Lobbying and the Theory of Trade Agreements

Giovanni Maggi and Andres Rodriguez-Clare

Yale and Berkeley

November 2011
Standard theory does not distinguish between lobbying to influence trade agreements (TAs) and lobbying to influence day-to-day trade policies. But they can be very different:

- Relevant interest groups for short-run trade policies are arguably industry-level groups (owners of factors that are "stuck" in short run);
- But TAs are long-run commitments. In the long run factors are (at least partially) mobile;
- Lobbying to influence TAs hampered by fact that lobby does not represent all beneficiaries of future protection, since some of these are owners of factors that are not in the sector yet.

Bits of empirical evidence:
- Factors are at least partially mobile in long run: Grossman and Levinsohn (1989), Baldwin-Magee (2002), Beaulieu (2002), Balistreri (1997);
- Entry/churning in exporting and import-competing industries: Eaton et al. (2007), Dunne et al. (1988);
- Gradual phasing-out of trade barriers in many TAs.
Standard theory does not distinguish between lobbying to influence trade agreements (TAs) and lobbying to influence day-to-day trade policies. But they can be very different:

- Relevant interest groups for short-run trade policies are arguably industry-level groups (owners of factors that are "stuck" in short run);
- Factors are at least partially mobile in long run: Grossman and Levinsohn (1989), Baldwin-Magee (2002), Beaulieu (2002), Balistreri (1997);
- Entry/churning in exporting and import-competing industries: Eaton et al. (2007), Dunne et al. (1988);
- Gradual phasing-out of trade barriers in many TAs.
Standard theory does not distinguish between lobbying to influence trade agreements (TAs) and lobbying to influence day-to-day trade policies. But they can be very different:

- Relevant interest groups for short-run trade policies are arguably industry-level groups (owners of factors that are "stuck" in short run);
- But TAs are long-run commitments. In the long run factors are (at least partially) mobile;
Introduction

- Standard theory does not distinguish between lobbying to influence trade agreements (TAs) and lobbying to influence day-to-day trade policies. But they can be very different:
  - Relevant interest groups for short-run trade policies are arguably industry-level groups (owners of factors that are "stuck" in short run);
  - But TAs are long-run commitments. In the long run factors are (at least partially) mobile;
  - Lobbying to influence TAs hampered by fact that lobby does not represent all beneficiaries of future protection, since some of these are owners of factors that are not in the sector yet.
Introduction

- Standard theory does not distinguish between lobbying to influence trade agreements (TAs) and lobbying to influence day-to-day trade policies. But they can be very different:
  - Relevant interest groups for short-run trade policies are arguably industry-level groups (owners of factors that are "stuck" in short run);
  - But TAs are long-run commitments. In the long run factors are (at least partially) mobile;
  - lobbying to influence TAs hampered by fact that lobby does not represent all beneficiaries of future protection, since some of these are owners of factors that are not in the sector yet.

- Bits of empirical evidence:
Standard theory does not distinguish between lobbying to influence trade agreements (TAs) and lobbying to influence day-to-day trade policies. But they can be very different:

- Relevant interest groups for short-run trade policies are arguably industry-level groups (owners of factors that are "stuck" in short run);
- But TAs are long-run commitments. In the long run factors are (at least partially) mobile;
- Lobbying to influence TAs hampered by fact that lobby does not represent all beneficiaries of future protection, since some of these are owners of factors that are not in the sector yet.

Bits of empirical evidence:

- Factors are at least partially mobile in long run: Grossman and Levinsohn (1989), Baldwin-Magee (2002), Beaulieu (2002), Balistreri (1997);
Standard theory does not distinguish between lobbying to influence trade agreements (TAs) and lobbying to influence day-to-day trade policies. But they can be very different:

- Relevant interest groups for short-run trade policies are arguably industry-level groups (owners of factors that are "stuck" in short run);
- But TAs are long-run commitments. In the long run factors are (at least partially) mobile;
- Lobbying to influence TAs hampered by fact that lobby does not represent all beneficiaries of future protection, since some of these are owners of factors that are not in the sector yet.

Bits of empirical evidence:

- Factors are at least partially mobile in long run: Grossman and Levinsohn (1989), Baldwin-Magee (2002), Beaulieu (2002), Balistreri (1997);
- Entry/churning in exporting and import-competing industries: Eaton et al. (2007), Dunne et al. (1988);
Introduction

- Standard theory does not distinguish between lobbying to influence trade agreements (TAs) and lobbying to influence day-to-day trade policies. But they can be very different:
  - Relevant interest groups for short-run trade policies are arguably industry-level groups (owners of factors that are "stuck" in short run);
  - But TAs are long-run commitments. In the long run factors are (at least partially) mobile;
  - Lobbying to influence TAs hampered by fact that lobby does not represent all beneficiaries of future protection, since some of these are owners of factors that are not in the sector yet.

- Bits of empirical evidence:
  - Factors are at least partially mobile in long run: Grossman and Levinsohn (1989), Baldwin-Magee (2002), Beaulieu (2002), Balistreri (1997);
  - Entry/churning in exporting and import-competing industries: Eaton et al. (2007), Dunne et al. (1988);
  - Gradual phasing-out of trade barriers in many TAs.
We revisit the standard TOT theory, taking into account:

1. Distinction between TAs and day-to-day trade policies, i.e., agreements can be incomplete (trade policy ceilings);
2. Not all beneficiaries of future protection are represented in the lobby when TAs are negotiated.

We show that predictions of standard theory change in important ways.

Recall some key predictions of standard theory:

- Cuts in trade barriers explained entirely by trade elasticities. Politics should not affect these cuts directly.
- There is always scope for Pareto-improvement over the NE.
- Optimal TA determines only net protection (e.g., $t_t$).
- No gains from policy ceilings.
We revisit the standard TOT theory, taking into account:

1. Distinction between TAs and day-to-day trade policies, i.e., agreements can be incomplete (trade policy ceilings);
We revisit the standard TOT theory, taking into account:

1. Distinction between TAs and day-to-day trade policies, i.e., agreements can be incomplete (trade policy ceilings);
2. Not all beneficiaries of future protection are represented in the lobby when TAs are negotiated.
We revisit the standard TOT theory, taking into account:

1. Distinction between TAs and day-to-day trade policies, i.e., agreements can be incomplete (trade policy ceilings);
2. Not all beneficiaries of future protection are represented in the lobby when TAs are negotiated.

We show that predictions of standard theory change in important ways.
Introduction (cont’d)

- We revisit the standard TOT theory, taking into account:
  1. Distinction between TAs and day-to-day trade policies, i.e., agreements can be incomplete (trade policy ceilings);
  2. Not all beneficiaries of future protection are represented in the lobby when TAs are negotiated.

- We show that predictions of standard theory change in important ways.

- Recall some key predictions of standard theory:
We revisit the standard TOT theory, taking into account:

1. Distinction between TAs and day-to-day trade policies, i.e., agreements can be incomplete (trade policy ceilings);
2. Not all beneficiaries of future protection are represented in the lobby when TAs are negotiated.

We show that predictions of standard theory change in important ways.

Recall some key predictions of standard theory:

- Cuts in trade barriers explained entirely by trade elasticities. Politics should not affect these cuts directly.
We revisit the standard TOT theory, taking into account:

1. Distinction between TAs and day-to-day trade policies, i.e., agreements can be incomplete (trade policy ceilings);
2. Not all beneficiaries of future protection are represented in the lobby when TAs are negotiated.

We show that predictions of standard theory change in important ways.

Recall some key predictions of standard theory:

- Cuts in trade barriers explained entirely by trade elasticities. Politics should not affect these cuts directly.
- There is always scope for Pareto-improvement over the NE.
We revisit the standard TOT theory, taking into account:

1. Distinction between TAs and day-to-day trade policies, i.e., agreements can be incomplete (trade policy ceilings);
2. Not all beneficiaries of future protection are represented in the lobby when TAs are negotiated.

We show that predictions of standard theory change in important ways.

Recall some key predictions of standard theory:

- Cuts in trade barriers explained entirely by trade elasticities. Politics should not affect these cuts directly.
- There is always scope for Pareto-improvement over the NE.
- Optimal TA determines only net protection (e.g. $t - t^*$).
We revisit the standard TOT theory, taking into account:

1. Distinction between TAs and day-to-day trade policies, i.e., agreements can be incomplete (trade policy ceilings);
2. Not all beneficiaries of future protection are represented in the lobby when TAs are negotiated.

We show that predictions of standard theory change in important ways.

Recall some key predictions of standard theory:

- Cuts in trade barriers explained entirely by trade elasticities. Politics should not affect these cuts directly.
- There is always scope for Pareto-improvement over the NE.
- Optimal TA determines only net protection (e.g. $t - t^*$).
- No gains from policy ceilings.
Incomplete TAs (policy caps) preferred to complete TAs.
Results

- Incomplete TAs (policy caps) preferred to complete TAs.
- Optimal TA involves tariff caps but no constraints on export instruments.

Giovanni Maggi and Andres Rodriguez-Clare (Yale and Berkeley)

November 2011
Results

- Incomplete TAs (policy caps) preferred to complete TAs.
- Optimal TA involves tariff caps but no constraints on export instruments.
- Extent of trade liberalization not systematically related to trade elasticities, and directly affected by politics.
Results

- Incomplete TAs (policy caps) preferred to complete TAs.
- Optimal TA involves tariff caps but no constraints on export instruments.
- Extent of trade liberalization not systematically related to trade elasticities, and directly affected by politics.
- Optimal TA determines both $t$ and $t^*$, whereas in standard model only net protection $t - t^*$ determined.
If no entry, our model collapses to standard model.
If no entry, our model collapses to standard model.

