Extended cost-effectiveness analysis (ECEA): assessing equity & poverty reduction benefits of TB control

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Background

A new perspective on the economic evaluation of health policies toward UHC in the post-2015 era

End of poverty by 2030

Sustainable Development Goal 1

"End poverty in all its forms everywhere"

World Bank objectives

(1) To eradicate extreme poverty (< $1.90 per day) by 2030

(2) To boost shared prosperity by raising the incomes of the bottom 40% of populations

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Sustainable Development Goal 3

"Achieve universal health coverage, including financial risk protection for all"

3 GOOD HEALTH AND WELL-BEING
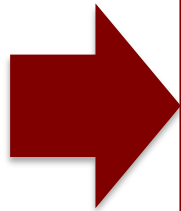
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How to achieve the poverty objective by 2030?

Usual requirements are put forward:

- **Sustaining growth:** leadership and governance, macroeconomic stability, market orientation

- **Investing in human development:** education, health

- **Insuring against risks:** social policies and programs, insurance

THEY LACK OF SPECIFIC PROPOSITIONS AND QUANTIFICATION OF IMPACT AND COST

Cruz et al. World Bank 2015

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Health system objectives

- **Improve health and distribution of health in population**
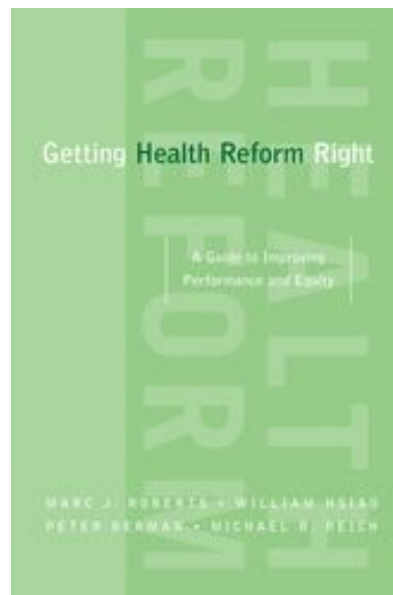- **Financial risk protection: prevention of medical impoverishment**
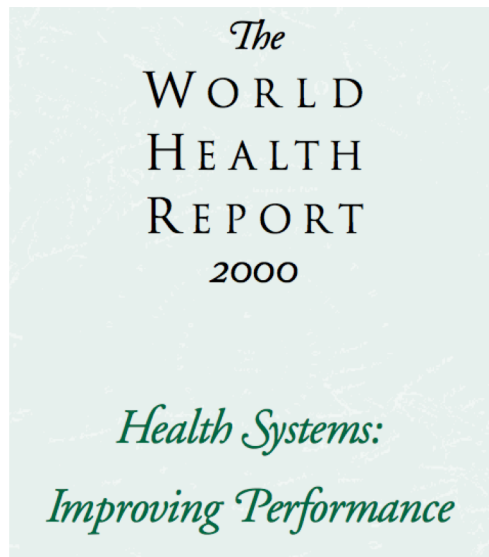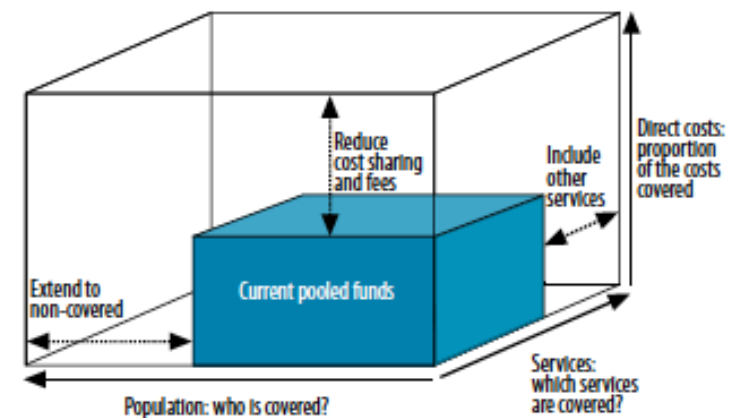

Fig. 1. Three dimensions to consider when moving towards universal coverage

- Murray & Frenk. Bulletin of the WHO 2000
- World Bank's flagship course in health finance

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Objective: Health Policy Assessment, with dimensions of equity & medical impoverishment

Extended Cost-Effectiveness Analysis (ECEA)

(1) **Distributional consequences** across distinct strata of populations
(e.g. socio-economic status, geographical setting, gender)

