Treaty Shopping, Race to the Bottom, and Treaty Cascades

Jing Qian

Princeton University

April 13, 2022
MPSA 2023 Annual Conference

Summary

Summary

- Bilateral tax treaties (BTTs) facilitates tax treaty shopping

Summary

- Bilateral tax treaties (BTTs) facilitates tax treaty shopping
- Yet, BTTs proliferates, with increasing generous provisions

Summary

- Bilateral tax treaties (BTTs) facilitates tax treaty shopping
- Yet, BTTs proliferates, with increasing generous provisions
- Treaty-shopping risks $\Rightarrow$ Race to the Bottom & Treaty Cascades

Summary

- Bilateral tax treaties (BTTs) facilitates tax treaty shopping
- Yet, BTTs proliferates, with increasing generous provisions
- Treaty-shopping risks $\Rightarrow$ Race to the Bottom & Treaty Cascades
- Original datasets
  - The universe of BTTs since 1900 (3900+ BTTs and $\sim$ 900 amendments)
  - Worldwide statutory withholding tax rates (1980 - 2020)

Summary

- Bilateral tax treaties (BTTs) facilitates tax treaty shopping
- Yet, BTTs proliferates, with increasing generous provisions
- Treaty-shopping risks $\Rightarrow$ Race to the Bottom & Treaty Cascades
- Original datasets
  - The universe of BTTs since 1900 (3900+ BTTs and $\sim$ 900 amendments)
  - Worldwide statutory withholding tax rates (1980 - 2020)
- Findings:
  - Race to the bottom: Treaty Shopping $\Rightarrow$ Treat Formation

Summary

- Bilateral tax treaties (BTTs) facilitates tax treaty shopping
- Yet, BTTs proliferates, with increasing generous provisions
- Treaty-shopping risks $\Rightarrow$ Race to the Bottom & Treaty Cascades
- Original datasets
    - The universe of BTTs since 1900 (3900+ BTTs and $\sim$ 900 amendments)
    - Worldwide statutory withholding tax rates (1980 - 2020)
- Findings:
    - Race to the bottom: Treaty Shopping $\Rightarrow$ Treat Formation
        - Treaty Shopping $\Rightarrow$ $\downarrow$ Treaty Rates | Treaty Formation

Summary

- Bilateral tax treaties (BTTs) facilitates tax treaty shopping
- Yet, BTTs proliferates, with increasing generous provisions
- Treaty-shopping risks $\Rightarrow$ Race to the Bottom & Treaty Cascades
- Original datasets
  - The universe of BTTs since 1900 (3900+ BTTs and $\sim$ 900 amendments)
  - Worldwide statutory withholding tax rates (1980 - 2020)
- Findings:
  - Race to the bottom: Treaty Shopping $\Rightarrow$ Treat Formation
    - Treaty Shopping $\Rightarrow$ $\downarrow$ Treaty Rates | Treaty Formation
  - Cascades: New BTT Formation $\Rightarrow$ More Treaty Shopping Risks

Background

Background

- Countries sign BTTs to address double taxation

Background

- Countries sign BTTs to address double taxation
- Yet, BTTs also reduce the withholding tax rate (WHT) for partners

Background

- Countries sign BTTs to address double taxation
- Yet, BTTs also reduce the withholding tax rate (WHT) for partners
  - WHT on passive income: dividends, interest, royalties, etc.

Background

- Countries sign BTTs to address double taxation
- Yet, BTTs also reduce the withholding tax rate (WHT) for partners
  - WHT on passive income: dividends, interest, royalties, etc.
- The same payment would face different tax rates:

Background

- Countries sign BTTs to address double taxation
- Yet, BTTs also reduce the withholding tax rate (WHT) for partners
  - WHT on passive income: dividends, interest, royalties, etc.
- The same payment would face different tax rates:
  - Base rate: w_i (applies to payments from i to all countries)

