

# A Rational Approach to Evidence-Based Decision Making in Education Policy



Dr. Matthew Jukes  
Fellow & Sr. Education  
Evaluation Specialist  
RTI International



Dr. Anne Buffardi  
Senior Research Fellow,  
ODI

# Uncertainty in Evidence-Based Decision Making

1

Problem

2

How to think  
about  
uncertain  
evidence

3

When to think  
about  
uncertain  
evidence

4

Implications

# The Problem



# The impact of education programmes on learning and school participation in low- and middle-income countries

September 2016



## Children

Providing information

Merit-based scholarships

School-based health

School-leaving



## Households

Providing information

Cash transfers

Reducing fees



## Systems

Public-private partnerships

School-based management

Community-based monitoring



## Schools

Remedial education

New schools and infrastructure

Providing materials

Structured pedagogy

Grouping by ability

Extra time

Computer-assisted learning



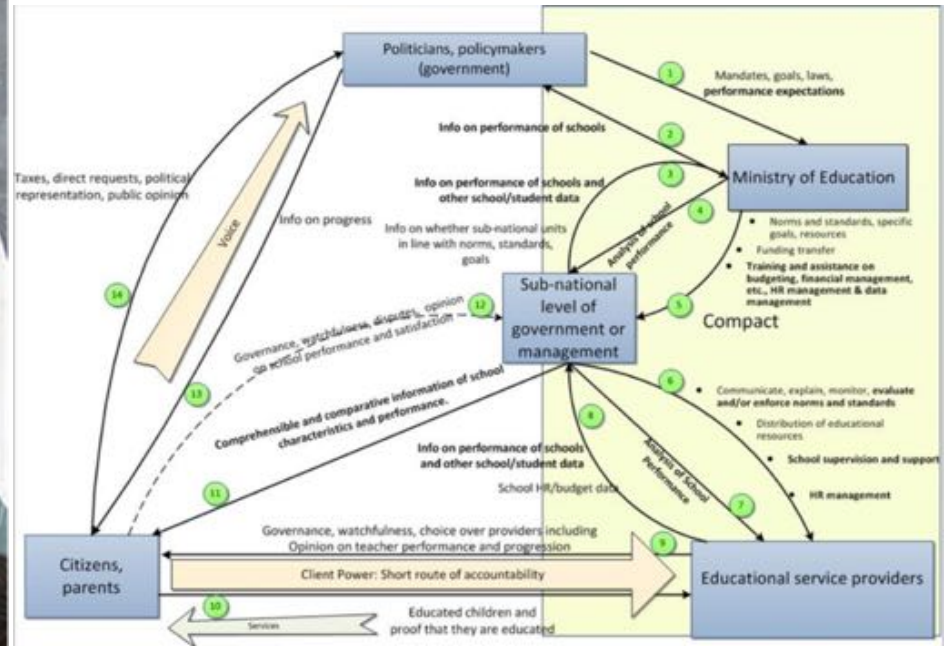
## Teachers

Teacher training

Hiring teachers

Teacher incentives and accountability

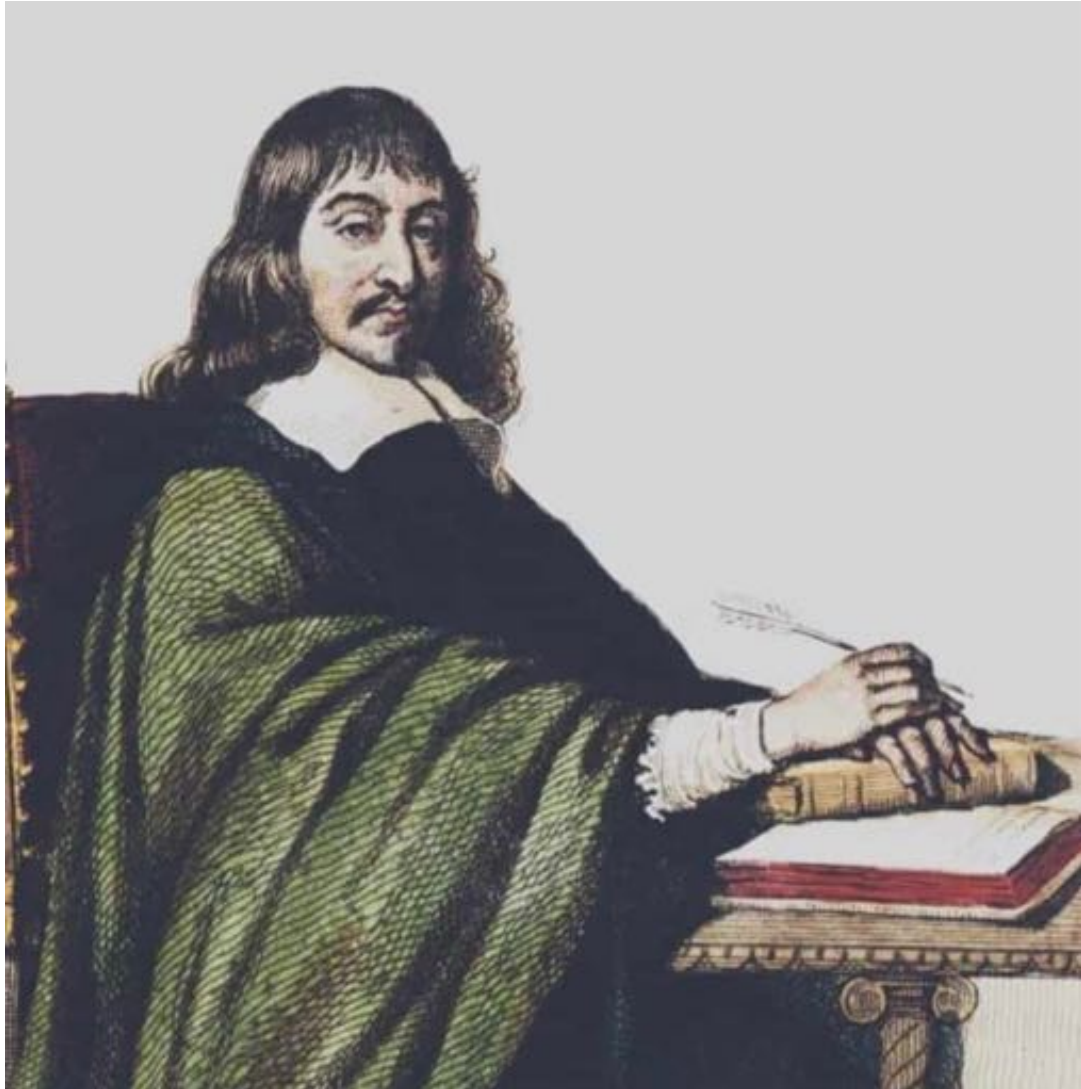
- What works in most contexts
- What is promising (may work in some contexts)
- What doesn't always work
- What is unknown



RCTs feasible for few development interventions  
(Bamberger and White 2007; Stern 2012 citing DFID).







# What is a rational approach to evidence-based decision making?

- ✓ Making the best use of the evidence
- ✓ Most likely to lead to good decision



# **How to think about uncertain evidence: consequences and costs**

# Continuum of Consequences



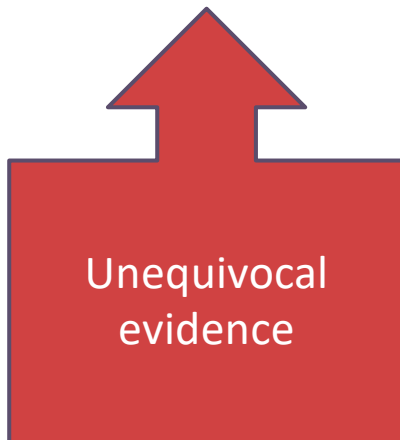
We might kill people



We might waste money



An arbitrary decision



# The Consequence of Uncertainty

| Drug          | Cure Rate | Death Rate |
|---------------|-----------|------------|
| Notsuridox    | 0-70%     | 0%         |
| Uncertanophil | 40-50%    | 0-5%       |

