National IQ and National Productivity: The Hive Mind across Asia

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Big spillovers—if they exist—deserve big attention

- IQ/intelligence/general reasoning skill--
  - Low, positive payoffs to individuals
  - Big, robust payoffs to nations
    - Hanushek et al. AER 2002, NBER 2010
    - Jones/Schneider JEG 2006, EI 2010
      - 6X individual payoff

- The macroeconomic question:
  - Where are the externalities?

The most important fact about IQ

- All cognitive abilities are positively correlated.
- e.g., it's not the case that people above-average at math are below-average at language skills.
- If you find an exception, you will become a famous psychologist.

What does IQ predict across individuals?

- Faster reaction to stimuli
  - Speed of touching flashing light
  - Speed of recognizing "L" vs. "F"
- Efficiency
  - High IQ predicts *lower* (*sic*) cerebral glucose metabolism
- Bigger brains
  - ρ=0.4 between *in vivo* brain size and IQ.

Brief expert summary: Ian Deary,
Intelligence: A very short introduction

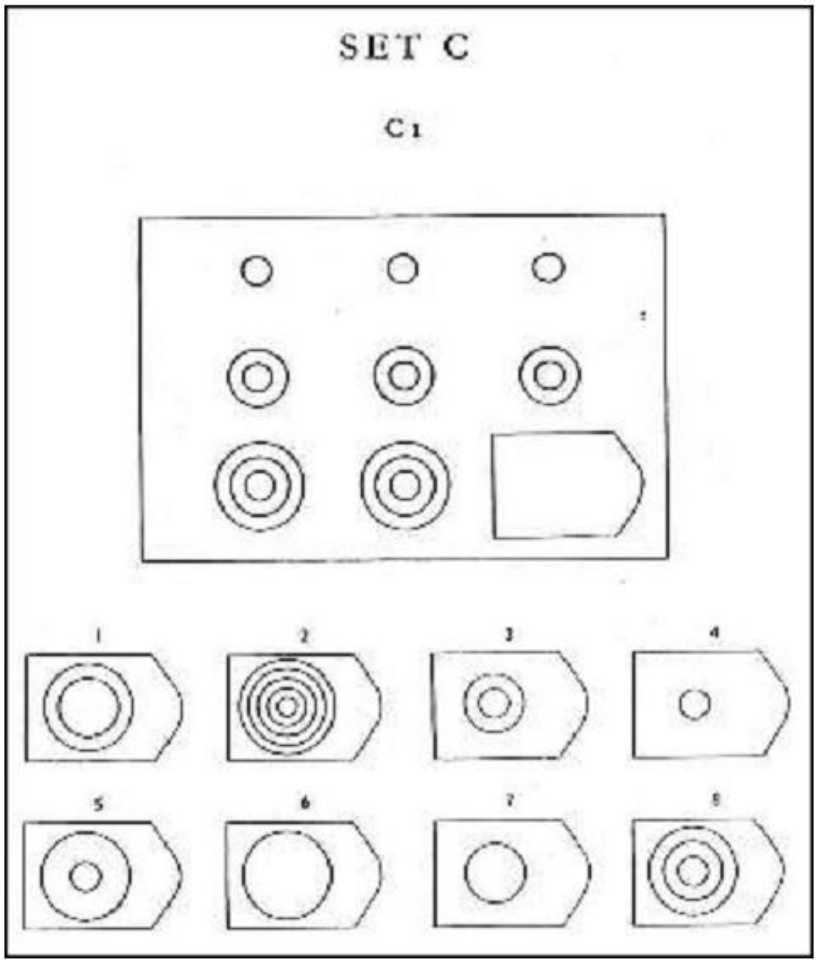
IQ by the numbers

- A normalization
  - Mean = 100 for United Kingdom
  - Standard Deviation within UK: 15 IQ points
- There is no “genius” cutoff for IQ
- No IQ-only cutoff for mental retardation
  IQ below 55 + major functional problems: used in standard psychological practice.