But with small entry: strict gains from caps, \( t \) and \( t^* \) uniquely determined, and optimal TA entails only a cap on \( t \).
Results (cont’d)

- If no entry, our model collapses to standard model.
  - But with small entry: strict gains from caps, \( t \) and \( t^* \) uniquely determined, and optimal TA entails only a cap on \( t \).
- Our model tends to predict less trade liberalization (smaller cut in \( t - t^* \) relative to NE) than standard model.
Results (cont’d)

- If no entry, our model collapses to standard model.
  - But with small entry: strict gains from caps, $t$ and $t^*$ uniquely determined, and optimal TA entails only a cap on $t$.

- Our model tends to predict less trade liberalization (smaller cut in $t - t^*$ relative to NE) than standard model.

- Under some conditions, there is no scope for a TA (i.e. optimal TA is empty).
Results (cont’d)

- If no entry, our model collapses to standard model.
  - But with small entry: strict gains from caps, $t$ and $t^*$ uniquely determined, and optimal TA entails only a cap on $t$.

- Our model tends to predict less trade liberalization (smaller cut in $t - t^*$ relative to NE) than standard model.

- Under some conditions, there is no scope for a TA (i.e. optimal TA is empty).
  - This occurs even if govs have no bargaining power vis-a-vis lobbies.
If no entry, our model collapses to standard model.

But with small entry: strict gains from caps, $t$ and $t^*$ uniquely determined, and optimal TA entails only a cap on $t$.

Our model tends to predict less trade liberalization (smaller cut in $t - t^*$ relative to NE) than standard model.

Under some conditions, there is no scope for a TA (i.e. optimal TA is empty).

This occurs even if govs have no bargaining power vis-a-vis lobbies.

Trade liberalization is shallower when lobbies have less bargaining power at ex-post stage.
Related literature


The basic model: economic structure

- Two perfectly competitive economies (H and F)
The basic model: economic structure

- Two perfectly competitive economies (H and F)
- A numeraire sector and two symmetric sectors
The basic model: economic structure

- Two perfectly competitive economies (H and F)
- A numeraire sector and two symmetric sectors
- Quasi-linear preferences
The basic model: economic structure

- Two perfectly competitive economies (H and F)
- A numeraire sector and two symmetric sectors
- Quasi-linear preferences
- Each good produced one-for-one from sector-specific capital
The basic model: economic structure

- Two perfectly competitive economies (H and F)
- A numeraire sector and two symmetric sectors
- Quasi-linear preferences
- Each good produced one-for-one from sector-specific capital
- Given symmetry and separability, can focus on a single non-numeraire sector
The basic model: economic structure

- Two perfectly competitive economies (H and F)
- A numeraire sector and two symmetric sectors
- Quasi-linear preferences
- Each good produced one-for-one from sector-specific capital
- Given symmetry and separability, can focus on a single non-numeraire sector
- Demand functions: \( d(p) \) and \( d^*(p^*) \)
The basic model: economic structure

- Two perfectly competitive economies (H and F)
- A numeraire sector and two symmetric sectors
- Quasi-linear preferences
- Each good produced one-for-one from sector-specific capital
- Given symmetry and separability, can focus on a single non-numeraire sector
- Demand functions: $d(p)$ and $d^*(p^*)$
- Fixed supplies: $x$ and $x^*$
The basic model: economic structure

- Two perfectly competitive economies (H and F)
- A numeraire sector and two symmetric sectors
- Quasi-linear preferences
- Each good produced one-for-one from sector-specific capital
- Given symmetry and separability, can focus on a single non-numeraire sector
- Demand functions: \(d(p)\) and \(d^*(p^*)\)
- Fixed supplies: \(x\) and \(x^*\)
  - Returns to capital: \(px\) and \(p^*x^*\)
The basic model: economic structure

- Two perfectly competitive economies (H and F)
- A numeraire sector and two symmetric sectors
- Quasi-linear preferences
- Each good produced one-for-one from sector-specific capital
- Given symmetry and separability, can focus on a single non-numeraire sector
- Demand functions: \( d(p) \) and \( d^*(p^*) \)
- Fixed supplies: \( x \) and \( x^* \)
  - Returns to capital: \( px \) and \( p^*x^* \)
- Import demand functions: \( m(p) = d(p) - x \) and \( m^*(p^*) = d^*(p^*) - x^* \)
The basic model: economic structure

- Two perfectly competitive economies (H and F)
- A numeraire sector and two symmetric sectors
- Quasi-linear preferences
- Each good produced one-for-one from sector-specific capital
- Given symmetry and separability, can focus on a single non-numeraire sector
- Demand functions: \( d(p) \) and \( d^*(p^*) \)
- Fixed supplies: \( x \) and \( x^* \)
  - Returns to capital: \( px \) and \( p^*x^* \)
- Import demand functions: \( m(p) = d(p) - x \) and \( m^*(p^*) = d^*(p^*) - x^* \)
- Home is natural importer, chooses specific tariff \( t \)
The basic model: economic structure

- Two perfectly competitive economies (H and F)
- A numeraire sector and two symmetric sectors
- Quasi-linear preferences
- Each good produced one-for-one from sector-specific capital
- Given symmetry and separability, can focus on a single non-numeraire sector
- Demand functions: \(d(p)\) and \(d^*(p^*)\)
- Fixed supplies: \(x\) and \(x^*\)
  - Returns to capital: \(px\) and \(p^*x^*\)
- Import demand functions: \(m(p) = d(p) - x\) and \(m^*(p^*) = d^*(p^*) - x^*\)
- Home is natural importer, chooses specific tariff \(t\)
- Foreign is natural exporter, chooses specific export subsidy \(t^*\)
Price arbitrage \((p = p^* + t - t^*)\) and market clearing \((m(p) + m^*(p^*) = 0)\) determine equilibrium prices: \(p(t - t^*)\) and \(p^*(t - t^*)\).
Economic structure (cont’d)

- Price arbitrage \((p = p^* + t - t^*)\) and market clearing 
  \((m(p) + m^*(p^*) = 0)\) determine equilibrium prices: \(p(t - t^*)\) and \(p^*(t - t^*)\)

- Welfare functions:
  \[ W(t, t^*) = s(p(\cdot)) + p(\cdot)x + tm(p(\cdot)) \]
  \[ W^*(t, t^*) = s^*(p^*(\cdot)) + p^*(\cdot)x^* + tm^*(p^*(\cdot)) \]
Price arbitrage \((p = p^* + t - t^*)\) and market clearing 
\((m(p) + m^*(p^*) = 0)\) determine equilibrium prices: \(p(t - t^*)\) and \(p^*(t - t^*)\)

Welfare functions:
\[
W(t, t^*) = s(p(\cdot)) + p(\cdot)x + tm(p(\cdot))
\]
\[
W^*(t, t^*) = s^*(p^*(\cdot)) + p^*(\cdot)x^* + t^*m^*(p^*(\cdot))
\]

Home’s W-max policy: 
\[
t = \frac{m^*(\cdot)}{m^*'(\cdot)} \equiv \frac{1}{\eta^*(\cdot)} > 0 \implies t = R_W(t^*)
\]
Price arbitrage ($p = p^* + t - t^*$) and market clearing
($m(p) + m^*(p^*) = 0$) determine equilibrium prices: $p(t - t^*)$ and $p^*(t - t^*)$

Welfare functions:

$W(t, t^*) = s(p(\cdot)) + p(\cdot)x + tm(p(\cdot))$

$W^*(t, t^*) = s^*(p^*(\cdot)) + p^*(\cdot)x^* + t^*m^*(p^*(\cdot))$

Home’s W-max policy: $t = \frac{m^*(\cdot)}{m^*(\cdot)} \equiv \frac{1}{\eta^*(\cdot)} > 0 \implies t = R_W(t^*)$

Foreign’s W-max policy: $t^* = \frac{m(\cdot)}{m(\cdot)} \equiv \frac{1}{\eta(\cdot)} < 0 \implies t^* = R^*_W(t)$
Economic structure (cont’d)

- Price arbitrage \( (p = p^* + t - t^*) \) and market clearing \( (m(p) + m^*(p^*) = 0) \) determine equilibrium prices: \( p(t - t^*) \) and \( p^*(t - t^*) \)

- Welfare functions:
  \[
  W(t, t^*) = s(p(\cdot)) + p(\cdot)x + tm(p(\cdot))
  \]
  \[
  W^*(t, t^*) = s^*(p^*(\cdot)) + p^*(\cdot)x^* + t^*m^*(p^*(\cdot))
  \]

- Home’s W-max policy: \( t = \frac{m^*(\cdot)}{m^*(\cdot)} \equiv \frac{1}{\eta^*(\cdot)} > 0 \iff t = R_W(t^*) \)

- Foreign’s W-max policy: \( t^* = \frac{m^*(\cdot)}{m^*(\cdot)} \equiv \frac{1}{\eta^*(\cdot)} < 0 \iff t^* = R^*_W(t) \)

- Assume \( R_W(t^*) \) and \( R^*_W(t) \) are "stable" \(|\text{slope}| < 1\)
Governments’ objectives:
\[ \tilde{U}^G = aW + C \]
\[ \tilde{U}^G^* = aW^* + C^* \]
Governments’ objectives:
\[ \tilde{U}^G = aW + C \]
\[ \tilde{U}^{G*} = aW^* + C^* \]

In each country, capital owners are organized in a lobby. Let \( c, c^* \) denote per-unit contributions: \( C = xc, C^* = x^* c^* \)
Governments’ objectives:
\[ \tilde{U}^G = aW + C \]
\[ \tilde{U}^G = aW^* + C^* \]

In each country, capital owners are organized in a lobby. Let \( c, c^* \) denote per-unit contributions: \( C = xc, C^* = x^*c^* \)

Lobbies’ payoffs:
\[ \tilde{U}^L = px - C = (p - c)x \]
\[ \tilde{U}^{L*} = p^*x^* - C^* = (p^* - c^*)x^* \]
Lobbying in the absence of TAs

- Non-cooperative equilibrium
Lobbying in the absence of TAs

- **Non-cooperative equilibrium**
  - In each country, G and L choose policy (and contributions) by Nash bargaining;

