

Tax Treaties and the International Allocation of Production: The Welfare Consequences of Location Decisions and Strategic Tax Setting

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Background

Two approaches to the taxation of foreign income:

- Territorial (source-based) taxation
 - ▶ 28 OECD countries, many developing countries
 - ▶ Business income earned abroad by foreign subsidiaries is wholly or partially exempt from home country tax with no credit for foreign taxes
 - ▶ Qualifying foreign subsidiary earnings can be repatriated with little or no tax
- Worldwide (residence-based) taxation
 - ▶ 6 OECD countries, many developing countries
 - ▶ Income earned abroad by foreign subsidiaries is subject to tax by the home country with a credit for income taxes paid to foreign governments
 - ▶ Most countries limit the credit for foreign income taxes to home country tax on foreign income

Foreign Tax Credit

Example 1 (full credit)

Residence tax rate: $t_R = 30\%$; source tax rate: $t_S = 20\%$; home income: $\pi_R = 200$; foreign income: $\pi_S = 100$

- Tax at home before credit: $T_R = t_R (\pi_R + \pi_S) = 90$;
foreign tax: $T_S = t_S \pi_S = 20$;
- Total tax before credit: $T_R + T_S = 110$;
- Foreign tax credit: $C = \min \{t_R \pi_S, t_S \pi_S\} = t_S \pi_S = 20$;
- Tax payable at home after credit: $T_R - C = 70$;
- Total tax paid after credit:
 $T = t_R (\pi_R + \pi_S) + t_S \pi_S - t_S \pi_S = t_R \pi_R + t_R \pi_S = 90$.

Foreign Tax Credit

Example 2 (excess credit position).

Residence tax rate: $t_R = 30\%$; source tax rate: $t_S = 45\%$; home income: $\pi_R = 200$; foreign income: $\pi_S = 100$

- Tax at home before credit: $T_R = t_R (\pi_R + \pi_S) = 90$;
foreign tax: $T_S = t_S \pi_S = 45$
- Total tax before credit: $T_R + T_S = 135$;
- Foreign tax credit: $C = \min \{t_R \pi_S, t_S \pi_S\} = t_R \pi_S = 30$
- Tax payable at home after credit: $T_R - C = 60$
- Total tax paid after credit:
$$T = t_R (\pi_R + \pi_S) + t_S \pi_S - t_R \pi_S = t_R \pi_R + t_S \pi_S = 105$$

Question

- The paper grew out of considering why a residence country would ever enter into tax sparing agreement
 - ▶ With tax sparing the tax credit on foreign income exceeds foreign tax actually paid
- We realized the explanation had more general implications for foreign tax credits
- Provided that $t_R \geq t_S$ we can write the total tax paid by a multinational firm operating in a Residence and a Source country as

$$T = t_R (\pi_R + \pi_S) + t_S \pi_S - a t_S \pi_S$$

where: $a = 0$: no tax credit; $0 < a < 1$: partial tax credit; $a = 1$: full tax credit; $a > 1$: excess tax credit (tax sparing)

- Explaining why $a > 1$ is observed requires the same argument as explaining $a > 0$

Question

- To explain why the residence country agrees to a treaty that implements tax credits requires an answer to the question

"Who benefits from the introduction of a foreign tax credit?"

- The answer to this question is not as clear as it might first seem

Answer?

- Assume there is a multinational firm, a residence country, and a source country
 - ▶ The introduction of a foreign tax credit reduces the effective tax rate on earnings in the source country
 - ▶ The return on investment in the source country will increase
 - ▶ The firm will increase investment in the source country (absolute and relative)
 - ▶ The source country will gain increased tax revenue
- The residence country will suffer a loss of tax revenue but may gain profit

Answer?

- The reasoning works if tax rates do not change when the tax credit is introduced
- Corporate tax rates have changed significantly in recent years
- One explanation for the (typical) reduction in corporate tax rate is enhanced tax competition
- Countries have used low rates to gain strategic advantage over rivals in order to increase secure increased FDI

A different answer?

- Try the argument again with two (or more) source countries
 - ▶ The source countries set tax rates strategically to compete for FDI
 - ▶ The introduction of a foreign tax credit increases the strategic advantage of reducing the corporate tax rate
 - ▶ The two source countries significantly reduce tax rates to benefit
 - ▶ This leads to lower tax revenues in equilibrium
 - ▶ Value of tax credit falls
- Revenue to residence country rises (and profit may also rise)!

