Foreign (In)Direct Investment and Corporate Taxation

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(Ifo Institute)
**Direct vs Indirect Structure**

- **Multinational Firm 1**
  - Direct Investment
    - **Foreign Affiliate in Country F**

- **Multinational Firm 2**
  - Indirect
    - **Conduit Entity in Country F or C**
      - Investment
        - **Foreign Affiliate in Country F**
This study...
– investigates the investment decision of affiliates of German multinationals
– analyzes whether direct and indirect investments differ structurally, and, in particular, differ with respect to corporate tax effects (theoretically as well as empirically)
– considers in the empirical analysis that the structural choice (direct vs indirect) is potentially endogenous

Results:
1. Theoretical analysis suggests different tax effects
2. Empirical analysis confirms theoretical predictions
3. Regime choice (direct or indirect) is endogenous
Number of Investments (1996 - 2005)

Number of Foreign Affiliates

Direct Investments

Indirect Investments

Wamser: Foreign (In)Direct Investment and Corporate Taxation
Direct vs Indirect Structure

- Multinational Firm 1
  - Direct Investment
  - Foreign Affiliate in Country F

- Multinational Firm 2
  - Indirect
  - Conduit Entity in Country F or C
  - Investment
  - Foreign Affiliate in Country F
Conduit Entities

• Existing literature
  – Mintz, ITAX, 2004

• Why establishing a conduit entity?
  – bundle services (financial services; legal or other efficiency reasons)
  – tax reasons:
    * treaty-shopping: preferential treatment with respect to withholding taxes (double taxation treaties)
    * conduit entity can defer payments to the parent and use funds for own investments (conduit firm is possibly a productive entity)
    * provide other affiliates with internal loans: tax-efficient financing structure, “double dip” structure
Theoretical Analysis follows the study of Mintz (2004) and applies the model to the German case.

The idea of the paper relies on the facts that...

1. The parent country (Germany) is a high-tax and tax exemption country
2. Countries differ in terms of taxation and corporate tax systems
3. Interest expenses associated with debt financing are tax deductible, while equity payments are fully taxed

⇒ this enables multinational enterprises to realize tax-arbitrage opportunities across countries

But: tax-arbitrage opportunities differ, depending on whether the investment structure is direct or indirect
1. Direct Investment:

– Parent firm is financing the foreign affiliate with equity capital

– Parent issues bonds (or borrows at banks) in the high-tax parent country to finance the foreign affiliate

→ if Tax (parent) > Tax (foreign affiliate) ⇒ interest deduction associated with debt in high-tax parent country is more valuable

→ dividend payments to parent firm are not taxed (exemption country)

→ multinational firm can exploit the difference in corporate tax rates and issue relatively more debt in high-tax parent country
Interest Deduction!

Tax (parent) > Tax (country F)

Multinational Firm 1
Issues Debt

Equity Finance

Multinational Firm 2
Issues Debt

Equity

Conduit Entity in Country F or C

Internal Debt

Foreign Affiliate in Country F

Interest Deduction!

Interest Deduction!
Distribution of Average Corporate Tax Rates (1996-2005)
2. Indirect Investment:

- This structure involves a third corporate entity

- Parent issues bonds (interest deduction!) and provides equity capital to the intermediate (conduit) entity

- Conduit entity is lending to the foreign affiliate in the host country (interest deduction!)

→ so-called “double dip” structure – two interest deductions for one investment
Interest Deduction!

Tax (parent) > Tax (country F)

Equity Finance

Firm 1
Issues Debt

Multinational Firm 2
Issues Debt

Conduit Entity in Country F or C

Internal Debt

Foreign Affiliate in Country F

Interest Deduction!

Interest Deduction!
1) Direct Investment: \[ T_1 = \frac{(1 - \tau_G)}{(1 - \tau_F)} \cdot i \]

2) Indirect Investment I: \[ T_2 = \frac{(1 - \tau_G - \tau_F)}{(1 - \tau_F)} \cdot i \]

3) Indirect Investment II: \[ T_2^* = \frac{(1 - \tau_G - \tau_F + \tau_C)}{(1 - \tau_F)} \cdot i \]
The analysis predicts a negative effect of the cost of capital terms in case of both structures (higher capital cost ⇒ less investment)

In case of direct investments, the effect of the statutory tax rate is negative (standard result)

Note the comparative static result for the local statutory tax rate in case of an indirect investment:

\[
\frac{dK_F}{d\tau_F} = \frac{-i\tau_G}{(1 - \tau_F)^2 f''(K_F)} > 0
\]
Empirical Considerations

Theoretical analysis suggests 2 regimes (direct and indirect):

Regime 1: \[ Y_{1,ijkt} = \alpha_1 + \alpha_2 T_{1,kt} + \alpha_3 X_{ijkt} + \psi_t + \varphi_i + \epsilon_{1,ijkt} \]

if \( I_{ijkt} = 1 \) (direct investment)

Regime 2: \[ Y_{2,ijkt} = \beta_1 + \beta_2 T_{2,kt} + \beta_3 X_{ijkt} + \psi_t + \varphi_i + \epsilon_{2,ijkt} \]

if \( I_{ijkt} = 0 \) (indirect investment)
... split sample and estimate 2 separate regimes ... but endogeneity?