(2) **Financial risk protection**: quantify household medical impoverishment averted by policy

Verguet, Laxminarayan & Jamison. Health Economics 2015
Verguet, Kim & Jamison. Pharmacoeconomics 2016

Extended Cost-Effectiveness Analysis (ECEA) approach

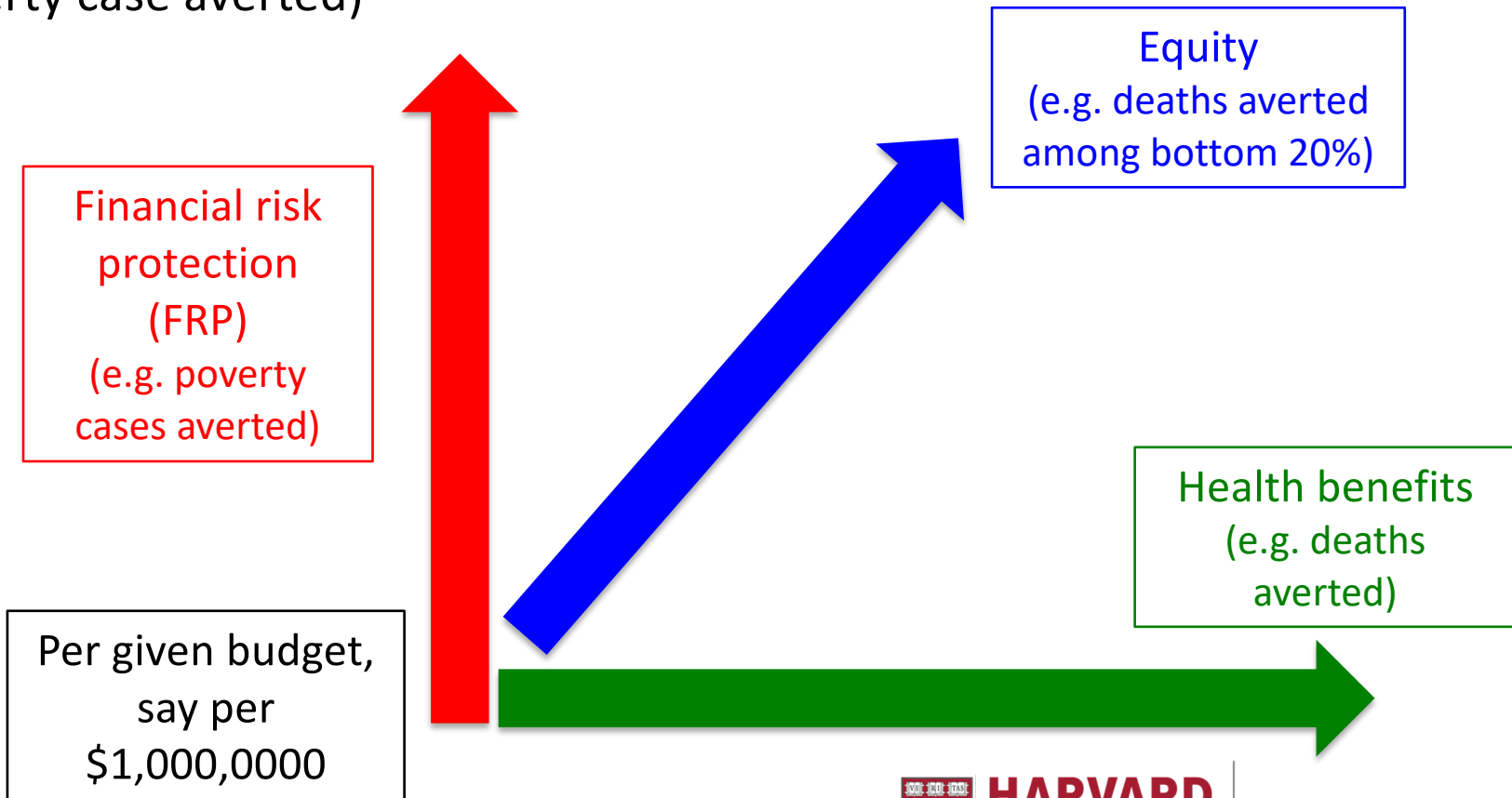Inclusion of the efficient purchase of equity and financial protection benefits into economic evaluations

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Policy objective: efficient purchase of equity & financial protection benefits