Background

- Countries sign BTTs to address double taxation
- Yet, BTTs also reduce the withholding tax rate (WHT) for partners
  - WHT on passive income: dividends, interest, royalties, etc.
- The same payment would face different tax rates:
  - Base rate: w_i (applies to payments from i to all countries)
  - Treaty rate: w_{ij} (applies to payment from i to j, if BTT in force)

Background

- Countries sign BTTs to address double taxation
- Yet, BTTs also reduce the withholding tax rate (WHT) for partners
    - WHT on passive income: dividends, interest, royalties, etc.
- The same payment would face different tax rates:
    - Base rate: w_i (applies to payments from i to all countries)
    - Treaty rate: w_{ij} (applies to payment from i to j, if BTT in force)
    - Effective rate: $t_{ij} = (1 - \text{BTT}_{ij})w_i + \text{BTT}_{ij}\min\{w_i, w_{ij}\}$

Background

- Countries sign BTTs to address double taxation
- Yet, BTTs also reduce the withholding tax rate (WHT) for partners
  - WHT on passive income: dividends, interest, royalties, etc.
- The same payment would face different tax rates:
  - Base rate: w_i (applies to payments from i to all countries)
  - Treaty rate: w_{ij} (applies to payment from i to j, if BTT in force)
  - Effective rate: $t_{ij} = (1 - \text{BTT}_{ij})w_i + \text{BTT}_{ij} \min\{w_i, w_{ij}\}$
- Tax differentials $\Rightarrow$ tax treaty shopping (Arel-Bundock 2017; Thrall 2021)

Background

- Countries sign BTTs to address double taxation
- Yet, BTTs also reduce the withholding tax rate (WHT) for partners
  - WHT on passive income: dividends, interest, royalties, etc.
- The same payment would face different tax rates:
  - Base rate: w_i (applies to payments from i to all countries)
  - Treaty rate: w_{ij} (applies to payment from i to j, if BTT in force)
  - Effective rate: $t_{ij} = (1 - \text{BTT}_{ij})w_i + \text{BTT}_{ij}\min\{w_i, w_{ij}\}$
- Tax differentials $\Rightarrow$ tax treaty shopping (Arel-Bundock 2017; Thrall 2021)
  - Route payment from i, through k, to j.
    - Combined rate: $t_{ikj} = 1 - (1 - t_{ik})(1 - t_{kj})$

Background

- Countries sign BTTs to address double taxation
- Yet, BTTs also reduce the withholding tax rate (WHT) for partners
  - WHT on passive income: dividends, interest, royalties, etc.
- The same payment would face different tax rates:
  - Base rate: w_i (applies to payments from i to all countries)
  - Treaty rate: w_{ij} (applies to payment from i to j, if BTT in force)
  - Effective rate: $t_{ij} = (1 - \text{BTT}_{ij})w_i + \text{BTT}_{ij} \min\{w_i, w_{ij}\}$
- Tax differentials $\Rightarrow$ tax treaty shopping (Arel-Bundock 2017; Thrall 2021)
  - Route payment from i, through k, to j.
    - Combined rate: $t_{ikj} = 1 - (1 - t_{ik})(1 - t_{kj})$
  - Treaty shopping if indirect rate lower than direct rate: $t_{ikj} < t_{ij}$
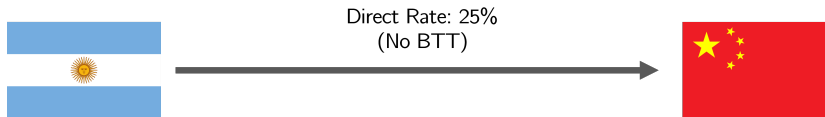
Background

