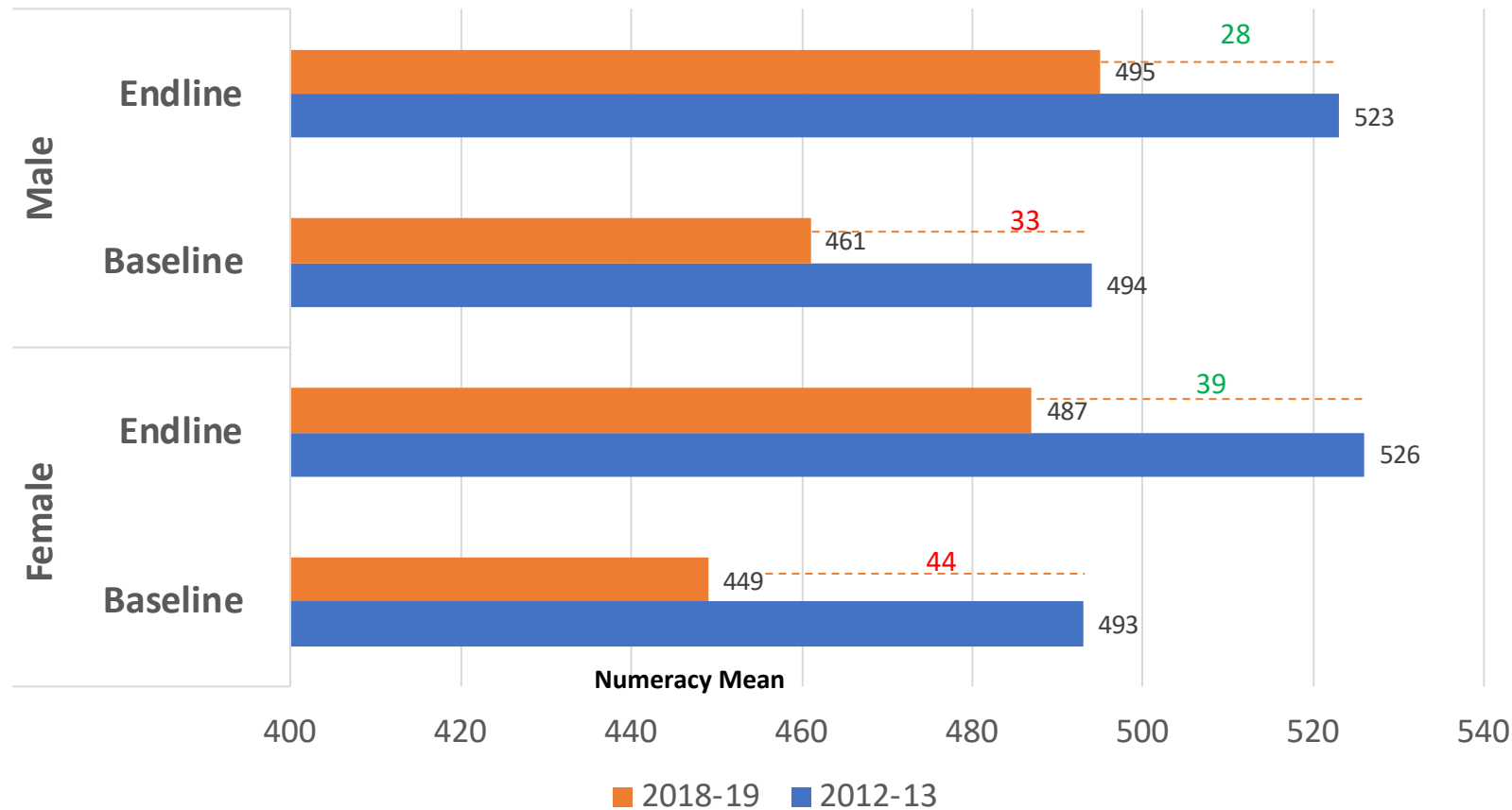# 2. The decline in numeracy levels was observed in both rural and urban students
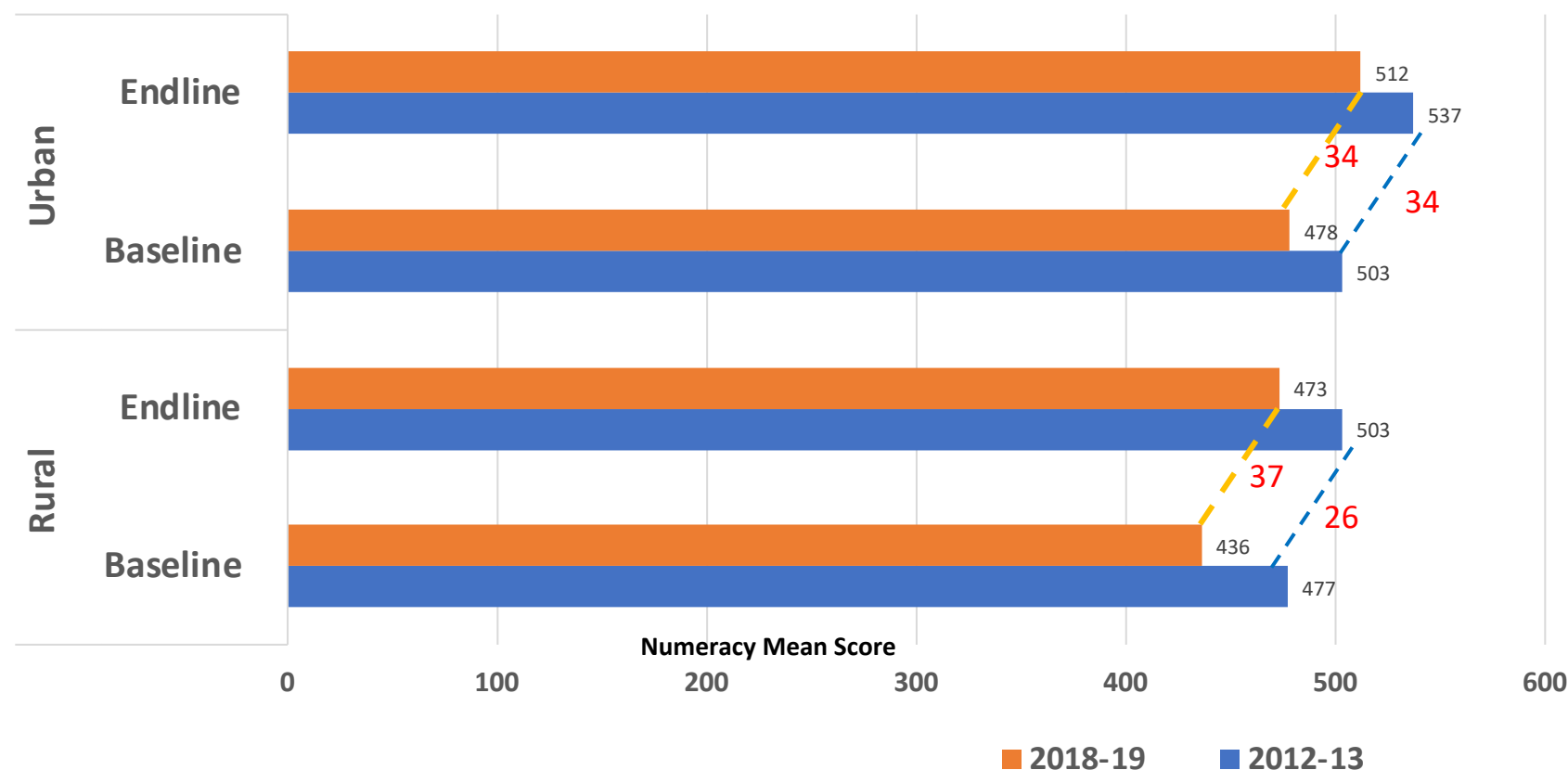
Rural students in 2018-19 made a higher progress (37 points) within a school year than rural students in 2012-13 (26 points).

