

# **Cheating on National Exams in Indonesia**

**How big is the problem?**

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RISE Annual Conference

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# Anecdotal evidence of widespread cheating

## Indonesian Ombudsman Finds Cheating Practice in National Exam

5 April 2016 13:20 WIB

Tempo.co

## Students get high scores by cheating

Fedina S. Sundaryani

The Jakarta Post

Jakarta / Mon, June 15, 2015 / 10:13 am

Indonesian schools

More cheating, or else!

Scandals in the classroom



The Economist, 2011

# The national exam is important for admissions

## National Exam aims to measure student achievement...

- Determines acceptance into junior secondary school, senior secondary school, and university
- Condition for graduation (until 2016)

## ... and school quality

- Percentage of students who pass the exam
  - Pressure for schools to have 100% pass rate

# Why is cheating a problem?

- 1. Cheating makes it impossible to assess the learning outcomes of the education system**
- 2. Students do not need to study and teachers do not need to teach to pass the exam**

But how big is the problem?

# We exploit a national policy against cheating

- The Government of Indonesia (GoI) took several measures to fight cheating in junior secondary schools since 2015

## Integrity Score (2015-present)

- Identify cheating based on answer patterns
- All schools

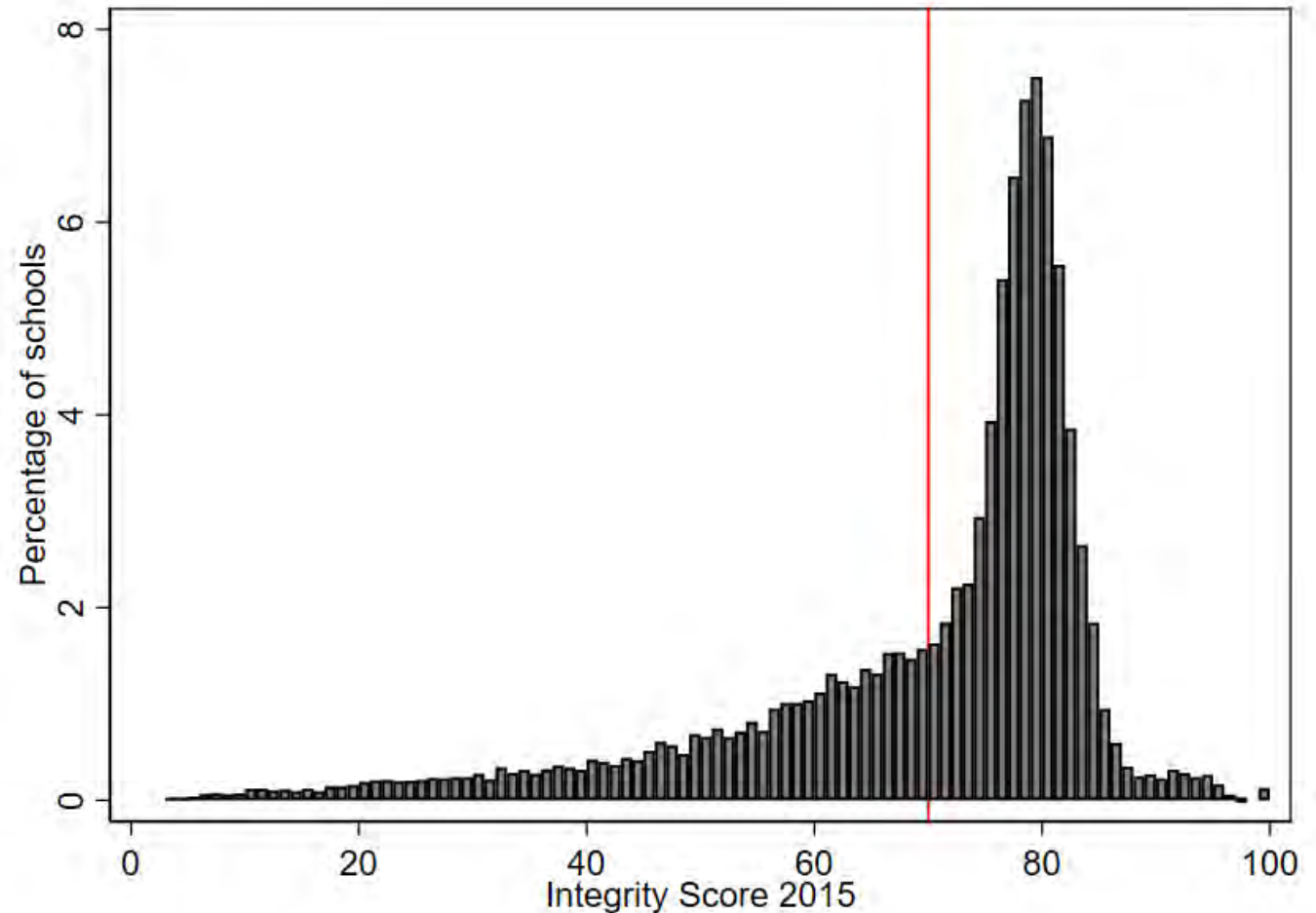
## Computer-Based Testing (CBT) (2015-present)