Assume for now that G has zero bargaining power; Non-cooperative equilibrium policies satisfy:

\[
\max_{t} (aW_t + px_t) = \sum_{j=1}^{T} \eta_j (x_j) + \sum_{j=1}^{T} a_j \eta_j (x_j)
\]

Assume (i) SOC satisfied; (ii) \(R(t)\) and \(R'(t)\) "stable".
Lobbying in the absence of TAs

- **Non-cooperative equilibrium**
  - In each country, G and L choose policy (and contributions) by Nash bargaining;
  - Assume for now that G has zero bargaining power;
Non-cooperative equilibrium

In each country, G and L choose policy (and contributions) by Nash bargaining;
Assume for now that G has zero bargaining power;
Non-cooperative equilibrium policies satisfy:
$$\max_t (aW + px) \implies t = \frac{1}{\eta(\cdot)} + \frac{1}{a \cdot |\eta(\cdot)| \cdot \frac{m(\cdot)}{x}} \implies t = R(t^*)$$
$$\max_{t^*} (aW^* + p^* x^*) \implies t^* = \frac{1}{\eta(\cdot)} + \frac{1}{a \cdot \eta^*(\cdot) \cdot \frac{m^*(\cdot)}{x^*}} \implies t^* = R^*(t)$$
**Non-cooperative equilibrium**

- In each country, G and L choose policy (and contributions) by Nash bargaining;
- Assume for now that G has zero bargaining power;
- Non-cooperative equilibrium policies satisfy:
  \[
  \max_t (aW + px) \implies t = \frac{1}{\eta^*(\cdot)} + \frac{1}{a \cdot |\eta(\cdot)| \cdot \frac{m(\cdot)}{x}} \implies t = R(t^*)
  \]
  \[
  \max_{t^*} (aW^* + p^*x^*) \implies t^* = \frac{1}{\eta(\cdot)} + \frac{1}{a \cdot \eta^*(\cdot) \cdot \frac{m^*(\cdot)}{x^*}} \implies t^* = R^*(t)
  \]
- Assume (i) SOC satisfied; (ii) \(R(t^*)\) and \(R^*(t)\) "stable".
Timing: (1) Govs and lobbies select TA; (2) Entry/exit occurs; (3) Given constraints imposed by TA, each gov-lobby pair bargains over policy and contributions; (4) Markets clear.
Trade Agreements

- **Timing:** (1) Govs and lobbies select TA; (2) Entry/exit occurs; (3) Given constraints imposed by TA, each gov-lobby pair bargains over policy and contributions; (4) Markets clear.

- *Ex post lobbying:* just as above, but s.t. TA-imposed constraints
Trade Agreements

- **Timing:** (1) Govs and lobbies select TA; (2) Entry/exit occurs; (3) Given constraints imposed by TA, each gov-lobby pair bargains over policy and contributions; (4) Markets clear.
- **Ex post lobbying:** just as above, but s.t. TA-imposed constraints
- **Entry/exit of capital:**

\[
\text{Pre-TA: } x_s + x_l \\
\text{Post-TA: } x_s + x_e \\
\text{(} s \text{ for “stayers” and } l \text{ for “leavers”)}
\]

To shut down domestic-commitment motive for TA, assume capital exogenously moved in/out of sector (when out, capital employed in N sector).

- **Ex-ante lobbying:** assume the (perfectly enforceable) TA maximizes ex-ante joint surplus of govs and lobbies:

\[
\Psi = U_G + U_G + U_L + U_L
\]

where \(U_G\), \(U_G\), \(U_L\) and \(U_L\) denote second-stage payoffs of govs and lobbies as viewed from ex-ante stage.
Timing: (1) Govs and lobbies select TA; (2) Entry/exit occurs; (3) Given constraints imposed by TA, each gov-lobby pair bargains over policy and contributions; (4) Markets clear.

*Ex post lobbying*: just as above, but s.t. TA-imposed constraints

Entry/exit of capital:
- Pre-TA: $x_s + x_l$ and $x_s^* + x_l^*$ (s for "stayers" and l for "leavers");
Trade Agreements

- **Timing:** (1) Govs and lobbies select TA; (2) Entry/exit occurs; (3) Given constraints imposed by TA, each gov-lobby pair bargains over policy and contributions; (4) Markets clear.

- **Ex post lobbying:** just as above, but s.t. TA-imposed constraints

- **Entry/exit of capital:**
  - Pre-TA: $x_s + x_l$ and $x_s^* + x_l^*$ (s for "stayers" and l for "leavers");
  - Post-TA: $x_s + x_e$ and $x_s^* + x_e^*$ (e for "entrants");
Trade Agreements

- **Timing:** (1) Govs and lobbies select TA; (2) Entry/exit occurs; (3) Given constraints imposed by TA, each gov-lobby pair bargains over policy and contributions; (4) Markets clear.

- **Ex post lobbying:** just as above, but s.t. TA-imposed constraints

- **Entry/exit of capital:**
  - Pre-TA: $x_s + x_l$ and $x_s^* + x_l^*$ ($s$ for "stayers" and $l$ for "leavers");
  - Post-TA: $x_s + x_e$ and $x_s^* + x_e^*$ ($e$ for "entrants");

  To shut down domestic-commitment motive for TA, assume capital exogenously moved in/out of sector (when out, capital employed in N sector).
Trade Agreements

- **Timing:** (1) Govs and lobbies select TA; (2) Entry/exit occurs; (3) Given constraints imposed by TA, each gov-lobby pair bargains over policy and contributions; (4) Markets clear.

- **Ex post lobbying:** just as above, but s.t. TA-imposed constraints

- **Entry/exit of capital:**
  - Pre-TA: $x_s + x_l$ and $x_s^* + x_l^*$ ($s$ for "stayers" and $l$ for "leavers");
  - Post-TA: $x_s + x_e$ and $x_s^* + x_e^*$ ($e$ for "entrants");
  - To shut down domestic-commitment motive for TA, assume capital exogenously moved in/out of sector (when out, capital employed in N sector).

- **Ex-ante lobbying:** assume the (perfectly enforceable) TA maximizes ex-ante joint surplus of govs and lobbies:
  \[
  \Psi = U^G + U^{G^*} + U^L + U^{L^*}
  \]  
  (1)

where $U^G$, $U^{G^*}$, $U^L$ and $U^{L^*}$ denote second-stage payoffs of govs and lobbies as viewed from ex-ante stage.
Ex-Ante Objectives

So we have \( \Psi = U^G + U^{G*} + U^L + U^{L*} \), where

\[
\begin{align*}
U^G &= aW + c \cdot (x_s + x_e) \\
U^{G*} &= aW^* + c^* \cdot (x^*_s + x^*_e) \\
U^L &= (p - c)x_s + 1 \cdot x_l \\
U^{L*} &= (p^* - c^*)x^*_s + 1 \cdot x^*_l
\end{align*}
\]

hence

\[
\Psi = a(W + W^*) + (px_s + p^*x^*_s) + (cx_e + c^*x^*_e) + (\cdot)
\]

where \((\cdot)\) is independent of policies.
Ex-Ante Objectives

- So we have $\Psi = U^G + U^{G*} + U^L + U^{L*}$, where

$$
U^G = aW + c \cdot (x_s + x_e)
$$
$$
U^{G*} = aW^* + c^* \cdot (x_s^* + x_e^*)
$$
$$
U^L = (p - c)x_s + 1 \cdot x_l
$$
$$
U^{L*} = (p^* - c^*)x_s^* + 1 \cdot x_l^*
$$

hence

$$
\Psi = a(W + W^*) + (px_s + p^*x_s^*) + (cx_e + c^*x_e^*) + (\cdot)
$$

where $(\cdot)$ is independent of policies.

- Note: in Maggi and Rodriguez-Clare (2007) we had $x_e = x_e^* = 0$.
  Here, future entrants will play a fundamental role.
Complete and Incomplete TAs

- We will consider two types of TA: (1) exact policy commitments (complete TA); (2) policy ceilings (incomplete TA).
We will consider two types of TA: (1) exact policy commitments (complete TA); (2) policy ceilings (incomplete TA).

Key difference: a complete TA leaves no discretion and hence forecloses ex-post lobbying, whereas an incomplete TA leaves the door open to ex-post lobbying (and ex-post contributions).
Complete and Incomplete TAs

- We will consider two types of TA: (1) exact policy commitments (complete TA); (2) policy ceilings (incomplete TA).
  - Key difference: a complete TA leaves no discretion and hence forecloses ex-post lobbying, whereas an incomplete TA leaves the door open to ex-post lobbying (and ex-post contributions).
- Optimal complete TA maximizes $a(W + W^*) + (px_s + p^*x_s^*)$, yielding
  \[
  t - t^* = \frac{1}{a \cdot |\eta(\cdot)| \cdot \frac{m(\cdot)}{x_s}} - \frac{1}{a \cdot \eta^*(\cdot) \cdot \frac{m^*(\cdot)}{x_s^*}} = \frac{1}{a \cdot m(\cdot)} \left( \frac{x_s}{|\eta(\cdot)|} - \frac{x_s^*}{\eta^*(\cdot)} \right)
  \]
Complete and Incomplete TAs

- We will consider two types of TA: (1) exact policy commitments (complete TA); (2) policy ceilings (incomplete TA).
  - Key difference: a complete TA leaves no discretion and hence forecloses ex-post lobbying, whereas an incomplete TA leaves the door open to ex-post lobbying (and ex-post contributions).
- Optimal complete TA maximizes $a(W + W^*) + (px_s + p^*x_s^*)$, yielding

  $$t - t^* = \frac{1}{a \cdot |\eta(\cdot)| \cdot \frac{m(\cdot)}{x_s}} - \frac{1}{a \cdot \eta^*(\cdot) \cdot \frac{m^*(\cdot)}{x_s^*}}$$

  $$= \frac{1}{a \cdot m(\cdot)} \left( \frac{x_s}{|\eta(\cdot)|} - \frac{x_s^*}{\eta^*(\cdot)} \right)$$

