

Lecture 7: Business taxation

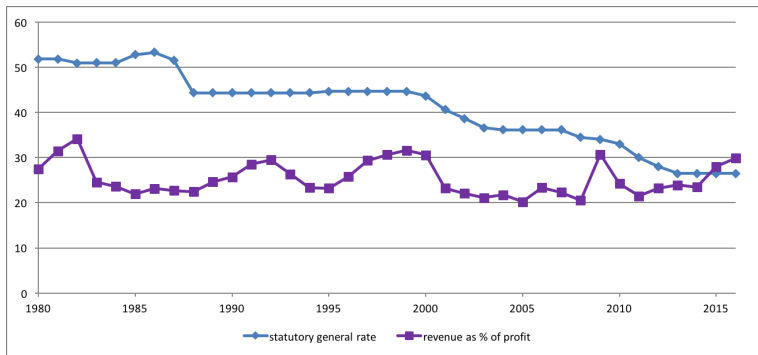
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Corporate income taxation: A tax on capital *employed* in the domestic economy

- The structure of the corporate tax and trends
- Economic effects and economic incidence of the corporate tax
- Who bears the burden of the corporate tax?
- Corporate taxation and globalization

Next week: Taxation of savings and capital income ...

Figure: Corporate tax rates and revenues, Canada, 1980-2016



- Federal corporate tax rate down from 39% to 19% since 1986.
- Same trend in most OECD countries (now even in US)
- Yet tax revenues have remained stable: **Why?**

Levied on *incorporated* businesses only.

$$\text{Tax paid} = \tau \times (\text{Revenues} - \text{Non-capital expenses} \\ - \text{Capital cost allowances} - \text{Interest on debt})$$

Notes:

- Most inputs deductible – so not taxed
- CCA for *economic depreciation* – see below
- Cost of corporate debt finance deductible – not equity finance
 - ▶ (personal income tax includes *Dividend Tax Credit*)

Investment effects of the corporate tax

Since CIT base deducts everything except the cost of capital, then it is a tax on capital – with potentially large effects on investment and productivity (excess burden).

But some capital costs (interest, CCA) *are* deductible – so effects on investment are unclear.

We first consider a very simple model of capital:

- A firm rents capital K for one year to generate operating profit $F(K)$
- Firm borrows K to finance operations and pays interest rK to creditors
- Corporate tax rate τ

The firm's profits:

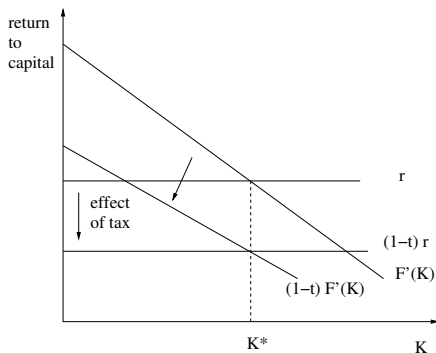
$$\Pi(K) = (1 - \tau)[F(K) - rK]$$

The firm adds capital until marginal profit is zero, or

$$\frac{d\Pi(K)}{dK} = (1 - \tau)[F'(K) - r] = 0$$

Investment is unaffected by the tax:

$$F'(K^*) = r \quad \text{for all } \tau \geq 0$$



In this model, the CIT is *neutral for investment*. Assumes:

- debt finance
- no depreciation

Why tax corporations?

Firms don't pay taxes, people do. We can't talk about the "fair share" of tax paid by business. We need to understand tax incidence on shareholders, managers, workers, consumers.

We could tax those agents directly through the personal income tax. So why have a corporate income tax at all???

Some possible explanations. The corporate tax may be useful as:

- 1 A rent tax
- 2 A tax on equity
- 3 A tax on foreign investors
- 4 A "backstop" to control personal tax avoidance

CIT as a rent tax

In our simple model, capital costs were deductible, so

$$F'(K^*) = r$$

i.e., investment was unaffected. But

$$R = \tau(F(K^*) - rK^*) > 0$$

i.e. **this tax generates positive tax revenue – by taxing economic rents.**

Some investment projects earn higher than normal returns – still continue even with the tax. Some key examples:

- resource rents
- monopoly profits
- intellectual property

CIT as a tax on equity

In our simple model, all capital was borrowed, and interest was deductible. In reality, some investment is financed by equity (**how much?**) which is not deductible. So the CIT could be a tax on equity:

- shareholders value incorporation
 - ▶ perhaps CIT is a **benefit tax on limited liability**
- entrepreneurs in start-ups may find it hard to borrow
 - ▶ perhaps CIT is a **tax on entrepreneurs**

If firms must rely on equity to finance investment, then the CIT discourages investment and creates (large) excess burdens. See the more detailed model below.

CIT as a tax on foreign investors

Most foreign investors (shareholders, bondholders) in domestic companies do not file personal tax returns domestically. So isn't a corporate tax needed to tax those incomes?

Problem with this argument?



We might still hope to use CIT to tax **rents** earned by foreigners (see above). But what if rents are internationally mobile?