Similar to CEA measures in say **$ per death averted**, estimate efficient purchase of FRP in say **$ per FRP provided** (e.g. $ per poverty case averted)

Equity
(e.g. deaths averted among bottom 20%)

Financial risk protection (FRP)
(e.g. poverty cases averted)

Health benefits
(e.g. deaths averted)

Per given budget, say per
$1,000,0000

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Example: distribution of deaths and cases of poverty averted by vaccines, 41 LMICs, 2016-2030

DEATHS AVERTED

MEDICAL IMPROVERISHMENT CASES AVERTED

Income quintile
- 1 (lowest)
- 2
- 3
- 4
- 5 (highest)

Antigen: MV HepB HPV YF Hib SP RV R NmA JE

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ECEA for:
Progressive prioritization & Pro-poor dimensions
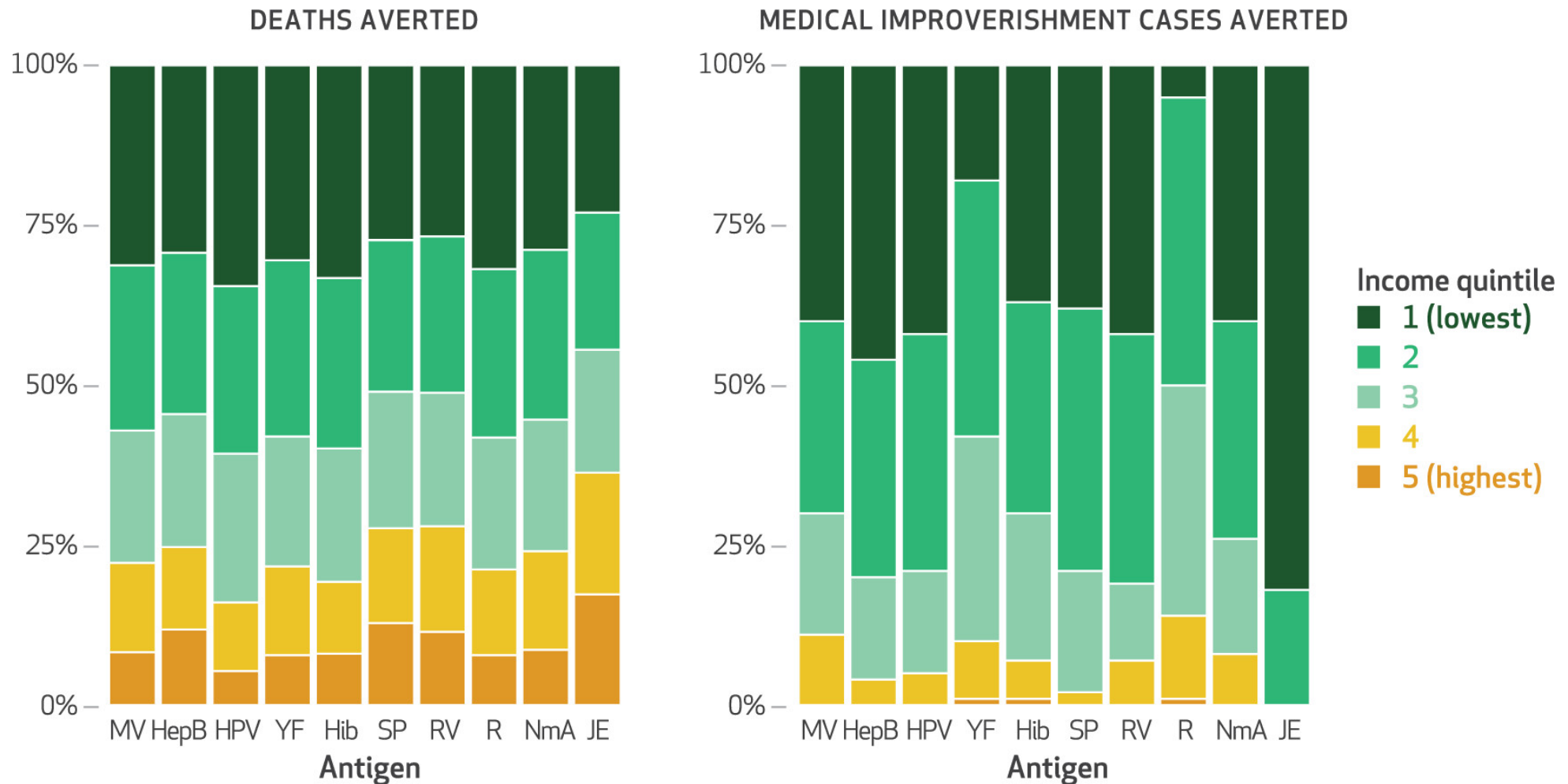
I = Poorest
V = Richest

