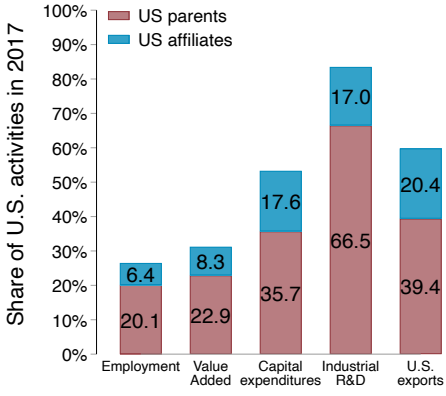
Global Ripple Effects of Corporate Tax Reforms

Dyrda, Hong, Sajid, and Steinberg
University of Rochester | September 2026

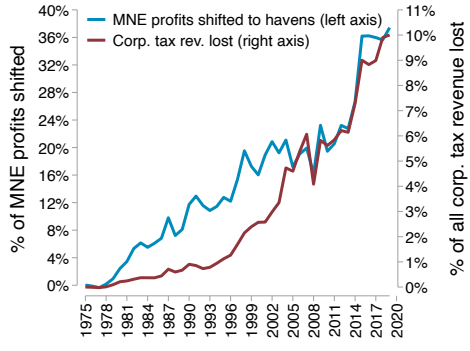
Motivation

Multinational Enterprises (MNEs) play increasingly important role in economy. Growing concerns that they don't pay "fair share" of corporate taxes.

Macroeconomic importance of MNEs + rise of profit shifting



(a) Importance of MNEs



(b) Rise of profit shifting

Source: Panel (a): Bureau of Economic Analysis, National Income and Product Accounts; National Science Foundation, Science and Engineering Indicators; Census Bureau Annual Capital Expenditure Survey. Panel (b): Wier and Zucman (2022).

Motivation

Multinational Enterprises (MNEs) play increasingly important role in economy. Growing concerns that they don't pay "fair share" of corporate taxes.

Fragmented corporate tax reforms to address profit shifting

- Unilateral approach: 2017 Tax Cuts and Jobs Act (TCJA) in United States
- Multilateral approach: OECD Two-Pillar Framework initiated in 2021, ratified by 140 countries

This paper: Illustrate quantitatively how MNEs propagate domestic corporate tax reforms to the global economy, using TCJA and Global Minimum Tax (GMT) as examples

What we do

Develop multi-country GE model to assess the global effects of corporate tax policies

- Heterogeneous firms w/ endogenous exporting, multinational production, and profit shifting
- Nonrivalry & mobile ownership of intangible capital
- Embed key details of TCJA & GMT: territorial system, accelerated depreciation, MNE-specific provisions, rule hierarchy

Quantitative strategy:

- Calibrate model to pre-TCJA data
- Introduce TCJA in United States
- Introduce side-by-side arrangement: other countries introduce GMT, US-based MNEs exempt
- US joins GMT, replaces TCJA's profit-shifting provisions

Empirical investigation of the effects of TCJA on firm investment and profit shifting

- Event-study design that exploits between-firm variation in exposure to the reform

What we find

TCJA: large domestic effects, positive cross-country ripple effects through two channels

- Increased US MNEs' intangible investment, raising output of their foreign subsidiaries
- Increased tangible investment of foreign MNEs' US affiliates, which led these MNEs to also increase intangible investent at home

GMT: small negative effects in adopting countries

- Reduces MNEs' intangible investment, which reduces output both at home and abroad
- When US MNEs exempt: they expand in equilibrium, offsetting losses in foreign MNEs' US affiliates
- When US MNEs are subject to GMT: US economy shrinks as well; GMT reduces intangible investment more than TCJA's profit-shifting provisions.

Empirics: tangible and intangible investment increase, profit shifting falls with intensity of exposure to TCJA

Contributions to the literature

Profit shifting: Hines and Rice (1994), Heckemeyer and Overesch (2017), Suárez-Serrato (2018), Beer, de Mooij, and Liu (2020), Clausing (2020), Guvenen et al. (2022), Tørsløv et al. (2022), Ferrari et al. (2023), Bilicka et al. (2024), Delis et al. (2024), Dyrda et al. (2024, 2025), Altshuler et al. (2025)

→ Evaluate the global effects of regional tax reforms using a multi-country GE model

TCJA and GMT: Auerbach (2018), Barro and Furman (2018), Beer et al. (2018), Slemrod (2018), Gale et al. (2019), Wagner et al. (2020), Johannesen (2022), Garcia-Bernardo et al. (2023), Clausing (2024), Hugger et al. (2024), Santacreu and Stewart (2024), Chodorow-Reich et al. (2025), Dobridge et al. (2025)