- multinational can choose the regime → regime choice is endogenous
- self selection, selection into regime
- shocks have different effects, depending on regime
- investment level and regime are chosen simultaneously
- switching firms (empirically: 50 affiliates are switching at least once)

⇒ empirical approach should test for endogeneity!
## Descriptive Statistics: Direct Indirect

<table>
<thead>
<tr>
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<th>Direct</th>
<th>Indirect</th>
</tr>
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<tbody>
<tr>
<td><strong>Statutory Tax Rate</strong></td>
<td>.308</td>
<td>.327</td>
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<td></td>
<td>(.073)</td>
<td>(.072)</td>
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<td><strong>Tax Wedge ($T_1 &amp; T_2$)</strong></td>
<td>.839</td>
<td>.345</td>
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<td></td>
<td>(.095)</td>
<td>(.171)</td>
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<tr>
<td><strong>Country GDP (in US$ bill.)</strong></td>
<td>951</td>
<td>1,790</td>
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<td></td>
<td>(1,993)</td>
<td>(2,839)</td>
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<td><strong>Labor Cost (in US$)</strong></td>
<td>13.79</td>
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<td>(8.78)</td>
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<td><strong>Lending Rate</strong></td>
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<td><strong>Present Value of Depreciation</strong></td>
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<td><strong>Fixed Assets (in € mill.)</strong></td>
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<td>(86.93)</td>
<td>(133.26)</td>
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<tr>
<td><strong>Sales (in € mill.)</strong></td>
<td>55.50</td>
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<td><strong>Loss carry-forward (binary)</strong></td>
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<td>(.460)</td>
<td>(.469)</td>
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</table>
... since we observe the regime ⇒ estimate a switching regression model (with observed switching)

- Lee (1978), Maddala (1983) suggest a two-step estimation approach:
  - first step: estimate probability model of being in either regime 1 or 2
  - find variables to identify the respective regime
  - obtain selection terms as control variables
  - include estimated selection variables as additional regressors in second-step regressions

- Additional aspects:
  - panel data
  - unobserved firm-specific effects ⇒ fixed effects technique
  - fixed effects in probit model (first stage)
– standard within transformation in second stage not valid (strict exogeneity)
– standard errors are not valid

⇒ follow Chamberlain (1980), Mundlak (1978): linearize fixed effect by including company-specific means of explanatory variables

⇒ estimate asymptotic variance according to Wooldridge (1995) (flexible and robust approach)
Second-stage Estimation

Regime 1: \[ Y_{1,ijkl} = \alpha_1 + \alpha_2 T_{1,kt} + \alpha_3 X_{ijkl} + \lambda_{1,ijkl} + \psi_t + \varphi_i + \epsilon_{1,ijkl} \]
if \( I_{ijkl} = 1 \) (direct investment)

Regime 2: \[ Y_{2,ijkl} = \beta_1 + \beta_2 T_{2,kt} + \beta_3 X_{ijkl} + \lambda_{2,ijkl} + \psi_t + \varphi_i + \epsilon_{2,ijkl} \]
if \( I_{ijkl} = 0 \) (indirect investment)
Data

Dataset for German multinationals (MiDi) provided by Deutsche Bundesbank

• Comprehensive annual database of German FDI
• Mandatory reporting for multinational firms (Foreign Trade Act; Außenwirtschaftsgesetz)
• Micro panel data (1996 to 2005)
• Information about balance sheets of foreign affiliates and further information about affiliates (e.g., whether the investment is direct or indirect)

• Sample restrictions:
  – Germany is high-tax country (exclude all observations where $\tau_G < \tau_F$)
  – focus on industry observations; producing firms
### Results (Switching Regression)

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<td><strong>Statutory Tax Rate</strong></td>
<td>-.450**</td>
<td>.900*</td>
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<td><strong>Tax Wedge ( (T_1) )</strong></td>
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<td>-.248*</td>
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<td><strong>log(Labor Cost)</strong></td>
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<td>.050</td>
<td>-.233</td>
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<td>(.136)</td>
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<td>.112***</td>
<td>.080</td>
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<td>(.030)</td>
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<td>Selection 2005</td>
<td>.098 (.065)</td>
<td>.239 ** (.117)</td>
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Wald-test ($\chi^2_9$)  
23.80  
15.72  
p-value  
.005  
.073  
Observations  
14,487  
5,949
### Robustness

