Linking administrative data and household survey for poverty measurement

Kyung Eun Lim

Welfare Statistics Division, Statistics Korea
2 November 2022
Contents

Ⅰ. Introduction of SHFLC

Ⅱ. Use of administrative data

Ⅲ. Relative poverty rate

IV. Use of social transfers in kind data
I. Introduction of SHFLC
1. Survey of Household Finance and Living Condition

○ Purpose of the Survey

- **To provide primary data** for economic, social and financial policies or studies by surveying the compositions and the distributions of households’ financial assets, non-financial assets and liabilities

- **To provide useful information** for policies on real estate, fiscal and bank rate and households’ credit management, financial system development by grasping periodically households’ microscopic financial soundness

- **To measure economic wellbeing** of a household or individual and to assess dynamic changes

⇒ The main objective of the SFLC is to **disseminate statistics on the income and it’s distribution like Gini coeffi., relative poverty rate** etc.
Diagram 1. Components of household economic well-being
Diagram 1. Components of household economic well-being

- Wealth
  - Asset
  - Debt

- Income
  - Employee
  - Self-employment
  - Property
  - Public transfer
  - Private transfer

- Economic Wellbeing

- Expenditure
  - Consumption
  - Non-consumption
2. Sample Design

- **(Sample System)** Rotation sampling(1/5)

<table>
<thead>
<tr>
<th></th>
<th>t</th>
<th>t+1</th>
<th>t+2</th>
<th>t+3</th>
<th>t+4</th>
<th>t+5</th>
<th>t+6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rotation1</strong></td>
<td>G₁₁</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>G₁₂</td>
<td>G₁₂</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>G₁₃</td>
<td>G₁₃</td>
<td>G₁₃</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>G₁₄</td>
<td>G₁₄</td>
<td>G₁₄</td>
<td>G₁₄</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>G₁₅</td>
<td>G₁₅</td>
<td>G₁₅</td>
<td>G₁₅</td>
<td>G₁₅</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rotation2</strong></td>
<td></td>
<td></td>
<td>G₂₁</td>
<td>G₂₁</td>
<td>G₂₁</td>
<td>G₂₁</td>
<td>G₂₁</td>
</tr>
<tr>
<td></td>
<td>G₂₂</td>
<td>G₂₂</td>
<td>G₂₂</td>
<td>G₂₂</td>
<td>G₂₂</td>
<td>G₂₂</td>
<td>G₂₂</td>
</tr>
<tr>
<td></td>
<td></td>
<td>G₂₃</td>
<td>G₂₃</td>
<td>G₂₃</td>
<td>G₂₃</td>
<td>G₂₃</td>
<td>G₂₃</td>
</tr>
<tr>
<td></td>
<td>G₂₄</td>
<td>G₂₄</td>
<td>G₂₄</td>
<td>G₂₄</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>G₂₅</td>
<td>G₂₅</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rotation3</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>G₃₁</td>
</tr>
</tbody>
</table>

- **(Sample Size)** 20,000 households
- **(Stratification)** city/province, town, house type (general, apt, large size apt): 68 strata
- **(Implicit Stratification)** Official price of house, Household size, Type of residence etc.
- **(Sampling Method)** Stratified two-stage cluster sampling (EDs (PPS) → Households (SYS))
3. General characteristics

- **(Survey period)** March 31 ~ April 16

- **(Reference period)**

- **(Scope of the survey)** It covers all households throughout the nation

- **(Statistical Unit)** Household
  - Including family members who, temporarily, do not live in a households' primary residence for a job, study, etc.

- **(Survey Mode)** Face to Face Interview (Internet, Self-report etc.)