- This defines a locus in $(t, t^*)$ space. See figure (POL_{ex-ante}).
Complete and Incomplete TAs

- We will consider two types of TA: (1) exact policy commitments (complete TA); (2) policy ceilings (incomplete TA).
  - Key difference: a complete TA leaves no discretion and hence forecloses ex-post lobbying, whereas an incomplete TA leaves the door open to ex-post lobbying (and ex-post contributions).
- Optimal complete TA maximizes \(a(W + W^*) + (px_s + p^*x_s^*)\), yielding

\[
\begin{align*}
t - t^* &= \frac{1}{a \cdot |\eta(\cdot)| \cdot \frac{m(\cdot)}{x_s}} - \frac{1}{a \cdot \eta^*(\cdot) \cdot \frac{m^*(\cdot)}{x_s^*}} \\
&= \frac{1}{a \cdot m(\cdot)} \left( \frac{x_s}{|\eta(\cdot)|} - \frac{x_s^*}{\eta^*(\cdot)} \right)
\end{align*}
\]

- This defines a locus in \((t, t^*)\) space. See figure (POL\textsubscript{ex-ante}).
- If \(\frac{x_s^*}{\eta^*} > \frac{x_s}{|\eta|}\), then \(t - t^* < 0\). Will focus on this case.
Define standard TOT model as one where (complete) TA negotiated ex-post, given capital levels $x_s + x_e$ and $x_s^* + x_e^*$. 

Recall ex-post lobbies' payoffs:

\[ \tilde{U}_L = (p_c)(x_s + x_e) \]
\[ \tilde{U}_L = (p_c')(x_s + x_e) \]

and govs' payoffs:

\[ \tilde{U}_G = aW + c(x_s + x_e) \]
\[ \tilde{U}_G = aW' + c'(x_s + x_e) \]

Optimal TA:

\[ t = \frac{1}{a} \left( x_s + x_e \right) \eta \left( x_s + x_e \right) \]

This defines locus POL ex post (see figure). If $x_e \eta > x_e j$, then POL ex post is left of POL ex ante; focus on this case.
Define standard TOT model as one where (complete) TA negotiated ex-post, given capital levels $x_s + x_e$ and $x_s^* + x_e^*$.

Recall ex-post lobbies' payoffs: 
\[
\tilde{U}^L = (p - c) (x_s + x_e), \quad \tilde{U}^L^* = (p^* - c^*) (x_s^* + x_e^*);
\]
and govs’ payoffs:
\[
\tilde{U}^G = aW + c \cdot (x_s + x_e), \quad \tilde{U}^G^* = aW^* + c^* \cdot (x_s^* + x_e^*).
\]
Benchmark: Standard TOT Model

- Define standard TOT model as one where (complete) TA negotiated ex-post, given capital levels $x_s + x_e$ and $x_s^* + x_e^*$.

- Recall ex-post lobbies' payoffs: $\tilde{U}_L = (p - c)(x_s + x_e)$, $\tilde{U}_L^* = (p^* - c^*)(x_s^* + x_e^*)$; and govs' payoffs: $\tilde{U}_G = aW + c \cdot (x_s + x_e)$, $\tilde{U}_G^* = aW^* + c^* \cdot (x_s^* + x_e^*)$.

- Optimal TA:

$$t - t^* = \frac{1}{a \cdot m(\cdot)} \left( \frac{x_s + x_e}{|\eta(\cdot)|} - \frac{x_s^* + x_e^*}{\eta^*(\cdot)} \right)$$
Benchmark: Standard TOT Model

- Define standard TOT model as one where (complete) TA negotiated ex-post, given capital levels $x_s + x_e$ and $x_s^* + x_e^*$.
- Recall ex-post lobbies' payoffs: $\tilde{U}^L = (p - c)(x_s + x_e)$, $\tilde{U}^L = (p^* - c^*)(x_s^* + x_e^*)$; and govs' payoffs: $\tilde{U}^G = aW + c \cdot (x_s + x_e)$, $\tilde{U}^G = aW^* + c^* \cdot (x_s^* + x_e^*)$.
- Optimal TA:

$$t - t^* = \frac{1}{a \cdot m(\cdot)} \left( \frac{x_s + x_e}{|\eta(\cdot)|} - \frac{x_s^* + x_e^*}{\eta^*(\cdot)} \right)$$

- This defines locus $POL_{ex-post}$ (see figure).
Define standard TOT model as one where (complete) TA negotiated ex-post, given capital levels $x_s + x_e$ and $x^*_s + x^*_e$.

Recall ex-post lobbies' payoffs: 
$$\tilde{U}^L = (p - c)(x_s + x_e),$$
$$\tilde{U}^{L^*} = (p^* - c^*)(x^*_s + x^*_e);$$
and govs' payoffs:
$$\tilde{U}^G = aW + c \cdot (x_s + x_e), \quad \tilde{U}^{G^*} = aW^* + c^* \cdot (x^*_s + x^*_e).$$

Optimal TA:
$$t - t^* = \frac{1}{a \cdot m(\cdot)} \left( \frac{x_s + x_e}{|\eta(\cdot)|} - \frac{x^*_s + x^*_e}{\eta^*(\cdot)} \right)$$

This defines locus $POL_{ex-post}$ (see figure).

If $\frac{x^*_e}{\eta^*} > \frac{x_e}{|\eta|}$, then $POL_{ex-post}$ is left of $POL_{ex-ante}$; focus on this case.
Gains from policy caps

**Proposition 1:** If $x_e^* > 0$, then a TA that specifies policy caps is strictly preferred to a complete TA.
Gains from policy caps

- **Proposition 1:** If $x_e^* > 0$, then a TA that specifies policy caps is strictly preferred to a complete TA.

- **Proof:**
Proposition 1: If $x_e^* > 0$, then a TA that specifies policy caps is strictly preferred to a complete TA.

Proof:
- Recall $\Psi = a(W + W^*) + (px_s + p^*x_s^*) + (cx_e + c^*x_e^*) + (\cdot)$

Consider an optimal complete TA at intersection of POL\_ex\_ante and R($t$). What if we turn these policy levels into policy caps? Applied policies unchanged, hence $a(W + W^*) + (px_s + p^*x_s^*)$ unchanged. But now $cixe > 0$, b/c exporting gov can threaten to lower $t$ toward $R(W(t))$, so it will be compensated for not doing so (and if we are inside the Romboid, also $cx_e > 0$). Therefore $\Psi$ is higher.

Interpretation: With complete TA, there is no ex-post lobbying, and future entrants free-ride on the pre-TA lobby. But with ceilings, future entrants will pay for protection, so ceilings help solve the free rider problem associated with future entry.
Gains from policy caps

**Proposition 1:** If \( x_e^* > 0 \), then a TA that specifies policy caps is strictly preferred to a complete TA.

**Proof:**

- Recall \( \Psi = a(W + W^*) + (px_s + p^*x_s^*) + (cx_e + c^*x_e^*) + (\cdot) \)
- Consider an optimal complete TA at intersection of POL_{ex-ante} and \( R^*(t) \)
Proposition 1: If $x_e^* > 0$, then a TA that specifies policy caps is strictly preferred to a complete TA.

Proof:

Recall $\Psi = a(W + W^*) + (px_s + p^*x_s^*) + (cx_e + c^*x_e^*) + (\cdot)$

Consider an optimal complete TA at intersection of $POL_{ex-ante}$ and $R^*(t)$

What if we turn these policy levels into policy caps? Applied policies unchanged, hence $a(W + W^*) + (px_s + p^*x_s^*)$ unchanged.

Interpretation: With complete TA, there is no ex-post lobbying, and future entrants free-ride on the pre-TA lobby. But with ceilings, future entrants will pay for protection, so ceilings help solve the free-rider problem associated with future entry.
Proposition 1: If $x_e^* > 0$, then a TA that specifies policy caps is strictly preferred to a complete TA.

Proof:

- Recall $\Psi = a(W + W^*) + (px_s + p^*x_s^*) + (cx_e + c^*x_e^*) + (\cdot)$
- Consider an optimal complete TA at intersection of $POL_{ex-ante}$ and $R^*(t)$
- What if we turn these policy levels into policy caps? Applied policies unchanged, hence $a(W + W^*) + (px_s + p^*x_s^*)$ unchanged.
- But now $c^*x_e^* > 0$, b/c exporting gov can threaten to lower $t^*$ toward $R^*_W(t)$, so it will be compensated for not doing so (and if we are inside the Romboid, also $cx_e > 0$). Therefore $\Psi$ is higher.
Proposition 1: If $x_e^* > 0$, then a TA that specifies policy caps is strictly preferred to a complete TA.

Proof:

- Recall $\Psi = a(W + W^*) + (px_s + p^*x_s^*) + (cx_e + c^*x_e^*) + (\cdot)$
- Consider an optimal complete TA at intersection of $POL_{ex-ante}$ and $R^*(t)$
- What if we turn these policy levels into policy caps? Applied policies unchanged, hence $a(W + W^*) + (px_s + p^*x_s^*)$ unchanged.
- But now $c^*x_e^* > 0$, b/c exporting gov can threaten to lower $t^*$ toward $R^*_W(t)$, so it will be compensated for not doing so (and if we are inside the Romboid, also $cx_e > 0$). Therefore $\Psi$ is higher.

Interpretation: With complete TA, there is no ex-post lobbying, and future entrants free-ride on the pre-TA lobby. But with ceilings, future entrants will pay for protection, so ceilings help solve the free rider problem associated with future entry.
Gains from policy caps (cont’d)

To get intuition from different perspective, let

\[ \rho \equiv \frac{x_e}{x_s + x_e}, \quad \rho^* \equiv \frac{x_e^*}{x_s^* + x_e^*}, \]

and suppose for simplicity \( \rho = \rho^* \).
Gains from policy caps (cont’d)

- To get intuition from different perspective, let

\[ \rho \equiv \frac{x_e}{x_s + x_e}, \quad \rho^* \equiv \frac{x_e^*}{x_s^* + x_e^*}, \]

and suppose for simplicity \( \rho = \rho^* \).

