IMPACT EVALUATIONS IN HEALTH SECTOR REFORM

CASE STUDIES FROM CHINA

IMPACT EVALUATION WORKSHOP
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The three case studies

- The case studies address two issues of major concern to China's policymakers right now:
  - Health insurance coverage
  - Reform of payment methods for health care providers
- The studies
  - Two of the studies concern rural health insurance
    - Study #1 is of the government's new rural cooperative medical scheme (NRCMS) over the period 2003-2005
    - Study #2 is of a rural health insurance scheme, piloted by researchers from Harvard University with Chinese academics and local governments over the period 2003-2006
  - Study #3 concerns a reform to the hospital payment system in Hainan province in 1997

The two insurance studies

Background to the 2 insurance studies

- During 1980s, ‘old’ cooperative medical scheme (CMS) collapsed, budget support to health facilities faltered
- Facilities allowed to charge for their services. Prices set by government, with higher margins for high-tech care and drugs in the hope facilities would cross-subsidize ‘basic’ care
- Health care costs increased rapidly, especially out-of-pocket spending
- High incidence of ‘catastrophic’ out-of-pocket payments and impoverishment due to health shocks. Also evidence of cost deterring use of services
- In 2003, govt. began rolling out a new rural cooperative medical scheme (NRCMS). Case study evaluates some of the first schemes—NRCMS has since changed considerably
- In 2003, Harvard University began a health insurance experiment with a different benefit package and different payment system for village doctors

Overview of the two insurance studies

Govt. new rural cooperative medical scheme (NRCMS)

1. Design of program by govt. officials
2. Evaluation a collaboration between MOH statisticians and World Bank economists
3. An input into a formal govt. evaluation
4. Some new data collection, including program design data. But strong emphasis on utilizing existing data, including facility data

Harvard rural mutual health care scheme (RMHC)

1. Design of program partly by Harvard researchers and partly by local govt. officials
2. Evaluation a collaboration between Harvard and Chinese researchers
3. A research study intended to inform policymaking
4. Analysis based entirely on new (household) data

Program design

Govt. new rural cooperative medical scheme (NRCMS)

1. Voluntary but heavily subsidized. Per capita revenues around RMB 30-50, well short of per capita spending
2. Savings account for outpatient expenses, pooling for inpatient expenses. High deductibles, low reimbursement ceilings, high coinsurance rate
3. All providers paid FFS. Schedule gives higher margins on drugs and tests
4. Govt. decided placement of program

Harvard rural mutual health care scheme (RMHC)

1. Voluntary but heavily subsidized. Per capita revenues around RMB 30-50, well short of per capita spending
2. Pooling for all expenses. No deductibles, even lower reimbursement ceilings, even higher coinsurance rate
3. Village doctors paid salary + performance-based bonus. Other providers paid FFS. Schedule gives higher margins on drugs and tests
4. Placement decided in consultation with local govt. officials

Evaluation methods

Govt. new rural cooperative medical scheme (NRCMS)

1. Pre-post changes among enrolled households compared with pre-post changes among households living in non-NRCMS areas
2. A tradeoff in trying to reduce bias due to unobservables:
   - NRCMS areas may have been deliberately chosen, but
   - Non-enrollees in NRCMS areas may have self-selected into scheme
3. Propensity score matching used to adjust for baseline differences in observable variables between "treated" and "untreated" households

Harvard rural mutual health care scheme (RMHC)

1. Pre-post changes among enrolled households compared with pre-post changes among households living in non-HIS areas
2. Similar tradeoff exists as with NRCMS study, because location of Harvard experimental sites was dependent on local govt. willingness to pilot HIS scheme
3. Propensity score matching used to adjust for baseline differences in observable variables between "treated" and "untreated" households

Data

Govt. new rural cooperative medical scheme (NRCMS)

1. 2003 National Health Survey used as baseline. In 2005, households in 10 NRCMS and 5 non-NRCMS counties were reinterviewed
2. Outcomes examined included utilization and out-of-pocket spending
3. Study also applied similar methods to analyze impacts on all China's township health centers and county hospitals. Data from govt. facility database (N~20,000)