Giving IQ tests across countries

- Private firms create standardization samples for the largest countries
  - Estimates mean and variance
  - Checked for cultural biases
- One widely-used culture-reduced IQ test
  - Raven's Progressive Matrices
  - Visual pattern completion
  - High correlation (0.8-0.9) with longer IQ tests

Ravens: An example



Raven's Matrices in rural Pakistan

- Alderman et al. (OBES 1996)
  - Attock in the Punjab
  - Dir in the North West Frontier Province
  - Badin in the Sind
  - Faisalabad in the Punjab

  - Male-only sample, controls for age, work.
  - **1σ higher score→13% higher wages**
  - Loosely: 1 IQ point→1% higher wages
  - Close to U.S.-based estimates

IQ across the ADB region: 1 IQ point = 3.7% higher GNI/L

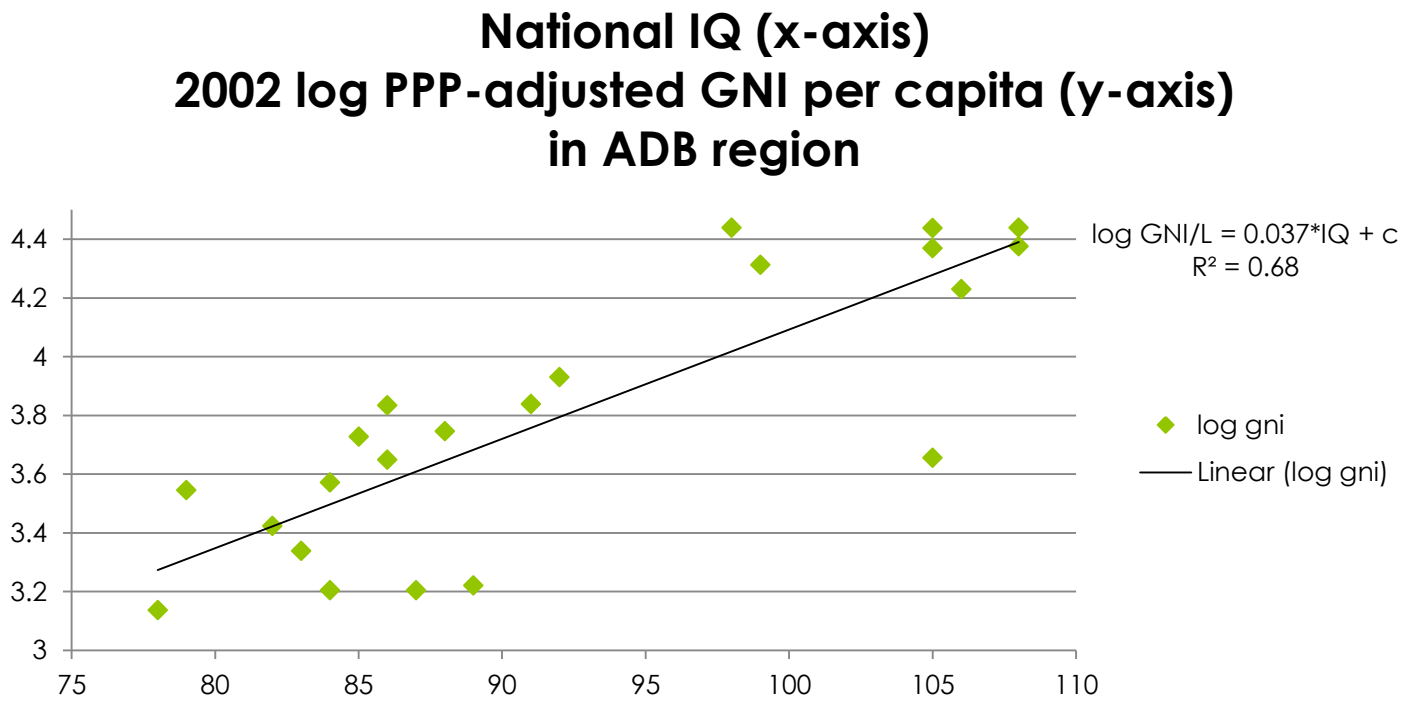
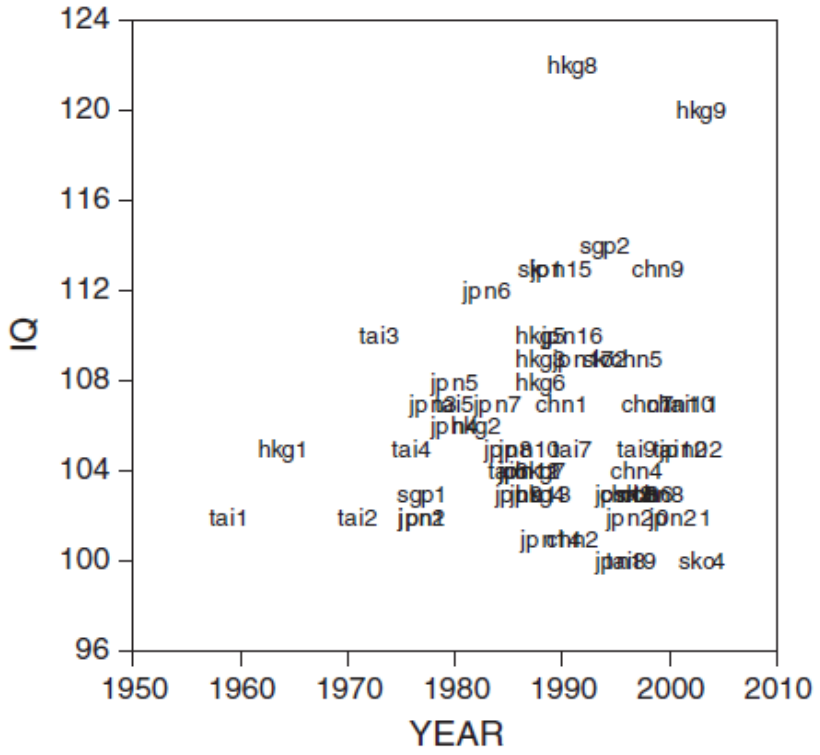


