

Corporate Taxation in Open Economies

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¹The views expressed in this presentation are those of the author and not necessarily those of the Central Bank of Ireland or the European System of Central Banks.

Motivation

- corporate taxation receives a lot of attention in the public discourse
- proposals to reform corporate taxation occur on a regular basis
- recent examples of enacted corporate-tax reforms:
 - US Tax Cuts and Jobs Act
 - reduction in the French corporate tax rate between 2020 and 2022
 - hike in the UK corporate tax rate in 2023
 - reduction in the German corporate tax rate between 2028 and 2032
- relevance to forecasts and decisions of policymakers

Research Question

- analyze the macroeconomic effects of corporate taxation
- quantify the impact on the domestic economy as well as the international spillovers
- proceed in two steps:
 - ① What are the long-run effects of corporate taxation?
 - ② Which adjustment dynamics does a corporate-tax reform trigger?
- the analysis is conducted in a two-country DSGE model
- focus on the territorial taxation regime

Distortive Effects of Corporate Taxation

- macroeconomic models often ignore corporate taxes
- profit taxation is non-distortive in many macro models:

$$\arg \max_x Profit(x) = \arg \max_x (1 - \tau) Profit(x)$$

- in my model, profit taxation distorts:
 - 1 firm creation
 - 2 operational status of firms (exporting vs. multinational production)
 - 3 balance of payments (cross-border dividend flows)

Model

Households

- **non-savers** consume their labor income completely and have no direct exposure to business income
- **savers** work, save, consume, and act as venture capitalists:
 - home savers finance the creation of firms that are headquartered in the home country
 - they receive dividends of these firms in exchange
- labor market features a search-and-matching friction
- Nash bargaining with nominal-wage stickiness

Firm Dynamics

- the home savers pay for the initial investment $\kappa_{ht}^{\mathcal{N}}$ in order to found a firm that is headquartered in the home country
- the firm draws its idiosyncratic productivity $a(\omega)$ from a Pareto distribution
- the firm experiences an exogenous death shock with probability δ_h

The Operational Status of Firms

- a firm chooses among three operational strategies (Helpman, Melitz, and Yeaple, 2004):
 - ① **domestic strategy:** produce at home, sell at home
 - ② **export strategy:** produce at home, sell at home and abroad
 - ③ **multinational strategy:** produce at home and abroad, sell at home and abroad
- the strategies differ in terms of costs and taxation
- the idiosyncratic productivity $a(\omega)$ determines the optimal strategy

Calibration

- the home and foreign country are identically calibrated
- both countries represent large advanced economies (e.g., US and euro area)
- parameters are calibrated to values that are common in the literature
- the degree of international openness:
 - $\text{export/GDP} = 15\%$
 - $\text{production of foreign-owned firms/total production} = 15\%$
- assume a passive fiscal policy and an active monetary policy

The Long-Run Effects of Corporate Taxation

The Long-Run Experiment

- compute the steady state at different calibrations of the home corporate tax rate τ_h^c
- vary the home corporate tax rate $\tau_h^c \in [0; 0.5]$ while keeping the foreign corporate tax rate $\tau_f^c = 0.25$ constant
- government bonds (b_h, b_f) and lump-sum taxes on savers ($\tau_h^{ls,s}, \tau_f^{ls,s}$) endogenously adjust to satisfy the fiscal-budget constraints
- the remaining fiscal instruments stay unchanged

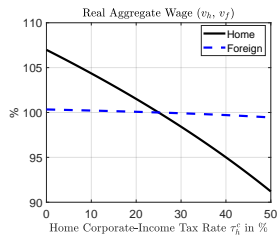
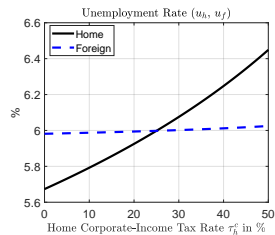
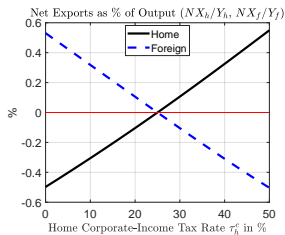
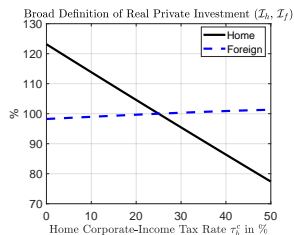
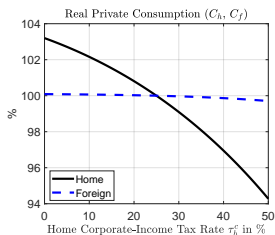
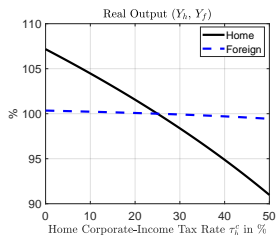
A Cut in the Home Corporate Tax Rate τ_h^c Affects the Home Economy