- Eliminate traditional cheating practices
- Phased in

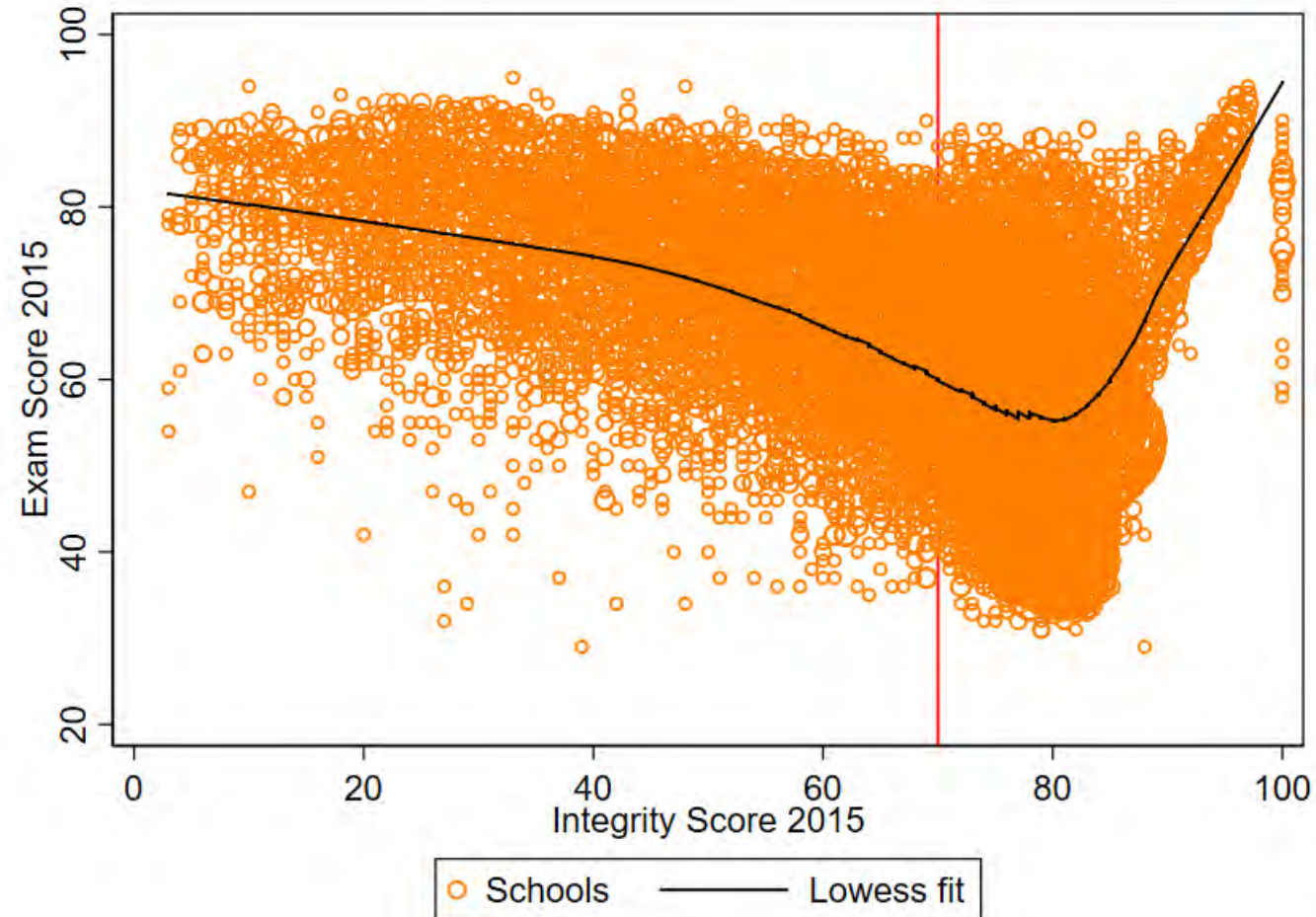
# Gol generates the integrity score by school