Public finance of rotavirus vaccine

Health gains & financial protection afforded, per $1M spent

India ($5.0)
Ethiopia ($0.4)

Financial risk protection ($)

Rotavirus deaths averted

Verguet, Murphy, Anderson, et al. Vaccine 2013

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Per $ spent
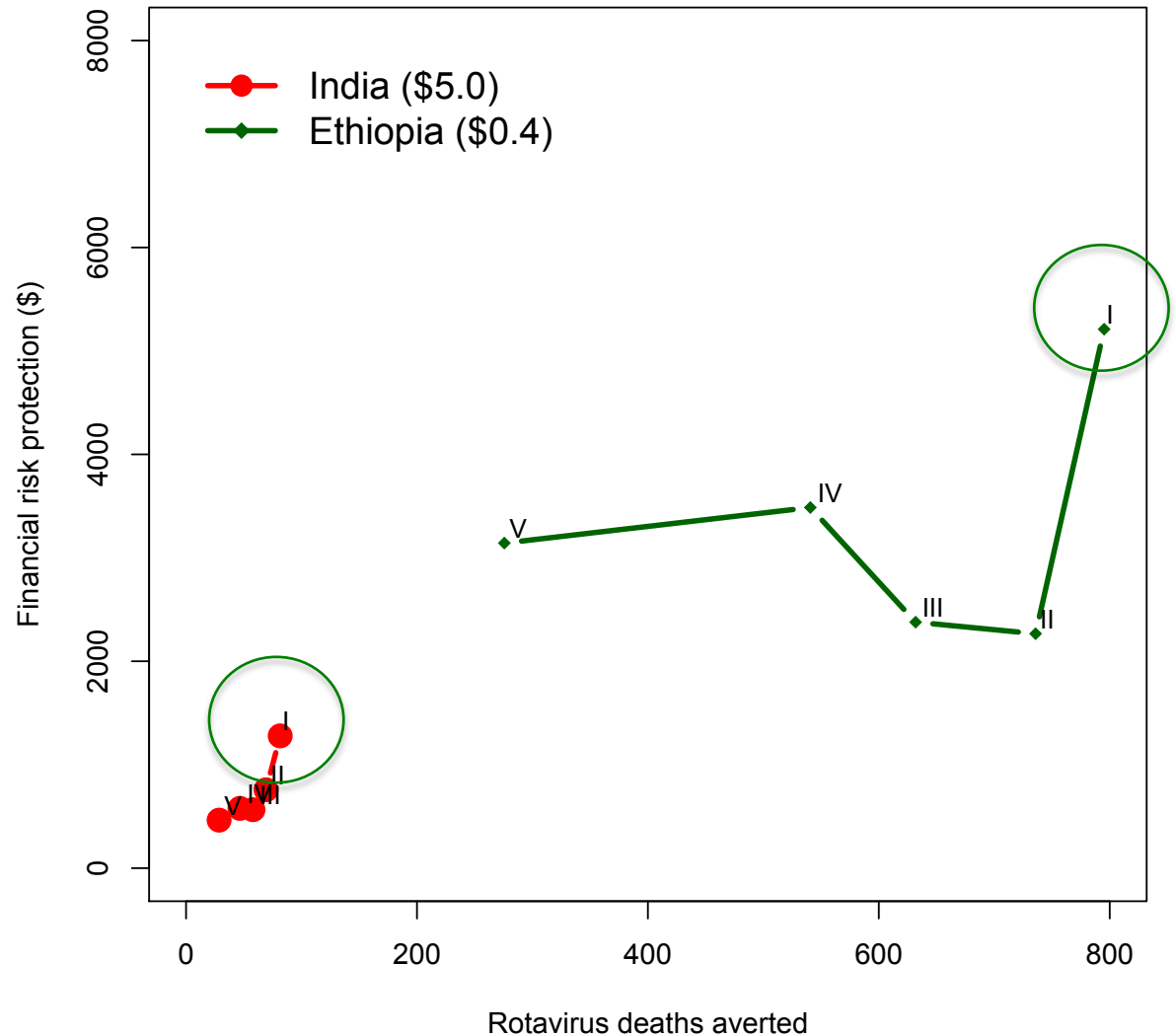
Priority setting **within** the health sector