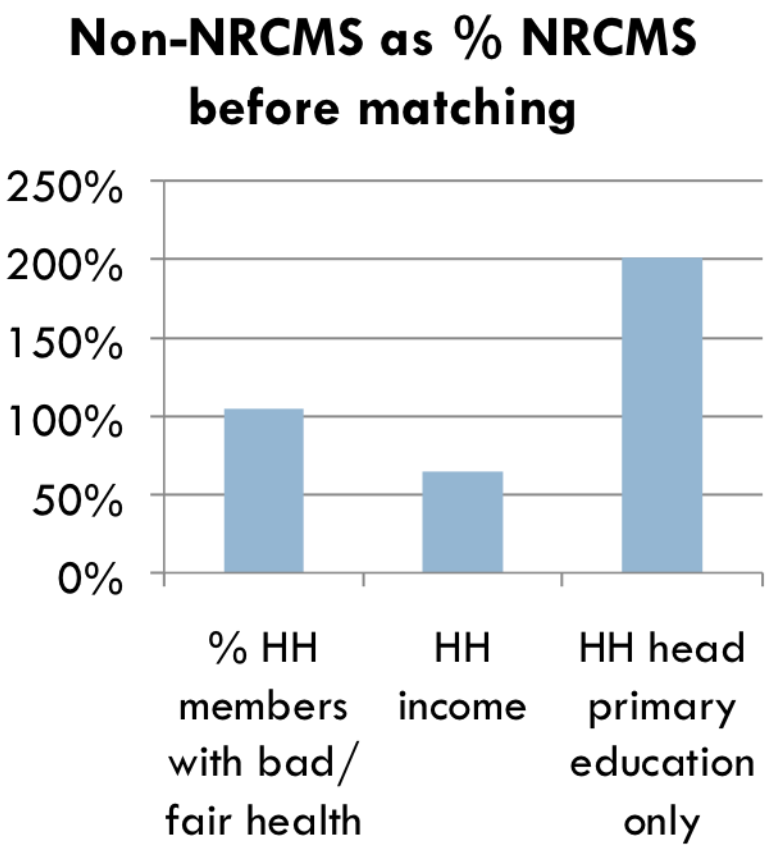
Harvard rural mutual health care scheme (RMHC)

1. Household data collected for purpose of study. Data collected in 3 "intervention" counties and 2 similar "control " counties. Began 2002, then annually thereafter
2. Outcomes examined included utilization and out-of-pocket spending
3. No data from health facilities collected

NRCMS—baseline differences

Govt. new rural cooperative medical scheme (NRCMS)

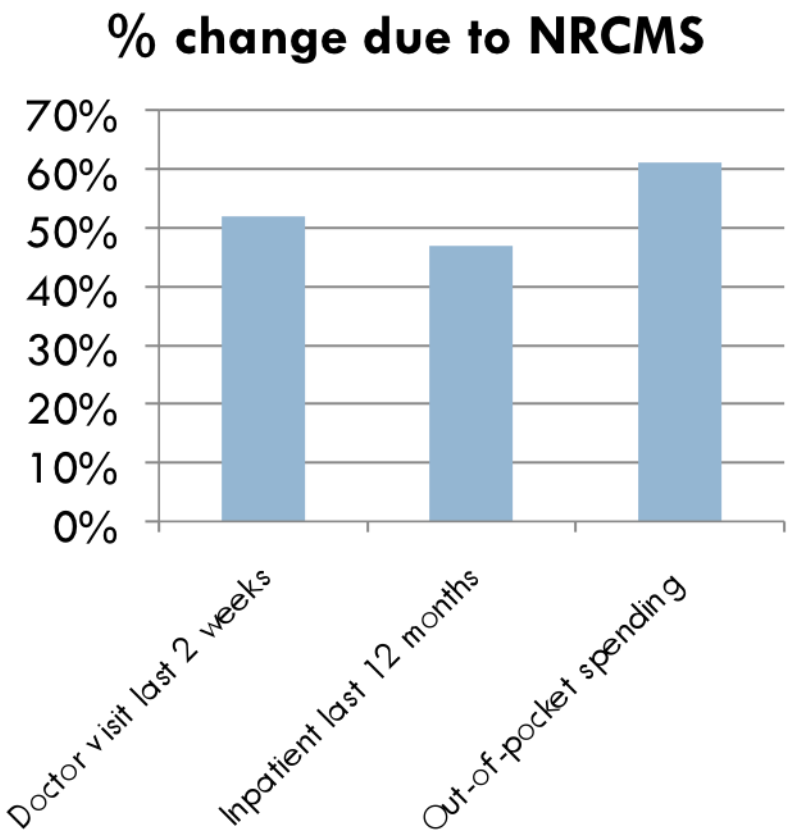
1. Appreciable differences in non-outcome variables between NRCMS households and households in non-NRCMS counties
2. Matching reduced differences but didn't eliminate them completely
3. Households in NRCMS counties typically ended up being matched with households in control counties that are similar
4. More and better-chosen "control" counties would have improved the study. Balancing would have been even better with randomization of "treatment" and "controls"