- Index range 0-100
- Higher value → higher integrity → less cheating

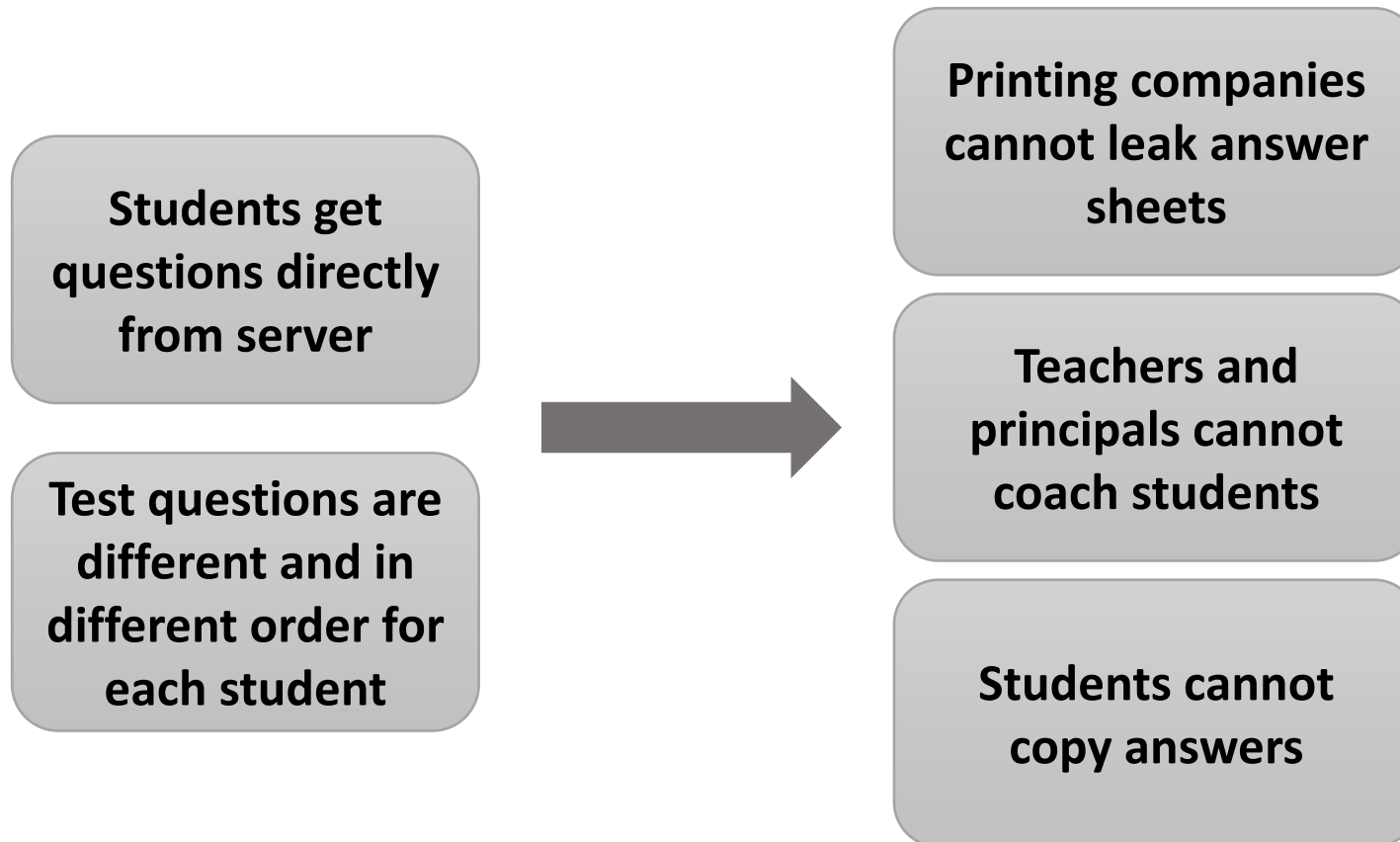
- < 70 → sufficient evidence for substantial cheating
- **34%** of schools had a score below 70 in 2015



