

# Returns on Investment in Official Statistics: Two Methods and Applications

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PARIS21 Secretariat

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# Motivation

[The researchers] are sceptical about the UN's push for "data for development" [...], gathering data is hugely expensive, at around \$1.5 billion per SDG target. – The Economist (2015)

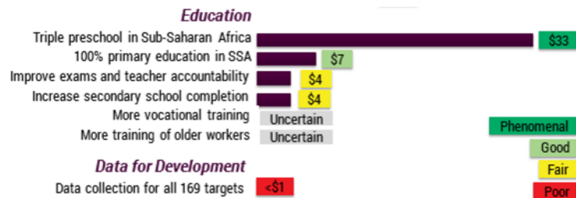
Social and economic benefit per USD spent

Sources: Copenhagen Concensus Centre (2015); Jerven (2014)

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## Costing

- Extrapolation from the costs of 18 MDG targets to 169 SDG targets is very naive
- Espey et al. (2016) estimate required investment in data production for SDGs at \$1 billion annually

## Return on investment

- Jerven (2014) concludes that “the benefit-cost ratio is *likely to be below one.*”

→ How can we measure the return on investment in data?

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# Challenges

## Methodological challenges

- not clear where to expect impacts: users and uses often unknown
- RCTs are difficult: information spillovers; withholding information is clearly unethical
- no market prices: statistics are a public (or club) good

# Methodologies

## Review of methodologies

- Cost or investment approach
- Market (equivalent) pricing
- Stated preferences
- Revealed preferences
- Impact assessment

→ Forthcoming report by UNECE Task Force on the Value of Official Statistics

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# Impact assessment: Literature

## Targeting

- Effective targeting of anti-poverty programmes in Indonesia (Alatas et al., 2012, AER)
- SA Old Age Pension scheme (Edmonds, 2006, JDE)

## Health

- Changes in sexual behavior of teenage girls after learning HIV risk statistics from the Kenyan DHS (Dupas, 2011, AEJ)
- Reduced infant mortality after informing citizens of clinics quality in Uganda (Björkman and Svensson, 2007, QJE)

## Education

- School accountability through dissemination of performance information in Portugal (Nunes et al., 2015, EER)

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# Impact assessment: School choice

## School choice

- well-established instrument to allow parents to choose the right school for their child
- potential to hold schools to account, reward them for good performance and thus improve educational outcomes

## Suitability for analysis

- important decision, sets the course of a child's development
- well-defined (and restricted) use of school statistics
- availability of microdata on school choices and outcomes

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# Impact assessment: School choice (cont'd)

## Costs of examination system

- In the UK, GCSE exams are organised by competing providers that charge about £250 per candidate (Source: OfQual)
- Cost of  $500k \times £300 = £150m$  per cohort

→ Benefits?

## Counterfactual experiment

- Wales and England have very similar education systems
- In 2001, Wales abolishes school league tables while tables for English schools continue to be published

→ Diff-in-diff analysis of GCSE results and PISA scores

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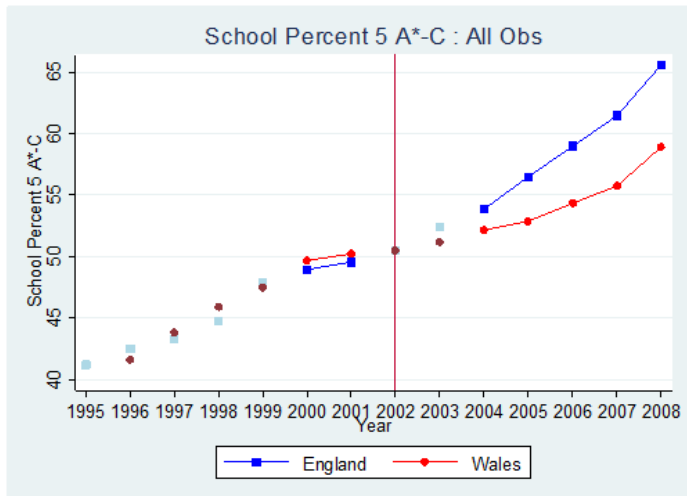
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# National exam performance in England and Wales



Source: Burgess et al. (2013, JPubEcon)

# Impact assessment

## Benefits I: Cost-savings potential

- Burgess et al. (2013): Effect size of publishing school league tables equivalent to class-size reduction of 30%
- This would require hiring additional teachers at £2.9 billion per cohort (compared to just £150m for examination system)

→ Any £1 invested saves £18 compared to cutting class size.

