



# Fiscal Affairs Department

## Tax Policy & Investment *The Eric Zwick papers*

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FISCAL AFFAIRS DEPARTMENT

NATIONAL TAX ASSOCIATION, MAY 19, 2017



# Distortions From Corporate Tax Policy

Income shifting – see <i>Heckemeyer and Overesch 2013</i>	
<ul style="list-style-type: none"><li>- Domestic (legal form)</li><li>- International (BEPS)</li></ul>	<ul style="list-style-type: none"><li>- PIT versus CIT</li><li>- CIT rate differences</li></ul>
Financial behavior – see <i>IMF 2016</i>	
<ul style="list-style-type: none"><li>- Domestic (debt bias)</li><li>- International (debt shifting)</li></ul>	<ul style="list-style-type: none"><li>- Cost of capital for debt vs. equity</li><li>- CIT rate differences</li></ul>
Investment behavior – see <i>De Mooij and Ederveen 2008</i>	
<ul style="list-style-type: none"><li>- Domestic (traditional focus on intensive margin)</li><li>- International (more focus on location of FDI)</li></ul>	<ul style="list-style-type: none"><li>- Intensive – cost of capital/METR</li><li>- Extensive – cash flow/AETR</li></ul>

# Results From earlier Meta Study on FDI

- ▶ “*Corporate tax elasticities: a reader’s guide to empirical findings*, Oxford Review of Economic Policy”
  - ▶ 427 elasticities from 31 studies on the impact of tax on FDI
  - ▶ Derive uniformly defined semi-elasticity:  $\% \Delta fdi / \Delta tax$
  - ▶ Explain systematic variation in findings by variation in study choices (meta analysis)
    - ▶ Consider various indicators of investment (FDI; PPE; Greenfield; M&A; #locations)
    - ▶ Consider various tax indicators (statutory rate; metr, aetr, atr)
- ▶ Some key findings
  - ▶ Mean semi-elasticity is around  $-3$
  - ▶ Studies using EATR systematically larger; STR systematically smaller than EMTR
  - ▶ Studies using #locations systematically smaller; PPE systematically larger than FDI

- ▶ Bottom line: neoclassical investment theory falls short to explain FDI – extensive margin
- ▶ Zwick papers: this is also the case for domestic investment
  - ▶ Based on improved analysis: using better data and better methodology than before
  - ▶ E.g. “*Tax Policy and Heterogeneous Investment Behavior*”, *American Economic Review* 2017
    - ▶ Bonus depreciation systematically raises investment by between 10 and 17 percent
    - ▶ Effects much larger for small firms & firms for which it immediately affects cash flow
    - ▶ Aggregate investment elasticities materially larger than earlier literature
    - ▶ Important policy implications: e.g. targeting bonus depreciation to credit-constrained firms more effective countercyclical policy
  - ▶ Today: “*Kinky Tax Policy and Abnormal Investment Behavior*”, Qiping Xu & Eric Zwick
    - ▶ Tax policy affects timing of investment



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## Kinky Tax Policy and Abnormal Investment Behavior

Qiping Xu and Eric Zwick  
(presented by Ruud de Mooij)

