Health insurance expansions in India

A. Malani (U. Chicago)
R. Laxminarayan (CDDEP/PHFI)
A. Nandi (CDDEP)
K. Narayan (PHFI)
Tarun Seem (PHFI)
Yogeshwar Gupta (PHFI)
Motivation

• India wants to spend additional 1-2% of GDP on health

• Substantial expansion of HI in India
  – Central: RSBY
  – State level: AP, Karnataka, Kerala, Maharashtra

• What is the value?
  – To health
  – To financial security
Prior Literature – 1/4

• Context: developing countries
  – China (Bogg et al. 1996, Cretin et al. 2006, Wagstaff et al. 2007a, Wagstaff et al. 2007b), Vietnam (Wagstaff & Pradhan 2003, Jowett et al. 2003), Mexico (King et al. 2009-SP), Cambodia (Levine et al. 2010-SKY), Columbia (Miller et al. 2011), Senegal (Jütting 2004), Egypt (Yip & Berman 2001)
  – India
    • Health shocks (Mohanan 2007, Mondal et al. 2010, Pal 2010)
    • RSBY evaluations (Hou Palacios 2010, Palacios 2010, Sun 2010, Swarup 2011, Berg et al. 2011)
    • State evaluations (Kuruvilla et al. 2005, Aggarwal 2010-KN)
    • Private insurance (Banerjee et al. ?)
Prior Literature – 2/4

• Groups
  – Vary price (e.g., RAND HIE, Cretin et al. 2006)
  – Insurance v. nothing (e.g., King et al. 2009)
  – Insurance v. income transfer (none)

• Intervention
  – Inpatient and outpatient (Cretin et al. 2006, King et al. 2009)
  – Attached to microfinance (Levine et al. 2010)
  – Inpatient only (e.g., RSBY evaluations)
Prior literature – 3/4

• Causal inference
  – Selection into HI based on poor health (Cutler and Reber, 1998; Ellis, 1989), greater wealth (Jütting, 2004; Cameron and Trivedi, 1991)
  – No controls for selection (e.g., Hou & Palacios 2010-enrollment; Westat 2010-non-RSBY)
  – Pre-post (Wagstaff & Pradhan 2003)
  – Natural experiment?
  – Randomization (RAND-US, Finkelstein et al. 2011-Oregon)
• Outcomes
  – Health only: no access to capital so forego quality care
    • OOP expenditures: Jütting 2004, Jowett et al. 2003, Yip & Berman 2001)
    • But see Wagstaff & Lindelow 2008
  – Financial too
    • Non-health consumption (e.g., Wagstaff & Pradhan 2003)
    • Lower income, future productivity (e.g., Van Damme et al. 2004, Annear et al. 2006)
    • Costly capital (e.g., Kruk et al. 2009, Levine et al. 2010)
• Power and duration
  – E.g., King et al. 2009-SP study was < 1 year
  – Hospitalization studies require large sample size
Two proposed studies

• RSBY evaluation
  – Randomized trial (RSBY or income transfer)
  – 9000 hhds, 3 Indian states, APL, two years
  – Health and financial status

• Maharashtra RGJAY evaluation
  – Staggered rollout, likely not randomized
  – 6000 hhds, BPL + APL, three years
  – Health, financial status, supply effects
RSBY study: Background

• RSBY begun in 2008
  – Rolled out in 238 of 629 districts so far
  – Goal was full rollout by 2013

• Plan
  – Eligibility: BPL
  – Premium: Hhd pays Rs. 30; govt pays Rs. 450 premium
  – Coverage: Rs. 30,000/year per hhd in inpatient care
  – Network: empanelled hospitals
  – Supplier: private insurance companies bid by district
  – Biometric Smart card
  – Future: APL groups allowed, maybe outpatient too
RSBY study: Design – 1/2

• Unit of analysis: Household
• Location: 2 districts in each of 3 states (Gujarat, Haryana, Orissa; but may change)
• Study population: 9000 hhds in middle tercile
  – APL (identified by use of social maps)
  – Enrolled prior to randomization
• Sample size
  – Hospitalization rate is 2.5% (x4 for hhd)
  – So max 900 hospitalizations
  – Will try to incorporate hospital-based survey
RSBY study: Design – 2/2

• Treatment: RSBY (w/o Rs. 30 registration fee)
• Control: Income transfer equal to govt paid premium in state (~Rs. 450)
• Assignment: Randomization
  – Match village pairs at block or district level
  – Randomize villages within pairs
• Causal inference: pre-post, (matched village pair) randomized, control variable approach
RSBY study: Timing