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Effect size:



Class-size reduction  
by 30%

£ 2.9bn



Hire 13,000  
teachers

£ 150m

Produce perfor-  
mance statistics

# Impact assessment

## Benefits II: Impact on economic growth

- Hanushek/Woessmann (2009): 1 standard deviation increase in PISA scores improves GDP by 1.74 percentage points
- Publishing league tables improves PISA scores for England by 0.1 standard deviations compared to Wales (2003-2009)

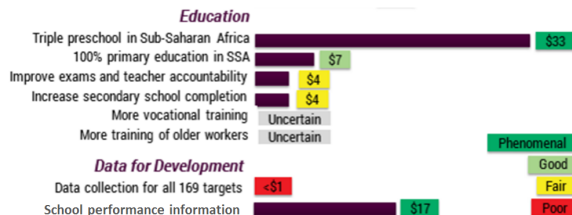
→ Any £1 invested yields an £16 increase in GDP.

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# Impact assessment: Conclusion

## Strengths

- provides measure of societal impact, not only a price tag
- can rule out competing accountability mechanisms:  
choice-based; high-stakes; low-stakes

## Limitations

- partial analysis: benefit of dissemination vs. cost of production
- steady-state assumption: effect of improved education persists
- reverse causation: effects of PISA scores on GDP estimates
- parallel trend assumption: diff-in-diff method is problematic
- difficult to replicate: method relies on rare policy changes
- redistributive effects of statistics are not captured

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# Revealed preferences I: School choice

Hungarian Education Office website



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A HIVATAL | ÜGYINTÉZÉS | PÁLYÁZATOK | SAJTÓSZOBA | KAPCSOLAT | BEJELENTKEZÉS

oktatas.hu  
OKTATÁSI HIVATAL

Naprakész információk a hírlevelünkben:

SZÉCHÉNYI  
Hagyományok  
Köznevelésért  
KÖZNEVELÉSI HIVATAL

Keresés

KÖZNEVELÉS | FELSOOKTATÁS | SZAKKÉPZÉS | TOVÁBBKÉPZÉS | LLL | NYELVVIZSGA | KÉPESÍTÉSEK ELISMERTETÉSE | KIR HIVATALI ÜGYEK

Köznevelés < Intézménykereső < Intézmények a számok tükrében < Hazai mérések statisztikái <

OM azon.	A feladatellátási hely neve	Képzési forma	Évfolyam	Összesen	A jelentésben szereplők	Matematika	Szövegértés	
033556	KOSZISZ Királyfalvi Miklós Katolikus Általános Iskola és Óvoda (4327 Pócspetri, Iskola út 4.)	általános iskola	6	20	18	1574 😊	1532 😊	
037728	"Agy Tanoda" Magyar- Angol Két Tanítási Nyelvű Általános Iskola (2000 Szentendre, Jókai utca 3.)	általános iskola	6	11	10	1627 😊	1607 😊	
031960	"B" EPÜLET (2500 Esztergom, Pázmány Péter utca 16.)	általános iskola	6	31	31	1520 😊	1510 😊	
027264	003 Szent Mór Katolikus Általános Iskola, Alapfokú Művészeti Iskola és Gimnázium Papnövelde utcai telephely (7621 Pécs, Papnövelde utca 1-3)	általános iskola	6	57	54	1581 😊	1610 😊	
029374	2. sz. épület (3800 Székszó, Malom út 2-6.)	általános iskola	6	65	63	1413 😞	1373 😞	

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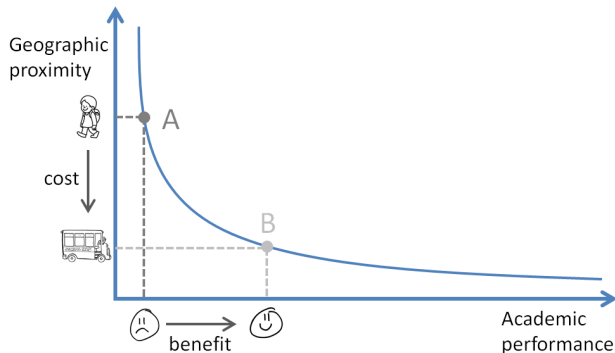
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## Method



stats

ads

## Example (Mexico)

Media	Notes	Impact	Market Value
Television	425	71M	\$41M
Printed Media	2,976	50M	\$31M
Radio	786	23M	\$72M
Internet	5,324	91M	\$6M
<b>Total</b>	<b>9,511</b>	<b>236M</b>	<b>\$151M</b>

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- measures subjective value to users
- applicable in developing countries and at reasonable cost

## Limitations

- partial effect: value to the public (not policy makers, administrators, etc)
- **school choice**: confounding problem: stats explain choice if parents (i) use them or (ii) would have found them useful
- **newspaper analysis**: unclear which keywords to use and which part of the article to count

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