- Then \( \Psi \) can be written as:

\[ \Psi(\bar{t}, \bar{t}^*) = \rho \left[ aW_T(\bar{t}, \bar{t}^*) + aW_T^*(\bar{t}, \bar{t}^*) \right] + (1 - \rho)P(\bar{t}, \bar{t}^*) + (\cdot) \]

where \( aW_T(\bar{t}, \bar{t}^*) \) and \( aW_T^*(\bar{t}, \bar{t}^*) \) are govs’ threat payoffs, and

\[ P(\bar{t}, \bar{t}^*) \equiv a\left[ W(\bar{t}, \bar{t}^*) + W^*(\bar{t}, \bar{t}^*) \right] + p \cdot (x_s + x_e) + p^* \cdot (x_s^* + x_e^*) \]

is the political joint payoff.
Gains from policy caps (cont’d)

- Recall

\[ \Psi(\bar{t}, \bar{t}^*) = \rho \left[ aW_T(\bar{t}, \bar{t}^*) + aW_T^*(\bar{t}, \bar{t}^*) \right] + (1 - \rho)P(\bar{t}, \bar{t}^*) + (\cdot) \]
Gains from policy caps (cont’d)

- Recall

\[ \Psi(\bar{t}, \bar{t}^*) = \rho [aW_T(\bar{t}, \bar{t}^*) + aW^*(\bar{t}, \bar{t}^*)] + (1 - \rho)P(\bar{t}, \bar{t}^*) + (\cdot) \]

- Turning exact constraints into caps does not affect \( P(\cdot) \).
Gains from policy caps (cont’d)

- Recall

\[ \Psi(\bar{t}, \bar{t}^*) = \rho [aW_T(\tilde{t}, \tilde{t}^*) + aW^*_T(\bar{t}, \bar{t}^*)] + (1 - \rho)P(\bar{t}, \bar{t}^*) + (\cdot) \]

- Turning exact constraints into caps does not affect \( P(\cdot) \).

- Next focus on threat payoffs. Consider a point \((\tilde{t}, \tilde{t}^*)\) in Romboid:
Gains from policy caps (cont’d)

- Recall

\[ \Psi(\bar{t}, \bar{t}^\star) = \rho \left[ aW_T(\bar{t}, \bar{t}^\star) + aW_T^*(\bar{t}, \bar{t}^\star) \right] + (1 - \rho)P(\bar{t}, \bar{t}^\star) + (\cdot) \]

- Turning exact constraints into caps does not affect \( P(\cdot) \).
- Next focus on threat payoffs. Consider a point \((\bar{t}, \bar{t}^\star)\) in Romboid:
  - If exact constraints,

\[ W_T(\bar{t}, \bar{t}^\star) + W_T^*(\bar{t}, \bar{t}^\star) = W(\bar{t}, \bar{t}^\star) + W^*(\bar{t}, \bar{t}^\star) \]
Gains from policy caps (cont’d)

- Recall

\[ \Psi(\bar{t}, \bar{t}^*) = \rho \left[ aW_T(\bar{t}, \bar{t}^*) + aW_T^*(\bar{t}, \bar{t}^*) \right] + (1 - \rho)P(\bar{t}, \bar{t}^*) + (\cdot) \]

- Turning exact constraints into caps does not affect \( P(\cdot) \).

- Next focus on threat payoffs. Consider a point \((\bar{t}, \bar{t}^*)\) in Romboid:
  - If exact constraints,
    \[
    W_T(\bar{t}, \bar{t}^*) + W_T^*(\bar{t}, \bar{t}^*) = W(\bar{t}, \bar{t}^*) + W^*(\bar{t}, \bar{t}^*)
    \]
  - If caps,
    \[
    W_T(\bar{t}, \bar{t}^*) + W_T^*(\bar{t}, \bar{t}^*) = W(R_W(\bar{t}^*), \bar{t}^*) + W^*(\bar{t}, R_W^*(\bar{t}))
    \]

so each gov gets its "cheating" payoff. This is at expense of ex-post lobby (hence partially paid for by entrants), not the other gov.
Gains from policy caps (cont’d)

- Recall

\[
\Psi(\bar{t}, \bar{t}^*) = \rho \left[ aW_T(\bar{t}, \bar{t}^*) + aW_T^*(\bar{t}, \bar{t}^*) \right] + (1 - \rho)P(\bar{t}, \bar{t}^*) + (\cdot)
\]

- Turning exact constraints into caps does not affect \( P(\cdot) \).

- Next focus on threat payoffs. Consider a point \((\bar{t}, \bar{t}^*)\) in Romboid:
  - If exact constraints,

\[
W_T(\bar{t}, \bar{t}^*) + W_T^*(\bar{t}, \bar{t}^*) = W(\bar{t}, \bar{t}^*) + W^*(\bar{t}, \bar{t}^*)
\]

  - If caps,

\[
W_T(\bar{t}, \bar{t}^*) + W_T^*(\bar{t}, \bar{t}^*) = W(R_W(\bar{t}^*), \bar{t}^*) + W^*(\bar{t}, R_W^*(\bar{t}))
\]

  so each gov gets its "cheating" payoff. This is at expense of ex-post lobby (hence partially paid for by entrants), not the other gov.

- Note: (1) Govs have no bargaining power, so preserving discretion does not generate ex-post rents; (2) No domestic distortions that ceilings can mitigate. Ceilings are preferable for different reason than in Maggi and Rodriguez-Clare (2007).
Next we characterize the optimal policy caps.

Proposition 2: The optimal caps lie on $\mathbb{R}$ (below N point). As a consequence, the export subsidy does not need to be capped.

Proof: Any point outside Cone is equivalent to a point on edge of Cone, so can focus on Cone.

Lemma 1: $\Psi$ increases moving Northeast ($45^\circ$) optimal ceilings on edge of Cone

Lemma 2: $\Psi$ increases moving West from a point on $\mathbb{R}$. Optimal ceilings cannot be on $\mathbb{R}$. 
Next we characterize the optimal policy caps.

**Proposition 2:** The optimal caps lie on $R^*$ (below $N$ point). As a consequence, the export subsidy does not need to be capped.
Next we characterize the optimal policy caps.

**Proposition 2:** The optimal caps lie on $R^*$ (below N point). As a consequence, the export subsidy does not need to be capped.

**Proof:**
Next we characterize the optimal policy caps.

**Proposition 2:** The optimal caps lie on $R^*$ (below N point). As a consequence, the export subsidy does not need to be capped.

**Proof:**

- Any point outside Cone is equivalent to a point on edge of Cone, so can focus on Cone.
Next we characterize the optimal policy caps.

**Proposition 2:** The optimal caps lie on $R^*$ (below N point). As a consequence, the export subsidy does not need to be capped.

**Proof:**

- Any point outside Cone is equivalent to a point on edge of Cone, so can focus on Cone.
- **Lemma 1:** $\Psi$ increases moving Northeast (45°) $\rightarrow$ optimal ceilings on edge of Cone
Next we characterize the optimal policy caps.

**Proposition 2:** The optimal caps lie on $R^*$ (below N point). As a consequence, the export subsidy does not need to be capped.

**Proof:**

- Any point outside Cone is equivalent to a point on edge of Cone, so can focus on Cone.
- **Lemma 1:** $\Psi$ increases moving Northeast ($45^0$) $\implies$ optimal ceilings on edge of Cone
- **Lemma 2:** $\Psi$ increases moving West from a point on $R$ $\implies$ optimal ceilings cannot be on $R$. 
To prove Lemma 1, recall

\[ \Psi = a(W + W^*) + (px_s + p^*x_s^*) + (cx_e + c^*x_e^*) + (\cdot) \]
To prove Lemma 1, recall

$$\Psi = a(W + W^*) + (px_s + p^*x_s^*) + (cx_e + c^*x_e^*) + (\cdot)$$

A move NE along a 45 degree line keeps $a(W + W^*) + (px_s + p^*x_s^*)$ constant.
To prove Lemma 1, recall

\[ \Psi = a(W + W^*) + (px_s + p^*x_s^*) + (cx_e + c^*x_e^*) + (\cdot) \]

- A move NE along a 45 degree line keeps \( a(W + W^*) + (px_s + p^*x_s^*) \) constant.
- Inside Romboid, \( c \) and \( c^* \) increase along a 45 degree line (due to "stability").
To prove Lemma 1, recall

$$\Psi = a(W + W^*) + (px_s + p^*x^*_s) + (c^*e + c^*x^*_e) + (\cdot)$$

- A move NE along a 45 degree line keeps $a(W + W^*) + (px_s + p^*x^*_s)$ constant.
- Inside Romboid, $c$ and $c^*$ increase along a 45 degree line (due to "stability").
- Outside Romboid, $c^* = 0$ and/or $c = 0$, but $\Psi$ still weakly increases.
To understand from different perspective, suppose $\rho = \rho^\ast$. Recall 

$$
\Psi(\tilde{t}, \tilde{t}^\ast) = \rho a [W_T(\tilde{t}, \tilde{t}^\ast) + W_T^*(\tilde{t}, \tilde{t}^\ast)] + (1 - \rho)P(\tilde{t}, \tilde{t}^\ast) + (\cdot).
$$
To understand from different perspective, suppose $\rho = \rho^*$. Recall

$$\Psi(\bar{t}, \bar{t}^*) = \rho a \left[ W_T(\bar{t}, \bar{t}^*) + W_T^*(\bar{t}, \bar{t}^*) \right] + (1 - \rho) P(\bar{t}, \bar{t}^*) + (\cdot).$$