# Decision Theory

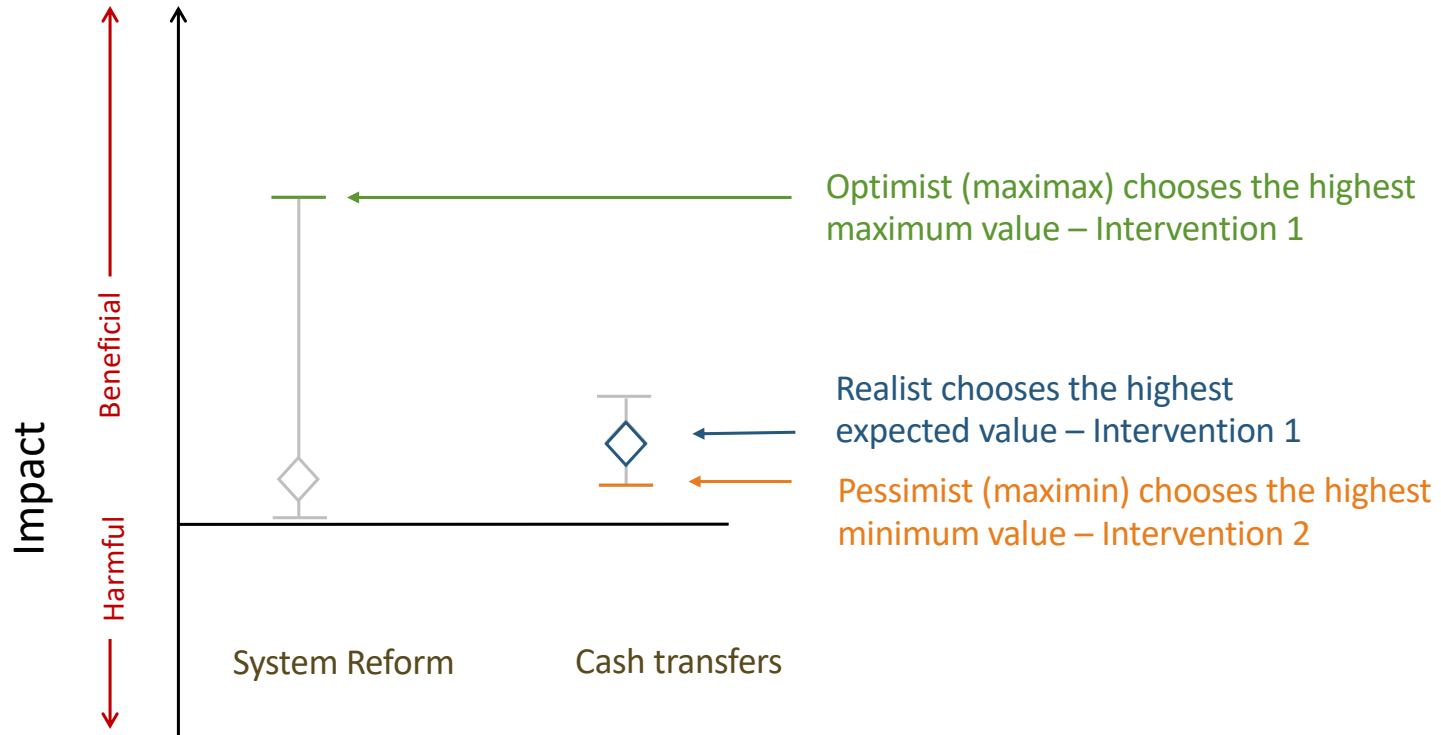
**Expected Value**  
(realist)