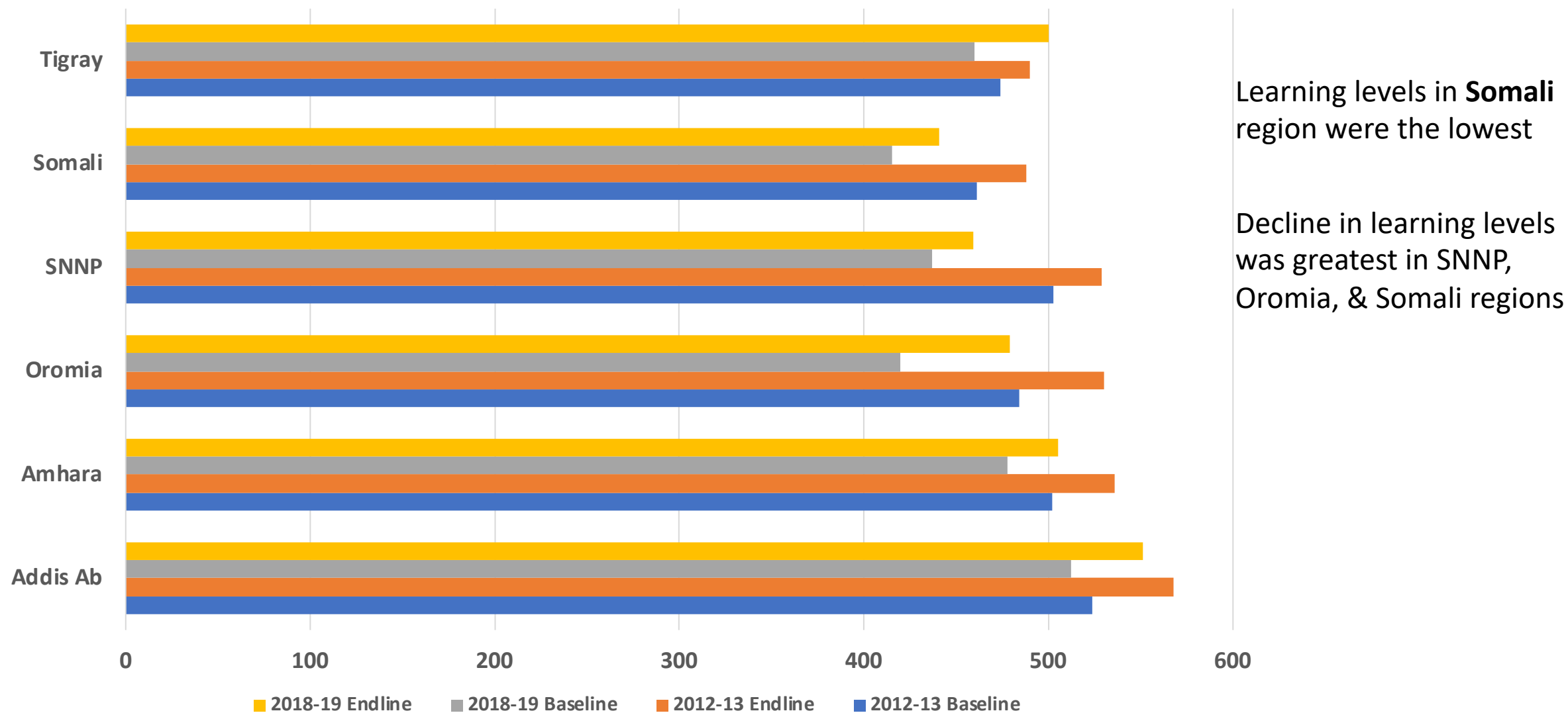The progress made by urban students is the same in both periods (34 points).