NRCMS—main results (i)

Govt. new rural cooperative medical scheme (NRCMS)

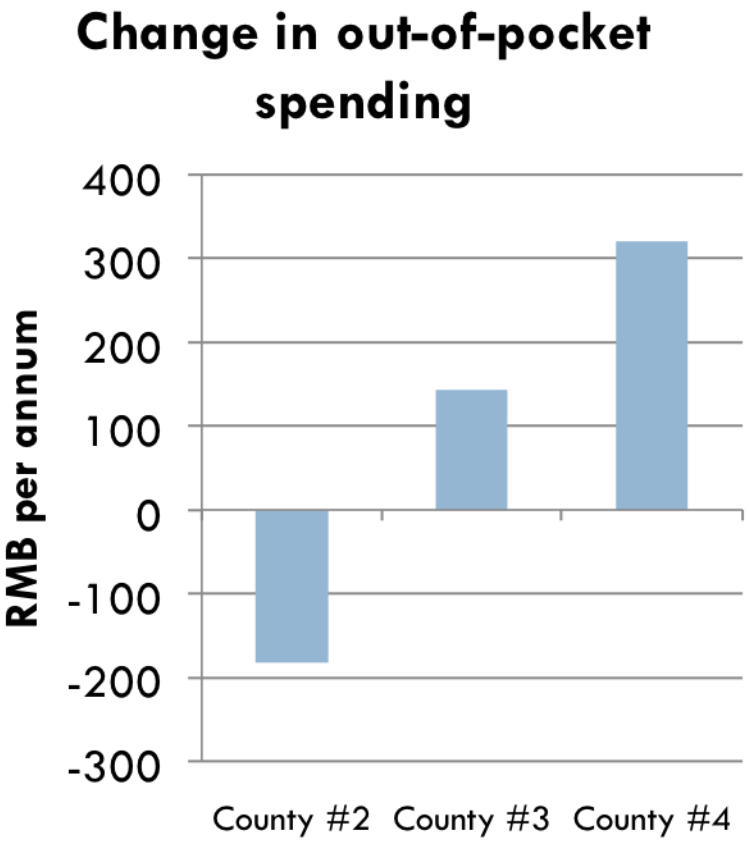
1. NRCMS increased utilization of outpatient and inpatient care. Outpatient impacts larger among the poor
2. NRCMS increased out-of-pocket spending. Only partly due to increased utilization. Partly due to increase in cost-per-contact. No results available on health status impacts



NRCMS—main results (ii)

Govt. new rural cooperative medical scheme (NRCMS)

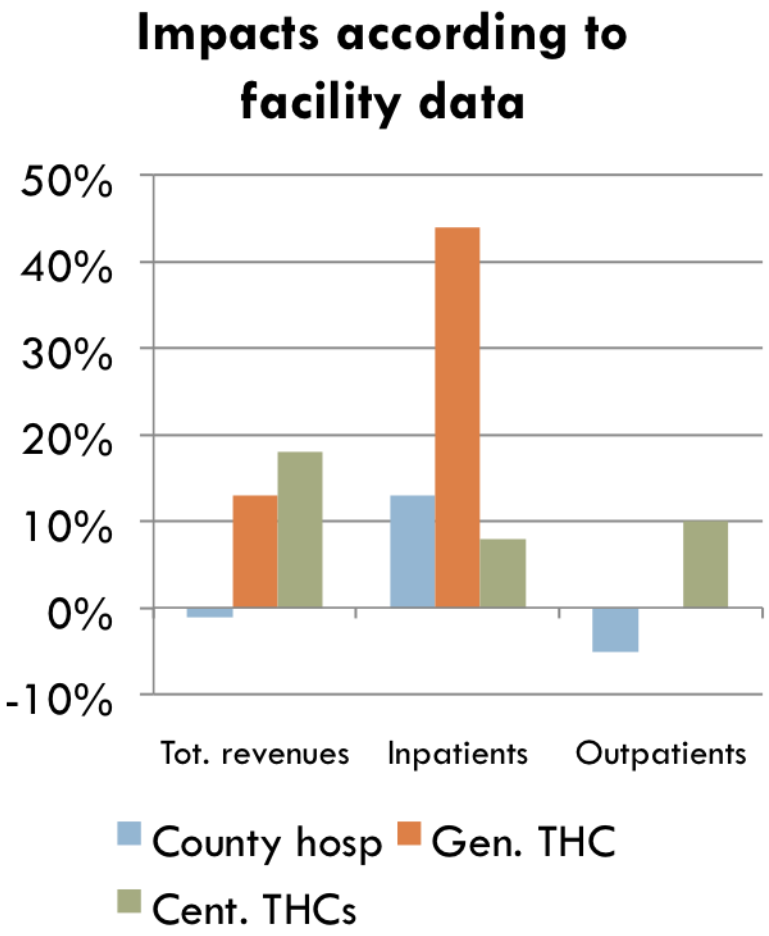
1. Disaggregated results reveal variation in impacts across counties
2. A hint that more generous NRCMS schemes put greater downward pressure on out-of-pocket spending