Poverty reduction benefits

Low health benefits
High poverty reduction benefits

High health benefits
High poverty reduction benefits

Low health benefits
Low poverty reduction benefits

High health benefits
Low poverty reduction benefits
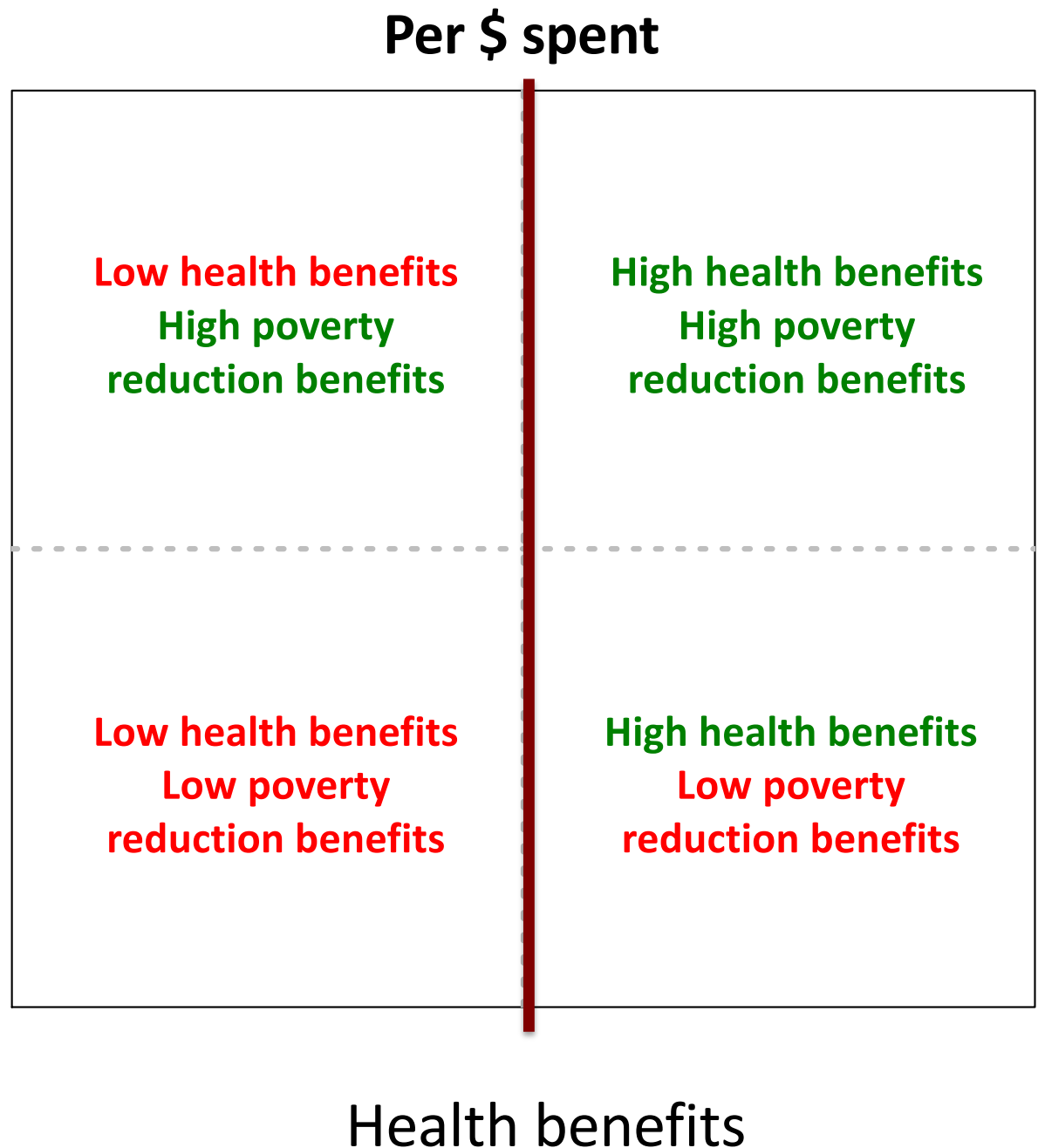
Health benefits