- Countries sign BTTs to address double taxation
- Yet, BTTs also reduce the withholding tax rate (WHT) for partners
    - WHT on passive income: dividends, interest, royalties, etc.
- The same payment would face different tax rates:
    - Base rate: w_i (applies to payments from i to all countries)
    - Treaty rate: w_{ij} (applies to payment from i to j, if BTT in force)
    - Effective rate: $t_{ij} = (1 - \text{BTT}_{ij})w_i + \text{BTT}_{ij}\min\{w_i, w_{ij}\}$
- Tax differentials $\Rightarrow$ tax treaty shopping (Arel-Bundock 2017; Thrall 2021)
    - Route payment from i, through k, to j.
        - Combined rate: $t_{ikj} = 1 - (1 - t_{ik})(1 - t_{kj})$
    - Treaty shopping if indirect rate lower than direct rate: $t_{ikj} < t_{ij}$
- Treaty shopping leads to government revenue loss
    - \$27.4 billion for 2009-2016 (Janský et al. 2021)
   - For SSA countries, $\sim 15\%$ CIT revenue (Beer and Loeprick 2018)

Background

- Countries sign BTTs to address double taxation
- Yet, BTTs also reduce the withholding tax rate (WHT) for partners
  - WHT on passive income: dividends, interest, royalties, etc.
- The same payment would face different tax rates:
  - Base rate: w_i (applies to payments from i to all countries)
  - Treaty rate: w_{ij} (applies to payment from i to j, if BTT in force)
  - Effective rate: $t_{ij} = (1 - \mathrm{BTT}_{ij})w_i + \mathrm{BTT}_{ij}\min\{w_i, w_{ij}\}$
- Tax differentials $\Rightarrow$ tax treaty shopping (Arel-Bundock 2017; Thrall 2021)
  - Route payment from i, through k, to j.
    - Combined rate: $t_{ikj} = 1 - (1 - t_{ik})(1 - t_{kj})$
  - Treaty shopping if indirect rate lower than direct rate: $t_{ikj} < t_{ij}$
- Treaty shopping leads to government revenue loss
  - \$27.4 billion for 2009-2016 (Janský et al. 2021)
  - For SSA countries, $\sim$ 15% CIT revenue (Beer and Loeprick 2018)
- BTTs as vehicles for tax avoidance through profit-shifting
  - \$200-300 billion annual loss (Garcia-Bernardo and Janský 2022)

Direct Rate: 25%
(No BTT)

Direct Rate: 25%
(No BTT)

Direct Rate: 12%
(1996 BTT)

Direct Rate: 0%
(Statutory Rate)
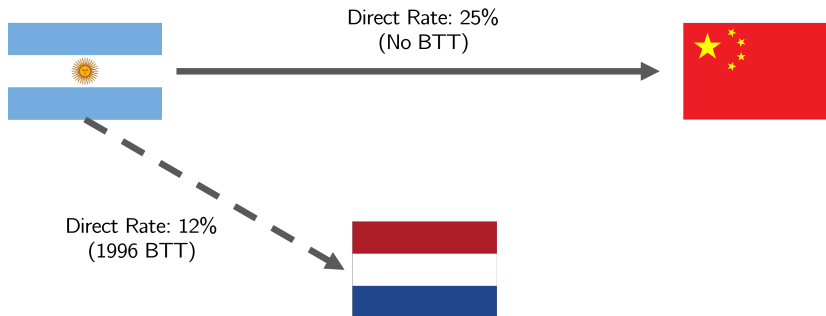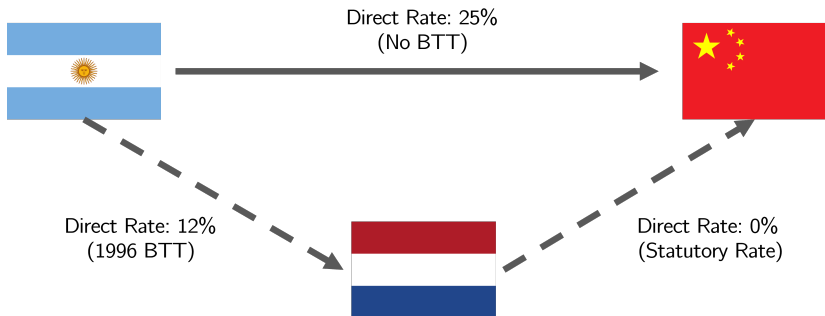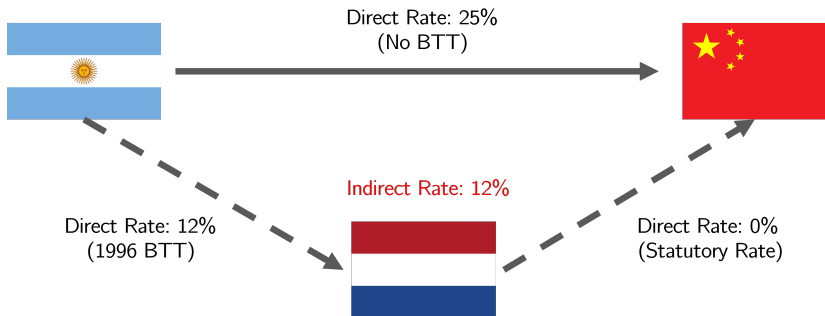
What Drives BTT Expansion?