# The integrity score has a negative correlation with exam scores



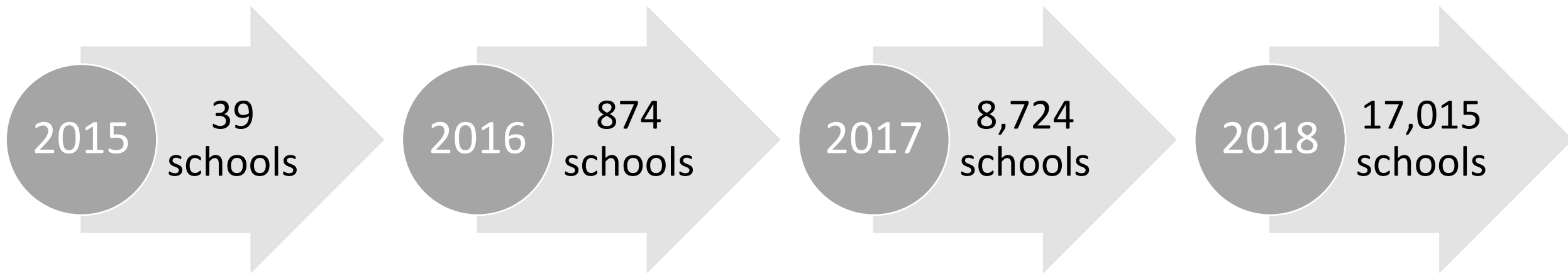
# CBT offers students and teachers fewer opportunities to cheat





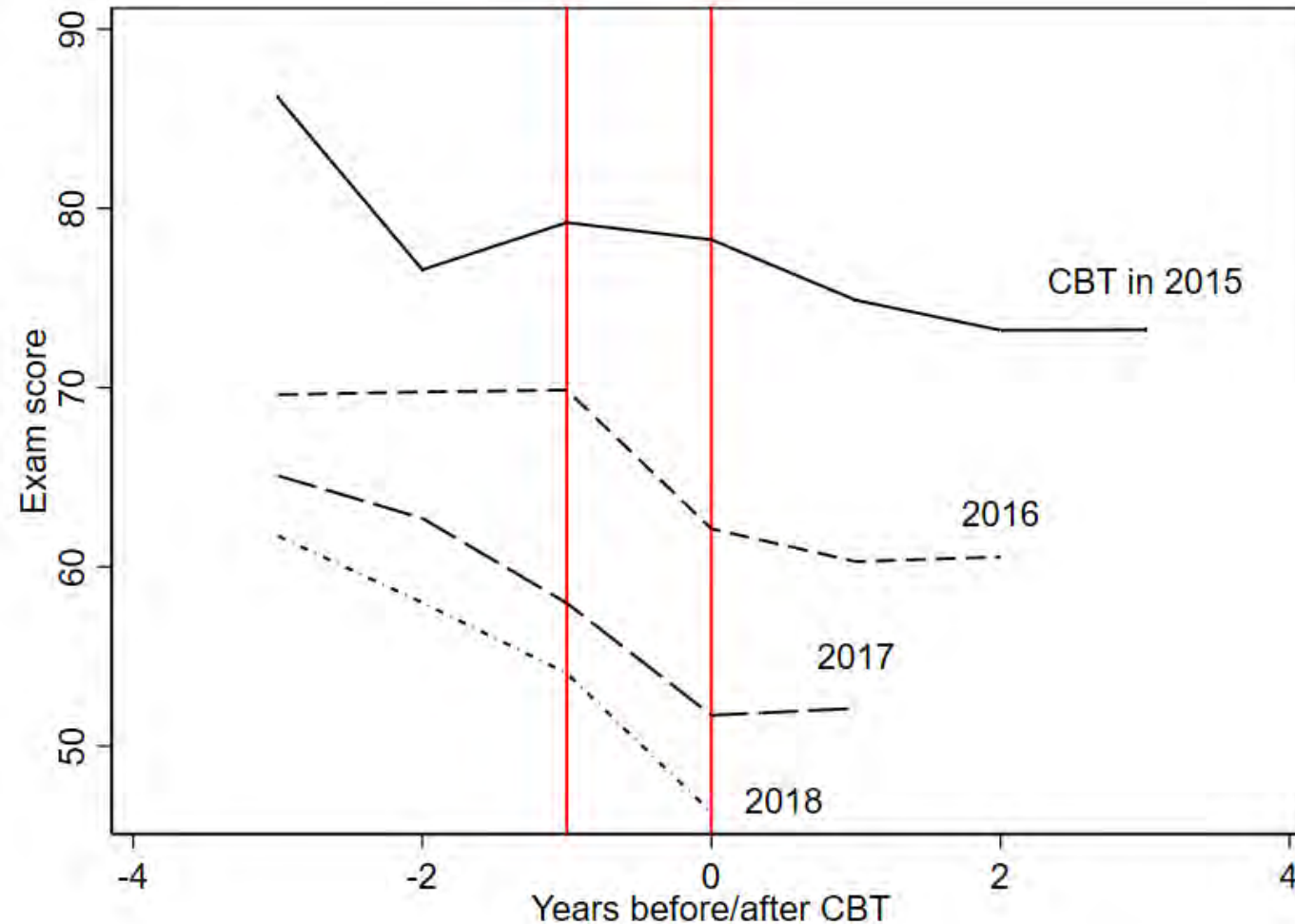
# CBT is rolled out over time in junior high schools