ECEA for: Priority setting **beyond** the health sector

Estimate efficient purchase of poverty reduction benefits by health policies i.e. **poverty cases averted per health policy $ invested**

Poverty averted per health policy $1M invested

Poverty averted per education policy $1M invested

Poverty averted per transport policy $1M invested
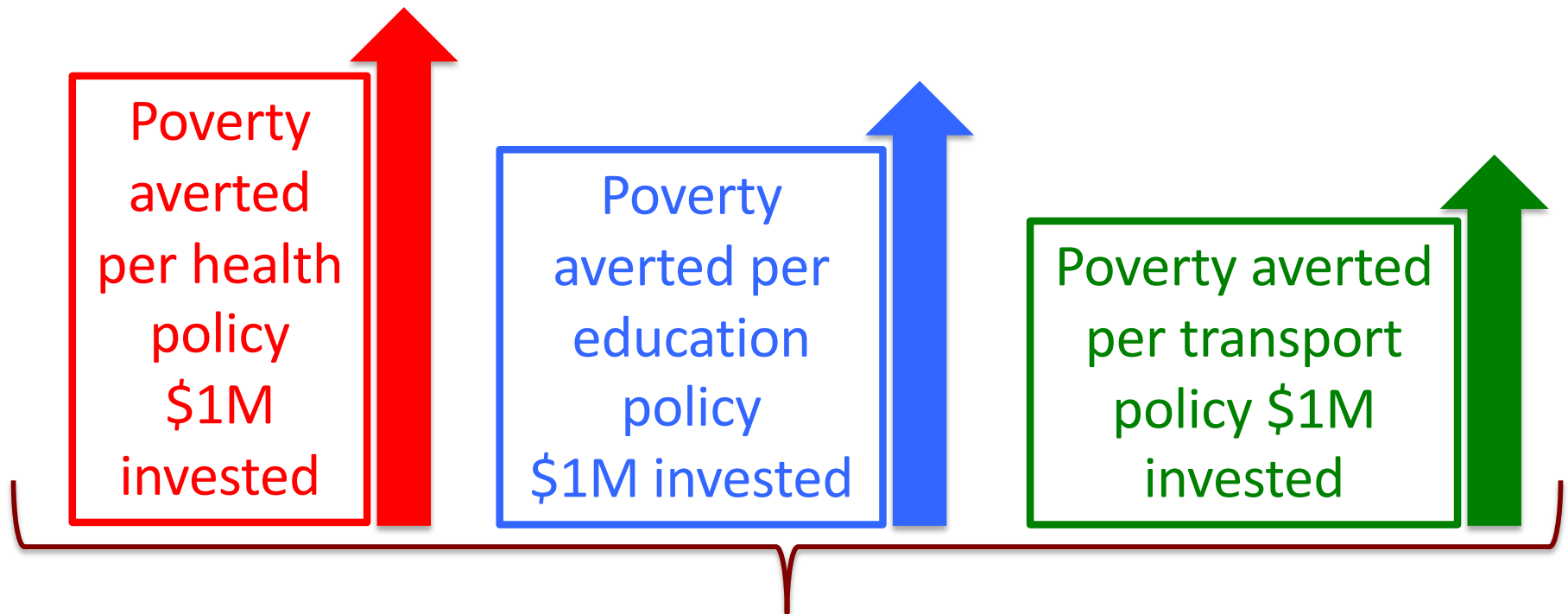
Intersectoral comparison by Ministry of Finance & Development

ECEA for TB control

ECEA approach

Examine specific health policy
(e.g. public finance for TB treatment)

Health gains
(e.g. TB-related deaths averted)

Household expenditure averted
(e.g. out-of-pocket (OOP) TB treatment averted)

Financial risk protection benefits
(e.g. household impoverishment averted)

Poorest   Poor   Middle   Rich   Richest

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ECEA dashboard: Universal public finance of TB treatment in India: summary benefits over 1 year for 1M Indians

Outcome	Total	Income Quintile I	Income Quintile II	Income Quintile III	Income Quintile IV	Income Quintile V
TB deaths averted	80	**40**	25	12	3	0
Private expenditures crowded out	$30,000	**6,000**	6,000	7,000	7,000	4,000
Financial risk protection	$10,000	**5,000**	2,000	1,000	1,000	<1,000

