Fiscal Incidence Analysis in Theory and Practice

× part the second,

× in which Steve risks the opprobrium
× of all present at the workshop on

× The Distributional Impact of Fiscal Policy

× and excommunication from the
× American Economics Association

× Washington, DC – June 10-11, 2013
Incidence Analysis and (Some of) Its Critics

- Standard incidence analysis is *descriptive* of the average state of affairs; the status quo
- Real economists do more sophisticated analyses; all the things in Nora’s fourth slide
  - Behavioral responses to policies
  - General equilibrium consequences of policies
  - Marginal, not average, incidence for policy analysis
- My assignment today is to discuss these
- My starting point is: sophistication is not worth it
Ignoring Behavioral Responses

• Consider an indirect tax or subsidy
• What is the value of that tax or subsidy to an individual?
• The compensating variation

\[
CV = e(p^1, u^0) - e(p^0, u^0) = \int_{p_0}^{p_1} x_i^c(p, u^0) dp
\]

\[
CV \approx x_i^c(p^0, u^0) \Delta p_i + \frac{1}{2} \frac{\partial x_i^c(p^0, u^0)}{\partial p_i} \Delta p^2 + \ldots
\]
Ignoring Behavioral Responses

• A picture may help:
How Bad is a First Order Approximation?

• Depends on the size of the price change
  • almost perfect for small (marginal) changes
• For larger changes, it depends on the elasticity
• most of the elasticities that concern us will be small-ish
  • labor supply (for income taxes)
  • demand for food vs. non-food for a typical VAT
  • demand for education or health care
• even most excises get levied on single goods with inelastic demand – alcohol, tobacco, petroleum products
## Quintile Shares of Marginal Benefits to Secondary Schooling in Rural Peru

<table>
<thead>
<tr>
<th>Quintile</th>
<th>CV, price change</th>
<th>( \partial \text{Prob}/\partial P )</th>
<th>Std BI, 0/1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.13</td>
<td>0.15</td>
<td>0.10</td>
</tr>
<tr>
<td></td>
<td>(0.010)</td>
<td>(0.010)</td>
<td>(0.014)</td>
</tr>
<tr>
<td>2</td>
<td>0.18</td>
<td>0.20</td>
<td>0.17</td>
</tr>
<tr>
<td></td>
<td>(0.011)</td>
<td>(0.011)</td>
<td>(0.016)</td>
</tr>
<tr>
<td>3</td>
<td>0.21</td>
<td>0.22</td>
<td>0.23</td>
</tr>
<tr>
<td></td>
<td>(0.012)</td>
<td>(0.012)</td>
<td>(0.019)</td>
</tr>
<tr>
<td>4</td>
<td>0.24</td>
<td>0.24</td>
<td>0.24</td>
</tr>
<tr>
<td></td>
<td>(0.013)</td>
<td>(0.012)</td>
<td>(0.020)</td>
</tr>
<tr>
<td>5</td>
<td>0.24</td>
<td>0.20</td>
<td>0.26</td>
</tr>
<tr>
<td></td>
<td>(0.015)</td>
<td>(0.012)</td>
<td>(0.022)</td>
</tr>
</tbody>
</table>
How Bad is a First Order Approximation- Take Two

- Most inequality measures use shares of income
- That means that any proportional error we make cancels out
- Look at the figure again: the second-order approximation is proportional to the first-order one
- caveats
  - This would not be true for *poverty* measures
  - Nor does it help for aggregations of several taxes or benefits
  - Heterogeneous demand elasticities
Summary on Behavioral Responses

- Taking them into account when valuing taxes/subsidies is difficult – requires demand estimation, at least
- For our project, the estimation approach and data would need to be similar
- The first-order approximation of a standard incidence analysis is much easier in general, and easier to make comparable across countries
- In most cases, it will be good enough
Ignoring General Equilibrium Effects

- Here, the idea is that a tax or subsidy on one good spills over to other markets, changing those prices, too
- So we need to calculate a set of compensating variations, one for each changing price, and add them up
- Here, I have to hang my hat on small elasticities
- That implies small spillovers
Well, OK, Here’s an Example

- Taxes that fall on intermediate goods
- e.g. petroleum excises and, in some countries, import duties
- In such cases, looking at final consumption only could be misleading. Need to trace the effects through the input-output structure of the economy
- We tried this in Madagascar
  - Using only IO table, not behavioral responses (as in a CGE)
  - made a large difference in incidence estimates for petroleum excises but no other taxes
- Was not easy, and is still much simpler than a CGE
Concentration Curves for Petroleum Excises, Madagascar, 1993-1995
Concentration Curves for Import Duties, Madagascar, 1993-1995

Cumulative share of population, poorest to richest

- Household expenditures, 1993
- Import duties, simulated
- Import duties, IO
- Import duties, effective
Concentration Curves for VAT, Madagascar, 1993-1995

The diagram shows concentration curves for VAT in Madagascar from 1993 to 1995. The x-axis represents the cumulative share of the population, from the poorest to the richest, while the y-axis represents the proportion of total VAT or household expenditures. The curves indicate the distribution of VAT burden across different income groups.
Summary on General Equilibrium Effects

• Trying to account for these in a comprehensive way requires a CGE. That’s hard.
• I remain to be convinced that it is worth the effort …
• … except that I do believe that these can change our valuation of the benefits/costs of taxes on intermediate goods
• Could/should our project account for that?
  • Import duties are certainly important in some poorer economies
  • Would need to have an IO table, and probably need to modify it with respect to the petroleum sector, tobacco, and alcohol
Average vs. Marginal Incidence

- Incidence analysis describes the status quo
  - We assign the benefits of schooling to those we see in school
  - We assign the costs of VAT to those we see consuming goods
- That is perfectly appropriate if the goal is to assess the distributional impact of the fisc, as CEQ does
- But most policy analysis makes more sense in terms of marginal changes:
  - increase VAT rate from 15% to 16%
  - increase vaccination rates from 90% to 95%
Average vs. Marginal Incidence

• Critics argue that this marginal incidence may be quite different from the observed average incidence.

• This is most obvious in the case of public services that are only consumed once:
  - Vaccinations
  - School attendance
  - Connections to the water or sewer mains

• Here, the existing beneficiaries that we observe in a survey are a poor guide to the marginal beneficiaries from a change in service provision.

• So the simple descriptive methods won’t do.

• We seem to need demand analysis …
Average vs. Marginal Incidence

• … or maybe not
• the “average” incidence is actually the intensive margin
• For example:
  • who benefits from a program to build new latrines in all the primary schools?
  • who benefits from adding a lab to all health clinics?
  • who loses from marginal increase in the VAT rate?
• Even for some extensive margins, we may be able to get away with simple descriptive methods
  • a program to build secondary schools in all towns that do not currently have one
Summary

• Traditional incidence methods are economically unsophisticated
• But moving beyond them requires considerably effort
  • Estimating demand systems
  • Building general equilibrium models
• There is a real opportunity cost to those efforts
• For the most part, I am not convinced that it’s worth it
• A challenge to the real economists: give us examples where I’m wrong