→ Model the tax provisions for MNEs and study the impacts on both tangible and intangible investment

MNEs: Helpman et al. (2004), Burstein and Monge-Naranjo (2009), McGrattan and Prescott (2009), Ramondo and Rodríguez-Clare (2013), Tintelnot (2017), Arkolakis et al. (2018), McGrattan and Waddle (2020), Alviarez et al. (2023), Antràs et al. (2025)

→ Emphasize the role of MNE networks and intangibles in the ripple effects of regional tax reforms

Model

Environment

Multi-country BKK with distortionary corporate taxation as in Chari, Nicolini, and Teles (2022)

- Five regions: US, Europe, Rest of the World, Low Tax (LT), (unproductive) Tax Haven (TH)
- Representative household consumes, works, and invests in tangible capital
- Armington aggregator converts differentiated varieties from each country into nontradable final good
- Governments collect corporate tax revenues and rebate it back to the household.

Firm heterogeneity and selection

- Continuum of firms based in each region with different productivity draws
- FDI versus export decisions as in Helpman, Melitz and Yeaple (2004)
- Non-rival intangible capital as in McGrattan and Prescott (2009)
- Transfer pricing and profit shifting from Dyrda et al. (2024)

Households

Household in region i solves

$$\max_{\{C_{it},L_{it},X_{it},B_{it+1}\}_{t=0}^{\infty}} \sum_{t=0}^{\infty} \beta^t \left[\log\left(\frac{C_{it}}{N_i}\right) + \psi_i \log\left(1 - \frac{L_{it}}{N_i}\right) \right].$$

subject to budget constraint,

$$P_{it}[C_{it} + X_{it}] + P_{bt}B_{it+1} = W_{it}L_{it} + R_{it}K_{it} + B_{it} + D_{it} + T_{it},$$

and law of motion for tangible capital,

$$K_{it+1} = (1 - \delta)K_{it} + X_{it}.$$

Armington aggregators

Final-good producer in region i combines domestic and foreign products into nontradable aggregate:

$$Q_{it} = \left[\sum_{j=1}^{J} \int_{\Omega_{jit}} q_{jit}(\omega)^{\frac{\varrho-1}{\varrho}} d\omega \right]^{\frac{\varrho}{\varrho-1}},$$

- $q_{jit}(\omega)$: the quantity of variety ω from region j
- Ω_{jit} is the set of goods from j available in i

Aggregate price index::

$$P_{it} = \left[\sum_{j=1}^{J} \int_{\Omega_{jit}} p_{jit}(\omega)^{1-\varrho} d\omega \right]^{\frac{1}{1-\varrho}}$$

Firm production technology

Firm from region i with productivity $a \sim F_i(a)$ produces in productive region j according to:

$$y_{ij}(a) = \sigma_{ij} A_j a z_i^{\phi} k_{ij}^{\alpha} \ell_{ij}^{1-\phi-\alpha}$$

- A_j: aggregate regional productivity
- $\sigma_{ij} \in [0,1]$: FDI barriers; $\sigma_{ii} = 1$
- z_i: nonrival intangible capital, produced at home in i using ℓ_i^z / A_i^z units of labor
- k_{ij}, ℓ_{ij}: rival, location-specific tangible capital, labor

Resource constraints:

$$y_{ii} = q_{ii} + \sum_{j \in J_X} \xi_{ij} q_{ij}^X, \quad y_{ij} = q_{ij},\ j \in J_F$$

- J_X: set of firm's export destinations
- J_F: set of firm's foreign affiliates

Firm's problem: local scale

Taking J_X, J_F, and z as given, firms choose rival factors to maximize local operating profits

Home region:

$$\pi_{ii}(a,z) = \max_{q_{ii},\{q_{ij}^X\}_{j\in J_X},\ell_i,k_i} \left\{ p_{ii}(q_{ii})q_{ii} + \sum_{j\in J_X} p_{ij}^X(q_{ij}^X)q_{ji}^X - W_i\ell_i - \tilde{R}_i k_i \right\}$$

Foreign affiliates:

$$\pi_{ij}(a,z) = \max_{q_{ij},\ell_j,k_j} \left\{ p_{ij}(q_{ij})q_{ij} - W_j\ell_j - \tilde{R}_j k_j \right\}$$

Note: $\tilde{R}_j$ denotes effective cost of tangible capital, which depends on specifics of tax code.