NRCMS—facility data results

Govt. new rural cooperative medical scheme (NRCMS)

1. Impacts estimated from facility data not directly comparable with household data because facility data cover whole of China
2. Results point to increased revenues, inpatients and outpatient visits—but variation across types of facility



Impacts of the NRCMS study

Capacity-building

- "*The collaboration has been very good for CHSI. It allowed us not only to learn impact evaluation methods, but to practice them on a real evaluation*
- *Impact evaluation is now a tool that CHSI plans to use in other policy impact assessments to give policymakers more evidence*
- *CHSI is studying more about impact evaluation methods to better understand them, and possible further applications*"

Policymaking

- "*The results have been used in some important Chinese policy-related documents, including the Government's assessment of NRCMS pilots*
- *Most conclusions have been accepted by senior policymakers*
- *The report has made policymakers … think more about how NCMS's impact on access and financial protection could be increased.*"

Gao Jun, Former Deputy Director, Center for Health Statistics & Information, MOH, Beijing

RMHC—baseline differences

	RMHC-enrolled	RMHC-nonenrolled	Control
Income per capita	1885	1700	2481
Ill in last month	26%	16%	17%
With chronic condition	17%	13%	14%
Poor/VPoor Self Rate Health	24%	17%	18%

RMHC—main results

	Baseline	Impact
% outpatient provider in the last 2 weeks	0.173	+0.120
Number of outpatient visit in the last 2 weeks	0.352	+0.148
% self-treat in the last 2 weeks	0.056	-0.039
% Hospitalized in the last year	0.033	No change
Any of the EQ-5D dimension with problem	0.49	-0.238
Out of pocket health spending > 30% of disposable income	0.153	-0.062
% below $1/day: lowest 25% income sample	0.621	-0.099

RMHC—policy impact

- Influenced central government's policy to change NCMS reimbursement from savings account to risk pooling
- RMHC plan scaled up to the whole provinces

The hospital payment reform study

Background to hospital payment study

- Provider payment methods for most Chinese hospitals:
  - FFS under distorted prices, drug mark up.
  - Incentives to use high-tech diagnostic procedures, prescribe expensive drugs
  - Unnecessary prescriptions
- Introduced urban employees basic medical insurance in mid 1995
- Introduced provider payment reform for hospitals in Jan 1997

Hospital study—program design

Monthly prospective budget set at last year's expenditure of the same month

- Pre-paid 90%; rest of 10% subject to quality review
- To prevent excessive cost reductions, in addition to the quality assurance review, the Social Insurance Bureau stipulates that a hospital can retain budget savings only if:
  - the number of patients treated is at least 90% of that of the previous year
  - total spending is at least 90% of the budget.
- Hospitals share the costs of budget overruns:
  - Hospitals pay 30% of the cost overrun if expenditures exceed the prospective budget by no more than 10%
  - 50% for cost overruns up to 20%
  - 100% thereafter.