Figure: As BTT ↑, Treaty WHT Rate ↓ (2004-2020)
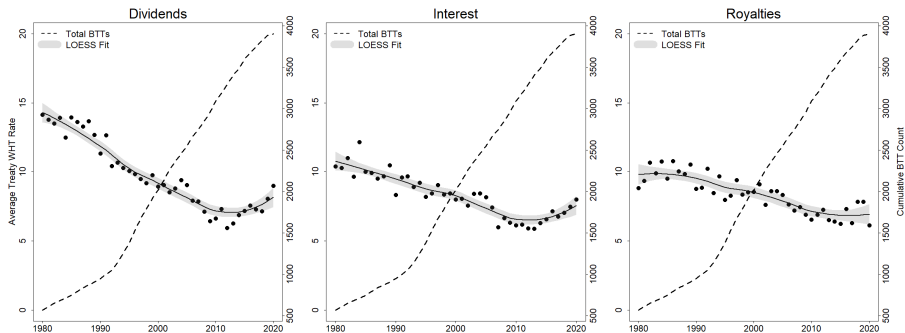
Notes: This figure plots the total number of BTTs countries have signed (right axis) and average withholding tax rate specified in treaties signed in a certain year (left axis) for dividends, interest, and royalties. The solid line and the shaded area represent the locally estimated scatterplot smoothing (LOESS) estimates and corresponding 95% confidence intervals for the average withholding tax rates.

Argument and Hypotheses

Using a simple treaty-shopping framework, I show:

Argument and Hypotheses

Using a simple treaty-shopping framework, I show:

1. BTTs are necessary conditions for treaty-shopping

Argument and Hypotheses

Using a simple treaty-shopping framework, I show:

1. BTTs are necessary conditions for treaty-shopping
2. Loss of tax revenue due to treaty-shopping

Argument and Hypotheses

Using a simple treaty-shopping framework, I show:

1. BTTs are necessary conditions for treaty-shopping
2. Loss of tax revenue due to treaty-shopping
3. Best response: sign more BTTs with lower WHT rates

Argument and Hypotheses

Using a simple treaty-shopping framework, I show:

1. BTTs are necessary conditions for treaty-shopping
2. Loss of tax revenue due to treaty-shopping
3. Best response: sign more BTTs with lower WHT rates

   $\Rightarrow$ Ultimately leads to tax treaty cascades: $\uparrow$ BTT, $\downarrow$ Treaty WHT

Argument and Hypotheses

Using a simple treaty-shopping framework, I show:

1. BTTs are necessary conditions for treaty-shopping
2. Loss of tax revenue due to treaty-shopping
3. Best response: sign more BTTs with lower WHT rates

   $\Rightarrow$ Ultimately leads to tax treaty cascades: $\uparrow$ BTT, $\downarrow$ Treaty WHT

Empirical implications:

Argument and Hypotheses

Using a simple treaty-shopping framework, I show:

1. BTTs are necessary conditions for treaty-shopping
2. Loss of tax revenue due to treaty-shopping
3. Best response: sign more BTTs with lower WHT rates

