Japan’s Public Universal Health Insurance System Reform: Lessons for Achieving and Maintaining Universal Health Care Coverage

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• This study is a part of a research paper by
  Ikegami N, Yoo BK, Hashimoto H, Matsumoto
  M, Ogata H, Babazono A, Watanabe R, Shibuya
  K, Yang BM, Reich MR, Kobayashi Y,

  “Japanese Universal Coverage: Evolution,
  Achievements and Challenges”,
  *Lancet* *(available on Sep.01, 2011)*

- Selected and ranked 14th out of “20 Best Books in Economics and Business in 2006” by Nikkei Newspaper (Japan’s Wall Street J)

- Key message:
  
  *If basic healthcare should be provided by a govt, European health care systems are more efficient than US health care system.*

- Sold more than 6,000+ copies (plus 3000+ in Chinese version)

- Ranking in Japan-Amazon: 30th in all categories and 1st in economics.
Chinese version published as one of “Center for Industrial Development and Environmental Governance (CIDEG) Series”

Chief Editors:
Prof. Aoki, M., Stanford Univ.
Prof. Wu, J., Peking Univ.
Motivation

• **Universal health coverage** in global health community (e.g., 58th World Health Assembly, 2005)
  – Definitions of Universal Coverage
    1) Access to appropriate services
    2) Affordable

• Japan’s insurance system
  = Social Health Insurance (SHI) [Germany] model
  – Universal coverage in 1961 (50th anniversary)
  – Successful performance
    • Equity in Access, Cost containment, Quality
  – Potential Solutions for challenges?
    • Financial instability – aging/recession/globalization etc.
  – Global Policy Implications
Definition of Universal Coverage

• Different goals need different strategies
  (a) Universal health coverage *different from*
    (b) Uniform benefit package
    (c) Uniform copayment rate
    (d) Uniform contribution rate
    across SHI plans

• Each goal needs long-term commitment
  – Japan started SHI system 1922
    • achieved (a) universal coverage in 1961
    • achieved (c) uniform copayment rate in 2003
Fragmented Structure of Japan’s Social Health Insurance System (3500 plans)

<table>
<thead>
<tr>
<th>Type</th>
<th># of plans</th>
<th>Eligibility (% total pop)</th>
<th>Financing Premium/Subsidy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employer-based insurance (EBI) plans</td>
<td>1574</td>
<td>Large company/ Public sector (30%)</td>
<td>100% / 0% (60% from employer)</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Small company (30%)</td>
<td>80% / 20%</td>
</tr>
<tr>
<td>Citizens’ health insurance (CHI) plans</td>
<td>1953</td>
<td>Residence (30%)</td>
<td>50% / 50% (higher risk)</td>
</tr>
</tbody>
</table>

Note: Aged 75+ enroll in 4th tier (separate) prefecture level plans (n=47)
Successful aspects of Japan’s SHI

• Equity in Access
  – Quasi single system (despite 3500 plans)
  – Uniform (a) Copayment rate, (b) Benefit package
    (c) Provider reimbursement rate set by Minister of Health, Labor and Welfare (MHLW)
  – Subsidy: General revenue, cross-subsidy among plans

• Cost containment
  – Quasi single payer system
    • 82% of total expenditures publicly financed
  – Total health expenditures (8% GDP)
    • Ranked 20th among OECD countries
(Universal?) Challenges to Japan’s SHI:

• Equity in burden-sharing
  – 3+ times difference in premium [% income]

• Reasons of financial instability
  – Aging (% aged 65+: 22% (2008), 30% (2020))
  – Long macro recession → tax revenue ↓
  – Globalization
    • Employer stopped insurance benefit
    • Part time/irregular workers ↑ → Citizens’ health insurance (CHI) plans
  – Uninsured (despite requirement to pay premium)
    • Unwilling or unable to pay?
Potential Solution to Challenges: Consolidation of 3,500 SHI Plans

• Examples in other countries:
  – Germany has ~ 200 plans, 10% of peak levels
  – Korea merged all SHI plans into a single entity in 2000, 11 years after achieving universal coverage

• Improve financial sustainability
  – More precise prediction of expenditures
  – Equalize/stabilize insurance risk pool
  – Reduces
    • Inequalities in financing
    • Administrative costs (*long-term saving*)
  – Opposition from low-risk plans → empirical evidence?
Research Objective 1

What are optimal consolidation sizes/options?