- Schools/district governments apply to GoI with interest in implementing CBT
- GoI approves if school meets criteria (access to computers, electricity and internet)



**47% using CBT**

# Schools that implement CBT later have lower scores and larger drop in test scores



# We predict grade manipulation using administrative data on all schools

## CBT limits cheating

- CBT implemented in phases
- Compare PBT score in previous year with CBT score

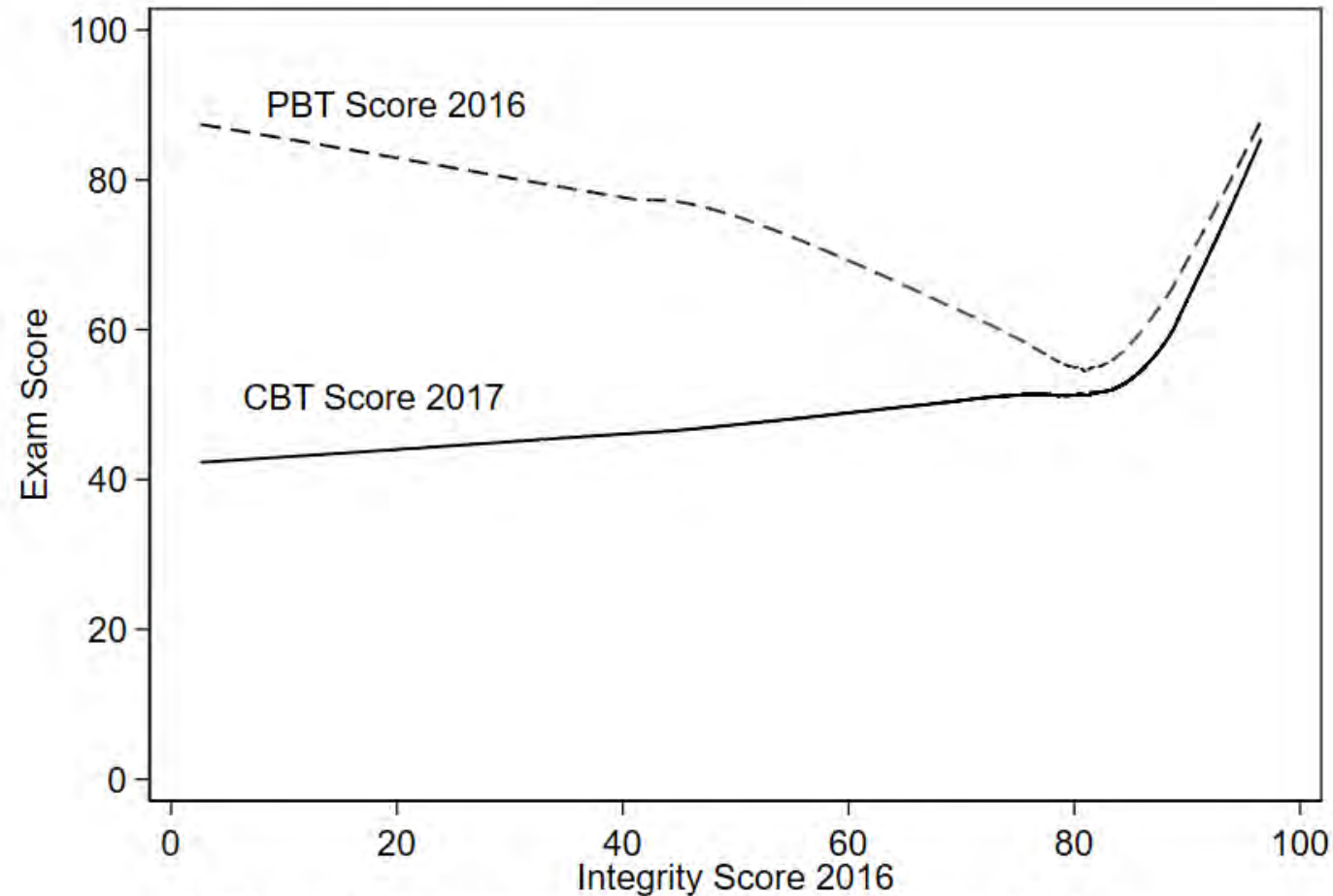
## The Integrity Score correlates with the drop in exam scores