   $\Rightarrow$ Ultimately leads to tax treaty cascades: $\uparrow$ BTT, $\downarrow$ Treaty WHT

Empirical implications:

1. H1: Treaty-Shopping Risk $\Rightarrow$ BTT Formation

Argument and Hypotheses

Using a simple treaty-shopping framework, I show:

1. BTTs are necessary conditions for treaty-shopping
2. Loss of tax revenue due to treaty-shopping
3. Best response: sign more BTTs with lower WHT rates

    $\Rightarrow$ Ultimately leads to tax treaty cascades: $\uparrow$ BTT, $\downarrow$ Treaty WHT

Empirical implications:

1. H1: Treaty-Shopping Risk $\Rightarrow$ BTT Formation
2. H2: Treaty-Shopping Risk $\Rightarrow$ $\downarrow$ Treaty WHT Rate | BTT Formation

Argument and Hypotheses

Using a simple treaty-shopping framework, I show:

1. BTTs are necessary conditions for treaty-shopping
2. Loss of tax revenue due to treaty-shopping
3. Best response: sign more BTTs with lower WHT rates

   $\Rightarrow$ Ultimately leads to tax treaty cascades: $\uparrow$ BTT, $\downarrow$ Treaty WHT

Empirical implications:

1. H1: Treaty-Shopping Risk $\Rightarrow$ BTT Formation
2. H2: Treaty-Shopping Risk $\Rightarrow$ $\downarrow$ Treaty WHT Rate | BTT Formation
3. H3: New BTT Formation $\Rightarrow$ $\uparrow$ Conduit Countries

Argument and Hypotheses

Using a simple treaty-shopping framework, I show:

1. BTTs are necessary conditions for treaty-shopping
2. Loss of tax revenue due to treaty-shopping
3. Best response: sign more BTTs with lower WHT rates

   $\Rightarrow$ Ultimately leads to tax treaty cascades: $\uparrow$ BTT, $\downarrow$ Treaty WHT

Empirical implications:

1. H1: Treaty-Shopping Risk $\Rightarrow$ BTT Formation
2. H2: Treaty-Shopping Risk $\Rightarrow$ $\downarrow$ Treaty WHT Rate | BTT Formation
3. H3: New BTT Formation $\Rightarrow$ $\uparrow$ Conduit Countries

Operationalization: $\text{Risk}_{ij} = \mathbb{1}\{t_{ij} > t_{ik^*j}\}$

- $k*$ is the optimal conduit
- $t_{ik^*j} = \min_{k \notin \{i,j\}} t_{ikj}$

Original Datasets on International Withholding Tax

Original data on bilateral tax treaties

Original Datasets on International Withholding Tax

Original data on bilateral tax treaties

- Source: IBFD, Tax Treaties Explorer, original treaty documents, etc.

Original Datasets on International Withholding Tax

Original data on bilateral tax treaties

- Source: IBFD, Tax Treaties Explorer, original treaty documents, etc.
- Basic info of 3900+ treaty + all amendments

Original Datasets on International Withholding Tax

Original data on bilateral tax treaties

- Source: IBFD, Tax Treaties Explorer, original treaty documents, etc.
- Basic info of 3900+ treaty + all amendments
- Treaty withholding tax rate for ~3500 treaties

Original Datasets on International Withholding Tax

Original data on bilateral tax treaties

- Source: IBFD, Tax Treaties Explorer, original treaty documents, etc.
- Basic info of 3900+ treaty + all amendments
- Treaty withholding tax rate for ∼3500 treaties

Original data on statutory withholding tax rate

Original Datasets on International Withholding Tax

Original data on bilateral tax treaties

- Source: IBFD, Tax Treaties Explorer, original treaty documents, etc.
- Basic info of 3900+ treaty + all amendments
- Treaty withholding tax rate for ∼3500 treaties

Original data on statutory withholding tax rate

- Source: Manually coded from annual corporate tax summaries

Original Datasets on International Withholding Tax

Original data on bilateral tax treaties

- Source: IBFD, Tax Treaties Explorer, original treaty documents, etc.
- Basic info of 3900+ treaty + all amendments
- Treaty withholding tax rate for ~3500 treaties