The decline between baselines is larger for rural students (41 compared to 25 points)

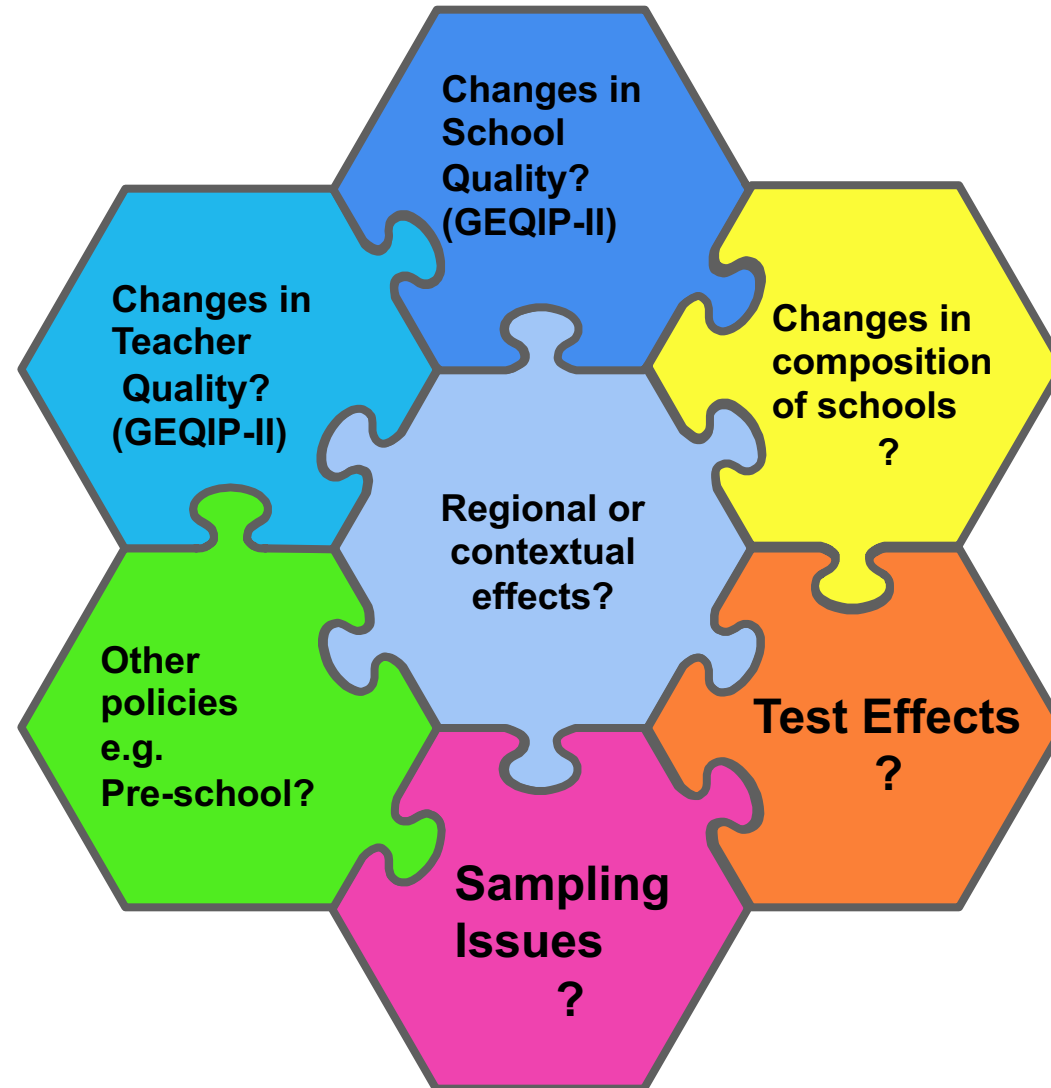# 3. The decline in numeracy levels was for both male and female students

