Growth through tax-incentivized FDI

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November 11, 2021
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Motivation

- Foreign direct investment (FDI) is allegedly good for growth
- Governments try to attract FDI through low corporate income tax rates and/or tax exemptions
- However, these tax incentives may not only affect the *level* of FDI, but also its *effects*
How can tax incentives affect the growth effects of FDI?

- Possible channels:
  - revenues foregone can hinder public investments (compared to FDI under higher taxation)
  - tax incentives can attract different types of FDI (efficiency-seeking)

**Hypothesis:** The greater the tax incentives, the lower is the (positive) growth effect of FDI.
Empirical Literature

Studies on growth and FDI:
- inconclusive findings on the relation between FDI and domestic growth, see Kose et al. (2009), Iamsiraroj & Ulubaşoğlu (2015)
- FDI determines growth via two distinct mechanisms: increase in productivity or increase in capital stock (de Mello 1997)
- established determinants of the absorptive capacity of FDI include: trade openness (Balasubramanyam et al. 1996, Arteta et al. 2001), human capital levels (Borensztein et al. 1998), and financial development (Alfaro et al. 2004)

Studies on tax incentives and FDI:
- tax rate elasticity of FDI is estimated 2.49 - 3.3 % (see meta-studies by De Mooij & Ederveen 2003, Feld & Heckemeyer 2011)
- studies using other types of tax incentives than the tax rate do not always find a positive effect on FDI (e.g. Klemm & Van Parys 2012)
Data

Our baseline sample consists of 182 countries over the period 1980 to 2017

Economic growth:
  - logarithmized GDP per worker (output-sided GDP divided number of workers)
  - Source: Penn World Tables

FDI:
  - logarithmized FDI inward stock in million USD, divided by number of workers
  - Source: UNCTAD FDI Statistics

Tax incentives:
  - Statutory corporate income tax rate (STR)
  - Sources: tax rate tables by KPMG and Tax Foundation
Heterogeneity of corporate income tax rates

Source: Own illustration, based on corporate tax rate tables from KPMG and Tax Foundation.

Note: 1st quartile includes CIT rates below 20%, 2nd quartile ranges from 20-25%, 3rd quartile from 25-30%, and 4th quartile above 30%.

Figure 1: Statutory corporate income tax rates, 2018.
FDI and growth distribution for high and low tax countries

Figure 2: Histograms on FDI and GDP per capita, 1980-2017.
Estimation strategy

Fixed Effects Model

\[ GDP_{c,t} = \beta_0 + \beta_1 FDI_{c,t-3} + \beta_2 FDI_{c,t-3} \times GDP_{c,t-3} + \beta_3 TAX_{c,t-3} + \beta_4 FDI_{c,t-3} \times TAX_{c,t-3} + \mu_c + \pi_t + \epsilon_{c,t} \]  

- \( \beta_4 \) is the coefficient of interest which measures to what extent the tax rate moderates the effect of FDI on growth.
- \( \beta_2 \) captures the moderating effect of other absorptive capacities (proxied by GDP per capita)
- The regressors are lagged by three years to address potential endogeneity problems.
- The model is estimated with OLS.
## Results

**Figure 3**: Estimating the effect of FDI and tax rate on GDP using OLS fixed effects

<table>
<thead>
<tr>
<th></th>
<th>(1) log GDP</th>
<th>(2) log GDP</th>
<th>(3) log GDP</th>
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<td>0.0860***</td>
<td>-0.353***</td>
<td>-0.658***</td>
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<td></td>
<td>(0.0143)</td>
<td>(0.0620)</td>
<td>(0.0842)</td>
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<tr>
<td>cL3.log_FDI#cL3.log_GDP</td>
<td>0.0451***</td>
<td>0.0602***</td>
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<tr>
<td></td>
<td>(0.00617)</td>
<td>(0.00744)</td>
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<tr>
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<td></td>
<td>0.301***</td>
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<td>(0.0813)</td>
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<tr>
<td>L3.STR</td>
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<td>(0.593)</td>
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<td>10.33***</td>
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<td>(0.0798)</td>
<td>(0.0872)</td>
<td>(0.221)</td>
</tr>
<tr>
<td>N</td>
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<td>5340</td>
<td>4207</td>
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<tr>
<td>r2</td>
<td>0.455</td>
<td>0.574</td>
<td>0.608</td>
</tr>
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</table>

Notes: Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Dependent variable is log GDP per worker. FDI instock is also measured per worker.
Interpretation of the results

- The higher the tax rate, the higher is the positive growth effect from inward FDI.

- The overall growth effect from FDI is additionally dependent on the income of the country (also as a proxy for other absorptive capacities).

- For instance, a country at the 25th percentile of income in our sample in 2017 (e.g. Angola) is predicted to experience a negative growth effect from FDI at a tax rate of 25 percent, but a positive growth effect at a tax rate of 40 percent.

- The results thus support that the tax rate can be an important determinant of the effect that FDI exerts on low-income recipient countries.
Incentives vs. Effects

- The effect of a decrease in the tax rate thus attracts FDI (generally positive), but lowers its growth effects (negative).

- The direction of the overall effect on growth through FDI is thus ambiguous and depends on the characteristics of the country.

- Combining estimations on both effects, we find that a 1 p.p. decrease in the tax rate reduces per capita GDP through FDI by 1.8 percent for a median income country.
Extensions and robustness tests (see appendix)

- Sample split for developing countries
- Control for alternative absorptive capacities (e.g. human capital, trade, domestic credit, institutional quality)
- Use effective tax rates instead of statutory tax rates
- Channel of government expenditure
- Arellano-Bond dynamic panel estimation
- Simultaneous equation model
Conclusion

- Our analysis shows that the tax rate is not only a prominent instrument to attract FDI, but is also a determinant of the absorptive capacity of FDI.

- The lower the tax rate, the lesser does inward FDI lead to economic growth.

- Policymakers should consider this trade-off.

- This overlooked negative growth effect implies that the FDI attracted via tax incentives is not so beneficial anymore.

- Future research could use more granular FDI data, e.g. on different types of FDI.
References I