Adapted from:
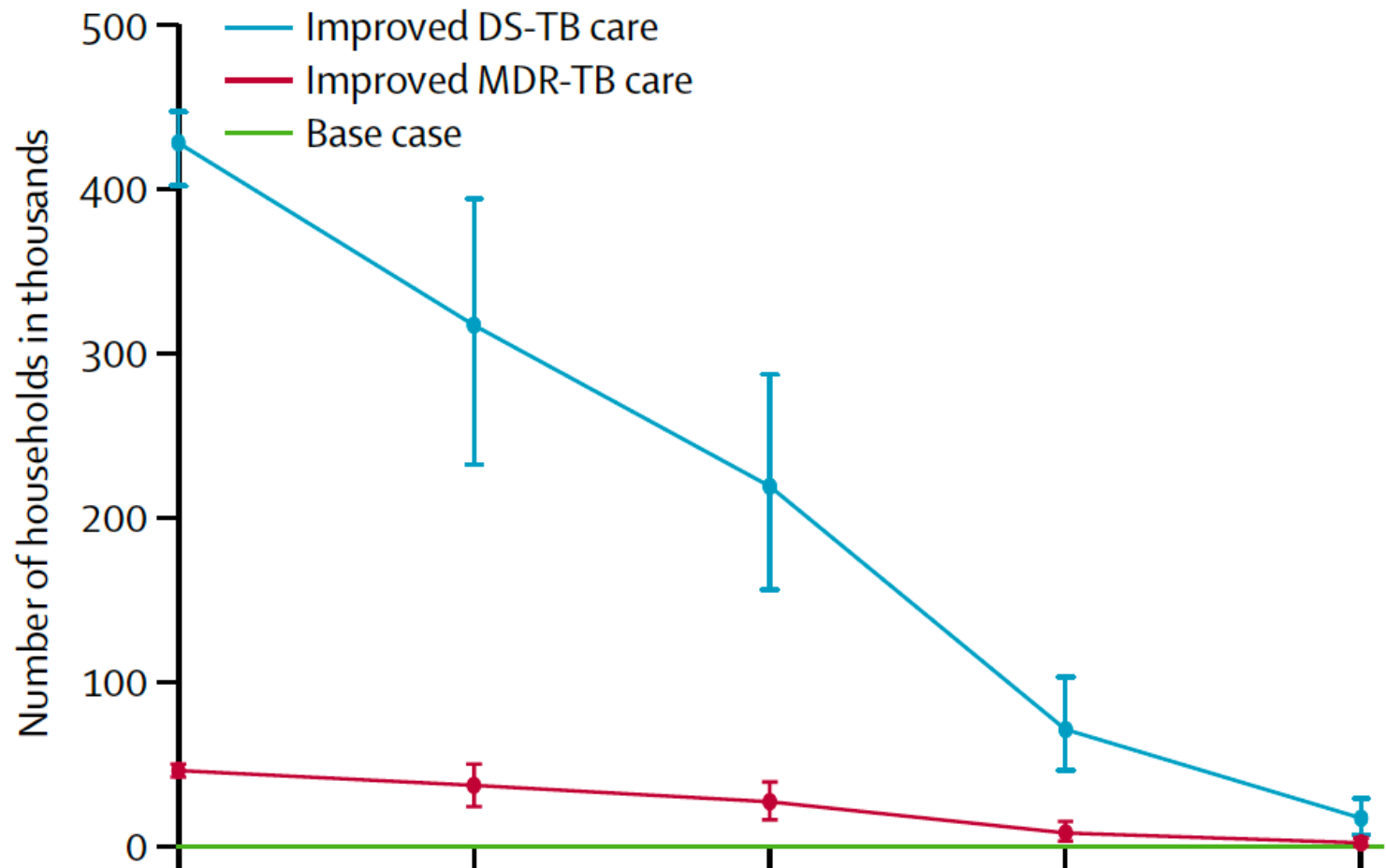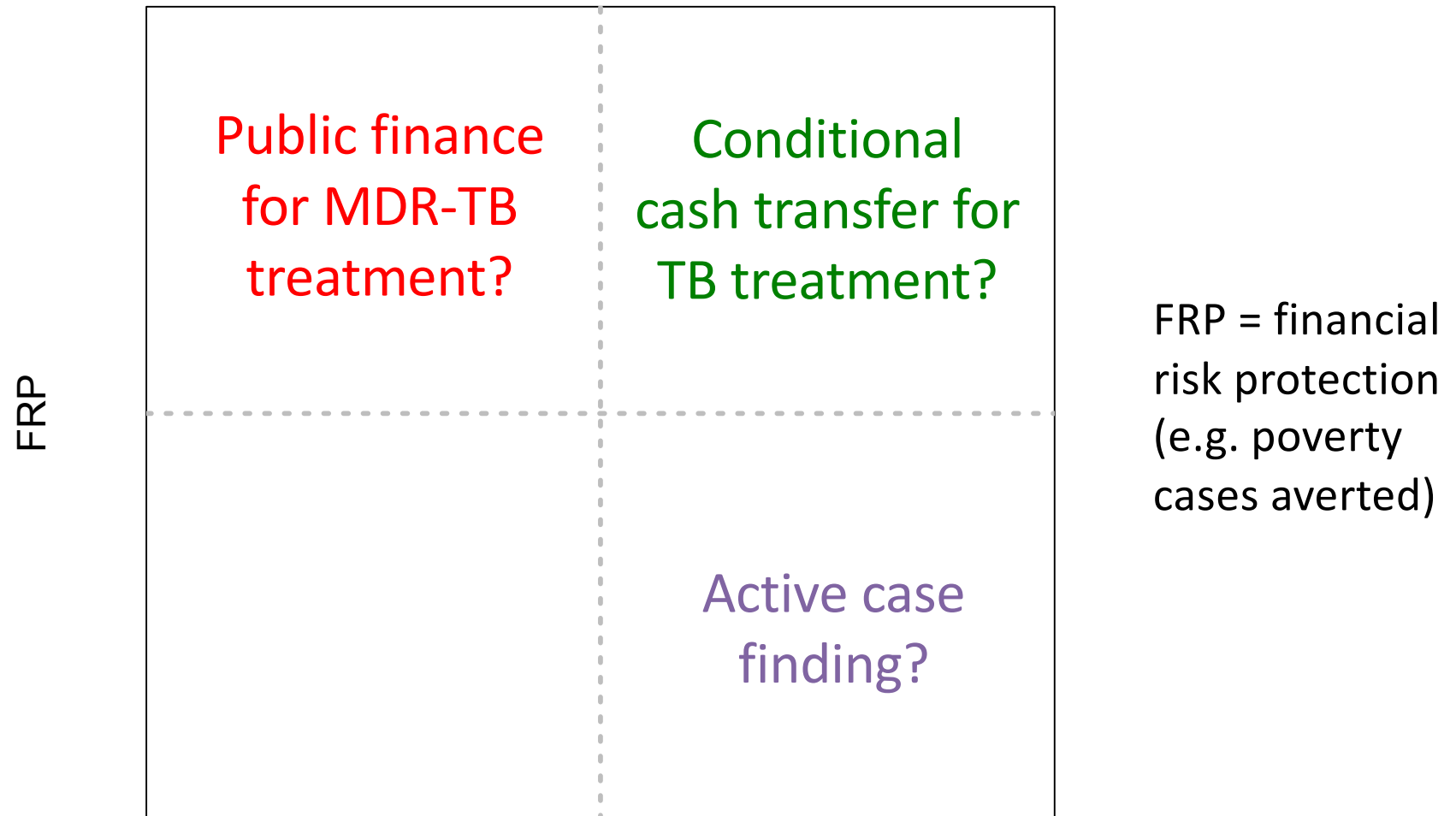Verguet, Laxminarayan, et al. Health Economics 2015

End TB Strategy ECEA: distribution of households with catastrophic health costs averted by TB intervention, India, 2016-35

Financial risk protection higher among poorest

Legend:
- Improved DS-TB care
- Improved MDR-TB care
- Base case

Y-axis: Number of households in thousands (0, 100, 200, 300, 400, 500)

Verguet, Riumallo-Herl, Gomez, et al. Lancet Global Health 2017

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ECEA for: design of TB control package

Where do specific TB policies pay off?

Public finance for MDR-TB treatment?

Conditional cash transfer for TB treatment?

Active case finding?

FRP = financial risk protection (e.g. poverty cases averted)

FRP (vertical axis)

Deaths averted (horizontal axis)

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Next steps

More data is needed

- On **OOP spending** and **household expenditures**
- On distribution of burden of disease by key population subgroups
- On social mixing and transmission within and across subgroups
- On heterogeneity/herd immunity within and across subgroups

Pursue ECEA country case studies

- Consider **subnational analyses: province, district**
- Examine **different delivery platforms: facility vs. outreach**
- Study **different policies: public finance, CCT, control/elimination**

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