- a cut in the corporate tax triggers more intensive firm creation \mathcal{N}_h
- more intensive firm creation translates into a larger number of home firms N_h^h
- the larger number of firms raises output Y_h
- higher output results into higher investment I_h and lower unemployment u_h
- lower unemployment together with a more generous wage v_h supports consumption C_h

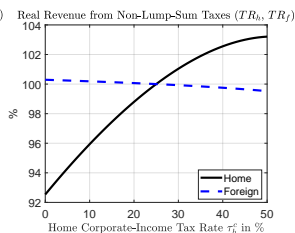
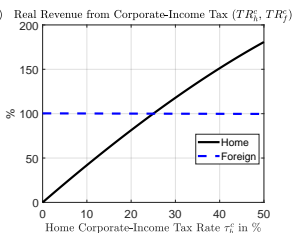
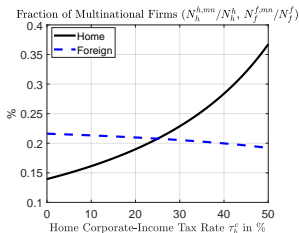
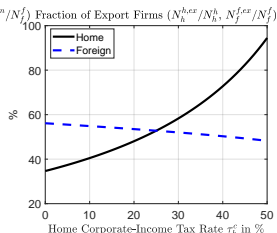
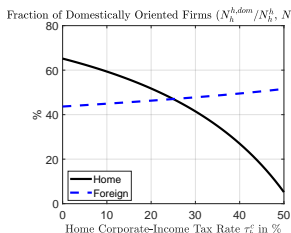
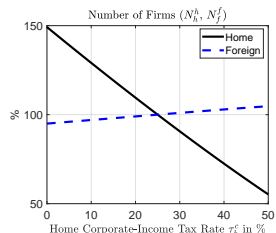
A Cut in the Home Corporate Tax Rate τ_h^c Affects the Operational Status of Home Firms

- the more generous wage makes exporters less competitive \implies home firms play the domestic strategy rather than the export strategy
- the lower corporate tax weakens the incentive to have a foreign affiliate \implies home firms play the export strategy rather than the multinational strategy
- the fraction of domestically oriented firms increases
- the fractions of export and multinational firms decrease

Long-Run Reaction to Home Corporate Tax



Long-Run Reaction to Home Corporate Tax



Adjustment Dynamics and Corporate-Tax Reforms

Dynamic Experiments

- cut the home corporate tax rate τ_{ht}^c from 25% to 20%
- government bonds (b_{ht} , b_{ft}) and lump-sum taxes on savers ($\tau_{ht}^{ls,s}$, $\tau_{ft}^{ls,s}$) endogenously adjust to satisfy the fiscal-budget constraints
- the remaining fiscal instruments stay unchanged
- simulate three scenarios:
 - ① **Permanent Cut:** announced and effective in quarter 1
 - ② **Temporary Cut:** announced and effective in quarter 1, reversed in quarter 21 as announced
 - ③ **Temporary Cut Gets Permanent:** announced and effective in quarter 1, made permanent in quarter 21 as a surprise
- the scenarios 1 and 3 differ in the communication but share the same path of the realized corporate tax rate

The Expansion of Output Is Much Smaller under a Temporary Cut than under a Permanent Cut

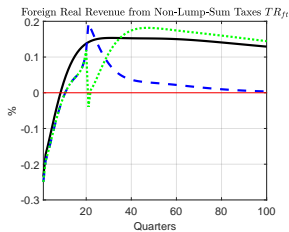
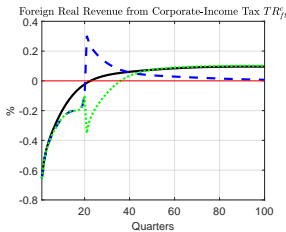
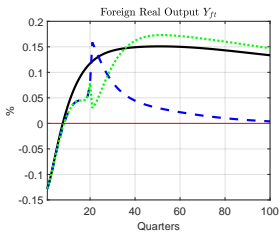
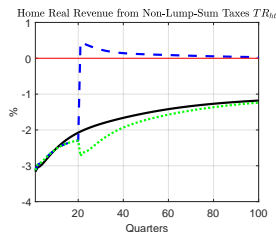
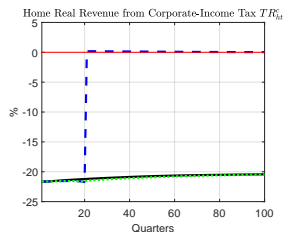
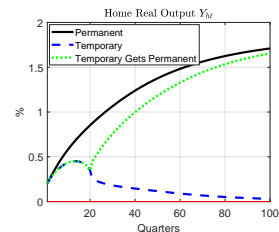
① Permanent Cut:

- economic agents expect that the corporate tax stays reduced forever
- massive firm creation in the home country \mathcal{N}_{ht}
- a substantial increase in the number of home firms N_{ht}^h
- a sizable expansion of home output Y_{ht}

② Temporary Cut:

- economic agents expect that the corporate-tax cut will be reversed after 20 quarters
- a smaller and short-lived rise in the home firm creation \mathcal{N}_{ht}
- a limited increase in the number of home firms N_{ht}^h
- a light expansion of home output Y_{ht}

The Dynamic Response to a Home Corporate-Tax Cut



The Macroeconomic Impact of Profit Shifting

International Profit Shifting

- so far the model hasn't allowed firms to artificially shift profits across borders
- tax-base erosion is high on the agenda of policymakers (OECD/G20 Inclusive Framework)
- extend the model by profit shifting
- explore how profit shifting affects macroeconomic outcomes

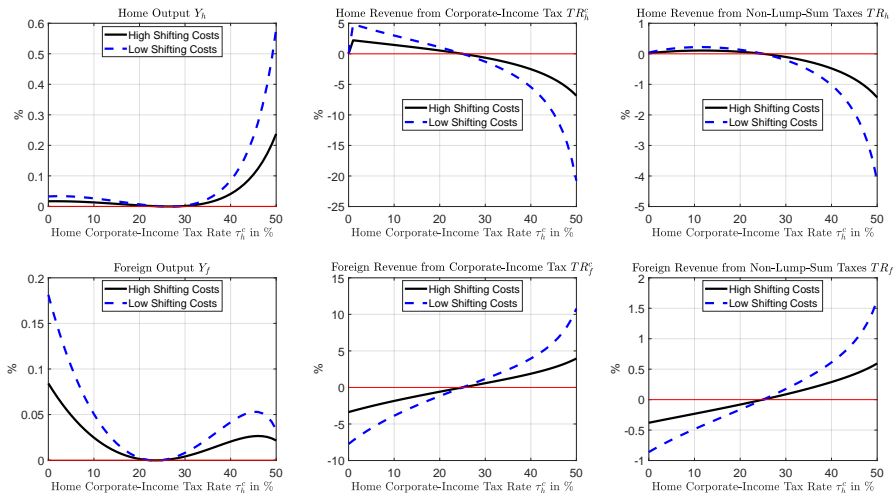
The Extended Model

- each multinational can move profits between the parent firm and overseas affiliate (issue an intra-firm invoice)
- the cost of profit shifting is quadratic in the value of the invoice
- model definitions of GDP, export, and import exclude profit-shifting activities (as in Guvenen et al., 2022; Tørsløv et al., 2023)
- focus on true economic activity and its response to profit shifting
- consider two calibrations of profit-shifting costs: high and low

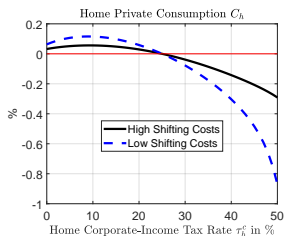
Main Effects of International Profit Shifting

- stronger GDP in the low-tax as well as high-tax jurisdiction (less tax distortion)
- stronger tax revenue and private consumption in the low-tax jurisdiction
- weaker tax revenue and private consumption in the high-tax jurisdiction
- more multinational firms from the low-tax as well as high-tax jurisdiction

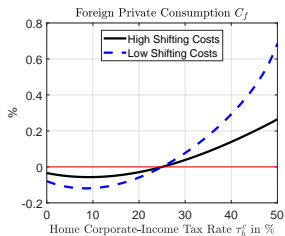
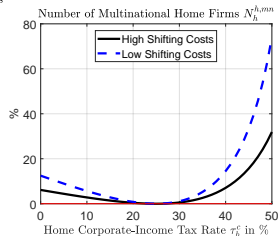
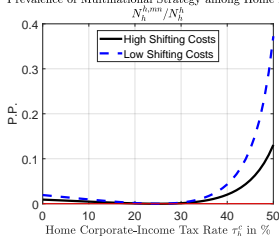
The Impact of Profit Shifting on Long-Run Output and Tax Revenue



The Impact of Profit Shifting on Long-Run Consumption and the Number of Multinational Firms



Prevalence of Multinational Strategy among Home Firms



Prevalence of Multinational Strategy among Foreign Firms