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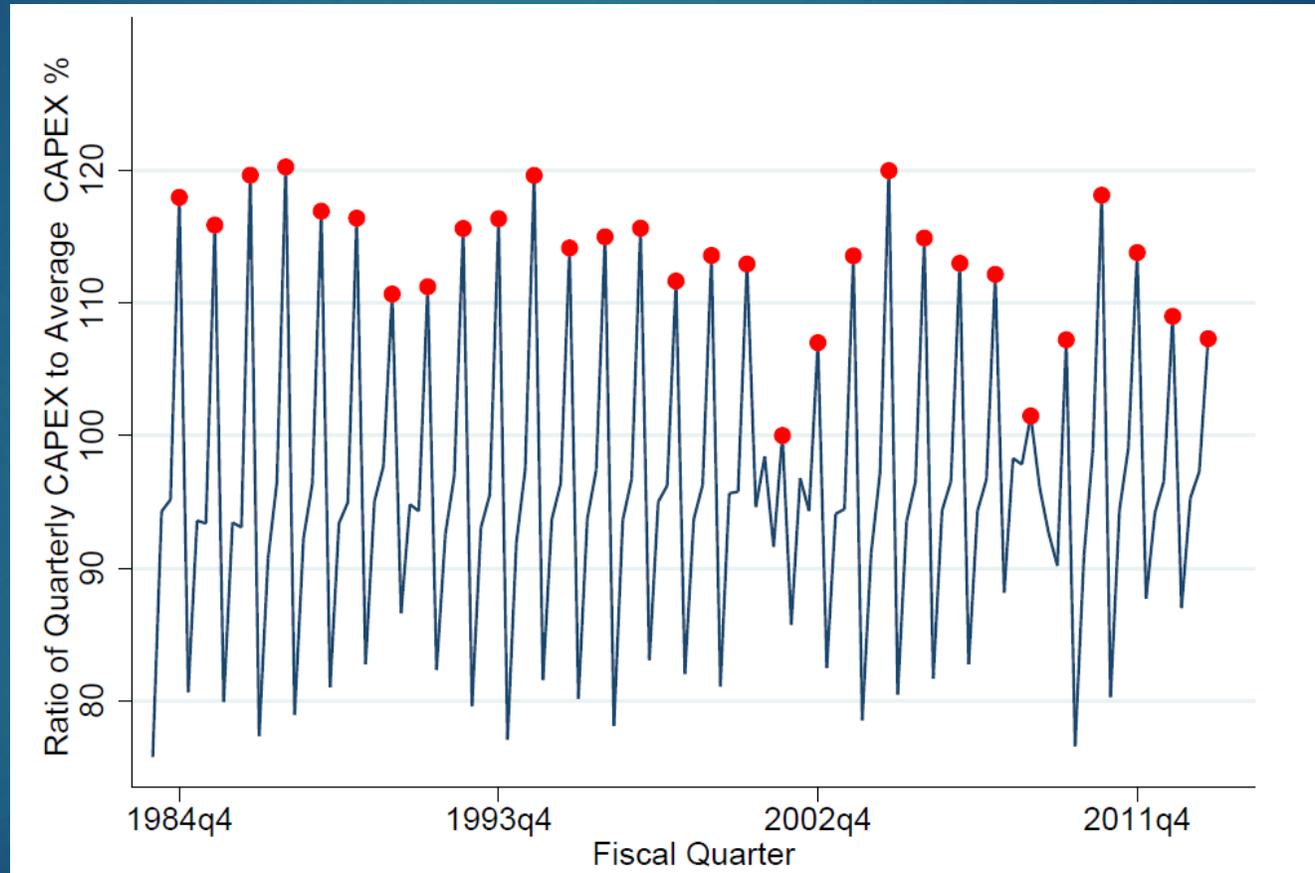


