Luxury or Necessity: How will State and Local Governments Balance Budgets in the Wake of COVID-19?

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### Estimates of Government Revenue Shortfall in FY2021 due to Pandemic: Different Scenarios

<table>
<thead>
<tr>
<th></th>
<th>Slow Recovery</th>
<th>Second Wave</th>
</tr>
</thead>
<tbody>
<tr>
<td>State (Whitaker, 2020)</td>
<td>-122.1 $B</td>
<td>-238.1 $B</td>
</tr>
<tr>
<td>Local (Whitaker, 2020)</td>
<td>-48.7 $B</td>
<td>-111.8 $B</td>
</tr>
<tr>
<td>Cities (Chernick, Copeland, and Reschovsky, 2020)</td>
<td>-9%</td>
<td>-15%</td>
</tr>
</tbody>
</table>

### Our Questions:

1. For which public good & service expenditures are revenue shortfalls felt most?
2. How does that vary by geography and level of government?
EMPIRICAL APPROACH

Our Approach:

- Apply Deaton demand system to estimate budget share changes in face of declining income
- Use the Great Recession as an estimating sample and then project to pandemic, taking revenue shocks under several scenarios from emerging literature

Under $H_0$: Budget shares remain constant after income shock

- Non-trivial choice: much practitioner focus on optimal public budgeting frameworks
- Empirical literature tends not to support constant budget shares (Reid 1988, Hoene and Pagano 2009, Desai, 2018)
Near-universe of public entities: **86,608 governments**, including

- 50 states
- 3,021 counties
- 35,241 cities and towns
- 13,430 independent school districts
- 34,866 special government districts

All governments surveyed every five years (...2002, 2007, 2012...)
Major governments surveyed every year (representing >90% of total dollars)
GREAT RECESSION:

- Large negative shock to public revenues

- We estimate response from changes in expenditure between 2007 and 2012

- Note: Public budgets tend to increase in real terms; even flat revenue is experienced as significant fiscal stress
Allocate expenditures to:
- Civil Administration
- Education – Elementary
- Education – Higher
- Public Safety
- Health
- Transport
- Parks Recreation
- Utilities
- Welfare
- Debt (current only)
- Retirement (current only)
- Unemployment (current only)

- Split all expenditures into current operations and capital outlays
- Intergovernmental transfers, where targeted, are allocated to funding entity
  - E.g.: State transfer to local governments for safety programs count as State current operations on safety
## STATS: SUMMATION OF EXPENDITURES ACROSS GOVERNMENTS

<table>
<thead>
<tr>
<th>Sums (combined cap &amp; current)</th>
<th>2007 - $B</th>
<th>2012 - $B</th>
<th>2007 - %</th>
<th>2012 - %</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Civil Administration</td>
<td>$347</td>
<td>$352</td>
<td>11.0%</td>
<td>10.0%</td>
</tr>
<tr>
<td>• Education – Elementary</td>
<td>$899</td>
<td>$931</td>
<td>28.5%</td>
<td>26.4%</td>
</tr>
<tr>
<td>• Education – Higher</td>
<td>$280</td>
<td>$352</td>
<td>8.9%</td>
<td>10.0%</td>
</tr>
<tr>
<td>• Public Safety</td>
<td>$245</td>
<td>$273</td>
<td>7.8%</td>
<td>7.8%</td>
</tr>
<tr>
<td>• Health</td>
<td>$225</td>
<td>$274</td>
<td>7.1%</td>
<td>7.8%</td>
</tr>
<tr>
<td>• Transport</td>
<td>$288</td>
<td>$333</td>
<td>9.1%</td>
<td>9.5%</td>
</tr>
<tr>
<td>• Parks Recreation</td>
<td>$99</td>
<td>$98</td>
<td>3.1%</td>
<td>2.8%</td>
</tr>
<tr>
<td>• Utilities</td>
<td>$247</td>
<td>$269</td>
<td>7.8%</td>
<td>7.6%</td>
</tr>
<tr>
<td>• Welfare</td>
<td>$222</td>
<td>$228</td>
<td>7.0%</td>
<td>6.5%</td>
</tr>
<tr>
<td>• Debt (current only)</td>
<td>$105</td>
<td>$123</td>
<td>3.3%</td>
<td>3.5%</td>
</tr>
<tr>
<td>• Retirement (current only)</td>
<td>$167</td>
<td>$193</td>
<td>5.3%</td>
<td>5.5%</td>
</tr>
<tr>
<td>• Unemployment (current only)</td>
<td>$29</td>
<td>$96</td>
<td>0.9%</td>
<td>2.7%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$3,153</strong></td>
<td><strong>$3,521</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Almost Ideal Demand System, Deaton and Muellbauer (1980) in 1\textsuperscript{st} differences:

\[ \Delta w_{ig} = \beta_i \Delta \log \left( \frac{X_g}{P} \right) + \sum_j \gamma_{ij} \Delta \log(p_{jg}) \]

