International Corporate Tax Avoidance: A Review of the Channels, Effect Sizes, and Blind Spots

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Motivation 1

International tax avoidance by multinational companies (MNCs) continues to be on top of the international tax policy agenda:

• Implementation of G20-OECD Base Erosion and Profit Shifting (BEPS) outcomes
• Re-launch of CCCTB proposal by European Commission
• Taxation of digital economy
• Wider debate on future of international tax regime
• Many unilateral reforms including the U.S. tax reform
Motivation 2

Meta-Analysis as a useful tool in evaluating tax reform:

- For the same research question, i.e. how responsive is own-country’s tax rate to changes in others’ rates, different studies tend to get different answers (point of estimate + standard error)
- Variation due to inclusion of different controls, estimation methods, type of data, geographic coverage, time period, and etc…
- Useful information though not analyzed in the primary studies
- This is when meta-analysis comes handy! 😊, by
  - Providing a more systematic comparison of different studies
  - Assessing the relative importance of particular empirical choices
  - Predicting the average estimate of the structural parameter researchers would find with the best available dataset and credible estimation strategy
Overview

Stock Taking
- What the ‘international tax architecture’ really is
- Main channels of international corporate tax avoidance
- Empirical evidence on the importance of a few channels, and on specific anti-avoidance regulations

New Meta-Analysis
- Estimating the overall magnitude of tax-motivated profit shifting
- A new consensus estimate on the semi-elasticity of reported profitability w.r.t. international tax differentials
- New insights into different drivers of the tax sensitivity and their relative importance
Main Channels of International Tax Avoidance

- Abusive Transfer Pricing
- International Debt shifting
- Treaty Shopping
- Strategic location of IPs
- Tax Deferral
- Corporate inversions and HQ location

Systematic empirical evidence on
How big is the (observable) problem and why should we bother?

• Abundance of papers estimated tax sensitivity of reported profit, using variants of
  \[ \log(\pi) = \varepsilon \tau + \gamma' x + u_{is} \]

• Estimates of semi-elasticity $\varepsilon$ differ widely. No surprise, given differences in
  • Datasets (more profit shifting among US firms?)
  • Depended variables (EBIT does not capture debt shifting)
  • Tax rates (backward looking effective tax rates are endogenous)
  • Time span (maybe profit shifting decreased over time?)
  • ...

• Semi-elasticity is central parameter, both for theory (revenue maximizing tax rates) and applied policy simulations (impact of US tax reform)

• Thus critical to understand what factors drive estimates and to distill the “true” semi-elasticity
Semi-elasticities in economics literature
Empirical strategy: meta-analysis

• Basic idea: explain variation in primary study estimates with study-specific characteristics, $x$, using simple regression framework

$$\varepsilon_{is} = \beta' x_{is} + u_{is}$$

• Allows computing conditional mean elasticity $E[\varepsilon_{is}|x]$ for any $x$

We can thus predict mean sensitivity researchers would find with the best available dataset and credible estimation strategy
(Some of) our contributions

1. **Use comprehensive and up-to-date pool of primary estimates**
   - Based on broad literature review, our dataset covers 318 semi-elasticity estimates from 27 studies (only economics literature)
   - Expands sample against Heckemeyer and Overesch (2017) by more than 50%, by using conditional elasticities, recent estimates, and industry-specific results

2. **Improve estimation approach by controlling for intra-study correlation**
   - Prior studies use WLS, where more weight is given to observations with small standard errors
   - Neglects the fact that semi-elasticity estimates are clustered at study level.
   - We incorporate between-study variation by estimating GLS
Intuition for effect of incorporating between-group variation in univariate setting
Main results

Average semi-elasticity is 1.2
• Implying that revenue implications are much more severe than previous consensus estimate suggests

Reported estimates deviate from this mean prediction
1. due to estimation choices and sample properties, including

<table>
<thead>
<tr>
<th>Use of</th>
<th>Instead of</th>
<th>Effect on estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIT</td>
<td>Profit</td>
<td>-0.09*</td>
</tr>
<tr>
<td>Profitability ratio</td>
<td>Log</td>
<td>0.34***</td>
</tr>
<tr>
<td>Domestic tax rate</td>
<td>Tax differential</td>
<td>-0.86***</td>
</tr>
<tr>
<td>Aggregate data</td>
<td>Micro data</td>
<td>0.81*</td>
</tr>
</tbody>
</table>

2. and partly due to more structural issues:
• Sensitivity of reported profit has increased since 1980s
• US firms are more responsive to tax differentials
Conclusion

There exists granular evidence for many areas of tax avoidance, but:

1. Data limitations and complexity of the issue have impeded examination of some important tax avoidance responses:
   - Creation of permanent establishments?
   - Offshore indirect sales?
   - Risk transfer?

2. Most tax avoidance estimates are derived on aggregated level. Country/Industry-specific estimates important to inform policy discussion

3. Interaction between tax avoidance responses, and between real and avoidance response is understudied