**Maximax**  
(optimist)

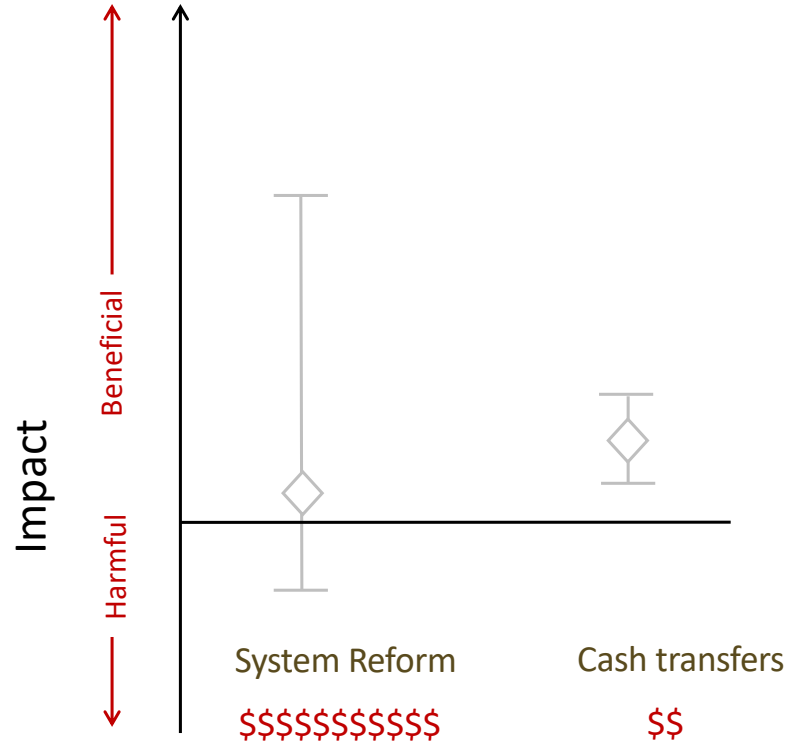
Maximizing the  
maximums  
(best of the best)

**Maximin**  
(pessimist)

Maximum of the  
minimums  
(best of the worst)







Message 1: Our approach to an uncertain course of action should be guided by the costs and consequences of that action

- It can be rational to pursue a policy with uncertain outcomes if:
  - Negative effects can be ruled out
  - Large positive effects are plausible
  - Costs are low

# Implications

- Systematically consider all negative and unintended outcomes of a policy
- Better cost estimates (less uncertainty in costs)

# **When to consider uncertain evidence**

# Attitude to Uncertainty

## **The Decision**

- 'Focusing Events' and Policy Windows
- Emergencies
- What is the Alternative?

## **How Feasible is Better Evidence?**

- Complexity
- Ethics



Message 2: Sometimes,  
acting under uncertainty  
is better than not acting

There are more sources of uncertainty than the error bars on the impact estimate



## Learning at Scale: Instruction and Systems Research

- Which instructional approaches improve learning outcomes at scale?
- What aspects of the system support these instructional approaches?

Google: "Learning at Scale CGD Blog"

BILL & MELINDA  
GATES *foundation*

  
RTI  
INTERNATIONAL

 Center  
for Global  
Development

# Uncertainty in Scaling

Efficacy studies



$$p(\text{program works at scale}) = p(\text{pilot program works}) \times p(\text{pilot conditions replicated at scale})$$

# Uncertainty in Scaling

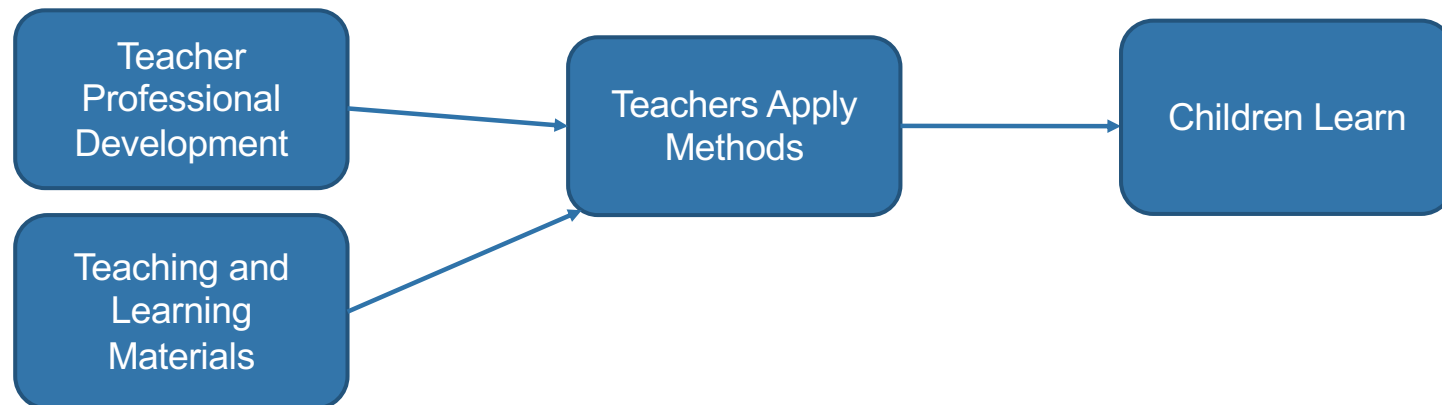
$p(\text{program works at scale}) = p(\text{pilot program works})$