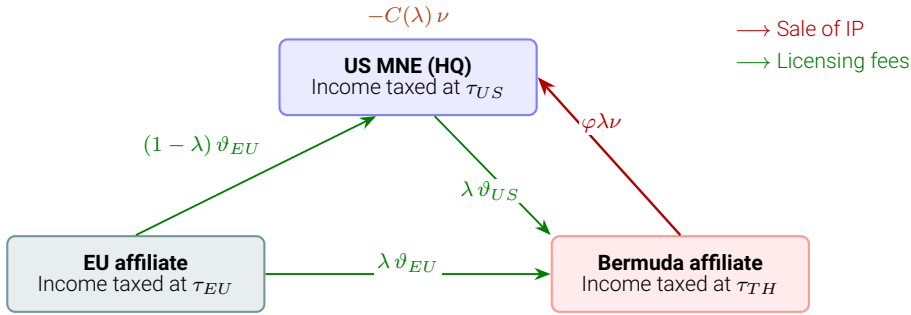
Firm's problem: worldwide scope

Choose set of export destinations, set of foreign affiliates, intangible investment, and profit shifting activities to maximize worldwide after-tax profits:

$$\Pi_i(a) = \max_{J_X, J_F, z,} \Big\{ \pi_{ii}(a,z) + \sum_{j \in J_F} \pi_{ij}(a,z) + \mathbb{1}_{\{\text{Affiliate in TH}\}} \pi_{i,TH}(a,z,\lambda) - W_i \ell_i^z / A_i^z$$
$$- \sum_{j \in J_F \cup \{i\}} \text{Tax liabilities}_{ij}(a,z,\lambda) - \text{Fixed costs}_i(J_X, J_F, \lambda) - \text{Profit-shifting costs}(a,z,\lambda) \Big\}$$

- Fixed costs per export location and foreign affiliate
- $\lambda \in [0,1]$: fraction of intangible capital shifted abroad. Split between LT and TH regions.
- Profit-shifting costs convex in λ

Illustration of DHS profit shifting mechanics



- ϑ_j: Licensing fee paid by division in j to headquarters. Set to z's share of division's revenue following transfer-pricing rules.
- ν: Total worldwide licensing fees (market value of z). In this example, equal to $\vartheta_{EU} + \vartheta_{US}$.
- λ: Fraction of intangible capital shifted to tax haven
- $\varphi < 1$: Markdown on sale of IP to tax haven below market value
- $C(\lambda)$: Profit shifting cost per unit of intangible capital

Profit shifting and intangible investment

Parameterize $\mathcal{C}(\lambda) = \lambda + (1-\lambda)\log(1-\lambda)$. Assume territorial tax system with no provisions related to profit shifting (e.g. EU before GMT)

Profit-maximizing level of profit shifting:

$$\lambda = 1 - \exp\left(-\frac{(\tau_{US} - \tau_{TH})(1-\varphi)}{(1-\tau_i)}\right)$$

- Increasing in tax differential $(\tau_{US} - \tau_{TH})$ and in mispricing of intangible capital $(1-\varphi)$

Profit-maximizing level of intangible investment:

$$z = z^{NS} \times \underbrace{(1 + (\lambda\mathcal{C}'(\lambda) - \mathcal{C}(\lambda)))}_{\Xi(\lambda)\geq 1}^{1+\phi(\varrho-1)}$$

- z^{NS}: optimal intangible investment w/o profit shifting (i.e. if $\lambda = 0$)
- $\Xi(\lambda) \geq 1$: net gain from profit shifting per unit of z. Increasing in λ

Institutional details of the TCJA and GMT

TCJA: broad tax cuts combined with MNE-specific provisions

Territorial system: US MNEs' foreign earnings now exempt from US corporate taxes. (Previously, repatriated earnings were included in the domestic corporate tax base.)

Statutory rate cut: Statutory corporate tax rate fell from 35% to 21%. Applies to all firms operating in US, including foreign MNEs' US affiliates.

Bonus depreciation: Immediate deduction for eligible tangible investment in the US rose from 50% to 100%. Again, applies to all firms in US.

GILTI: 10.5% minimum tax on residual income booked in low-tax foreign affiliates

- Excludes 10% return on foreign tangible capital ("Qualified Business Asset Investment", QBAI)
- Lowers effective marginal cost of foreign tangible investment

FDII: Preferential tax rate $\approx 13\%$ on US-booked intangible income associated with exports

- Deduction calculated net of 10% return on domestic tangible capital (QBAI again)
- Raises effective marginal cost of domestic tangible capital for US firms
- Disadvantages US firms relative to foreign MNEss' US affiliates.