CIT as a backstop to the personal income tax

Suppose we had a perfect PIT that taxed rich shareholders just the way we want. Should we just abolish the corporate tax, because of its effects on investment?

- Without CIT, income could be retained in corporation and tax deferred indefinitely
- Capital gains on corporate shares would be very hard to tax on accrual – our system has a **realization basis** for capital gains
- big potential for tax avoidance if corporate tax rate were zero – or much lower than top personal rates

A more complete theory, with depreciable assets and equity finance.

Economic depreciation is the opportunity cost of owning a capital asset for a period of time. Example: Studies show that computers depreciate 50% per year. So a \$1 million computer generates a stream of depreciation expenses

$$(\$500K, \$250K, \$125K, \dots)$$

Under the CIT, purchases cannot generally be deducted (*expensed*) in the year of purchase. Instead, *Capital cost allowance* (or *tax depreciation*) is a stream of deductions

$$(D_0, D_1, D_2, \dots)$$

permitted in years following purchase, per dollar spent.

Let Z denote the PDV of future depreciation deductions per dollar.

The cost of capital to the firm depends on whether it uses debt finance (deductible) or equity finance (non-deductible). Let the after-tax financial cost of capital be

$$r_f = \begin{cases} (1 - \tau)r & \text{with debt finance} \\ r & \text{with equity finance} \end{cases}$$

Now the marginal investment earns after-tax return $(1 - \tau)G$ per year, and it costs $(r_f + \delta)(1 - \tau Z)$. So invest if

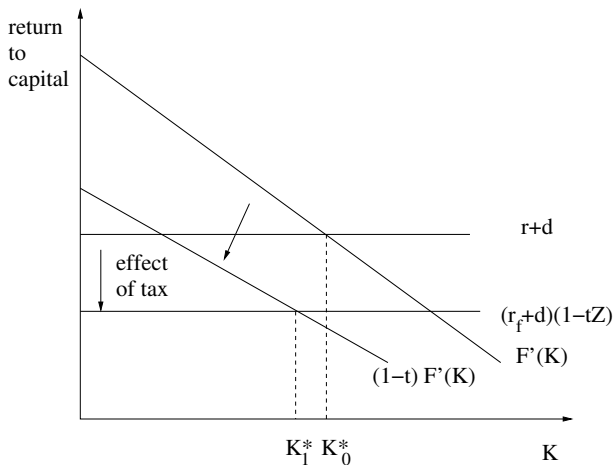
$$G \geq UCC = \frac{(r_f + \delta)(1 - \tau Z)}{1 - \tau}$$

The RHS is the *hurdle rate* for new investment, or the **user cost of capital**.

Tax affects the UCC in complicated ways. Investment is discouraged iff

$$UCC > r + \delta$$

Figure: Effects of CIT on investment: The general case



Can we still design the CIT to be neutral for all investments? Consider two possibilities: (i) cash flow taxation; (ii) allowance for corporate equity.

Suppose that investment is *expensed*: fully deductible immediately on purchase. Then $Z = 1$. But there is no deduction for interest costs: $r_f = r$. So:

$$UCC = \frac{(r_f + \delta)(1 - \tau Z)}{1 - \tau} = \frac{(r + \delta)(1 - \tau)}{1 - \tau} = r + \delta$$

This is cash flow taxation: immediate expensing of investment, but no deduction for financial costs of capital. **Cash flow taxation is neutral for investment.**

Why isn't cash flow taxation used in practice?



[Redacted]



[Redacted]

Suppose instead that CCA equals true economic depreciation, so a \$1 investment generates a stream of deductions

$$(0, \delta, \delta(1 - \delta), \delta(1 - \delta)^2, \dots)$$

The PDV of deductions is

$$Z = \frac{\delta}{1 + r_f} + \frac{\delta(1 - \delta)}{(1 + r_f)^2} + \frac{\delta(1 - \delta)^2}{(1 + r_f)^3} + \dots = \frac{\delta}{r_f + \delta}$$

Now, let firm deduct cost of all debt and equity finance, so $r_f = (1 - \tau)r$:

$$UCC = \frac{(r_f + \delta) \left(1 - \frac{\tau\delta}{r_f + \delta}\right)}{1 - \tau} = \frac{r_f}{1 - \tau} + \delta = r + \delta$$

With ACE and full economic depreciation, the CIT is neutral for investment! Why isn't ACE used in practice?



In a classical corporation tax, interest payments are tax deductible, but return to equity (dividends, retained earnings/capital gains) are not.

- tax preference for debt – can lead to excessive leverage

Dividend tax credit in Canada: personal tax credit to shareholders roughly equivalent to a corporate deduction for dividends paid. So corporate and personal taxes are *integrated*: no bias against equity; potential to reduce excess burden

But:

- but only for **domestic, taxable shareholders**: not pension funds or foreign investors
 - ▶ is this likely to affect corporate finance decisions of Canadian corporations?
- resulting loss in personal tax revenues is large – about \$5 billion per year, largely accruing to high-income households
- So an ACE or cash flow tax would be a better way to equalize treatment of equity and debt finance

Who ultimately bears the burden of the corporate tax? Capital or labour?