# Kinky Tax Policy and Abnormal Investment Behavior by Qiping Xu and Eric Zwick

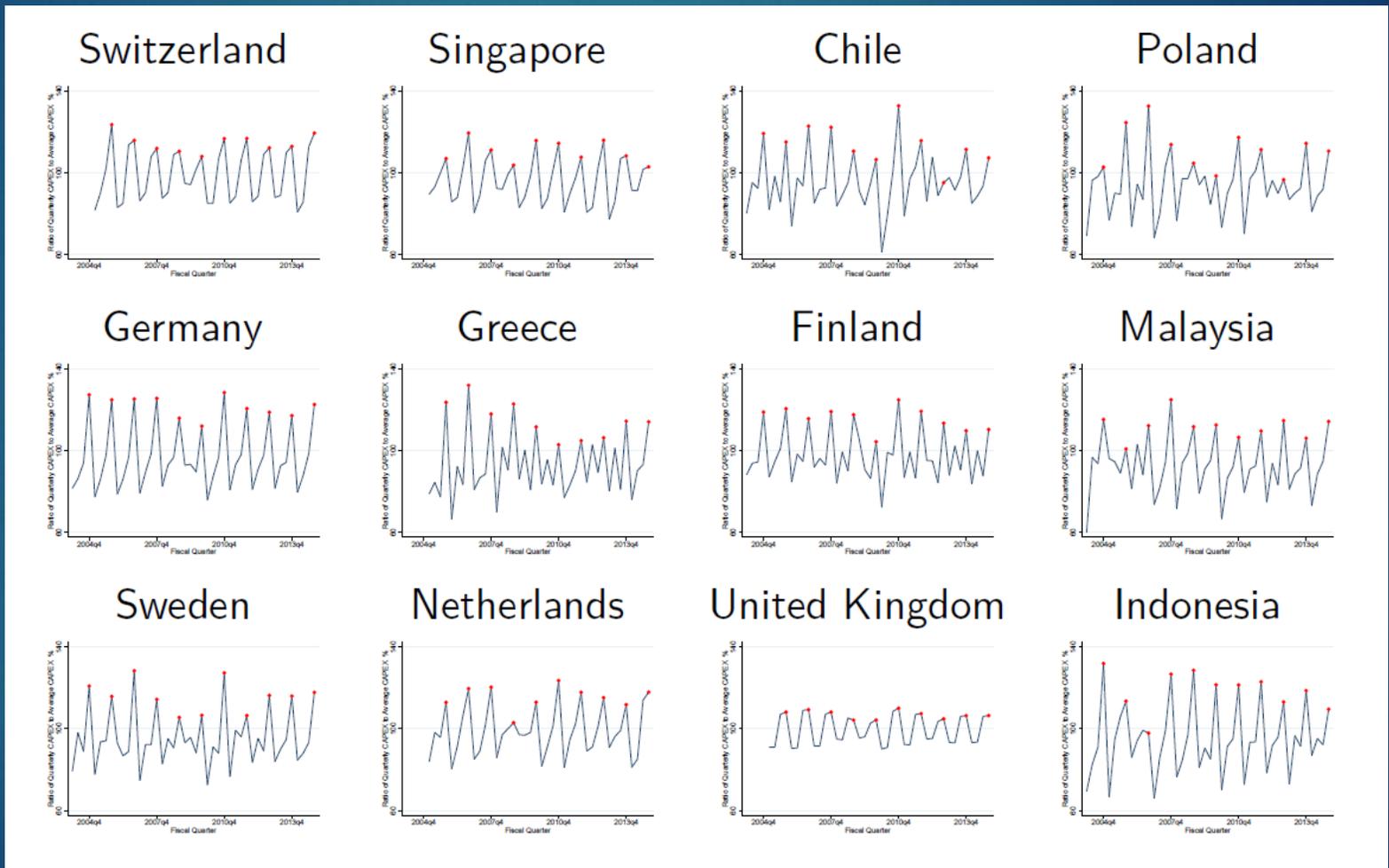
Stylized facts from three data sources

- ▶ Compustat: 1984 – 2013, 17,500 firms
  - ▶ Focus on quarterly data on CAPEX
  - ▶ Focus on timing of investment – especially a spike in Q4: indicator  $Q4/av(Q1-Q3)$
- ▶ IRS Statistics of income 1993 – 2004 for 100,000 firms
  - ▶ To identify tax positions of firms
- ▶ Compustat Global: 15,000 firms in 33 countries