GMT: 15% floor with special treatment for US MNEs

Core rule:

- Top-up tax of 15% on income of large MNEs' foreign affiliates
- Share of tangible assets and payroll is excluded from top-up tax base ("substance-based income exclusion")
- Hierarchy of taxing rights: Host country collects first, followed by parent country. Third countries where MNEs operate can claim taxing rights as backstop. Creates incentive for low-tax countries to participate.

Treatment of US MNEs:

- Introduced in top of TCJA, which already has GILTI
- Side-by-side agreement: Host countries collect top-up over GILTI. Effective tax rate on US MNEs' income in low-tax regions rises from 10.5% to 15%. Relatively small change for US MNEs compared to EU & RW MNEs.
- Counterfactual: US MNEs completely exempt from GMT, pay nothing above GILTI

Quantitative analysis

Calibration

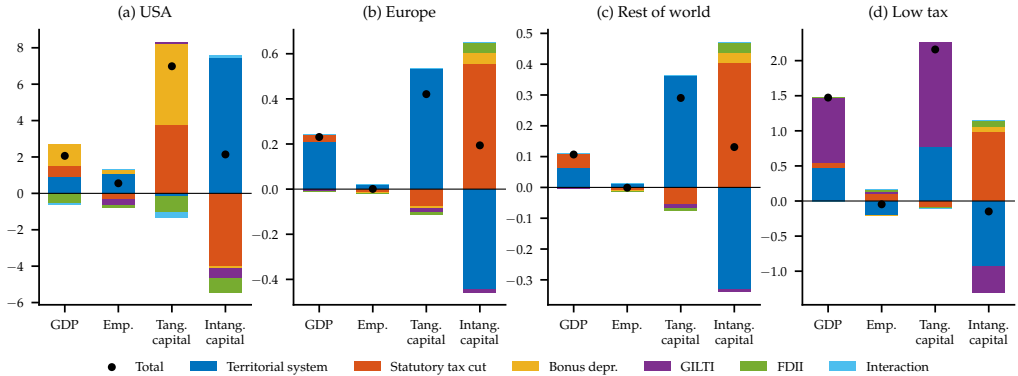
Calibrate model with pre-TCJA US tax system (worldwide taxation, no GILTI, etc.) to pre-2017 data

Discipline for key parameters:

- Region TFP and firm prod. dispersion: GDP and firm size dist.
- Intangible share: income share of intangibles for foreign MNEs' local affiliates
- Trade costs (fixed, variable): Export participation, bilateral trade flows
- FDI costs (fixed, variable): Number of MNEs, GDP share of foreign MNEs' local affiliates
- Corporate tax rates: Tørsløv et al. (2022) for non-US countries and Compustat for the US
- Profit shifting cost: Lost profit estimates from Tørsløv et al. (2022)
  - → Lost profits/GDP: 0.6% for US, 1.4% for EU, 0.7% for RoW.
- Pre-TCJA profit repatriation share:
  - → From low-tax regions: Δ aggregate shifted profits after TCJA from Delis et al. (2024)
  - → From high-tax regions: gap in pre-TCJA effective tax rates between U.S. MNEs vs. non-MNEs