FIGURE 4
IQ in East Asia: 1959–2003



Source: LV (2006). Data labels indicate country and sequence order. Thus, hkg9 is the ninth IQ test given to a Hong Kong sample as reported in LV (2006).

Reverse Causation?

East Asia and its offshoots started off period with 100+ IQ scores.

"Year" = year of publication

Similar results for OPEC countries pre- and post-embargo.

Massive rises in Y/L ≠ Massive rises in IQ

Source:
Jones and Schneider , *Economic Inquiry* (2010).

Four Channels of the Hive Mind

1. IQ & patience & Feldstein-Horioka
2. Prisoner's dilemmas & Coase
3. Fragile output & O-Rings (time permitting)
4. IQ & Rational Voters (time permitting)

IQ belongs in the Utility Function

- Psych/Econ: High IQ predicts low discount rate
- Growth theory: High patience predicts high savings rates (s) & high capital intensity (K/Y)
- Therefore: If countries differ in IQ, they should differ in long-run capital intensity.

Underlying working paper: Jones/Podemska 2010

IQ and patience: A stylized fact

[A]cross [24] studies,

higher intelligence was associated with lower D[elay] D[iscounting]…

-Shamosh and Ray, *Intelligence*, 2008

- Also: Benjamin/Brown/Shapiro (2006), Frederick (JEP 2005), Burks et. al (PNAS 2009)

Capital stays where it is saved: Feldstein-Horioka

- In a CRRA Ramsey model where time preference rises when IQ falls:

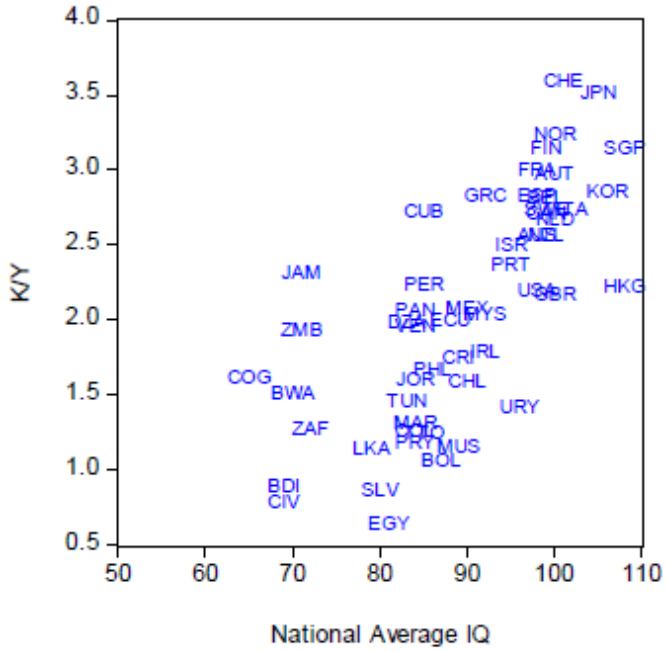
Steady-state savings rate

$$s^* = \alpha(g + n + \delta)/(\rho(IQ) + \theta g + \delta)$$

Steady-state capital/output ratio:

$$(K/Y)^* = \alpha/(\rho(IQ) + \theta g + \delta)$$

National IQ and K/Y: ρ=0.64



In a world of mobile capital: The patient inherit the earth

- Order all countries by their rates of time preference, with Country 1 the most patient:

"Asymptotically, Country 1 owns all the wealth…[all] claims on capital and the present value of the wage income in all countries."

-Barro & Sala-i-Martin,
Economic Growth, p. 164-165

Who is "country 1?"

- By National Average IQ:

  A Tie: Hong Kong and Singapore (108)

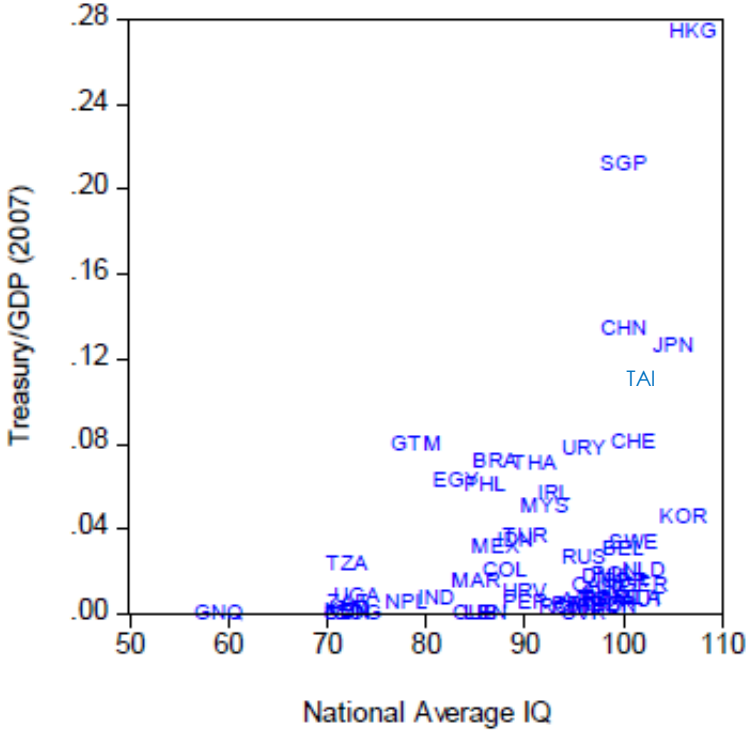
- Within 3 IQ points:

  S. Korea (106)

  China; Japan; Taipei, China (105)

Who is Country 1 in practice?

Who holds the greatest fraction of the world's safest globally traded asset?



OPEC members, Caribbean Tax Havens, and Luxembourg omitted

T/Y = 5 for Bermuda

New evidence on national time preference

"How Time Preferences Differ: Evidence from 45 Countries"

Wang/Rieger/Hens, 2010

Survey-based inquiry of economics students

Low time preferences correlate with low risk aversion, high national GDP per capita.