# Fiscal Year-end Investment Spikes in US (Q4 is 37% higher than average Q1-Q3) – real and robust



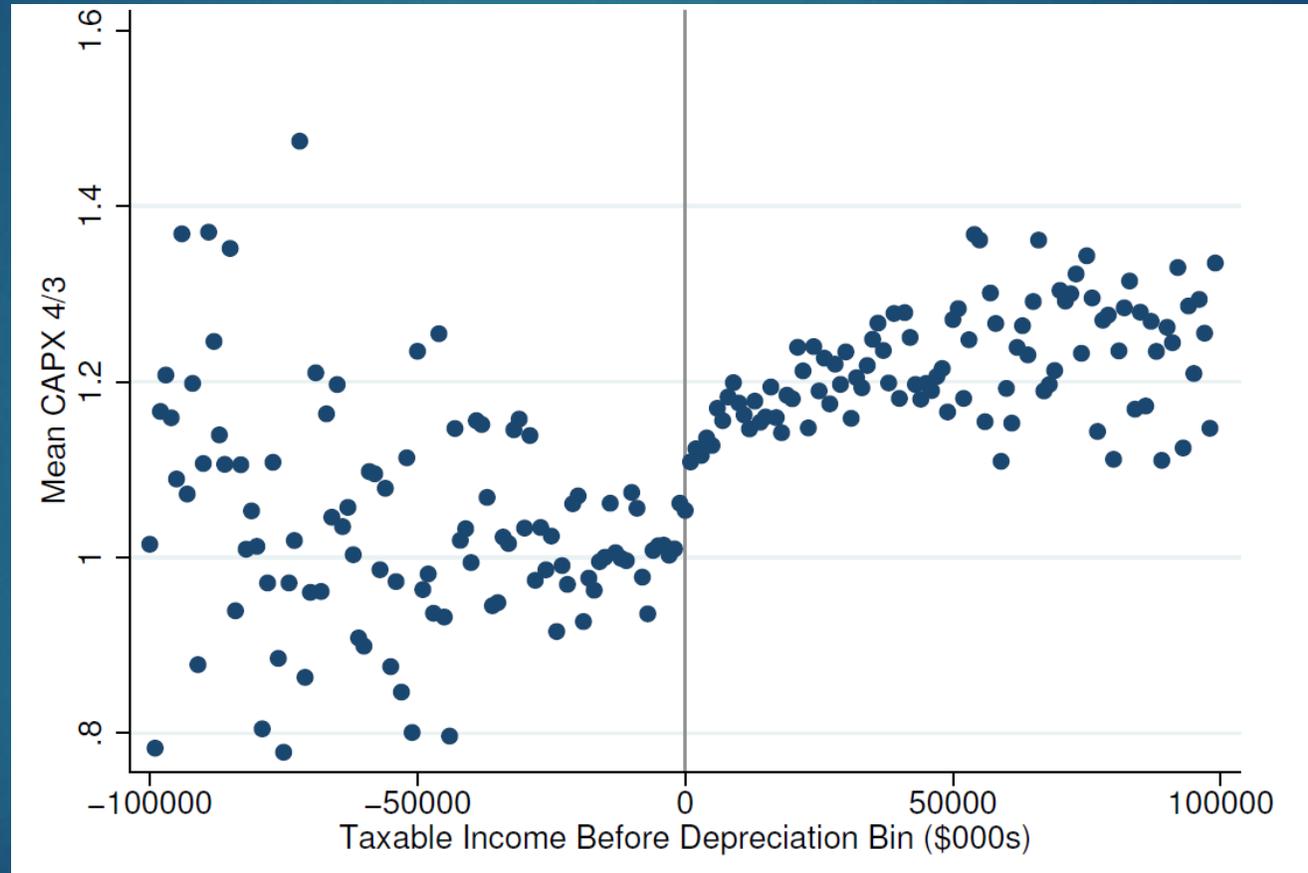
# Idem, internationally



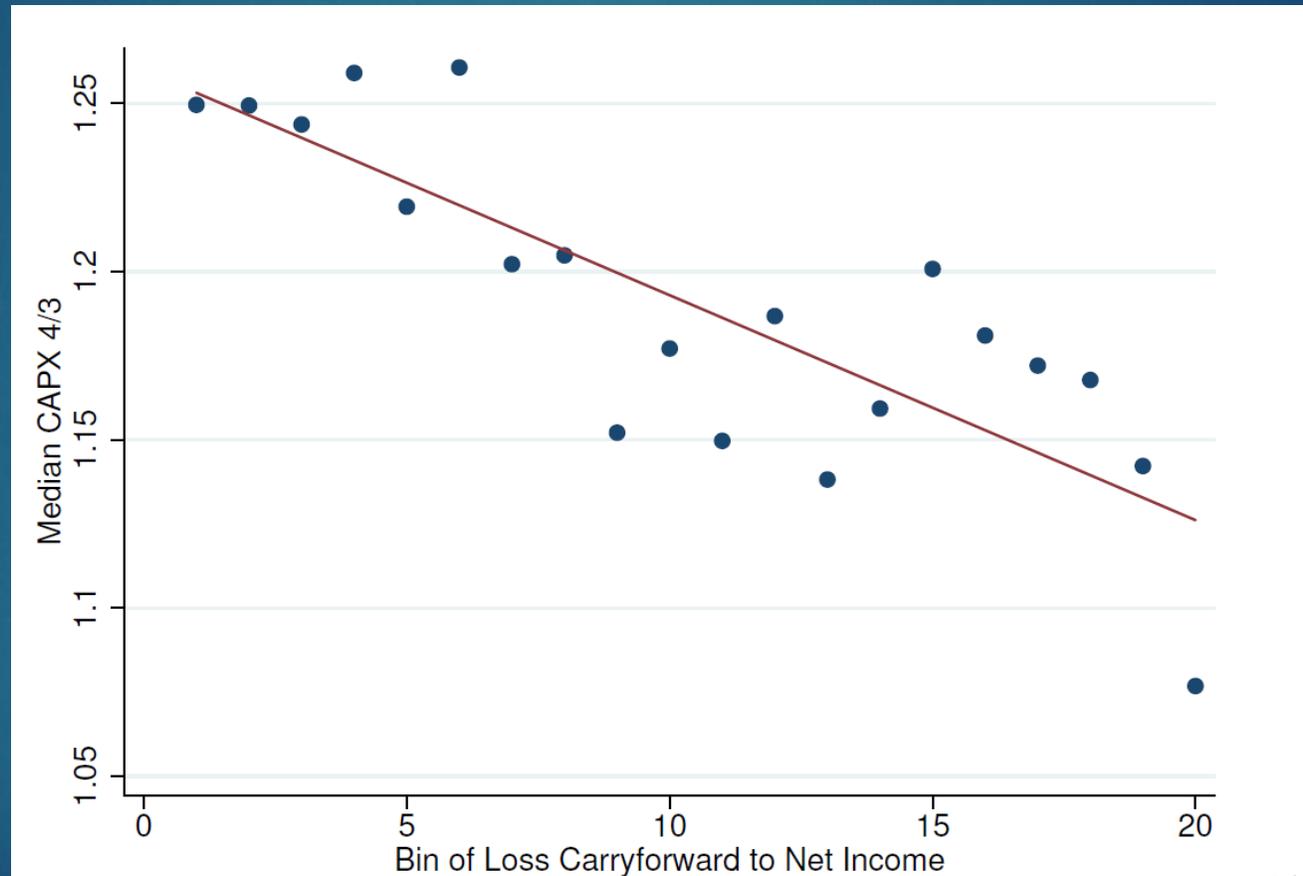
# Is This Due To Tax?

- ▶ Alternative explanations (some of which are explored too)
  - ▶ Use-it-or-lose-it budgeting
  - ▶ Earnings volatility
- ▶ Tax issue – the value of depreciation allowances
  - ▶ Half-year convention: “place all CAPEX at midpoint of FY” – i.e. December purchase gives rise to half-year of depreciation allowance against FY earnings
  - ▶ Backloading investment to Q4 maximizes the tax benefit of depreciation – due to discounting
  - ▶ End of year provides information about tax position – and thus value of depreciation allowance: value higher for firms with positive taxable income; lower for firms in a loss position (identifying assumption)

# Q4 Spike and Taxable Income Status (IRS)



# Q4 Spike and NOL Carryforward



# Paper Offers More

- ▶ Tax Reform act of 1986 – reduced benefit of Q4 spike
  - ▶ Repeal of the investment tax credit
  - ▶ Reduction in the top CIT rate
  - ▶ Longer recovery period for tax depreciationReduced spike after 1987 by between 11 and 14 percent
- ▶ International evidence
  - ▶ Reductions in CIT rates have reduced the Q4 spike significantly
- ▶ Paper also relates the spike directly to finance constraints
  - ▶ Regress CAPEX by Quarter on Tobin q and cash-flow
  - ▶ Then interact cash-flow variable with four indicators of financial constraints
  - ▶ For Q4, the coefficient for the interaction term is 2 twice that of other Q's—financial constraints amplify tax minimizing behavior

# Implications

- ▶ For modeling
  - ▶ Simulating investment effects of CIT reform needs a model allowing financially constrained firms
  - ▶ Cash-flow business tax would not be fully neutral for investment
- ▶ For corporate tax policy
  - ▶ Taxation affects investment margins in unexpected ways
  - ▶ Investment incentives will amplify the Q4 spike
  - ▶ Allowing tax minimization has benefits for firms, but are only exploited by some firms
  - ▶ IRS could require 'mid-quarter' convention (already if CAPEX very skewed across the year)