Original data on statutory withholding tax rate

- Source: Manually coded from annual corporate tax summaries
    - EY: Worldwide Corporate Tax Guide (2004 - 2020)
    - PwC: Corporate Taxes, A Worldwide Summary (1980 - 2004)

Original Datasets on International Withholding Tax

Original data on bilateral tax treaties

- Source: IBFD, Tax Treaties Explorer, original treaty documents, etc.
- Basic info of 3900+ treaty + all amendments
- Treaty withholding tax rate for ∼3500 treaties

Original data on statutory withholding tax rate

- Source: Manually coded from annual corporate tax summaries
    - EY: Worldwide Corporate Tax Guide (2004 - 2020)
    - PwC: Corporate Taxes, A Worldwide Summary (1980 - 2004)
- 170+ jurisdictions; 1980 - 2020

The Expansion of the Bilateral Tax Treaties

Figure: Annual New and Cumulative BTTs by OECD Status (1945 - 2020)
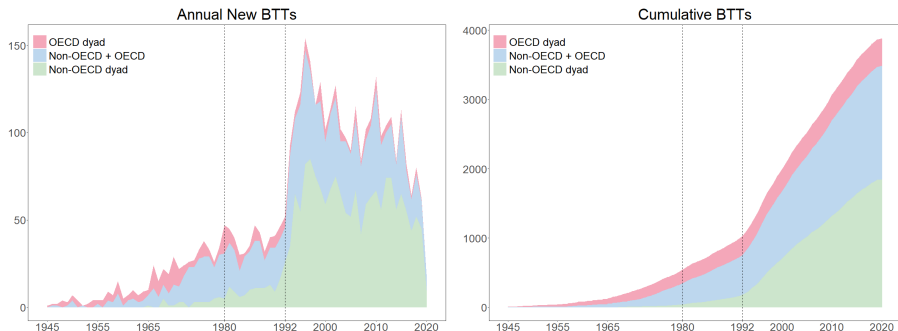
Notes: This figure displays the annual new BTTs (left panel) and cumulative BTTs (right panel) signed by jurisdictions between 1945 and 2020, depending on whether either or both the contracting states are OECD members. For consistency, OECD members only includes the 24 countries that joined in the 1960s and 1970s.

H1: Treaty Shopping $\Rightarrow$ BTT Formation

Table: Risk of Treaty Shopping and Treaty Formation

| | Tax Treaty Formation | | |
	Dividends	Interest	Royalties
Risk of Treaty Shopping (t-1)	0.149***	0.352***	0.420***
	(0.052)	(0.051)	(0.057)
Host country controls	✓	✓	✓
Partner country controls	✓	✓	✓
Dyad controls	✓	✓	✓
Cumulative BTTs	✓	✓	✓
Host region FE	✓	✓	✓
Partner region FE	✓	✓	✓
Observations	158684	158684	158684
BTTs covered	1119	1119	1119

Notes: Directed dyad-year level observations for 1980 - 2020. Results from Cox-Proportional Hazards Model with coefficients displayed. Efron approximation used for tied events. The event of interest is the formation of bilateral tax treaties between country dyads. Robust standard errors clustered on country dyads are reported in parantheses. All covariates, except for time-invariant ones, are lagged by one year.
$* * * p < 0.01$, $* * p < 0.05$, $* p < 0.1$.