- **(Interview Duration)** 50~60 min.
Ⅱ. Use of administrative data
Diagram 1. Components of household economic well-being

- Financial
  - Real

- Financial
  - Rent deposit payables

Wealth
  - Asset
  - Debt

Income
  - Employee
  - Self-employment
  - Property
  - Public transfer
  - Private transfer

Economic Wellbeing

Expenditure
  - Consumption
  - Non-consumption
1. Administrative Data Sources

- **(Statistics Act)** The obtaining and processing of administrative data are prescribed under Article 24 of the Statistics Act (Provision of Administrative Data)

- **(Administrative Data provider)** National Tax Service, Ministry of Health and Welfare, National Pension Service, etc.(12 providers)

- **(Administrative Data)**
  - **Income**
    - Ordinary household income (excluding non-recurring income)
      (Employee income, Self-employment income, Property income, Public transfers)
  - **Expenditure**
    - Non-consumption
      (income tax, national pension/health insurance contribution etc.)
2. Process of Using Administrative Data

Transfer administrative data → Analyze admin. data in comparison to survey data → Set forth standard rules for using admin. data

Analyze data and compile statistical tables ← Treat data for unmatched sample units ← Match administrative and survey data
3. Data Matching Methods

Alternate key of each sample unit

Exact Matching

Matching rates range
⇒ between 92~95% each year

If an alternate key-based matching failed,
⇒ data treatment schemes,
  including the correction of matching bias were applied
Ⅲ. Relative poverty rate
1. Equivalence scales

The equivalised income = \( \frac{\text{Household income}}{\sqrt{\text{The number of household members}}} \)

⇒ Equivalized Market Income (MI) = Employment income + Self-employment income + Property income + Private transfers received - Private transfers spent

Equivalized Disposable Income (DI) = MI + Public transfers received - Public transfers spent \( \text{(OECD Wave7)} \)

⇒ Income Distribution Index

(Gini coeff., Income quintile ratio, Palma ratio, Relative poverty rate etc.)
2. Relative poverty rate

The ratio of the number of people whose MI/DI is the same as or less than 50% of median income

⇒ Improvement effect = MI – DI

= 1%p('11) → 6%p('20)
3. Relative poverty rate of the retirement age group

Source: BBC News Korea
Relative poverty rate of the retirement age group

⇒ Improvement effect = MI – DI

= 10%p(’11) → 19.8%p(’20)
4. OECD(2017~2020)

○ Relative poverty rate (based on DI)

○ Retirement age group (based on DI)
Among OECD countries,
Korea has the highest elderly poverty rate.
Can you believe it?
Among OECD countries, Korea has the highest elderly poverty rate. Can you believe it?

- The immaturity of the pension system
- Female elderly population
- Assets were not taken into account
- Etc.
Among OECD countries, Korea has the highest elderly poverty rate. Can you believe it?

- The immaturity of the pension system
- Female elderly population
- Assets were not taken into account
- Etc.
IV. Use of social transfers in kind data
1. Social transfers in kind

Goods and services provided by the government to households or individuals, including free education, free childcare, and medical subsidies (health insurance)

- Education
- Childcare
- Medical care
- Other vouchers

※ STIK are not currently covered by any concept of measuring international income statistics because *policy details and valuation may differ from country to country*
Results of Income Statistics Produced With Social Transfers In–Kind Included (Experimental Statistics)

https://kostat.go.kr/portal/eng/
2. Relative poverty rate trends
3. Improvement effect by STIK

![Graph showing improvement effect by STIK]

- **Children**
  - Before: 40.4%
  - After: 23.9%

- **Work**
  - Before: 10.6%
  - After: 7.9%

- **Retirement age**
  - Before: 9.8%
  - After: 2.8%
4. Changes in the Gini coefficient by social transfers in-kind sector in 2020

- **Total**
  - Before: 0.331
  - Medical care: 0.282
  - Education: 0.314
  - Childcare: 0.329
  - Other vouchers: 0.330

- **Working age group (18-65)**
  - Before: 0.312
  - Medical care: 0.275
  - Education: 0.294
  - Childcare: 0.295
  - Other vouchers: 0.310
  - Total: 0.312

- **Retirement age group (66 or older)**
  - Before: 0.376
  - Medical care: 0.291
  - Education: 0.378
  - Childcare: 0.376
  - Other vouchers: 0.375

- **Children group (17 or younger)**
  - Before: 0.310
  - Medical care: 0.247
  - Education: 0.296
  - Childcare: 0.265
  - Other vouchers: 0.303
  - Total: 0.308
Thank you!!

(ezstat@kostat.go.kr)