- Correlate the 2016 integrity score with the drop in scores for 2017 CBT schools

## Predict the exam score without cheating for PBT schools

- Predict out of sample using integrity score and PBT exam score

# The integrity score correlates with the drop in scores



1) LOWESS fit; 2) Observations are 7,169 schools switched to CBT in 2017

# We predict non-cheating scores for PBT schools

- Schools with higher integrity select into CBT → Cheating might be larger in population

|                     | CBT exam score |         |
|---------------------|----------------|---------|
|                     | Coefficient    | P-value |
| PBT exam score      | 0.200 (0.059)  | 0.001   |
| Integrity score     | -0.045 (0.056) | 0.422   |
| Exam * Integrity    | 0.007 (0.001)  | 0.000   |
| Constant            | 12.270 (4.527) | 0.007   |
| Mean CBT exam score | 51.94          |         |
| Province dummies    | YES            |         |
| R <sup>2</sup>      | 0.71           |         |
| Observations        | 7,169          |         |

## Limitations

- School-level data
- Compare across cohorts

# Low integrity schools increase scores with 42%

|                                     | Exam on Paper | Exam on Computer | Drop in Scores |
|-------------------------------------|---------------|------------------|----------------|
| All Schools                         | 57.0          | 48.2             | 8.8 (18.3%)    |
| Low Integrity<br>(Integrity < 70)   | 68.7          | 46.1             | 22.6 (49.0%)   |
| High Integrity<br>(Integrity >= 80) | 51.9          | 48.7             | 3.2 (6.6%)     |

**DiD estimator**  
**= 22.6 – 3.2**  
**= 19.4 (42.1%)**

Note:

- Computer-based exam scores in 2017 predicted for PBT schools
- 25% of schools had an integrity score below 70, while 53% had an integrity score equal to or above 80

# Conclusion: Cheating is substantial

- **34%** of junior high schools have an integrity score below 70
- Low integrity schools increase exam scores with **42%**

## Other studies used similar algorithms to identify cheating in Chicago and South Italy

- Jacob and Levitt (2003) find cheating practices in 4-5% of elementary school classrooms in Chicago
- Angrist, Battistin and Mezzogiorno (2017) find evidence for score manipulation in 14% of primary school exams in South Italy

## Cheating at this scale adds to the learning crisis

- The national exam results do not measure learning
- It demotivates students to learn and teachers to teach

**Future Research:** Does learning increase after implementation of CBT?

# Thank You

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