Inside Romboid, a move NE along $45^0$ has no effect on $P(\bar{t}, \bar{t}^*)$, and changes govs’ joint threat payoff by

$$\underbrace{m(\overline{R_W}(\bar{t}^*) - \bar{t}^*)}_{\text{trade at H’s threat pt}} - \underbrace{m(\bar{t} - \overline{R_W}(\bar{t}))}_{\text{trade at F’s threat pt}} > 0$$
To understand from different perspective, suppose $\rho = \rho^*$. Recall

$$\Psi(t, \bar{t}^*) = \rho a \left[ W_T(t, \bar{t}^*) + W_T^*(t, \bar{t}^*) \right] + (1 - \rho) P(t, \bar{t}^*) + (\cdot).$$

Inside Romboid, a move NE along $45^0$ has no effect on $P(t, \bar{t}^*)$, and changes govs’ joint threat payoff by

$$\underbrace{m(R_W(\bar{t}^*) - \bar{t}^*)}_{\text{trade at H’s threat pt}} - \underbrace{m(\bar{t} - R_W^*(\bar{t}))}_{\text{trade at F’s threat pt}} > 0$$

Intuition:
To understand from different perspective, suppose $\rho = \rho^*$. Recall
$$
\Psi(t, \bar{t}^*) = \rho a [W_T(t, \bar{t}^*) + W_T^*(t, \bar{t}^*)] + (1 - \rho) P(t, \bar{t}^*) + (\cdot).
$$

Inside Romboid, a move NE along $45^0$ has no effect on $P(t, \bar{t}^*)$, and changes govs’ joint threat payoff by

$$
\frac{m(R_W(\bar{t}^*) - \bar{t}^*)}{\text{trade at H’s threat pt}} - \frac{m(\bar{t} - R_W^*(\bar{t}))}{\text{trade at F’s threat pt}} > 0
$$

Intuition:

- $dt = dt^* > 0$ implies $dW = m(t - t^*)$ and $dW^* = -m(t - t^*)$
To understand from different perspective, suppose $\rho = \rho^*$. Recall 
$$\Psi(\bar{t}, \bar{t}^*) = \rho a [W_T(\bar{t}, \bar{t}^*) + W^*_T(\bar{t}, \bar{t}^*)] + (1 - \rho)P(\bar{t}, \bar{t}^*) + (\cdot).$$

Inside Romboid, a move NE along $45^0$ has no effect on $P(\bar{t}, \bar{t}^*)$, and changes govs’ joint threat payoff by

$$m(R_W(\bar{t}^*) - \bar{t}^*) - m(\bar{t} - R^*_W(\bar{t})) > 0$$

trade at H’s threat pt \hspace{2cm} trade at F’s threat pt

Intuition:

- $dt = dt^* > 0$ implies $dW = m(t - t^*)$ and $dW^* = -m(t - t^*)$
- but govs’ payoffs are $W$ and $W^*$ evaluated at threat points $(R_W(\bar{t}^*), \bar{t}^*)$ and $(\bar{t}, R^*_W(\bar{t}))$
To understand from different perspective, suppose $\rho = \rho^*$. Recall
$$\Psi(\bar{t}, \bar{t}^*) = \rho a \left[ W_T(\bar{t}, \bar{t}^*) + W_T^*(\bar{t}, \bar{t}^*) \right] + (1 - \rho) P(\bar{t}, \bar{t}^*) + (\cdot) .$$

Inside Romboid, a move NE along $45^0$ has no effect on $P(\bar{t}, \bar{t}^*)$, and changes govs’ joint threat payoff by

$$m( R_W(\bar{t}^*) - \bar{t}^*) - m(\bar{t} - R_W^*(\bar{t})) > 0$$

where $m$ represents the marginal effect at the threat points $H$ and $F$.

Intuition:

- $dt = dt^* > 0$ implies $dW = m(t - t^*)$ and $dW^* = -m(t - t^*)$
- but govs’ payoffs are $W$ and $W^*$ evaluated at threat points $(R_W(\bar{t}^*), \bar{t}^*)$ and $(\bar{t}, R_W^*(\bar{t}))$
- so the effect on $W$ is $m( R_W(\bar{t}^*) - \bar{t}^*) > m(\bar{t} - \bar{t}^*)$ and the effect on $W^*$ is $-m(\bar{t} - R_W^*(\bar{t})) > -m(\bar{t} - \bar{t}^*)$. 
To understand Lemma 2, consider a point inside Romboid:

\[ \Psi(\bar{t}, \bar{t}^*) = \rho a \left[ W(R_W(\bar{t}^*), \bar{t}^*) + W^*(\bar{t}, R_W^*(\bar{t})) \right] + (1 - \rho) P(\bar{t}, \bar{t}^*) + (\cdot) \]
To understand Lemma 2, consider a point inside Romboid:

$$
\Psi(\bar{t}, \bar{t}^*) = \rho a [W(R_W(\bar{t}^*), \bar{t}^*) + W^*(\bar{t}, R_W^*(\bar{t}))] + (1 - \rho) P(\bar{t}, \bar{t}^*) + (\cdot)
$$

A move left affects first term through $W^*_1(\bar{t}, R_W^*(\bar{t})) < 0$. 

Threat externality: decreasing $t$ increases Foreign's threat payoff. $P(\bar{t}, \bar{t}^*)$ also increases as we move left, because we move towards POLex ante.

Argument can be extended outside Romboid.
To understand Lemma 2, consider a point inside Romboid:

\[ 
\Psi(\bar{t}, \bar{t}^*) = \rho a \left[ W(R_W(\bar{t}^*), \bar{t}^*) + W^*(\bar{t}, R_W^*(\bar{t})) \right] + (1 - \rho) P(\bar{t}, \bar{t}^*) + (\cdot) 
\]

A move left affects first term through \( W_1^*(\bar{t}, R_W^*(\bar{t})) < 0 \).

- **Threat externality**: decreasing \( t \) increases Foreign’s threat payoff.
To understand Lemma 2, consider a point inside Romboid:

$$
\Psi(\bar{t}, \bar{t}^*) = \rho a \left[ \mathcal{W}(R_W(\bar{t}^*), \bar{t}^*) + \mathcal{W}^*(\bar{t}, R^*_W(\bar{t})) \right] + (1 - \rho)P(\bar{t}, \bar{t}^*) + (\cdot)
$$

A move left affects first term through \( \mathcal{W}^*_1(\bar{t}, R^*_W(\bar{t})) < 0 \).

- Threat externality: decreasing \( t \) increases Foreign’s threat payoff.

\( P(\bar{t}, \bar{t}^*) \) also increases as we move left, b/c we move towards \( \text{POL}_{ex-ante} \).
To understand Lemma 2, consider a point inside Romboid:

\[ \Psi(\bar{t}, \bar{t}^*) = \rho a \left[ W(R_W(\bar{t}^*), \bar{t}^*) + W^*(\bar{t}, R_W^*(\bar{t})) \right] + (1 - \rho)P(\bar{t}, \bar{t}^*) + (\cdot) \]

A move left affects first term through \( W_1^*(\bar{t}, R_W^*(\bar{t})) < 0 \).

- **Threat externality**: decreasing \( t \) increases Foreign’s threat payoff.

- \( P(\bar{t}, \bar{t}^*) \) also increases as we move left, b/c we move towards \( \text{POL}_{\text{ex-ante}} \).

- Argument can be extended outside Romboid.
Comparison with standard model

- **Remark 1**: if $R^*$ upward sloping and optimal TA non-empty, TA binds tariff below NE level, and in response to this, F will unilaterally reduce export subsidy.
Remark 1: if $R^*$ upward sloping and optimal TA non-empty, TA binds tariff below NE level, and in response to this, F will unilaterally reduce export subsidy.

Remark 2: Allowing for policy ceilings pins down both $t$ and $t^*$, while if TA restricted to be complete, only $t - t^*$ determined.
Remark 1: if $R^*$ upward sloping and optimal TA non-empty, TA binds tariff below NE level, and in response to this, F will unilaterally reduce export subsidy.

Remark 2: Allowing for policy ceilings pins down both $t$ and $t^*$, while if TA restricted to be complete, only $t - t^*$ determined.

Remark 3: If $x_e = x_e^* = 0$, our model collapses to standard model (no gains from ceilings, only $t - t^*$ determined, optimum on $POL_{ex-ante} = POL_{ex-post}$). But with small entry, indifference broken in favor of caps, and optimal TA pins down $t$ and $t^*$ (at intersection between $POL_{ex-ante}$ and $R^*$).
With non-negligible entry, our model’s predictions are different from those of the standard model also in terms of trade liberalization (reduction in $t - t^*$ relative to NE):

In standard model, optimal TA is on $\text{POL}_{\text{ex-\text{post}}}$. In our model, there are two departures from this prediction:
Comparison with standard model (cont’d)

- With non-negligible entry, our model’s predictions are different from those of the standard model also in terms of trade liberalization (reduction in $t - t^*$ relative to NE):
  - In standard model, optimal TA is on $\text{POL}_{\text{ex-post}}$. In our model, there are two departures from this prediction:
    - positive entry, complete TA $\implies$ recall optimal $t - t^*$ higher than in standard model
With non-negligible entry, our model’s predictions are different from those of the standard model also in terms of trade liberalization (reduction in $t - t^*$ relative to NE):

In standard model, optimal TA is on $\text{POL}_{\text{ex-post}}$. In our model, there are two departures from this prediction:

- positive entry, complete TA $\implies$ recall optimal $t - t^*$ higher than in standard model
- positive entry, ceilings $\implies$ under plausible conditions (e.g. linearity), optimal TA is (weakly) on the right of $\text{POL}_{\text{ex-ante}}$ $\implies$ $t - t^*$ even higher.
Comparison with standard model (cont’d)

With non-negligible entry, our model’s predictions are different from those of the standard model also in terms of trade liberalization (reduction in $t - t^*$ relative to NE):
In standard model, optimal TA is on $POL_{ex-post}$. In our model, there are two departures from this prediction:

- positive entry, complete TA $\implies$ recall optimal $t - t^*$ higher than in standard model
- positive entry, ceilings $\implies$ under plausible conditions (e.g. linearity), optimal TA is (weakly) on the right of $POL_{ex-ante} \implies t - t^*$ even higher.