H1: Treaty Shopping $\Rightarrow$ BTT Formation

Figure: Survival Probability by Risk of Treaty Shopping

(a) Dividends   (b) Interest   (c) Royalties
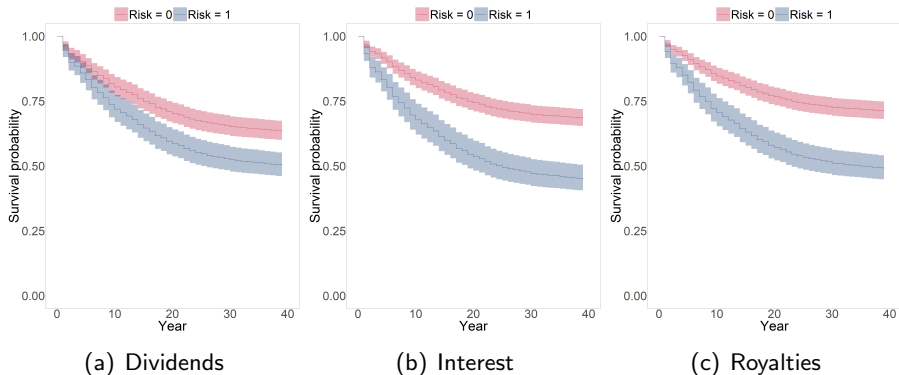
Notes: This plot shows the predicted survival probability (probability of not signing a BTT) and corresponding 95% confidence interval, depending on whether the host country is facing the risk of treaty shopping. The x-axis represents the year relative to the start of the sample in 1980. Control variables are set at the group average (regional fixed effects are excluded).

H2: Treaty Shopping $\Rightarrow$ Lower Treaty WHT Rate

Table: Risk of Treaty Shopping and Treaty Depth

| | Tax Treaty Depth | | |
	Dividends	Interest	Royalties
Risk of Treaty Shopping (t-1)	7.765***	5.708***	3.693***
	(1.472)	(1.058)	(1.074)
Host country controls	✓	✓	✓
Partner country controls	✓	✓	✓
Dyad controls	✓	✓	✓
Cumulative BTTs	✓	✓	✓
Host country FE	✓	✓	✓
Partner country FE	✓	✓	✓
Year FE	✓	✓	✓
Observations	2162	2139	2161
Adjusted R^2	0.789	0.784	0.789

Notes: Directed-dyad level observations for 1980 - 2020. Only includes observations for the dyad-year that a bilateral tax treaty is signed. Results from ordinary least squares regression. Robust standard errors clustered at host country level reported in parentheses. All models include host country, home country, and year fixed effects. The dependant variable is the difference between the statutory withholding tax rate and the newly-signed treaty withholding tax rate for the given type of transaction. All covariates, except for time-invariant ones, are lagged by one year.
$* * *p < 0.01, * * p < 0.05, *p < 0.1$.

# H2: Treaty WHT Rate Follows the Cheapest Indirect Rate

Figure: Comparison of Treaty WHT Rates with Base and Indirect Rates
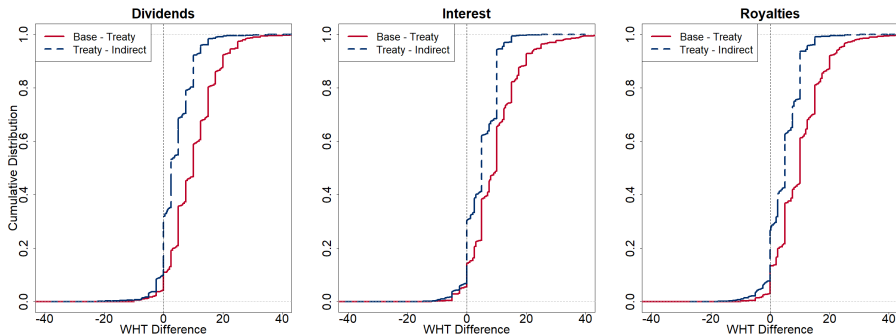
Notes: This figure plots the empirical cumulative distribution function (CDF) for the difference between 1) the statutory withholding tax rate and the treaty withholding tax rate; and 2) the treaty withholding tax rate and the cheapest indirect rate. The statutory withholding tax rate and the cheapest indirect rate are measured at the year before BTT signing. The sample is directed-dyad observations at the year of BTT formation and only includes dyads that the host country faces the risk of treaty shopping in the year before.