Hospital study—evaluation methods

Difference-in-difference

	June 1995-Dec 1996	Jan 1997-June 1997
Six hospitals	FFS	Prospective Payment
Eight hospitals	FFS	FFS

Hospital study—data

- Inpatient claims data for the insured from SHI for all 14 hospitals
- July 1995 to July 1997
- Three expenditure outcomes:
  - ‘‘expensive drugs’’ (guizhong yaopin), a list of prescription drugs compiled by the Hainan’s SHI to include medications that are significantly more expensive than average
  - ‘‘high technology procedures’’, e.g. dialysis, ultrasound, pacemaker insertion, electroconvulsive therapy (ECT), organ transplants, CT, MRI.
  - Inpatient bed charges

Hospital study—results

Total expenditure per admission	-53%
SHI expenditure per admission	-43%
Patient copayment per admission	-44%
% of admission with “expensive drugs”	No statistically significant changes
“expenditure drug” expenditure given positive expenditure	-43%
% of admission with high tech procedures	-41%
High tech expenditure given positive expenditure	-60%
Bed charges	No change

New provider payment reform study

Background to new study

- World Bank's *Health XI* project provides funding for 40 rural counties to pilot innovative reforms in one or more of three areas: provider payments and service delivery; health insurance; public health
- The idea is to evaluate the pilots, learn lessons, and disseminate findings so that China's other rural counties benefit when designing and implementing their reforms
- SIEF-funded impact evaluation to focus on provider payment reforms, the aim being to apply best-practice IE methods to especially promising reforms

New study—program design

- Counties prepare proposals with technical assistance from national and international experts. In practice, there are similarities across counties, especially within the same province
- Common themes:
  - Hospital and THC payments reformed to case-based methods, with performance-related bonuses
  - Village doctors reformed to capitation with performance-related bonuses
- Details likely to vary somewhat by location, and are still being worked out

New study—evaluation methods

Randomized phased rollout

- Most realistic at THC/village level, rather than county level
- Some would be selected randomly to implement first. Rollout would be delayed in the remaining ones for 1-2 years—these would be the control group
- Requires agreement and support from county officials. Unclear if will be forthcoming

Nonrandomized phased rollout

- If randomized phased rollout isn't possible, fall back on diffs-in-diffs, exploiting (nonrandom) phased rollout. Compare changes among first-adopters with changes among later-adopters
- Improve balancing on observables through regression or matching methods

New study—data

- Household data
  - Baseline data from 2008 National Health Survey fielded in all 40 project counties and 132 non-project counties in the 8 project provinces. In each county, 2200 individuals are interviewed, drawn from 5 townships and typically around 1.3 villages per township. Follow-up data from 2013 NHS or an intermediate special NHS-type survey
- Facility data

  Routine administrative data at facility-level on county hospitals and THC's. Patient-level data from county hospitals
- New data
  - Some household and facility data—some through project, some through SIEF evaluation. Details being worked out. Aim is to supplement existing data as necessary

Conclusions

Policy

- Limited impacts of early NRCMS on out-of-pocket spending likely to be to limited coverage—small budget and focus on inpatient care
- Harvard RMHC scheme shows benefits of a different benefit package and changes to village doctor payment scheme
- Hainan hospital study shows benefits of shift from FFS to prospective payment methods

Methods

- Estimating plausible counterfactual requires appropriate methods and the right data. NRCMS study would have benefitted from more and better data from non-NRCMS counties
- Getting at health impacts of insurance interventions is an under-researched area—in China and elsewhere

Published versions of the case studies

- NRCMS:
  - Centre for Health Statistics and Information (2006). China's New Rural Cooperative Medical Scheme: Studies of Development and Effectiveness. (In Chinese.) Beijing, Ministry of Health.
  - Wagstaff, A., M. Lindelow, Gao Jun, Xu Ling and Qian Juncheng. (2009). "Extending health insurance to the rural population : an impact evaluation of China's new cooperative medical scheme." Journal of Health Economics 28(1): 1-19.
- Harvard RMHC:
  - Wang, H., W. Yip, et al. (2009). "The impact of rural mutual health care on health status: evaluation of a social experiment in rural China." Health Economics (in press).
- Hospital payment reform:
  - Yip, W. and K. Eggleston (2001). "Provider payment reform in China: the case of hospital reimbursement in Hainan province." Health Economics 10(4): 325-39.
  - Yip, W. and K. Eggleston (2004). "Addressing government and market failures with payment incentives: Hospital reimbursement reform in Hainan, China." Social Science & Medicine 58: 267-277.