The decline for **female** students both at the start and end of G4 was larger than for **male** students!

4. The decline in numeracy levels in 2018-19 was across the 6 sample regions, and regional disparities in learning progress widened over time
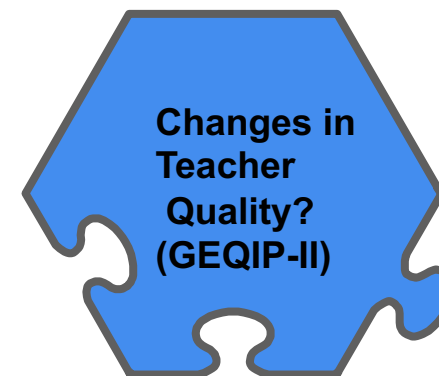

Learning levels in **Somali** region were the lowest

Decline in learning levels was greatest in SNNP, Oromia, & Somali regions

■ 2018-19 Endline ■ 2018-19 Baseline ■ 2012-13 Endline ■ 2012-13 Baseline

What Explains Changes in Learning Outcomes?

Changes in School Quality? (GEQIP-II)

Changes in Teacher Quality? (GEQIP-II)

Changes in composition of schools?

Regional or contextual effects?

Other policies e.g. Pre-school?

Test Effects?

Sampling Issues?

There is a general improvement in key school resources over time

Resource indicator	2012-13	2018-19	Difference
School has a functional library, %	70.0	82.0	12.0
School has a functional pedagogical resource centre, %	55.0	85.0	30.0**
Working computers, average	1.09	2.55	1.45
School has working radios, %	67.0	77.0	10.0
Number of classrooms in school, average	14.0	15.0	1.0
Class size, average	56	52	-4.0**
School operates a full-day shift, %	9.0	15.0	6.0
School provides one G4 maths textbook per student, %	72.0	61.0	-11.0
School received "School Grant" last academic year, %	94.0	79.0	-15.0*

t-test of the differences is significant at ***$p<0.001$; **$p<0.05$; *$p<0.1$

Changes in Teacher Quality? (GEQIP-II)

2018-19 cohort:
- Improved school quality indicators in general

Teachers in 2018-19 showed improvement in many of the 'teacher quality' indicators!

Teacher quality indicator	2012-13	2018-19	Difference
Proportion of teachers with diploma/university degree, %	68.0	88.5	20.5***
Proportion of teachers who completed level 2 CPD training, %	46.5	59.5	13.0
Proportion of teachers who specialised in mathematics, %	19.0	85.0	66.0***
Teacher's mathematics content knowledge, average	479.0	516.0	37.0**
Teachers' age, average	34.69	31.34	-3.35
Teachers' teaching experience, average	13.25	4.82	-8.43***

t-test of the differences is significant at ***$p<0.001$; **$p<0.05$; *$p<0.1$

Changes in Teacher Quality? (GEQIP-II)
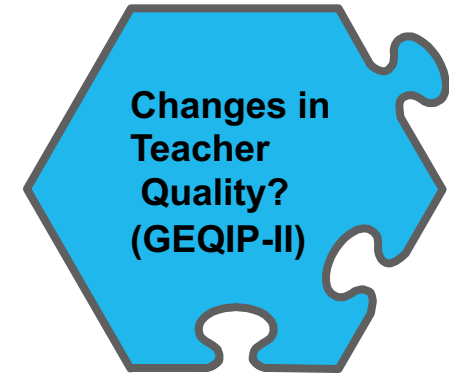
2018-19 cohort:
- Improved teachers/mixed picture?

Despite these improvements in teacher quality, students' numeracy performance has declined over time.

The trend is mixed, but G4 students in 2018-19 were more disadvantaged!