Thus, by ignoring entry, standard model tends to "overpredict" extent of trade liberalization.
Proposition 3: The optimal TA reduces net protection \((t - t^*)\) by a (weakly) smaller amount than the optimal complete TA, provided 
\(\eta^* \cdot |m^*|\) is nondecreasing in \(p^*\).
Ceilings vs complete TA

- **Proposition 3**: The optimal TA reduces net protection \((t - t^*)\) by a (weakly) smaller amount than the optimal complete TA, provided \(\eta^* \cdot |m^*|\) is nondecreasing in \(p^*\).

- **Proof (sketch)**:
Proposition 3: The optimal TA reduces net protection \( (t - t^*) \) by a (weakly) smaller amount than the optimal complete TA, provided \( \eta^* \cdot |m^*| \) is nondecreasing in \( p^* \).

Proof (sketch):

Recall \( \Psi = a(W + W^*) + (px_s + p^*x_s^*) + (cx_e + c^*x_e^*) \). The component \( a(W + W^*) + (px_s + p^*x_s^*) \) is max along \( \text{POL}_{\text{ex-ante}} \), so it suffices to show that \( (cx_e + c^*x_e^*) \) increases moving up along \( R^* \).
Ceilings vs complete TA

- **Proposition 3:** The optimal TA reduces net protection \((t - t^*)\) by a (weakly) smaller amount than the optimal complete TA, provided \(\eta^* \cdot |m^*|\) is nondecreasing in \(p^*\).

- **Proof (sketch):**
  - Recall \(\Psi = a(W + W^*) + (px_s + p^*x_s^*) + (cx_e + c^*x_e^*)\). The component \(a(W + W^*) + (px_s + p^*x_s^*)\) is max along POL\textsubscript{ex-ante}, so it suffices to show that \((cx_e + c^*x_e^*)\) increases moving up along \(R^*\).
  - Intuitively, \(c\) increases (weakly). And \(c^*\) increases iff \(R^* > R_{W}^* \iff 1/ \left(\frac{\eta^* \cdot |m^*|}{x_s^* + x_e^*}\right)\) increasing in \(\bar{t}\) \(\iff \eta^* \cdot |m^*|\) increasing in \(p^*\).
Proposition 3: The optimal TA reduces net protection \((t - t^*)\) by a (weakly) smaller amount than the optimal complete TA, provided \(\eta^* \cdot |m^*|\) is nondecreasing in \(p^*\).

Proof (sketch):

- Recall \(\Psi = a(W + W^*) + (px_s + p^*x_s^*) + (cx_e + c^*x_e^*)\). The component \(a(W + W^*) + (px_s + p^*x_s^*)\) is max along POL_{ex-ante}, so it suffices to show that \((cx_e + c^*x_e^*)\) increases moving up along \(R^*\).
- Intuitively, \(c\) increases (weakly). And \(c^*\) increases iff \(R^{'}/R_{W}^{'}) \iff \frac{1}{\eta^* \cdot \frac{|m^*|}{x_s^* + x_e^*}}\) increasing in \(\bar{t} \iff \eta^* \cdot |m^*|\) increasing in \(p^*\).

Condition in Prop. 3 not guaranteed in general, but satisfied for example if demand is linear or \(\eta^*\) is constant.
There may be no scope for TA

- Optimal TA may coincide with NE point (no scope for TA):

\[ R_0 \] sufficiently close (or equal) to one, there is no scope for a TA.

Intuition: recall that a move up along 45 strictly increases \( \Psi \), so by continuity, if moving up along \( R \) improves \( \Psi \).
There may be no scope for TA

- Optimal TA may coincide with NE point (no scope for TA):
- **Proposition 4**: If \( R^* \) sufficiently close (or equal) to one, there is no scope for a TA.
There may be no scope for TA

Optimal TA may coincide with NE point (no scope for TA):

**Proposition 4:** If $R^*$ sufficiently close (or equal) to one, there is no scope for a TA.

- Intuition: recall that a move up along $45^0$ strictly increases $\Psi$, so by continuity, if $R^* \approx 1$ moving up along $R^*$ improves $\Psi$. 
There may be no scope for TA

- Optimal TA may coincide with NE point (no scope for TA):

  - **Proposition 4:** If $R^*$ sufficiently close (or equal) to one, there is no scope for a TA.
    - Intuition: recall that a move up along $45^0$ strictly increases $\Psi$, so by continuity, if $R^* \approx 1$ moving up along $R^*$ improves $\Psi$.

- What if $R^*$ not close to one? Let us impose more structure.
A linear specification

- Assume linear demands: \( d(p) = \alpha - \beta p \), \( d^*(p^*) = \alpha^* - \beta^* p^* \).
A linear specification

- Assume linear demands: \( d(p) = \alpha - \beta p \), \( d^*(p^*) = \alpha^* - \beta^* p^* \).

- **Proposition 5**: If \( \rho \) and \( \rho^* \) close enough to one, there exists \( \hat{a} > 0 \) such that (i) for \( a > \hat{a} \), optimal \( \bar{t} \) is given by \( \bar{t} = R^*(\bar{t}) \); (ii) for \( a < \hat{a} \), optimal TA is empty.
A linear specification

- Assume linear demands: \( d(p) = \alpha - \beta p, \quad d^*(p^*) = \alpha^* - \beta^* p^*. \)

- **Proposition 5:** If \( \rho \) and \( \rho^* \) close enough to one, \( \exists \hat{a} > 0 \) s.t. (i) for \( a > \hat{a} \), optimal \( \bar{t} \) is given by \( \bar{t} = R^*(\bar{t}) \); (ii) for \( a < \hat{a} \), optimal TA is empty.

  - Key steps of proof: (1) Convexity: \( \frac{d^2 \Psi R^*}{dt^2} > 0 \) inside Romboid; (2) Submodularity: \( \frac{d^2 \Psi R^*}{dtda} < 0 \).
A linear specification

- Assume linear demands: \( d(p) = \alpha - \beta p, \quad d^*(p^*) = \alpha^* - \beta^* p^*. \)

- **Proposition 5**: If \( \rho \) and \( \rho^* \) close enough to one, \( \exists \hat{a} > 0 \) s.t. (i) for \( a > \hat{a} \), optimal \( \tilde{t} \) is given by \( \tilde{t} = R^*(\tilde{t}) \); (ii) for \( a < \hat{a} \), optimal TA is empty.

  - Key steps of proof: (1) Convexity: \( \frac{d^2\Psi^R}{dt^2} > 0 \) inside Romboid; (2) Submodularity: \( \frac{d^2\Psi^R}{dtda} < 0. \)

- Recall \( \sigma = 0 \), so reason govs may "fail" to improve over NE is not to preserve political rents. Nor are ex-ante lobbies responsible for this. Reason is that NE entails highest feasible joint threat payoff for govs.
A linear specification

- Assume linear demands: \( d(p) = \alpha - \beta p \), \( d^*(p^*) = \alpha^* - \beta^* p^* \).

- **Proposition 5**: If \( \rho \) and \( \rho^* \) close enough to one, \( \exists \hat{a} > 0 \) s.t. (i) for \( a > \hat{a} \), optimal \( \bar{t} \) is given by \( \bar{t} = R^*(\bar{t}) \); (ii) for \( a < \hat{a} \), optimal TA is empty.

  - Key steps of proof: (1) Convexity: \( \frac{d^2 \Psi_{R^*}}{dt^2} > 0 \) inside Romboid; (2) Submodularity: \( \frac{d^2 \Psi_{R^*}}{dt da} < 0 \).

- Recall \( \sigma = 0 \), so reason govs may "fail" to improve over NE is not to preserve political rents. Nor are ex-ante lobbies responsible for this. Reason is that NE entails highest feasible joint threat payoff for govs.

- Suggests optimal TA more likely to be empty when (i) more entry after TA; and (ii) politics more important.
More details about Proposition 5

- Intuition for convexity ($\frac{d^2 \Psi^{R^*}}{dt^2} > 0$) inside Romboid. If $\rho = \rho^* = 1$, then $\Psi = a \left[ W(R_W(t^*), t^*) + W^*(t, R^*_W(t)) \right]$, hence

$$
\frac{d\Psi^{R^*}}{dt} = W_2(R_W(R^*(t)), R^*(t))R^* - W_1^*(t, R^*_W(t))
$$

$$
= m(R_W(R^*(t)) - R^*(t))R^* - m(t - R^*_W(t))
$$

trade at H’s threat pt

trade at F’s threat pt
More details about Proposition 5

- Intuition for convexity \( \left( \frac{d^2 \Psi}{dt^2} > 0 \right) \) inside Romboid. If \( \rho = \rho^* = 1 \), then \( \Psi = a [ W(R_W(t^*), t^*) + W^*(t, R_W^*(t)) ] \), hence

\[
\frac{d\Psi^R}{dt} = W_2(R_W(R^*(t)), R^*(t))R^'* + W_1^*(t, R_W^*(t))
\]

\[
= m(R_W(R^*(t)) - R^*(t))R^'* - m(t - R_W^*(t))
\]

- How does increasing \( t \) affect \( \frac{d\Psi^R}{dt} \)? By stability (\( R_W \) and \( R_W^* \) flat), indirect effects through \( R_W \) and \( R_W^* \) dominated by direct effects:
More details about Proposition 5