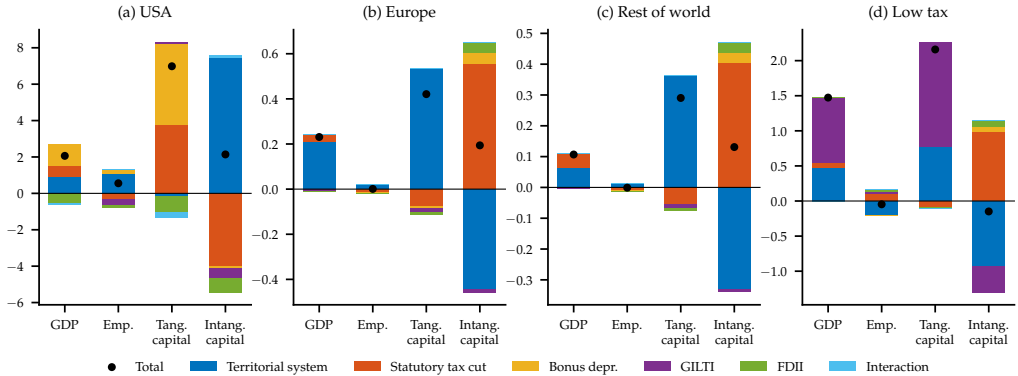
Effects of the TCJA

Macro effects: decomposition by provision



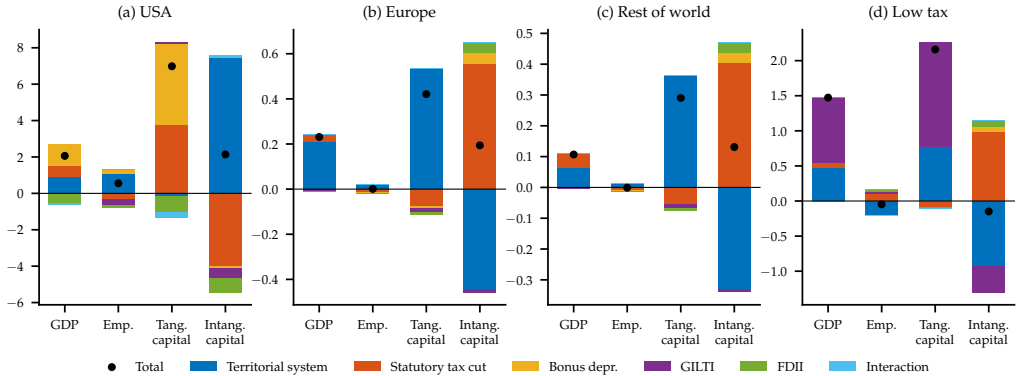
- Full TCJA raises US GDP by **2.1%**, tangible capital by **7.0%**, and intangible capital by **2.1%**
- Bonus depreciation and territorial taxation generate the largest expansionary effects

Macro effects: decomposition by provision



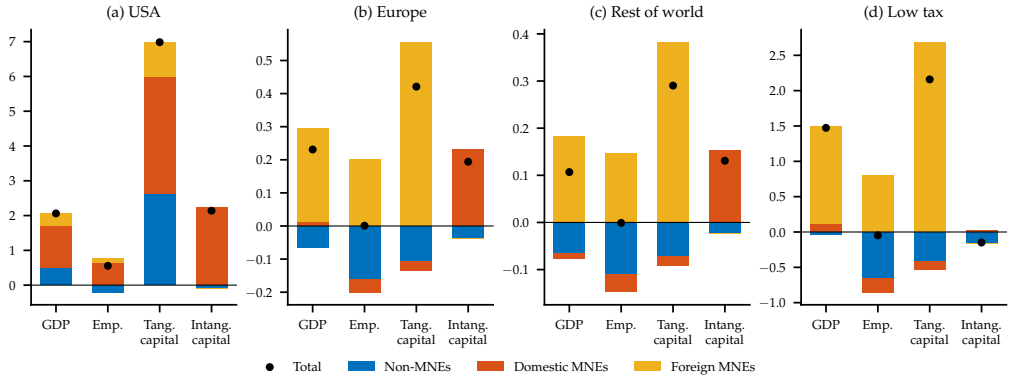
- Territorial taxation is main source of positive foreign spillovers: GDP rises by **0.23%** in EU and **0.11%** in RW
- Many countervailing forces: rate cut reduces intangible investment, FDII reduces investment and GDP

Macro effects: decomposition by provision



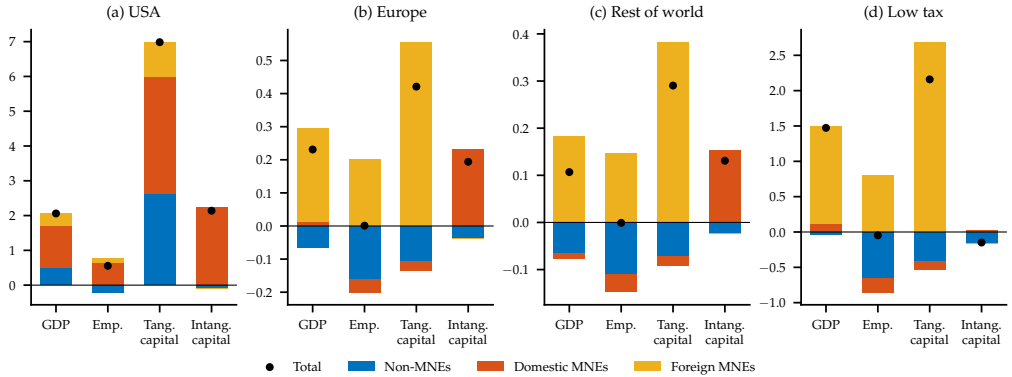
- Bonus depreciation raises US tangible capital by **4.5%** with almost no effect in intangible capital
- More effective investment stimulus than the statutory rate cut.