Student background indicator	2012-13	2018-19	Difference
Proportion of students attended preschool, %	42.0	50.0	8.0***
Hours spent by a child doing homework/studying, average	1.58	1.80	0.22***
Proportion of students ever dropped out before G4, %	19.0	11.0	-8.0***
Number of days absent in the current school year, aver	1.64	1.46	-0.18
Household durable assets, average	0.12	-0.47	-0.59***
Proportion of female students from the least eco background, %	49.0	52.0	3.0
Primary caregivers' literacy, %	50.0	41.0	-9.0***
Time taken to walk to school (in minutes), average	18.35	21.84	3.49***
Students whose biological mother alive, %	93.0	82.0	11.0***
Students whose biological father alive, %	83.0	78.0	5.0*

Changes in composition of schools ?
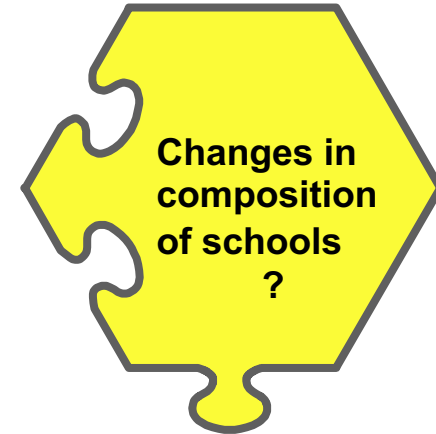
Proportion of girls does not differ between YL and RISE (52% and 51%) but a big increase in rural pupils (40% to 55%)

t-test of the differences is significant at ***p<0.001; **p<0.05; *p<0.1

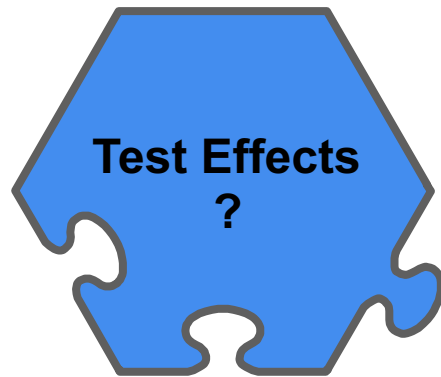# The decline in household assets vary by region

Decline in household assets by region for YL 2012-13 and RISE 2018-19
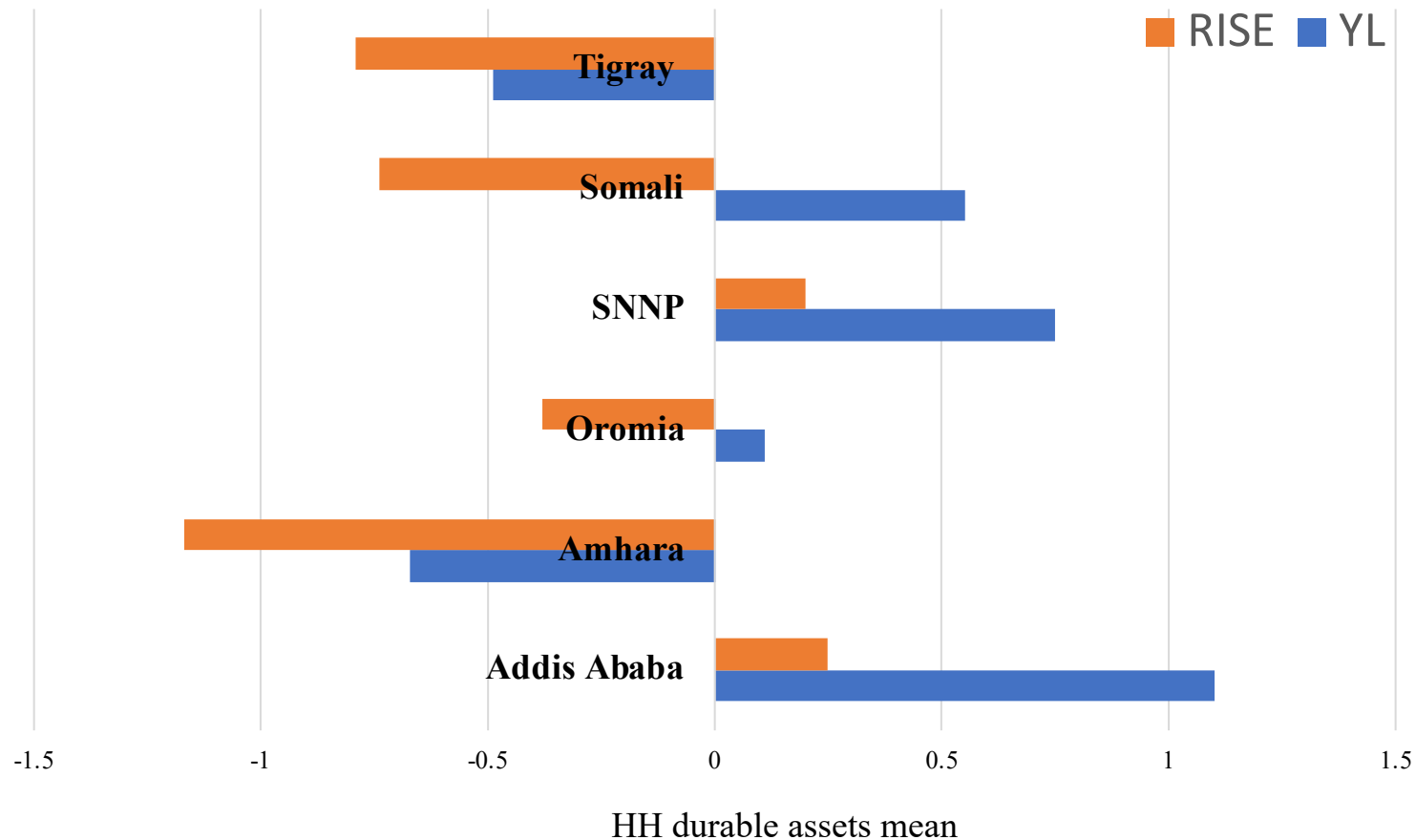
- Tigray region saw the smallest decline