Figure: Treaty Shopping Conduits: Fragmented but Dominated by Key Countries
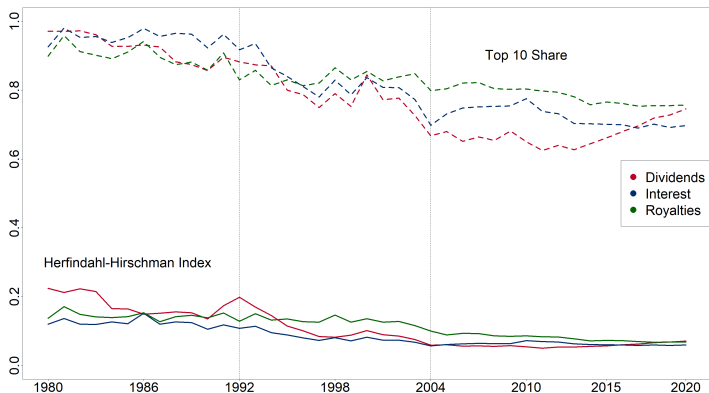
Notes: This figure depicts the evolution of the treaty shopping "conduit market" from 1980 to 2020, with solid lines representing the market concentration level measured by the Herfindahl-Hirschman Index and dashed lines indicating the total share of the top 10 conduit countries. The colors correspond to different payment types. The dashed vertical lines represent two important years: the year of 1992 when the BTT network began to expand rapidly, and the year of 2004 that the sample coverage has increased due to the switch of data sources.

Discussion

Discussion

Treaty-shopping as unique (tax) policy constraints

Discussion

Treaty-shopping as unique (tax) policy constraints
- (Conventional) tax competition

Discussion

Treaty-shopping as unique (tax) policy constraints

- (Conventional) tax competition
    - Untargeted, react to competitors

Discussion

Treaty-shopping as unique (tax) policy constraints

- (Conventional) tax competition
    - Untargeted, react to competitors
- Treaty diffusion (Elkins et al. 2006; Barthel & Neumayer 2012)

Discussion

Treaty-shopping as unique (tax) policy constraints

- (Conventional) tax competition
    - Untargeted, react to competitors
- Treaty diffusion (Elkins et al. 2006; Barthel & Neumayer 2012)
    - Targeted, react to competitors

Discussion

Treaty-shopping as unique (tax) policy constraints

- (Conventional) tax competition
  - Untargeted, react to competitors
- Treaty diffusion (Elkins et al. 2006; Barthel & Neumayer 2012)
  - Targeted, react to competitors
- Treaty-shopping

Discussion

Treaty-shopping as unique (tax) policy constraints

- (Conventional) tax competition
  - Untargeted, react to competitors
- Treaty diffusion (Elkins et al. 2006; Barthel & Neumayer 2012)
  - Targeted, react to competitors
- Treaty-shopping
  - Targeted, react to conduits

Discussion

Treaty-shopping as unique (tax) policy constraints

- (Conventional) tax competition
  - Untargeted, react to competitors
- Treaty diffusion (Elkins et al. 2006; Barthel & Neumayer 2012)
  - Targeted, react to competitors
- Treaty-shopping
  - Targeted, react to conduits

Globalization and state policy autonomy

Discussion

Treaty-shopping as unique (tax) policy constraints

- (Conventional) tax competition
  - Untargeted, react to competitors
- Treaty diffusion (Elkins et al. 2006; Barthel & Neumayer 2012)
  - Targeted, react to competitors
- Treaty-shopping
  - Targeted, react to conduits

Globalization and state policy autonomy

- "Still room to move"? (Mosley 2000, 2005)

Discussion

Treaty-shopping as unique (tax) policy constraints

- (Conventional) tax competition
    - Untargeted, react to competitors
- Treaty diffusion (Elkins et al. 2006; Barthel & Neumayer 2012)
    - Targeted, react to competitors
- Treaty-shopping
    - Targeted, react to conduits

Globalization and state policy autonomy

- "Still room to move"? (Mosley 2000, 2005)
- Policy divergence requires international cooperation convergence