- Intuition for convexity \( \left( \frac{d^2 \Psi^{R^*}}{dt^2} > 0 \right) \) inside Romboid. If \( \rho = \rho^* = 1 \), then \( \Psi = a [W(R_W(t^*), t^*) + W^*(t, R_W^*(t))] \), hence

\[
\frac{d\Psi^{R^*}}{dt} = W_2(R_W(R^*(t)), R^*(t)) R^* + W^*_1(t, R_W^*(t))
\]
\[
= m(R_W(R^*(t)) - R^*(t)) R^* - \underbrace{m(t - R_W^*(t))}_{\text{trade at H's threat pt}}
\]

- How does increasing \( t \) affect \( \frac{d\Psi^{R^*}}{dt} \)? By stability (\( R_W \) and \( R_W^* \) flat), indirect effects through \( R_W \) and \( R_W^* \) dominated by direct effects:
  - (i) \( R^* \uparrow \) and hence \( m(R_W(R^*) - R^*) \uparrow \): positive externality of \( t^* \) on H is reinforced;
More details about Proposition 5

- Intuition for convexity \( \frac{d^2 \Psi^R}{dt^2} > 0 \) inside Romboid. If \( \rho = \rho^* = 1 \), then \( \Psi = a \left[ W(R_W(t^*), t^*) + W^*(t, R_W^*(t)) \right] \), hence

\[
\frac{d\Psi^R}{dt} = W_2(R_W(R^*(t)), R^*(t))R^* + W_1^*(t, R_W^*(t))
= m(R_W(R^*(t)) - R^*(t))R^* - m(t - R_W^*(t))
\]

trade at H’s threat pt
trade at F’s threat pt

- How does increasing \( t \) affect \( \frac{d\Psi^R}{dt} \)? By stability \( (R_W \text{ and } R_W^* \text{ flat}) \), indirect effects through \( R_W \) and \( R_W^* \) dominated by direct effects:

  (i) \( R^* \uparrow \) and hence \( m(R_W(R^*) - R^*) \uparrow \): positive externality of \( t^* \) on H is reinforced;

  (ii) \( m(t - R_W^*) \downarrow \): negative externality of \( t \) on F is weakened.
Recall

\[
\frac{d\Psi^R}{dt} = m(R_W(R^*(t)) - R^*(t))R^{'*} - m(t - R_W^*(t))
\]
More details about Proposition 5

- Recall

\[ \frac{d\Psi^R}{dt} = m(R_W(R^*(t)) - R^*(t))R'^* - m(t - R_W^*(t)) \]

- Intuition for submodularity \((\frac{d^2\Psi^R}{dt^2} < 0)\). Increasing \(a\) affects \(\frac{d\Psi^R}{dt}\) only through \(m(R_W(R^*) - R^*)\), and by stability the dominating effect is \(R^* \downarrow\), hence \(m \downarrow\).
More details about Proposition 5

• Recall

$$\frac{d \Psi^R}{dt} = m(R_W(R^*(t)) - R^*(t))R^* - m(t - R^*_W(t))$$

• Intuition for submodularity ($\frac{d^2 \Psi^R}{dt da} < 0$). Increasing $a$ affects $\frac{d \Psi^R}{dt}$ only through $m(R_W(R^*) - R^*)$, and by stability the dominating effect is $R^* \searrow$, hence $m \searrow$.

• Given convexity, no interior optimum in Romboid. Also, outside Romboid only point Q can be optimal ($\bar{t} = R^*(\bar{t}) \implies$ optimum is either N or Q.)
More details about Proposition 5

- Recall

\[
\frac{d\Psi^R}{dt} = m(R_W(R^*(t)) - R^*(t))R'^* - m(t - R^*_W(t))
\]

- Intuition for submodularity \((\frac{d^2\Psi^R}{dtda} < 0)\). Increasing \(a\) affects \(\frac{d\Psi^R}{dt}\) only through \(m(R_W(R^*) - R^*)\), and by stability the dominating effect is \(R^* \downarrow\), hence \(m \downarrow\).

- Given convexity, no interior optimum in Romboid. Also, outside Romboid only point Q can be optimal \((\bar{t} = R^*(\bar{t})) \implies\) optimum is either N or Q.

- By submodularity, as \(a \nearrow\) optimum can only switch from N to Q. If \(a \to \infty\) optimum is Q, and if \(a\) small it is N \(\implies\) bang-bang.
Further comparison with standard model

- Further contrast with predictions of standard TOT model:

  - Standard model predicts trade liberalization entirely explained by trade elasticities.
  - In our model, trade liberalization directly affected by politics (e.g. $a$), and not systematically related to trade elasticities.

Remark 4: Assume linear demands. In standard TOT model, optimal TA reduces $t$ by $1/\eta + 1/j\eta_\rho(m(tN))$. In our model, no systematic relationship between trade liberalization and trade volumes/elasticities.

Suppose $\rho$ and $\rho_\rho$ close to one (as in Prop.5). As $a$ decreases, $m(tN)$ goes up, but $\Delta(tN)$ goes down: inverse relationship b/w trade liberalization and trade volume (or inverse trade elasticities).

Two effects of a decline in $a$ that go in same direction: (a) optimal complete TA reduces $(tN)$ by less $(tN)$ while optimal $t$ unchanged; (b) moving to optimal incomplete TA may wipe out all trade liberalization.
Further comparison with standard model

- Further contrast with predictions of standard TOT model:
  - Standard model predicts trade liberalization entirely explained by trade elasticities.
Further comparison with standard model

- Further contrast with predictions of standard TOT model:
  - Standard model predicts trade liberalization entirely explained by trade elasticities.
  - In our model, trade liberalization directly affected by politics (e.g. $a$), and not systematically related to trade elasticities.
Further comparison with standard model

- Further contrast with predictions of standard TOT model:
  - Standard model predicts trade liberalization entirely explained by trade elasticities.
  - In our model, trade liberalization directly affected by politics (e.g. \( a \)), and not systematically related to trade elasticities.

- **Remark 4:** Assume linear demands. In standard TOT model, optimal TA reduces \( t - t^* \) by \( \frac{1}{\eta^*} + \frac{1}{|\eta|} \propto m(t_N - t^*_N) \). In our model, no systematic relationship between trade liberalization and trade volumes/elasticities:
Further comparison with standard model

- Further contrast with predictions of standard TOT model:
  - Standard model predicts trade liberalization entirely explained by trade elasticities.
  - In our model, trade liberalization directly affected by politics (e.g. $a$), and not systematically related to trade elasticities.

- **Remark 4:** Assume linear demands. In standard TOT model, optimal TA reduces $t - t^*$ by $\frac{1}{\eta^*} + \frac{1}{|\eta|} \propto m(t_N - t_N^*)$. In our model, no systematic relationship between trade liberalization and trade volumes/elasticities:
  - Suppose $\rho$ and $\rho^*$ close to one (as in Prop.5). As $a$ decreases, $m(t_N - t_N^*)$ goes up, but $\Delta(t - t^*)$ goes down: inverse relationship b/w trade liberalization and trade volume (or inverse trade elasticities).
Further comparison with standard model

Further contrast with predictions of standard TOT model:

- Standard model predicts trade liberalization entirely explained by trade elasticities.
- In our model, trade liberalization directly affected by politics (e.g. $a$), and not systematically related to trade elasticities.

Remark 4: Assume linear demands. In standard TOT model, optimal TA reduces $t - t^*$ by $\frac{1}{\eta^*} + \frac{1}{|\eta|} \propto m(t_N - t_N^*)$. In our model, no systematic relationship between trade liberalization and trade volumes/elasticities:

- Suppose $\rho$ and $\rho^*$ close to one (as in Prop.5). As $a$ decreases, $m(t_N - t_N^*)$ goes up, but $\Delta(t - t^*)$ goes down: inverse relationship b/w trade liberalization and trade volume (or inverse trade elasticities).
- Two effects of a decline in $a$ that go in same direction: (a) optimal complete TA reduces $(t - t^*)$ by less $(t_N - t_N^* \downarrow$ while optimal $t - t^*$ unchanged); (b) moving to optimal incomplete TA may wipe out all trade liberalization.
Extension: each gov has bargaining power $\sigma$ vis-a-vis its lobby.
Extension: each gov has bargaining power $\sigma$ vis-a-vis its lobby.

**Conjecture:** Increasing $\sigma$ (weakly) reduces trade liberalization.
Extension: each gov has bargaining power $\sigma$ vis-a-vis its lobby.

Conjecture: Increasing $\sigma$ (weakly) reduces trade liberalization.

Intuition: when $\sigma > 0$, by specifying policy caps govs obtain not only their threat payoffs, but also part of the ex-post political surplus, so gains from using caps even bigger than with $\sigma = 0$, and all intuitions above remain valid.
Bargaining powers

- Extension: each gov has bargaining power $\sigma$ vis-a-vis its lobby.

- **Conjecture:** Increasing $\sigma$ (weakly) reduces trade liberalization.
  - Intuition: when $\sigma > 0$, by specifying policy caps govs obtain not only their threat payoffs, but also part of the ex-post political surplus, so gains from using caps even bigger than with $\sigma = 0$, and all intuitions above remain valid.
  - Higher $\sigma$ implies larger marginal benefit from increasing discretion by raising caps, hence trade liberalization is shallower.
We argued it is important to distinguish between lobbying to influence TAs and lobbying to influence day-to-day trade policies.
Conclusion

We argued it is important to distinguish between lobbying to influence TAs and lobbying to influence day-to-day trade policies.

Once this is recognized, and incomplete TAs (policy caps) are allowed for, the predictions of the standard TOT theory change in important ways, provided there is any entry into politically-organized sectors following the TA.
We argued it is important to distinguish between lobbying to influence TAs and lobbying to influence day-to-day trade policies.

Once this is recognized, and incomplete TAs (policy caps) are allowed for, the predictions of the standard TOT theory change in important ways, provided there is any entry into politically-organized sectors following the TA.

Extensions on the burner: endogenous capital movements, multi-sector general-equilibrium model, more general incomplete TAs.