- Somali region saw the steepest decline over the six-year period

Changes in composition of schools ?
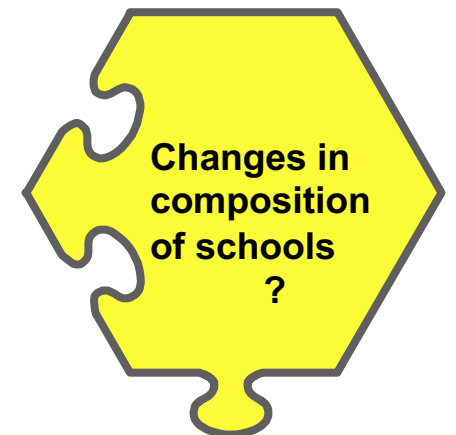
Responses to Test Items

Test Effects ?

We have used IRT methods to design and link tests

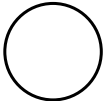But curricula and teaching change over time
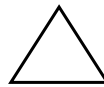
Could this explain decline?

Which is half of 6?
A. 12 B. 3
C. 2 D. 4

YL 67%
RISE 56%

Which of these is a triangle?

A. B.

C. D.

YL 85%
RISE 74%

Which of these whole numbers is closest to 900,000?
A. 1,003,000   B. 413,000
C. 878,000   D. 823,000

YL 68%
RISE 43%

15 + 12 − 3 =
A. 30 B. 0
C. 24 D. 27

YL 51%
RISE 37%

Underperformance by context

Regional or contextual effects?