1. Hong Kong
2. Japan
3. South Korea
4. Taipei, China
5. Malaysia
6. China
7. Thailand
8. Vietnam
9. Azerbaijan
10. Georgia

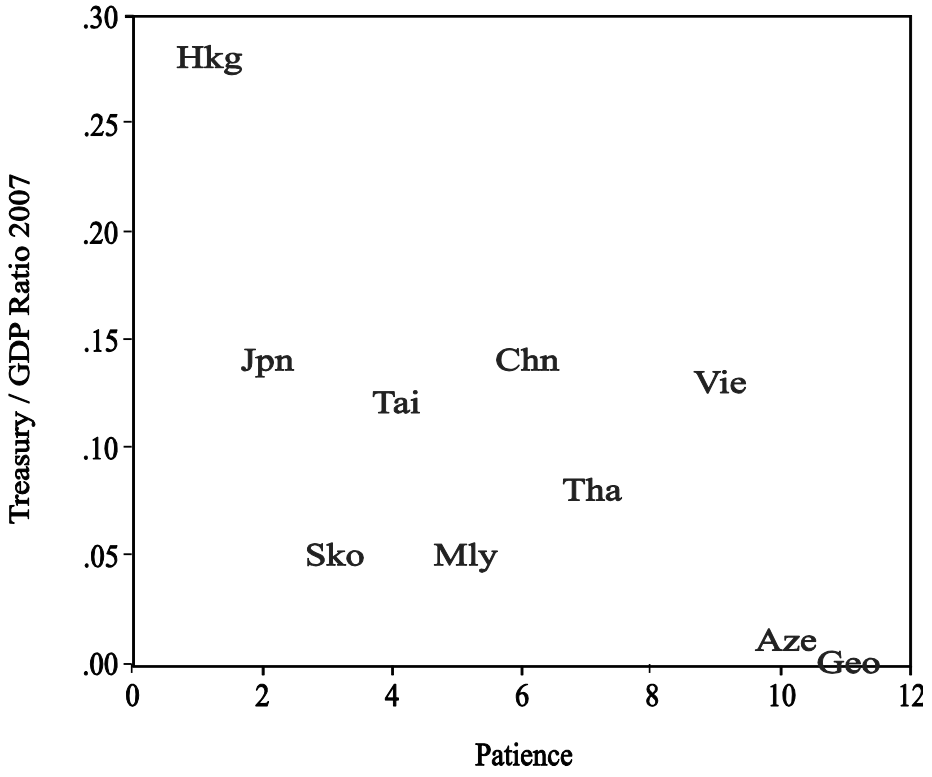
Willingness to wait across the ADB region

Question: Would you wait a month for 11% more money?

In rank order, from highest to lowest percentage of "Yes, wait" responses.

Patience rank and Treasury/GDP ratio

Spearman Rank Correlation: -0.7



Are smarter groups more cooperative?

- Prisoner's dilemmas everywhere in political economy
  - Exchange the high- or low-quality good?
  - Does each top general plan a coup?
  - Citizen cooperation amid police corruption
  - Cleaning up the front yard

- Folk theorem: patience opens the door

IQ predicts cooperation with strangers

- First paper: Jones, JEBO 2008.
  - Meta-study of RPDs across US universities
  - 100 point higher school SAT → 5 to 8% more cooperation

- Subsequent work:
  - Burks et al., PNAS 2009
  - Putterman et al, 2010
  - al-Ubaydli, Jones, Weel, 2011 (unpublished)
  - McCabe et al., 2011 (unpublished)

Summary of exp'l results: al-Ubaydli, Jones, Weel (2011)

- IQ is 5x more powerful for pairs than for individuals
- 1 s.d. rise in pair IQ→ 11% more cooperation

- Controlling for personality, risk-aversion, patience:
  - Average IQ grows more significant as more controls added
  - Little change in coefficient size: Just noise reduction
  - Patience intermittently significant, not risk aversion