Formal Model

- This argument can be established in a formal model
- Consider a residence country, R , and two source countries, S_1 , and S_2
- The countries levy tax at rates t_R , t_{S_1} , t_{S_2} on corporate income
- The residence country provides a tax credit a_i on tax paid in source country i

Formal Model

- A multinational firm decides the division of production between the three countries
- Denote the proportion in source country i by λ_i so the proportion in the residence country is $1 - \lambda_1 - \lambda_2$
- The λ s can represent:
 - The share of total production in each country
 - The proportion of the production process in each country
- Note that the latter introduces transfer pricing issues - discussed briefly below

Formal Model

- The division of production determines the profit generated in each country

$$\text{Residence: } \pi_R = \pi_R (1 - \lambda_1 - \lambda_2)$$

$$\text{Source 1: } \pi_{S_1} = \pi_{S_1} (\lambda_1)$$

$$\text{Source 2: } \pi_{S_2} = \pi_{S_2} (\lambda_2)$$

- The profit of the firm after tax is

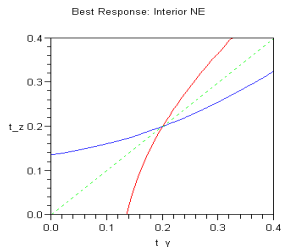
$$\bar{\pi} = (1 - t_R) (\pi_R + \pi_{S_1} + \pi_{S_2}) + (a_1 - 1) t_{S_1} \pi_{S_1} + (a_2 - 1) t_{S_2} \pi_{S_2}$$

Choices

- The firm chooses λ_1 and λ_2 to maximize profit
- The source countries independently maximize tax revenue, R_i , by choosing the tax rates t_{S_1} and t_{S_2}
- The residence country maximizes the sum of after-tax profit and revenue, $\bar{\pi} + R_R$, by choosing a pair of tax treaties $a_1 \geq 0$, $a_2 \geq 0$
- Motivation of residence
 - ▶ A tax credit removes distortion in location choice so raises profit of resident firm
 - ▶ But the credit reduces tax revenue

General Result

- Tax revenue of source countries can *fall* when tax credits are accepted (relative to the revenue with no tax credits)
- This occurs when the elasticities of choices satisfy $\varepsilon_{t_{S_2}}^{\lambda_1} \varepsilon_a^{t_{S_2}} + \varepsilon_a^{\lambda_1} < 0$
- Typically, $\varepsilon_{t_{S_2}}^{\lambda_1} > 0$, and $\varepsilon_a^{\lambda_1} > 0$, so need $\varepsilon_a^{t_{S_2}} < 0$



- This agrees with the intuition: if the tax treaty intensifies tax competition the source countries can lose
- In this case the source countries can be trapped in a Prisoners' dilemma

An Example

- The example illustrates that the source countries can *lose* from an agreement
- If both host countries enter then $t_1 = t_2 = 0.164$
- If S_1 enters and S_2 does not, then $t_2 = 0.5$, $t_1 = 0.416$, and $\lambda = 0.871$
- The situation is symmetric between S_1 and S_2

	Agree	Don't Agree
Agree	0.164, 0.164	0.685, 0.148
Don't Agree	0.148, 0.685	0.500, 0.500

Payoffs for Source Countries ($t_R = 0.6$, $t_{S_i} = 0.5$, $\gamma = 0.9$)

Tax Sparing

- Tax sparing: a provision in a bilateral tax treaty about taxation by one country of its resident's income earned in the other country
- With tax sparing the tax credit on foreign income exceeds foreign tax actually paid

Country	Tax System	No. of Tax Sparing Agreement
Australia	Territorial	14
Canada	Territorial	39
France	Territorial	27
Italy	Territorial	36
Portugal	Territorial	7
Sweden	Territorial	43
United States	Worldwide	0

Source: Azemar and Dharmapala (2015)

Foreign tax credit

Suppose, foreign country offers a reduced tax rate to attract an MNC.