\textbf{Variables}

- \( \Delta w_{ig} \): government g’s budget share for good i
- \( X_g/P \): g’s real expenditure on good i
- \( p_{jg} \): prices of the J goods available to g.

(Each good i’s demand is a function of all prices.)
EMPIRICAL METHODOLOGY (2)

Almost Ideal Demand System, Deaton and Muellbauer (1980) in 1st differences:

\[ \Delta w_{ig} = \beta_i \Delta \log \left( \frac{X_g}{P} \right) + \sum_j \gamma_{ij} \Delta \log (p_{jg}) \]

**Features**

1. \( \beta_i \) is the sensitivity of budget share to a changes in real expenditures
2. Sum of all goods elasticities, \( \beta_i \), equals zero in first differences.
3. The null, \( \beta_i = 0 \), is proportional changes in expenditures with changes in budget
4. \( \beta_i < 0 \) means that an income reduction leads to an **increase** in relative budget share for good \( i \) (less than one-for-one cuts).... a “necessity” good.
5. \( \beta_i > 0 \) means that an income reduction leads to a **decrease** in relative budget share for good \( I \) (more than one-for-one cuts) .... a “luxury” good.
RESULTS – PART 1

ESTIMATING THE $\beta_i$ FROM $\Delta w_{ig} = \sum_j \gamma_{ij} \Delta \log(p_{jg}) + \beta_i \Delta \log \left(\frac{X_g}{\bar{p}}\right)$

- By expenditure category (education, health, etc.) and by jurisdiction type (state, county, etc.)
- Our best specification: Estimate the $\beta_i$ for sub-state entities within each state to pick up elasticity heterogeneity
RESULTS FROM $\beta_i$ ESTIMATIONS:
Summarizing which categories have statistically significant changes in budget shares

<table>
<thead>
<tr>
<th>Elasticity</th>
<th>Necessities</th>
<th>Luxuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>Higher Education, Retirement</td>
<td>Transport, Civil Admin</td>
</tr>
<tr>
<td>County</td>
<td>Public Safety, Civil Admin; Transport</td>
<td>Public Health, Capital Investments</td>
</tr>
<tr>
<td>Cities</td>
<td>Public Safety; Civil Admin, Debt</td>
<td>Utilities; Capital Investments</td>
</tr>
</tbody>
</table>
- Requires an assumption about the intensity of the COVID-19 economic shock on government budgets
- In the paper, we use 3 simulations:
  - A 9% government revenue shock (akin to “slow recovery” in literature)
  - A 15% government revenue shock (akin to “second wave” in literature)
  - Heterogeneous shocks by State (a la Whitaker (2020)):
    - “Second wave” with muted economic effects (e.g., partial shutdowns)
These are the rebalancing effects.
These are the rebalancing effects

Necessities:
- K-12 Educ.
- Higher Ed
- Retirement
- Safety
- Debt Pymt
These are the rebalancing effects

Necessities:
- K-12 Educ.
- Higher Ed
- Retirement
- Safety
- Debt Pymt

Luxuries:
- Welfare
- Civil Admin
- Transport
  - Current
  - Capital
- K-12 Ed Capital
RESULTS – PART 2: HETEROGENEITIES BY STATE

MAP WHAT MATTERS MORE / LESS ACROSS STATES
Reduction due to Rebalancing, 2nd Wave Scenario: Transport (CUR)
Reduction due to Rebalancing, 2nd Wave Scenario: Parks/Rec (CUR)
TAKEAWAYS

1. Crisis response of shifting capital allocations to current spending

2. Classification of public goods and services into "necessities" and "luxuries":
   a) Necessities: education (K12 and Higher), retirement, public safety
   b) Luxuries: capital spending, transportation, welfare
   c) Priorities vary by level of government

3. Wide regional heterogeneities in budgetary priorities
   a) Exogenous factors (weather; geography) shape fiscal response
   b) Demographic factors also appear important (e.g., unemployment allocations)