Pensions and health insurance: Variation across regions

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BEA/BLS

BEA Advisory Committee Meeting
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Purpose

- Improve estimates of state personal income
- How?
  - Improve state-by-industry estimates of employers’ contributions for employee benefits
    - Pensions
    - Health and life insurance
    - Supplemental unemployment insurance
Current Practice

• National levels for employer contributions are estimated by NAICS 3-digit industries
  – Administrative and survey source data
• National totals are distributed among states by industry
  – Using the distribution of wages and salaries across states for each industry
• State estimates reflect variation in:
  – Industry mix across states
  – Contribution rates across industries
Problem With Current Practice

• Does not reflect variation across states in contribution rates in each industry
  – Same contribution rate for an industry in every state
• Contribution rates vary within industry by
  – Firm size
  – Extent of unionization
  – Worker and job characteristics
Solution

• Use BLS National Compensation Survey data to develop estimates of contribution rates
  – Modeled estimates that generate a unique contribution rate for each state and industry
• Generate contribution levels for each state and industry
  – Contribution rate times wages and salaries
Expected Impact

• Not too big
  – State estimates are benchmarked back to national industry totals
    • Only the variation across states for each industry is affected

• But
  – May affect relative ranks of states
  – Impact more significant in some industries
BLS National Compensation Survey (NCS)

- Quarterly survey of ~35,000 jobs in ~8,000 establishments in 20 compensation categories
- Used to produce
  - Employment Cost Index (quarterly)
  - Employer Costs for Employee Compensation (annual)
  - Inter-area pay comparisons (annual)
  - Employee Benefits Descriptions
Details of ECI Data Used

• Microdata for 1999-2002
  – Private non-agriculture industry only
  – Sample size > 51,000
• Data collected for each sampled job:
  – Cash pay
    • Straight-time wages, premium & leave pay, bonuses
  – Employers’ costs for non-cash compensation
    • Pensions, health & life insurance, supplemental UI
Goal of the Analysis of NCS Data

• Interested in predicting average RATIO of:
  – Employers’ non-cash pay components to Employers cash pay components

• Want to predict this RATIO:
  – Separately by state for each industry

• BEA will use the RATIO to estimate non-cash components for each state and industry
Contribution Rate Model

• Dependent Variable:
  – Non-cash / Cash RATIO for 51,000 job-level observations

• Independent variables:
  – Dummies for state, year, 3-digit NAICS
  – Interacted dummies: 1-digit NAICS by state

• Use a TOBIT to account for zero lower bound
Distribution of Contribution Rates in NCS
Alternative Geographies, Industries

• Investigated Less Detailed Regional Indicators and Less Detailed Industrial Definitions

• Investigated Models Having no Interaction Terms

• F-tests indicated that state, 3-digit NAICS, and interaction terms were jointly significant
Estimated contribution rates (RATIOS)
What Explains Variation in the RATIOS?

- Estimated Model with Varying Sets of Controls:
  - Unionization Rate
  - Wage Levels
  - Average Establishment Size

- Predicted RATIOS with these Controls Held Constant over all state-industry cells

- Compare models in terms of variation in RATIOS
Decomposition Results

<table>
<thead>
<tr>
<th>Model</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
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</thead>
<tbody>
<tr>
<td>Basic Specification</td>
<td>0.123</td>
<td>0.059</td>
<td>0.000</td>
<td>0.430</td>
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<tr>
<td>Union Added</td>
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<td>0.050</td>
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<tr>
<td>Union and Wages</td>
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<td>0.051</td>
<td>0.000</td>
<td>0.394</td>
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<tr>
<td>Union, Wages, and Size</td>
<td>0.118</td>
<td>0.050</td>
<td>0.000</td>
<td>0.395</td>
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</tbody>
</table>
Steps to Generate New Compensation Levels

1. Generate new employer contribution levels
   - Wages times modeled contribution rates
2. Control modeled contribution levels to national industry totals
   - Compute new controlled contribution rates
3. Estimate new compensation levels
   - Replace old contribution levels with new contribution levels in compensation
Absolute Difference in State Contribution Rates

Absolute difference in percentages

<table>
<thead>
<tr>
<th>Absolute difference in percentages</th>
<th>Number of states</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;= .5</td>
<td>13</td>
</tr>
<tr>
<td>&gt;.5 to 1</td>
<td>17</td>
</tr>
<tr>
<td>&gt;1 to 1.5</td>
<td>9</td>
</tr>
<tr>
<td>&gt;1.5 to 2</td>
<td>5</td>
</tr>
<tr>
<td>&gt;2 to 3</td>
<td>3</td>
</tr>
<tr>
<td>&gt;3</td>
<td>4</td>
</tr>
</tbody>
</table>
Absolute Percent Difference in State Compensation Levels

- <= 0.5: 14 states
- > 0.5 to 1: 20 states
- > 1 to 1.5: 7 states
- > 1.5 to 2: 5 states
- > 2 to 3: 1 state
- > 3: 4 states
Problem With Extreme Values

• Sampling and/or measurement error leads to some estimated contribution rates that are either very low or high
• Is this a concern?
  – High contribution rates might have sizeable affects on published BEA industry earnings by state
  – But, model is used to generate contribution rates for every state by industry cell
    • Need to evaluate impact on published estimates
Questions For Committee

• Is using a model a fruitful and technically appropriate way to estimate employer contribution rates?

• How appropriate is the particular model that was used to generate predicted contribution rates? Are there other models that should be studied?

• How might the BEA control for variation in estimates that results from sampling and/or measurement error, and that sometimes results in extreme values?