Macro effects: decomposition by firm type



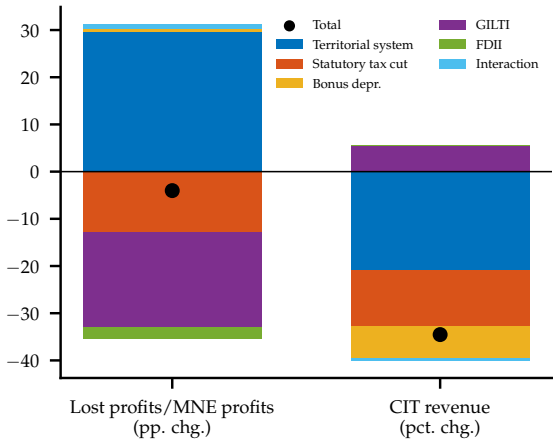
- US MNEs generate most of the increase in GDP and essentially all the increase in intangible capital
- All three firm types nevertheless contribute to the **7.0%** increase in U.S. tangible capital

Macro effects: decomposition by firm type



- Abroad, expansion of US MNEs' affiliates accounts for nearly all growth in output and tangible capital. Some crowding out of local activity
- Foreign MNEs also expand intangible investment at home, because rate cut + bonus depreciation benefit their US subsidiaries

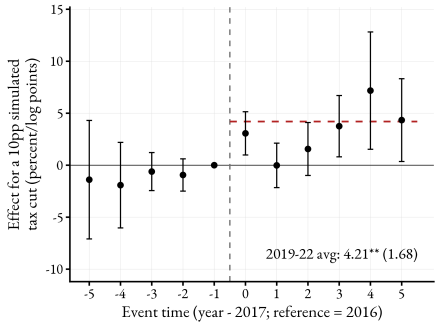
Effects on public finances: decomposition by provision



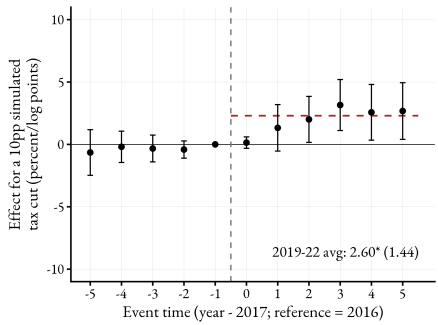
- Share of US MNE profits shifted abroad falls by about **4pp**
- Rate cut, GILTI, and FDII more than offset territorial system's stronger profit-shifting incentive
- US corporate tax revenue falls by **34.5%**. Territorial system, rate cut, and bonus depreciation reduce revenue; GILTI recovers about 5.5%.
- The revenue decline is close to the **38%** estimate in Chodorow-Reich et al.

Empirical validation

Compustat event study: investment



(a) Tangible investment rate



(b) Intangible investment rate

- Treatment applies post-TCJA rules to firms' 2016 characteristics, isolating legislated exposure from endogenous tax and investment responses
- Simulated tax cut of **10.2pp** raises tangible investment by **4.2%** and intangible investment by **2.6%**, on average over 2019–2022
- Immediate response for tangible investment, gradual response for intangibles

Micro and macro investment responses

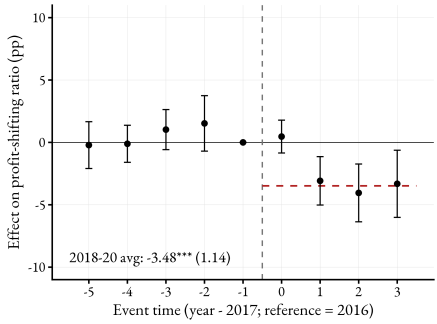
Aggregate US capital stock:

- Our model: $+7.0\%$
- Chodorow-Reich et al. (2026): 6.4%
- Similar predictions despite different identification strategies and model structures

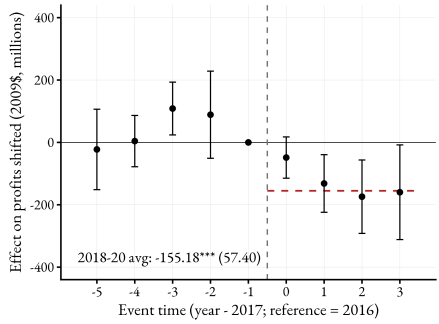
Semi-elasticity of capital to taxation ($\%\Delta\text{Inv}/\text{p.p.}\Delta\text{METR}$)