Our standard incidence model provides some insights.

- ① Short run: the stock of capital available to invest is roughly fixed. Taxes on capital investment should be .
- ② Longer run: investors can avoid the domestic CIT by investing abroad (or in non-corporate assets). As domestic investment falls, the pre-tax return rises, restoring equilibrium. The burden of the tax is borne by:
 - ▶
 - ▶ owners of internationally immobile assets (like resource rents)

Exercise: Consider a *withholding tax* on corporate payments to foreign investors. What is the incidence of this tax on foreign and domestic capitalists, and domestic workers?

In our model so far, firms choose how much to invest in the domestic economy – possibly financed by foreign portfolio investors.

In reality, much of investment is channelled through *multinational corporations* that choose between investing in country of residence, or in subsidiaries in foreign countries.

Foreign investments of MNCs are subject to taxation both in host country and in their country of residence. Approaches to alleviating double taxation:

- 1 credit system (used by US, UK until recently): foreign income of MNC is subject to taxation at home, with a credit for foreign taxes paid.
- 2 exemption system (used by Canada and most other rich countries): foreign income is exempt from taxation at home.

So Canadian MNCs pay tax in Canada on domestic but not foreign investments. Does this make sense?

MNC chooses between investment in domestic assets (domestic tax rate τ_d) and assets in a *tax haven* (foreign tax rate $\tau_f = 0$). Assets have pre-tax return (productivity) $R_i, i = d, f$.

- ① Credit system, MNC invests at home if $(1 - \tau_d)R_d \geq (1 - \tau_d)R_f$ or

$$R_d \geq R_f$$

which maximizes worldwide productivity of capital. Credit system leads to **Capital Export Neutrality: taxes do not affect where MNC invests.**

- ② Exemption system, MNC invests at home if $(1 - \tau_d)R_d \geq R_f$ or

$$R_d \geq \frac{R_f}{1 - \tau_d} > R_f$$

The exemption system may lead to *offshoring* of MNC investment into foreign subsidiaries.

Why do you think most countries now use exemption?

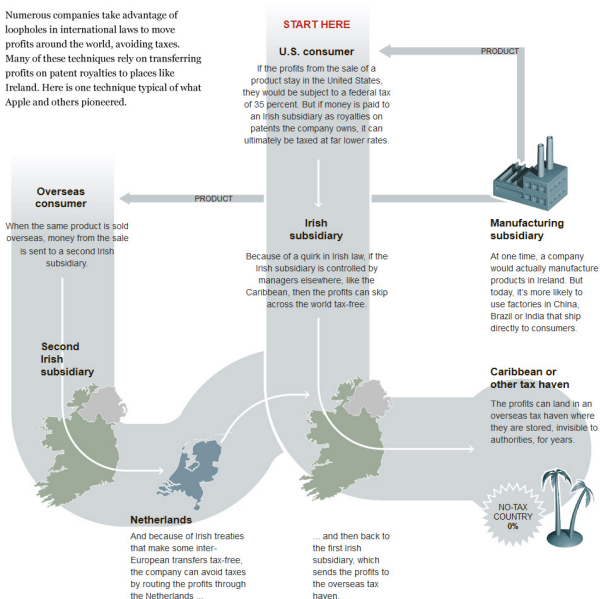
One reason for exemption is that MNCs can use financial and accounting transactions to *shift profits* out of US and other high-tax countries to *tax havens*, even without relocating their physical investments and production. Even if we want to tax worldwide income, doing so is hard!

Examples of profit shifting activities:

- Transfer pricing: Affiliates in low-tax countries sell inputs to parent company at an elevated price, reducing taxable income at home.
- Expatriation of intellectual property: Patents are held by affiliates in low-tax countries, and sales in high-tax countries are offset by tax-deductible royalty payments to offshore affiliates.
- Offshore financing: {Parent borrows from financing affiliate in a low-tax country, generating deductible interest payments.

'Double Irish With a Dutch Sandwich'

Numerous companies take advantage of loopholes in international laws to move profits around the world, avoiding taxes. Many of these techniques rely on transferring profits on patent royalties to places like Ireland. Here is one technique typical of what Apple and others pioneered.



As MNCs grow in importance and profit shifting becomes more widespread, strong implications for the future of the corporate tax:

- Revenue loss
 - ▶ absent changes to our system, capital owners pay less tax – burdens will shift to workers
 - ▶ Corporate tax burden shifts from investors in large MNCs to smaller, domestic-only corporations
 - small firms can't easily use tax havens
- Tax competition
 - ▶ Domestic tax base becomes very sensitive to tax rate
 - ▶ countries reduce rates to attract profits
 - ▶ potential *race to the bottom* in rates
- Impact on jobs and investment is less clear:
 - ▶ with profit shifting, MNCs may not need to offshore jobs to avoid tax
 - ▶ e.g. Google can still invest in US, because doesn't pay much tax there...