- We used a simple regression model with YL data to predict scores for RISE schools based on student characteristics
- Bars show the difference between actual and predicted scores
- Widespread 'underperformance' in all regions and the vast majority of schools
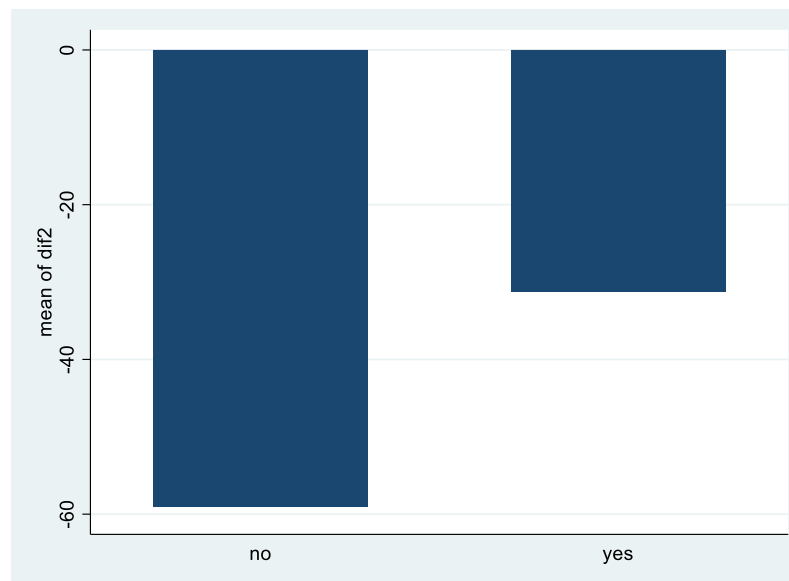- Much greater 'underperformance' in Oromia and SNNP, however
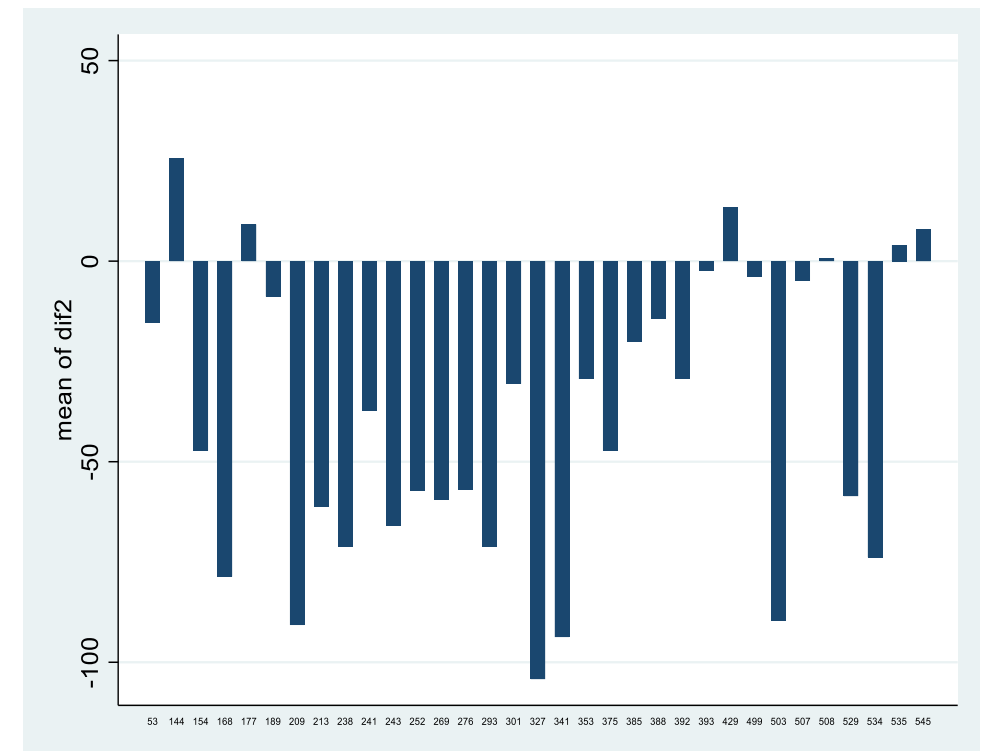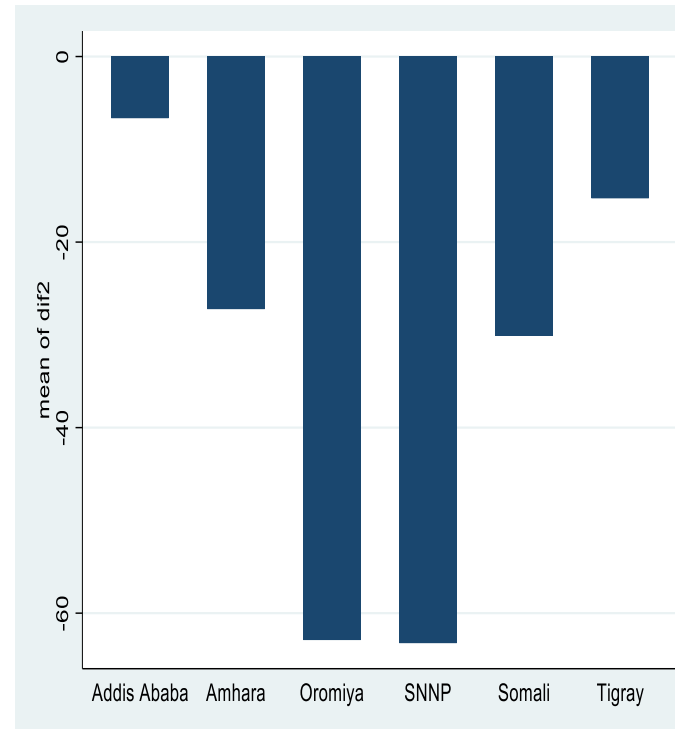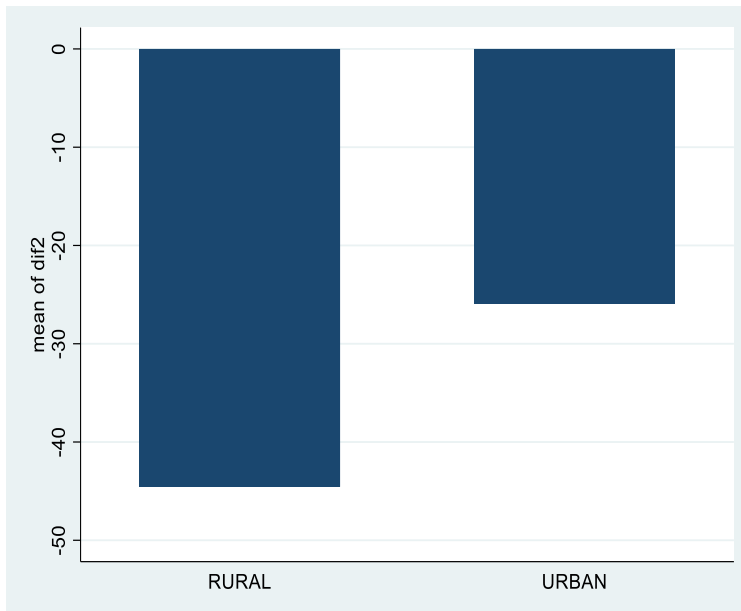
Underperformance by example education / policy indicators
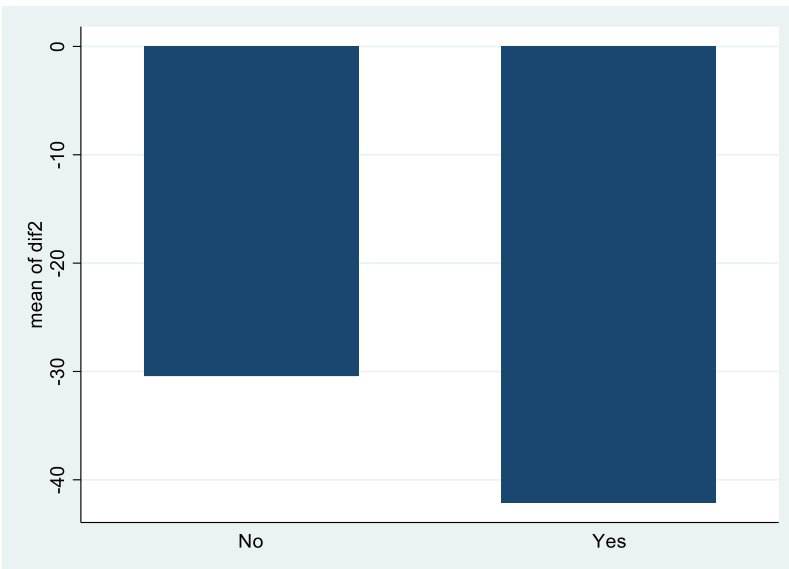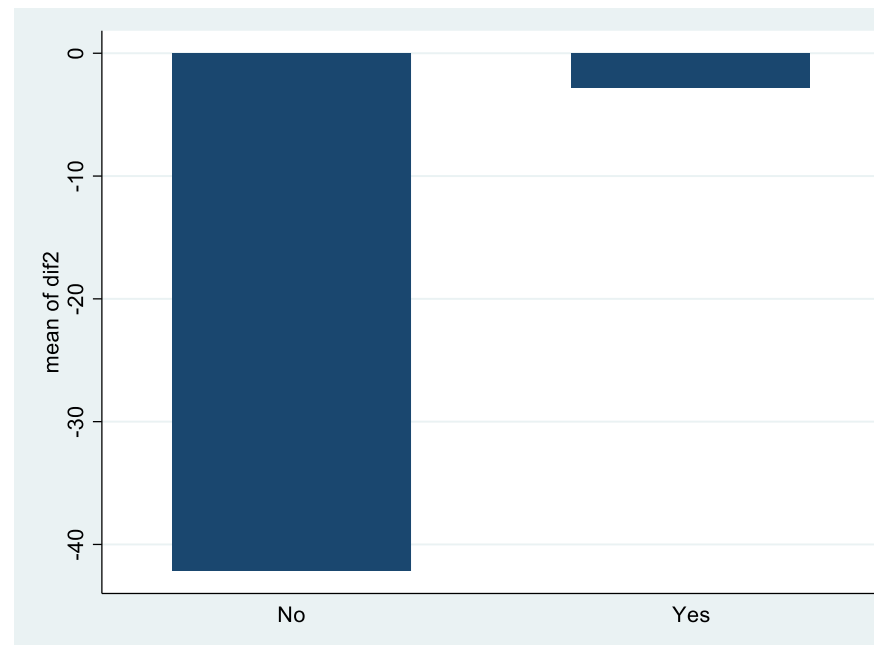
Attended pre-school

??

Taught by a specialist maths teacher

RISE cohort:

More pupils attended pre-school

But some indication of a decline in quality of pre-school?

Otherwise, underperformance is less for those in more advantaged schools

Other policies e.g. Pre-school?

Attends a school with working internet

Conclusions

- The decline in learning levels : not necessarily an indicator of a failure of GEQIP-II
  - Little evidence to suggest that school and teacher quality worsened in the period between 2012 and 2019
  - There may be a lag time before learning outcomes improve?
- Decline in school readiness at entry to G1? Or in G1-3?
  - A reduction in the quality of preschool education over time? Might resolve in time?
- Progress during the 2018-19 improved slightly, but pupils became more disadvantaged over time although not enough to explain the decline
  - Decline could have been worse without GEQIP-II???
  - Factors external to the education system in Ethiopia (e.g., conflict) may have contributed

THANK YOU!

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