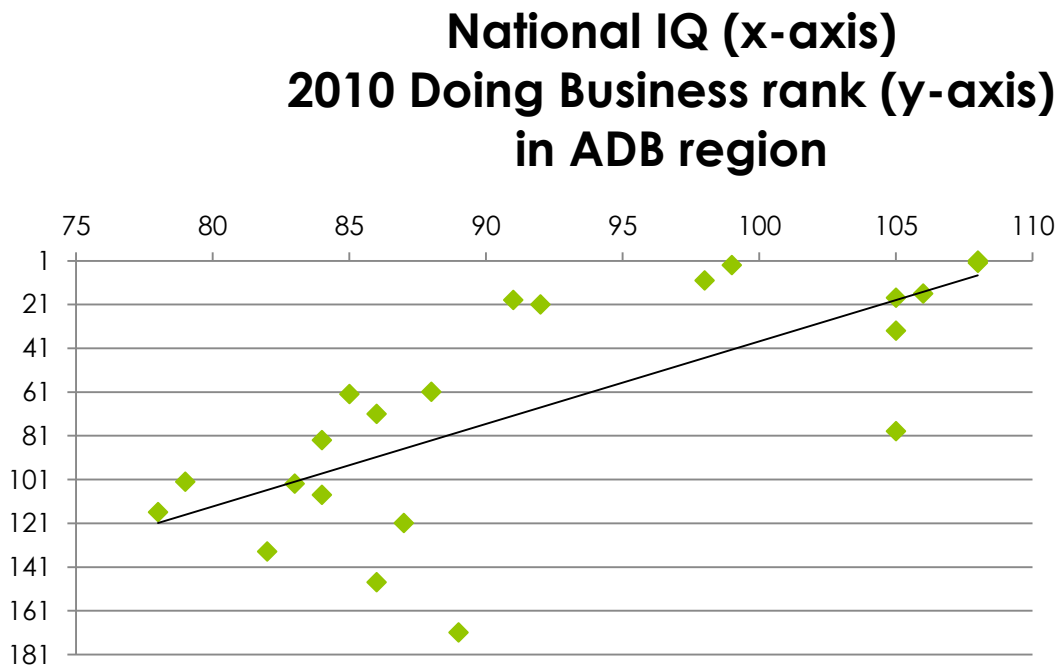
- Round 2: High IQ players reciprocate cooperation
  - Gets cooperation off the ground: *Homo reciprocans* awakes

Politics demands tacit, RPD-style cooperation

- And high IQ groups are better at this.
- The failure of the Coase theorem in politics has been a puzzle—why are the $100 bills of good institutions left on the sidewalk?
- *Every political economy model that includes a β is a theory where group IQ matters for politics.*
- Canonical example:

  Reputational models of time consistency

National IQ and Good Institutions: PCTIQ



Rank = -3.8IQ + c
R^2 = 52%

The Caplan Channel

- Within the U.S., high IQ predicts greater support for laissez-faire
  - Minimum wage
  - Trade
  - Immigration
  - *True conditioned on education & income*
- Does this hold across ADB countries?
  - Limited evidence—but probably, yes

Environmental Effects on IQ

- Part of the Copenhagen Consensus
- Environmental lead and fluoride and lack of micronutrients: Too big to ignore.
- Schooling? Perhaps---but we still don't know if this is "hollow IQ."

Flynn Effect: An unambiguous , large, environmental effect on IQ

- Flynn, a philosopher (*sic*) from New Zealand
- In 1980's, documented a 2-3 point per decade rise in IQ across all rich countries
- Some evidence gains are from bottom half of IQ distribution
- Some evidence this has peaked in rich countries

Survey: Flynn, *What is Intelligence?*

The arithmetic way to raise national IQ: Immigration

- High-skilled, pro-STEM immigration tends to raise national average IQ
- Such policies likely raise physical capital and institutional quality in longer run.
- True even though low-skilled immigration has few apparent effects on native wages

Conclusion: The Hive Mind across Asia

- Neoclassical and public choice payoffs to raising national IQ

- The Flynn Effect deserve rigorous research in developing countries
  - *Solow in the brain?*
  - *Does education raise real IQ or only nominal IQ?*
  - *Which pre- and post-natal interventions pay?*