- MNEs in our model: -1.5
- Firm-level literature: [-1.1,-0.55]
- Our semi-elasticity is larger because it includes intangible capital also responds, raising marginal product of tangible capital

Compustat event study: profit shifting



(a) Profit shifting ratio

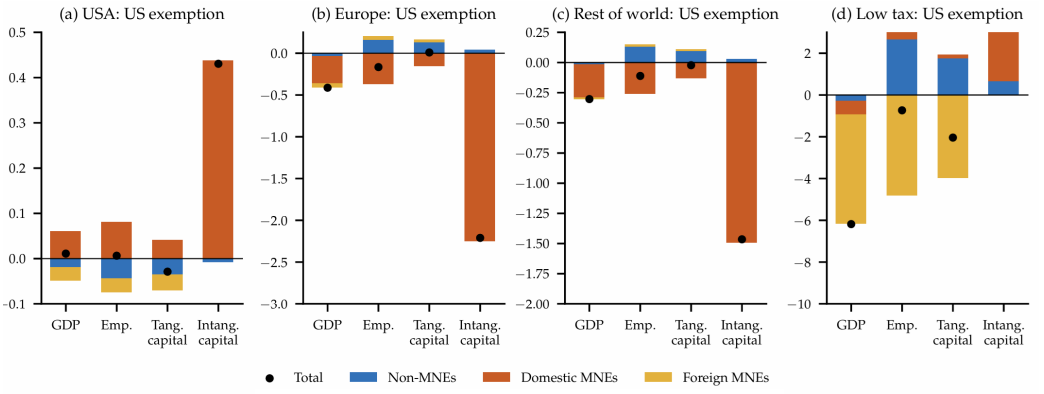


(b) Total profits shifted

- US MNEs reduce profit shifting relative to foreign MNEs that operate in the United States
- Shifted-profit share falls by **3.5 percentage points**, close to model prediction of **4 percentage points**.
- Not targeted in calibration; we only target change in aggregate shifted profits

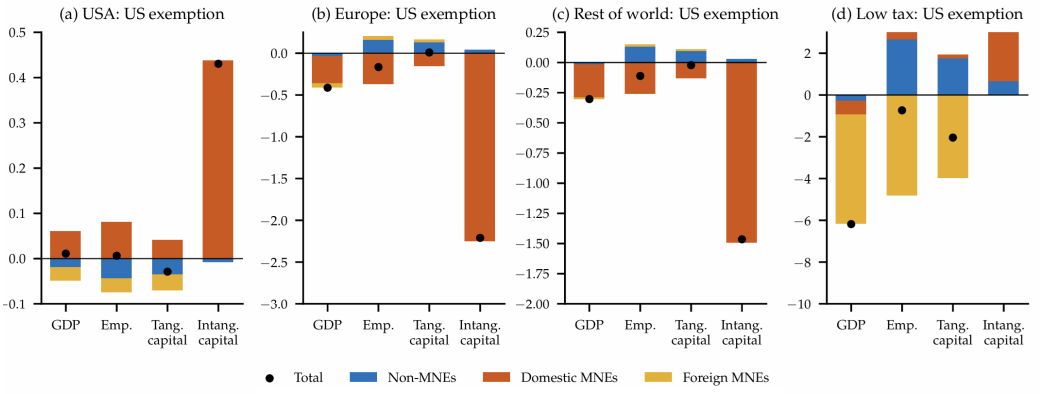
Effects of the GMT

Macro effects: US MNEs completely exempt



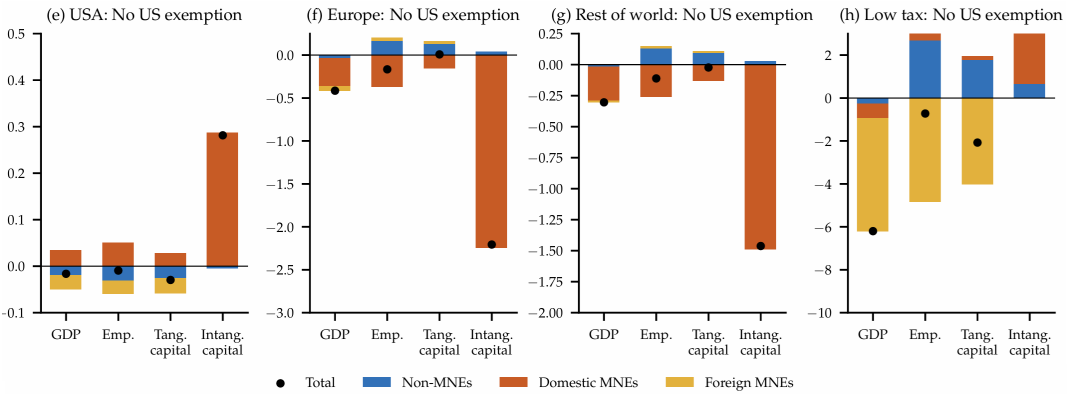
- GDP falls by **0.41%** in Europe and **0.30%** in the RoW
- Main adjustment margin: intangible investment, −**2.2%** in EU and −**1.5%** in the RW