$\times p(\text{pilot conditions replicated at scale})$

↑  
?



# Theory-Driven Approach to Scaling



# Uncertainty in External Validity

\$\$ for precision, high bar for evidence

$$p(\text{program works here}) = p(\text{program worked there}) \\ \times p(\text{here is similar to there})$$

?

Davey, C., Hargreaves, J., Hassan, S., Cartwright, N., Humphreys, M., Masset, E., . . . Bonell, C. (2018). Designing evaluations to provide evidence to inform action in new settings. Paper presented at the CEDIL (Centre for Excellence in Development Impact and Learning) Inception Paper Launch, London, UK.

# Does Reducing Class Size Improve Student Learning?

“A bad estimate from the right place is better than a good estimate from the wrong place”

Pritchett and Sandefur (2013)


# Message 3: Uncertainty is the norm

*Economics and Philosophy* (2019), 1–30  
doi:10.1017/S0266267119000105

CAMBRIDGE  
UNIVERSITY PRESS

## ARTICLE

### The lure of incredible certitude

Charles F. Manski 

Department of Economics and Institute for Policy Research, Northwestern University, Evanston, IL, USA  
Email: [cfmanski@northwestern.edu](mailto:cfmanski@northwestern.edu)

(Received 22 September 2018; revised 16 January 2019; accepted 23 January 2019)

#### Abstract

Forthright characterization of scientific uncertainty is important in principle and in practice. Nevertheless, economists and other researchers commonly report findings with *incredible certitude*, reporting point predictions and estimates. To motivate expression of incredible certitude, economists suggest that researchers respond to incentives that make the practice tempting. This temptation is the ‘lure’ of incredible certitude. I appraise some of the rationales that observers may have in mind when they state that incredible certitude responds to incentives. I conclude that scientific expression of incredible certitude at most has appeal in limited contexts. It should not be a general practice.

**Keywords:** scientific uncertainty; policy analysis; partial identification

Message 4: Identify all sources of uncertainty in a policy decision

Identify them

Measure them

Reduce them (especially those with larger consequences)

# Implications

# Conclusions

- It can be rational to pursue a policy with uncertain outcomes if:
  - Negative effects can be ruled out
  - Large positive effects are plausible
  - Costs are low
  - A decision is urgent
  - Evidence is hard to improve
  - Uncertainty isn't mainly about the efficacy of the "intervention"

# For Policy Implementation

- Policy Diversification with Small Bets
- Problem-driven iterative adaptation (PDIA)

Manski, C. (2013). Public Policy in an Uncertain World.

Andrews, M., Pritchett, L., & Woolcock, M. (2012). Escaping Capability Traps through Problem-Driven Iterative Adaptation (PDIA).



## For Research and Evaluation

- Theory-based approach to identifying where the uncertainty is in a policy decision
- Focus on where data provide the most information (addressing the biggest unknowns with the largest consequences)
- Multidisciplinary research methods to assess and reduce uncertainty (e.g. testing assumptions, threats to validity)



“is evidence  
informative?”

Thanks!



[mjukes@rti.org](mailto:mjukes@rti.org)



@matthewchjukes



- Collaborating, Learning, and Adapting
- Agile M&E



# Evidence Hierarchies

