Income Shifting and Real Investment

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Motivation

- Tax policy is seen as a useful tool to stimulate economic growth
  - US: “Our findings indicate that the business side of the Unified Framework [the corporate tax reform] would increase GDP by between 3 and 5 percent over the baseline long-run projection” [The Council of Economic Advisers 2017]
  - UK: “To support businesses to invest and grow, we’ve cut the main rate of corporation tax from 28% in 2010 to 23%. In March 2013 we announced that the rate will fall further to 20% in April 2015.” [2010 to 2015 government policy: UK economic growth]
- However, multinational firms (MNE) pay substantially less taxes than domestic firms and make up a large share of the economy.
- Further, production of MNE affiliates in different countries is likely to be connected.
Research Questions

- How tax sensitive is MNE investment?
- How much of the difference is due to profit shifting?
Structure of the Paper

- Theoretical Framework
  - Understand the link between extent of profit shifting and tax sensitivity of investment

- Empirical Quantification
  - Extent of profit shifting activities of MNEs
  - Difference in the tax sensitivity of MNE and domestic firm investment

- Discussion of the Results
Theoretical Framework

Set Up:

- “Independent” profit maximizing multinational affiliate
- which faces tax system that distorts investment decision
- and can shift a share $\alpha$ of its’ profits to tax haven at costs $w(\alpha)$
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Solution:
- Optimal $\alpha$ depends on tax savings and costs of shifting
- Optimal capital stock depends on “profit shifting adjusted” tax costs of capital:

$$UCC = \frac{1 - \tau^*(1 - c)}{1 - \tau^*}$$  \hspace{1cm} (1)

with $\tau^* = (1 - \alpha)\tau + \alpha\tau_I$
Illustration Impact of Profit Shifting on Cost of Capital

**Figure:** Cost of Capital for Different Tax Rates

**Assumption:** Tax rate on shifted profits = 0%
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Illustration Impact of Profit Shifting on Cost of Capital

Figure: Relative Change Cost of Capital for MNEs compared to Domestic Firms

Assumption: Tax rate on shifted profits = 0%
Extent of Profit Shifting

**Method:**
- Cross-section identification
- Comparing profits over total assets for MNEs and domestic firms
  - within the same country, same 4 digit industry and same size class
Extent of Profit Shifting

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Data
- Unconsolidated financial statements for firms in Europe, without PIIGS countries
- Around 1 million firm-year observations
- 18% MNEs, average total assets: 8 million euro, average sales: 9.5 million euro
Extent of Profit Shifting: Results

**Figure: 2006**

**Figure: 2012**

Source: Author's calculations based on Amadeus, 2012.
Tax Sensitivity of Investment

Method

- Dependent variable: Net investment rate
- Main explanatory variable: current and past tax rate changes, interacted with MNE indicator
- Controls for time-invariant component of firms’ investment rates and industry-year, size-year and EU15/EU13 year fixed effects and differences in tax sensitivity of firms with respect to size and industry
- Sensitivity analysis controls for country-industry-year differences
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Data

- Same as before, includes all years from 2005 to 2013 but requires at least 5 observations per firm
- Around 3.3 million firm-year-observations
- Average net investment rate: 5%, average sales growth 3%, MNE share 22%
Figure: Impact of Tax Rate Decrease on MNE and Domestic Firm Investment

Source: Author’s calculations based on Amadeus, 2006 to 2012.
### Table: Estimated Tax Sensitivity of MNE and Domestic Firm Investment

<table>
<thead>
<tr>
<th></th>
<th>Domestic Firms</th>
<th>MNE</th>
<th>Difference Absolute</th>
<th>Difference Relative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All Countries: Prediction: 30% lower tax sensitivity</strong></td>
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<td></td>
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</tr>
<tr>
<td>Baseline</td>
<td>-0.494***</td>
<td>-0.096</td>
<td>0.398**</td>
<td>-80%</td>
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<tr>
<td></td>
<td>(0.131)</td>
<td>(0.120)</td>
<td>(0.173)</td>
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<tr>
<td>With C-I-Y FE</td>
<td>0.431***</td>
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<td></td>
<td>(0.081)</td>
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<tr>
<td><strong>High Tax Countries: Prediction: 40% lower tax sensitivity</strong></td>
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<tr>
<td>Baseline</td>
<td>-0.522***</td>
<td>0.005</td>
<td>0.528***</td>
<td>-99%</td>
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<tr>
<td></td>
<td>(0.140)</td>
<td>(0.116)</td>
<td>(0.176)</td>
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<tr>
<td>With C-I-Y FE</td>
<td>0.505***</td>
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<tr>
<td></td>
<td>(0.082)</td>
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<tr>
<td><strong>Low Tax Countries: Prediction: 0% lower tax sensitivity</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>-0.486***</td>
<td>-0.260***</td>
<td>0.226***</td>
<td>-46%</td>
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<tr>
<td></td>
<td>(0.068)</td>
<td>(0.082)</td>
<td>(0.078)</td>
<td></td>
</tr>
<tr>
<td>With C-I-Y FE</td>
<td>0.246***</td>
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<td></td>
<td>(0.075)</td>
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</tbody>
</table>

*Source: Author’s calculations based on financial statements database Amadeus, 2006-2012.*
Discussion

- Estimated tax rate sensitivity substantially lower than predicted
- In high tax countries, MNE investment is insensitive to tax incentives.
- In low tax countries, tax sensitivity is about half of the one for domestic firms

Potential Explanation

1. We underestimated the extent of profit shifting. True share of shifted profits: 70% (100% in high tax and 35% in low tax countries)
2. Production of multinational affiliates is connected.
   - Tax rate in one particular country has smaller impact on MNEs’ relevant cost of capital, independent of profit shifting
We find that MNE investment is substantially less sensitive to tax incentives due to interconnectedness of production of multinational affiliates and profit shifting.

Thus, effectiveness of tax incentives to stimulate economic growth of existing firms depends on share of MNEs in an economy, likely to decrease in the future.

However, tax policy is still important as it affects MNEs’ location decision.