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<th>(EU 15)</th>
<th>(Manufact.)</th>
<th>(EU 27)</th>
<th>(EU 15)</th>
<th>(Manufact.)</th>
<th>(τ_C = 10%)</th>
<th>(τ_C = 20%)</th>
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<td>(0.210)</td>
<td>(0.316)</td>
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<td>-1.08**</td>
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<td>0.081**</td>
<td>-0.001</td>
<td>0.050*</td>
<td>0.051</td>
<td>0.033</td>
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<td>(0.021)</td>
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<td>(0.062)</td>
<td>(0.078)</td>
<td>(0.067)</td>
<td>(0.055)</td>
<td>(0.061)</td>
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<td><strong>Loss carry-forward</strong></td>
<td>-0.034**</td>
<td>-0.029</td>
<td>-0.040**</td>
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<td>(0.025)</td>
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<td><strong>log(GDP)</strong></td>
<td>-0.096</td>
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<td>-0.172</td>
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<td>(0.126)</td>
<td>(0.144)</td>
<td>(0.152)</td>
<td>(0.118)</td>
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<td><strong>log(Labor Cost)</strong></td>
<td>-0.076</td>
<td>-0.932***</td>
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<td>-0.225</td>
<td>-0.365</td>
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<td>(0.174)</td>
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<td><strong>log(Lending Rate)</strong></td>
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<td>0.100**</td>
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<td>0.087</td>
<td>0.081</td>
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<td>(0.079)</td>
<td>(0.116)</td>
<td>(0.088)</td>
<td>(0.085)</td>
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<td>(0.727)</td>
<td>(0.901)</td>
<td>(0.948)</td>
<td>(1.02)</td>
<td>(0.859)</td>
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Conclusions

- Structurally different tax effects, depending on investment regime (direct or indirect)
- Investigation confirms endogeneity of regime choice
- Empirical results suggest that German multinationals can profit from “double-dip” structure
- Results imply that the existence of conduit structures (and low-tax conduit locations) may reduce tax competition
- But: Countries may compete for conduit entities
- Future research: should (i) consider complexity of conduit chains (ii) take a closer look at cross-country financial flows (iii) further consider non-tax reasons for different strategies
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First-step Estimation

- Estimate a Probit model in a first step
  - binary variable 0/1
  - 1 if we observe a direct structure
  - 0 if we observe an indirect structure

- control for firm-specific heterogeneity

- include all variables from second stage

- include identifying variables

\[
I_{ijkt} = \begin{cases} 
1 & \text{if } IND_{ijkt}^* > 0 \\
0 & \text{otherwise}
\end{cases}
\]

\[
IND_{ijkt}^* = f[c_{ijkt}(X_{ijkt}, \gamma_i)].
\]
Exclusion Restrictions

How can we identify the regime?

Additional conduit entity implies additional costs and control problems

⇒ bigger and more productive multinational groups possibly have a higher propensity to invest in an indirect structure

Identifying Variables (company-group specific):
– log(balance-sheet total)
– profitability

obtain \( \hat{\lambda}_1 = \frac{\phi(X\hat{a})}{\Phi(X\hat{a})} \), \( \hat{\lambda}_2 = \frac{\phi(X\hat{a})}{1-\Phi(X\hat{a})} \) from Probit → and include in second stage
### First-stage Regression

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<tr>
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<th>(2)</th>
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<td>log(Balance-Sheet Total)</td>
<td>-0.111*** (.019)</td>
<td>-0.113*** (.019)</td>
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<tr>
<td>Profitability</td>
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<tr>
<td>Statutory Tax Rate</td>
<td>-0.007 (.363)</td>
<td>-0.009 (.363)</td>
</tr>
<tr>
<td>log(Sales)</td>
<td>0.000 (.011)</td>
<td>0.000 (.011)</td>
</tr>
<tr>
<td>Loss carry-forward</td>
<td>0.008 (.017)</td>
<td>0.008 (.017)</td>
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<tr>
<td>log(GDP)</td>
<td>-0.075 (.113)</td>
<td>-0.072 (.113)</td>
</tr>
<tr>
<td>log(Labor Cost)</td>
<td>-0.030 (.134)</td>
<td>-0.032 (.134)</td>
</tr>
<tr>
<td>log(Lending Rate)</td>
<td>0.002 (.034)</td>
<td>0.002 (.034)</td>
</tr>
<tr>
<td>Present Value of Depr.</td>
<td>0.065 (.296)</td>
<td>0.062 (.296)</td>
</tr>
<tr>
<td>LogL.</td>
<td>-9,179</td>
<td>-9,179</td>
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<tr>
<td>Observations</td>
<td>20,436</td>
<td>20,436</td>
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