Macro effects: US MNEs completely exempt



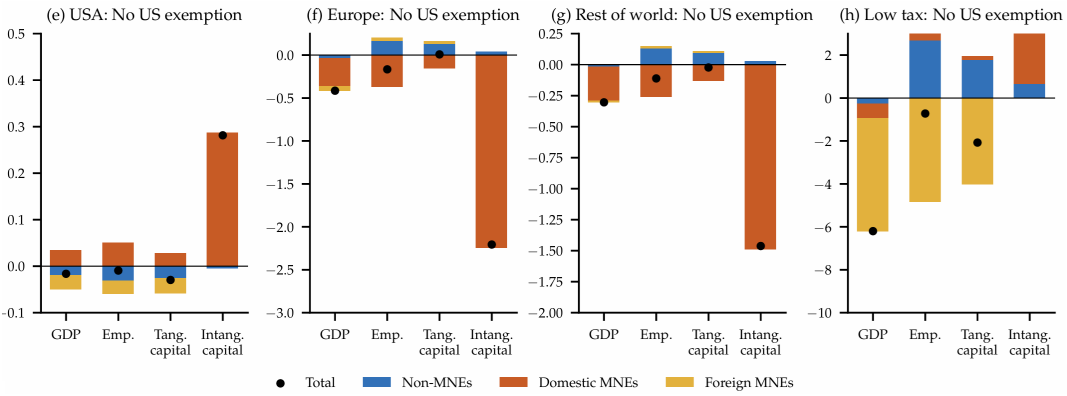
- No aggregate effect in US, but factors reallocate away from foreign MNEs' affiliates toward US MNEs
- US MNEs increase intangible investment because they become more competitive in foreign markets relative to affected MNEs

Macro effects: US MNEs subject to top-up above GILTI



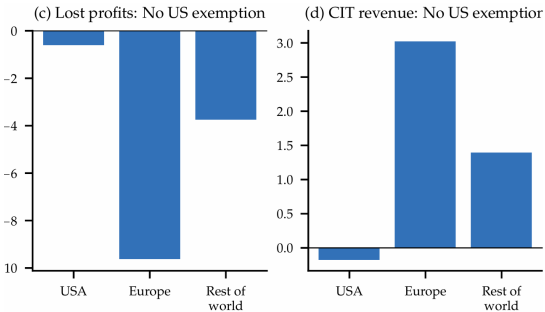
- Europe and the RoW experience almost exactly the same contractions, but US GDP now falls slightly due to smaller expansion by US MNEs
- Higher METR on intangible capital, but also on tangible capital due to smaller exclusion (SBIE vs QBAI)

Macro effects: US MNEs subject to top-up above GILTI



- Small absolute effects reflect the GMT's narrow scope: MNEs' effective tax rates change 1/10 as much as under TCJA
- Relative to tax change, domestic and cross-country effects of both reforms are similar in magnitude

Effects on public finances



- GMT sharply reduces profit shifting: by **9.6pp** for EU and **3.8pp** for RW
- Corporate tax revenue rises by **3.0%** in EU, **1.4%** in RW, and **6.0%** in LT
- Collection hierarchy lets LT capture top-up tax revenue revenue, more than offsetting loss in revenue from shifted profits
- Effects all regions (including US) similar w/ and w/o exemption for US MNEs. Marginal effect of adding GMT on top of GILTI on profit shifting is minimal.

Conclusion

Conclusions

We study the global ripple effects of two major tax reforms using a quantitative model

Connects investment decisions to tax policy details and captures key int'l propagation channels:

- Extensive margin: FDI, international trade
- Intensive margin: non-rival intangible capital, treatment of foreign affiliates' tangible capital

Empirical validation using Compustat corroborates model predictions

Key advantages versus reduced-form empirics:

- Aggregate level responses in GE versus relative cross-firm effects
- Provision-by-provision decomposition of multi-faceted reforms