• Months 1-6: outreach, conduct social maps, consent eligible hhds, randomize villages
• 7-12: staggered rollout of RSBY or income transfer, baseline survey
• 13-18: hospital surveys
• 19-24: first year survey
• 25-30: hospital surveys, preliminary data analysis
• 31-36: second year surveys
• 37-42: final data analysis
RSBY study: Main survey

- Survey all hhds in study 3 times
- Surveys based on NSSO, NFHS (DHS), DLHS, IHDS, SKY Cambodia, Banerjee et al. microfinance study
- Health
  - Expenditures
  - Simple measures of health
  - (Risk-taking/preventative behavior)
- Financial status
  - Non-health consumption
  - Assets (unproductive, productive)
  - Investment (education)
- Participation incentive: Rs. 50/hour
- Time: 60 min
RSBY study: Hospital survey

• Give incentive for enrolled hhds to report hospitalization (e.g., Rs. 100)
• Two interviews
  – After 3 days (to recall pre-hospitalization assets)
  – After 30 days (to assess change in assets)
• More in depth interview – some outcomes
• Participation incentive: Rs. 50/hour
• Time: 90 min
RGJAY study: Background

• RGJAY rolled out in 2012
  – Initially in 8 of 35 districts (Gadchiroli, Amravati, Nanded, Solapur, Dhule, Raigad, Mumbai city and Suburban Mumbai)
  – Remaining districts in 2013, 2014

• Plan
  – Eligibility: BPL (yellow card) & APL (orange card)
  – Premium: Govt. pays Rs. 367 premium
  – Coverage: Rs. 150,000/year per hhd for 927 hospital procedures
  – Network: empanelled hospitals (TBD)
  – Supplier: National Insurance Co. won bid for whole state
  – No biometric Smart card
RGJAY study: Design – 1/2

• Unit of analysis: household, health facility
• Location: 8 treatment districts (RGJAY phase 1), 27 control districts (RGJAY in phases 2 and 3)
• Three longitudinal surveys – population based, post-hospitalization (more statistical power), facility survey
• Study population: 10,000 households, another 3000 households with a hospitalization, 400 hospitals
  – “Intent to treat”: RGJAY eligible (both BPL and APL) households studied in treatment and control districts
  – Sample size determined by treatment effect of 25% change in hospitalization rate
RGJAY study: Design – 2/2

• Treatment: districts given RGJAY
• Control: districts not yet given RGJAY

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1 districts</td>
<td>Treatment</td>
<td>Treatment</td>
<td>Treatment</td>
</tr>
<tr>
<td>Phase 2 districts</td>
<td>Control</td>
<td>Treatment</td>
<td>Treatment</td>
</tr>
<tr>
<td>Phase 3 districts</td>
<td>Control</td>
<td>Control</td>
<td>Treatment</td>
</tr>
</tbody>
</table>

• Causal inference
  – Ideally phase 2 districts/blocks selected randomly
  – IV’s based on political decision-making
  – Border-identification (with oversampling)
RSBY study: Design – 1/2

• Unit of analysis: Household
• Location: 2 districts in each of 3 states (Gujarat, Haryana, Orissa; but may change)
• Study population: 9000 hhds in middle tercile
  – APL (identified by use of social maps)
  – Enrolled prior to randomization
• Sample size
  – Hospitalization rate is 2.5% (x4 for hhd)
  – So max 900 hospitalizations
  – Will try to incorporate hospital-based survey
RSBY study: Design – 2/2

• Treatment: RSBY (w/o Rs. 30 registration fee)
• Control: Income transfer equal to govt paid premium in state (~Rs. 450)
• Assignment: Randomization
  – Match village pairs at block or district level
  – Randomize villages within pairs
• Causal inference: pre-post, (matched village pair) randomized, control variable approach
RGJAY study: Timing

• 2012
  – Mar-May: Pop-based survey
  – June-Feb: Hospital-based survey
  – June-Feb: Facility survey

• 2013
  – Repeat

• 2014
  – Repeat
RGJAY study: Main survey

• Survey all hhds in study 3 times
• Questionnaire design similar to RSBY study: based on existing household surveys
• Outcomes: health and financial status
• Participation incentive: None
• Time: 60 min
RGJAY study: Hospital-based survey

• RGJAY eligible households in treatment and control districts enlisted for survey during a hospital stay
• Two interviews
  – After 3 days (to recall pre-hospitalization assets)
  – After 30 days (to assess change in assets)
• More in depth interview – same outcomes
• Participation incentive: none
• Time: 90 min
RGJAY study: Facility survey

- Randomly selected empanelled (phase 1) and likely-to-be empanelled (phases 2 & 3) hospitals
- Questionnaire based on DHS and DLHS facility surveys
- Outcomes – change in physical infrastructure, human resources, procedures offered and performed
- Participation incentive: Rs. 1000 for respondent
- Time: 90 min