Example 3 (tax incentive for FDI). Residence tax rate: $t_R = 30\%$; source tax rate: $t_S = 20\%$; home income: $\pi_R = 200$; foreign income: $\pi_S = 100$

- Reduced foreign tax rate: $t_S^* = 10\%$
- Tax at home before credit: $T_R = t_R (\pi_R + \pi_S) = 90$;
foreign tax: $T_S = t_S^* \pi_S = 10$
- Total tax before credit: $T_R + T_S = 100$;
- Foreign tax credit: $C = \min \{t_R \pi_S, t_S^* \pi_S\} = t_S^* \pi_S = 10$
- Tax payable at home after credit: $T_R - C = 80$
- Total tax paid after credit:
$$T = t_R (\pi_R + \pi_S) + t_S^* \pi_S - t_S^* \pi_S = t_R \pi_R + t_R \pi_S = 90$$

Tax revenue foregone by the source is transferred to the treasury of the residence: no benefit to MNC from the reduced tax rate.

Foreign tax credit

Solution: matching credit or tax sparing.

Example 4 (tax sparing). Residence tax rate: $t_R = 30\%$; source tax rate: $t_S = 20\%$; home income: $\pi_R = 200$; foreign income: $\pi_S = 100$

- Reduced foreign tax rate: $t_S^* = 10\%$
- Tax at home before credit: $T_R = t_R (\pi_R + \pi_S) = 90$;
foreign tax: $T_S = t_S^* \pi_S = 10$
- Total tax before credit: $T_R + T_S = 100$;
- Foreign tax credit: $C = \min \{t_R \pi_S, t_S \pi_S\} = t_S \pi_S = 20$
- Tax payable at home after credit: $T_R - C = 70$
- Total tax paid after credit: $T = t_R (\pi_R + \pi_S) + t_S^* \pi_S - t_S \pi_S = t_R \pi_R + [t_R - (t_S - t_S^*)] \pi_S = 80$

Tax revenue foregone by the source remains with the MNC. Residence country grants tax credit in excess of foreign tax paid.

Empirical evidence: effect on FDI

- Azemar and Dharmapala (2015)
 - ▶ Panel data for 2002-2012
 - ▶ Bilateral FDI from 23 OECD countries to 113 developing and transition economies
 - ▶ Tax sparing associated with 30 percent increase in bilateral FDI stocks
 - ▶ Effects start from the year that tax sparing comes into force onwards
 - ▶ No effect of transition from worldwide to territorial taxation in the home country (Norway, UK, Japan, and New Zealand)
 - ★ Tax sparing is equally valuable for worldwide and territorial MNCs.

An Example

- Assume MNC profit is given by

$$\pi = (1 - t_R) (1 - \lambda_1 - \lambda_2)^\gamma + (1 - \tau_{S_1}) \lambda_1^\gamma + (1 - \tau_{S_2}) \lambda_2^\gamma$$

where

$$\tau_{S_i} = t_R + t_{S_i}^* - ((1 - \alpha) t_{S_i} + \alpha t_{S_i}^*)$$

- Tax sparing if $t_{S_i}^* < t_{S_i}$ and $\alpha > 0$
- Strategic game:
 - Residence: choose $\{a_1, a_2\}$ to $\max_{[0,1] \times [0,1]} W_R(a_1, a_2)$
 - Source j : choose $t_{S_j}^*$ to $\max_{[0, t_{S_j}]} W_j(t_{S_j}^*)$, $j = 1, 2$
- With simultaneous choice:** there can be an equilibrium with tax sparing for one country
- With residence as a Stackelberg leader:** there can be tax sparing with both countries

Transfer Pricing

- If the models represents the division of the production process between countries then transfer pricing has to be considered
- The choice of tax credit should take into account how it affects the incentive to manipulate transfer price
- With double taxation should relocate profit to Residence country
- The incentive to do this is reduced as the tax credit is increased
- This creates an additional trade-off in the choice processes

Conclusions

- Tax credits are used to avoid double taxation and the distortion of international location decisions
- This is not sufficient justification for why a Residence country will agree to a treaty that implements credits
- The Residence country can gain if a tax credit intensifies tax competition for FDI
- Tax competition can lead to a Prisoner's Dilemma outcome for the Source countries
- The welfare impact of a tax treaty is not obvious when tax rates are chosen strategically