• The larger, the better - no simulation is needed

• But, how large is most optimal?
  – The larger, the more difficult to implement
    • Merging to single program – politically most difficult
  – Simulation needed to explore
    • Threshold size, above which the incremental benefit will be nearly zero
      – E.g., if threshold size = 10 million, little economic reason to merge to single program (130 million)
    • Threshold size depends on (Japanese specific)
      – (i) Disease prevalence
      – (ii) Distribution of cost per case
Research Objective 2

• Simulation Analysis to compare 4 options

1) consolidate only Citizens’ Health Insurance (CHI) plans at 47-prefectural (~= US state) level

2) consolidate both CHI and Employer-based Insurance (EBI) plans at 47-prefectural level

3) consolidate only CHI plans at national level

4) consolidate both CHI and EBI plans at national level
Methods

Step 1: Empirical (real data) analysis
• to estimate mean/standard error (SE) of age-specific per-capita annual inpatient expenditure (PCAIE) (national average)

Step 2: Simulation analysis
• to estimate mean/SE of PCAIE for 4 options

Step 3: Comparison of 4 options
• based on ratio of SE to mean [%]
Step 1: Empirical (real data) analysis

- Mean/SE of PCAIE
  - 3 age-categories: 0-19; 20-64; 65+
  - 22 major disease category
- National data/population (2005 and 2002)
  1. Patient Survey (n=600,000 per year)
     → inpatient care utilization rate
     Hyp. Ex. in 100 persons aged 65+, 20 cases due to CVD
  2. Social Medical Care Claims Data (n=60,000 / yr)
     → health expenditure per case
     Hyp. Ex. In 65+, (ave.) $4000 per inpatient case due to CVD.
     Thus, among 100 persons aged 65+, total CVD cost=20*$4k
Methods: Step 2
Simulation analysis for all 4 options
To estimate mean and SE of PCAIE

Option 1) only CHI plans at 47-prefectural level
  • Estimates for each of 47 prefecture plans
    – Common simulation parameters among 47 plans
      • Age-specific prevalence of disease-categories
      • Normal distrib. of cost per case (mean/variance)
    – Different simulation parameters among 47 plans
      • Size and proportion of 3 age-categories
Results 1

• Number of consolidated plan enrollees:
  – Option 1: 0.2 - 5.7 million  (47 prefecture plan)
    • Citizen’s Health Insurance (community) plans only
  – Option 2: 0.5 - 11 million  (47 prefecture plan)
    • Additionally consolidate employer based plans
  – Option 3: 40 million  (Single plan)
  – Option 4: 113 million  (Single plan, all population)
Results 2

• Reduction in variance of PCAIE diminished after plan size exceeded
  1.5 million under Option 1
  = Optimal (threshold) consolidation size
  = 9\textsuperscript{th} largest prefecture plan
    – Regress variance on plan-size among the largest 9 prefecture-level plans, estimated coeff is statistically zero (p > 0.05)
    – Once linear regression model includes 10\textsuperscript{th} largest plan and additional smaller plans, regression coeff negative & significant (p < 0.05)
Size of CHI Plans and Variance of Per-capita Annual Inpatient Health Expenditures [ratio of standard error to the mean (%)] in Japan, 2005
Size of CHI Plans and Variance of Per-capita Annual Inpatient Health Expenditures [ratio of standard error to the mean (%)] in Japan, 2005

CHI plans smaller than an optimal size (n=38)
slope = -0.93
p<0.001
Results 3

- “Standardized” plan-size effect (per additional 1 million enrollees) on the plan’s risk pooling

  = e.g., Slope coefficient among 38 smallest CHI plans

  = \(-0.93\) (p < .001) percentage point reduction in the variance of PACIE
Results 4

Economically optimal (threshold) consolidated plan size:

• 9\textsuperscript{th} largest prefecture in both options 1 & 2 (consolidating at 47-prefecture level)

• 1.5 million under Option 1 (CHI plans only)

• 4.5 million under Option 2 (both CHI & EBI)
Size of CHI Plans and EBI Plans and Variance of Per-capita Annual Inpatient Health Expenditures [ratio of standard error to the mean (%)] in Japan, 2005
Conclusions

• Financially vulnerable CHI plans gains benefit of equalizing/stabilizing the insurance risk pool by consolidation at 47 prefecture level

• Economically optimal (threshold) consolidated size
  – 9th largest prefecture plan (CHI/EBI)

• Benefit of further consolidation (greater than prefecture level)
  – 38 among 47 prefectures (half of Japan’s total population) gains a reasonable additional benefit
1) Timing of consolidating SHI plans

- **Inherent weakness** of a SHI system
  - Fragmented by employment/residential status
  - Easier to start and expand...

- The earlier, the better
  - Each plan differs in risk profile and income level.

- Both **political drivers** and **empirical evidence** are needed to overcome the opposition of SHI plans (lower risk and higher income enrollees)
Global Policy Implications 2

• Different goals need different strategies
  (a) Universal health coverage different from
  (b) Uniform benefit package
  (c) Uniform copayment rate
  (d) Uniform contribution rate across SHI plans

• Each goal needs long-term commitment
  – Japan started SHI system 1922
    • achieved (a) universal coverage in 1961
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References


Questions?