



**STRATEGIC TARIFFS AND PRIVATIZATION
POLICIES IN A BILATERAL TRADE WITH
CORPORATE SOCIAL RESPONSIBILITY**

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Xu Lili (Dalian Maritime University, China)
Sang-Ho Lee (Chonnam National University, Korea)

THIS PAPER DEALS WITH MIXED OLIGOPOLY ON

- Privatization Policies: binary choice
- Strategic Tariffs: bilateral trade model
- Corporate Social Responsibility(CSR): altruistic consumer-initiative approach

PRIVATIZATION POLICY

- In the last few decades (1980s~2000s), both developed and developing countries have continued to privatize their state-owned enterprises and liberalize their markets.
- According to Kowalshi, et al.(2013, OECD report):
 - *Around 200 largest SOEs in the world have significant government ownership and their sales are equivalent to approximately 6% of worldwide GDP.*
 - *Over 50% of all SOEs in OECD countries are significant players in sectors such as transportation, telecommunications, finance, manufacturing, power generation, electricity and other energy industries.*
- The main explanation has been that privatization leads to increased productivity and profitability, but competition has been more effective at improving performance than privatization.

STRATEGIC TRADE POLICY

- Along with the global trend of open economy and trade liberalization, to foster domestic economic growth, strategic (or free) trade policy has recently inspired foreign firms' entry into those industries, even with the existence of SOEs
- *The policy issue of international mixed market where the strategic choices of privatization are interacted with competition under trade and tariff policies is important in recent decades.*

STRATEGIC TRADE IN UNILATERAL MIXED OLIGOPOLY

- Pal and White(1998, 2003) firstly introduced the relations between import tariff and government ownership, and showed that optimal tariff is lower at full nationalization than at full privatization.
- Chang(2005, 2007), Yu and Lee(2011), and Han(2012) showed that privatization strategy is affected by trade instruments and cost difference between firms.
- Chao and Yu(2006) showed that foreign competition lowers the optimal tariff rate but privatization substitutes for entry barrier.
- Wang, et al.(2014) showed that domestic entry might be socially excessive whether it is free trade or domestic government imposes a tariff.

STRATEGIC TRADE IN BILATERAL MIXED OLIGOPOLY

- Barcena-Ruiz and Garzon(2005) considered an integrated world market and showed that only one government privatizes and that government obtains lower social welfare at equilibrium.
- Dadpay and Heywood(2006) and Matsushima and Takauchi(2014) found that public firms play the role of trade barriers and the strategic interaction of the two governments serves to reduce welfare.
- Han and Ogawa(2008) and Lee, et al.(2013) showed that the equilibrium degree of privatization depends not only on the relative efficiency of the SOE, but also on trade policy.

CSR TRENDS

- During the last decade in 2000s, many leading companies have adopted CSR activities as a global business practice.
- According to KPMG (2002, 2005, 2015 report):
 - *In 2005, among 250 largest global companies in the world (In 2002, 100 companies in 45 countries), around 45% (23%) firms have declared the accomplishment of CSR activities in their financial reports. In 2015, increasingly and importantly, it becomes over 92% (73%) firms.*

CSR AND PRIVATIZATION

- Since Porter and Kramer(2006) shows the linkage between CSR and competitive advantage, CSR has now become a mainstream global business strategy in leading industries (including mixed market where CSR firms compete with SOEs.).
- *The policy issue of CSR-initiative in mixed market where the strategic choices of privatization policies are interacted with CSR strategies is also important in recent decades.*

CSR IN OLIGOPOLY MARKET

- Goering(2007, 2009, 2012, 2014) firstly introduced the formulation of CSR-firm which cares for consumer surplus as a proxy of CSR-initiative, and examined the effect of CSR-firm in market competition.
- Kopel(2009, 2015), Kopel and Brand(2012), Brand and Grothe(2013), Lambertini and Tampieri(2012, 2015), Gosh and Mitra(2013), Matsumura and Ogawa(2014, 2017) expanded the analysis of the emergence of CSR-firms under various market structure.
- Wang, et al. (2012), Chang et al.(2014), Liu, et al.(2018) extended to the international market and explored the strategic relation between tariff policy and CSR activities under the unilateral framework.

CSR IN MIXED OLIGOPOLIES

- Recently, a few works deal with the CSR-initiatives in mixed oligopolies: Kim, et al.(2017), Ouattara (2017) and Itano (2017) examined the optimal privatization policies in a mixed oligopoly with CSR-firms.
- In this paper, we consider an international bilateral trade model with two countries in which a domestic public firm competes with a foreign private firm with CSR initiatives, and examine the strategic interaction of two countries' optimal choices of tariffs and privatization policies.

MAIN FINDINGS: BOTH PRIVATE OR MIXED MARKETS

- In both private markets, tariff policy has an entry-reducing effect and strategic tariff is decreasing in the degree of CSR, but the strategic tariff is higher (lower) than efficient tariff when the degree of CSR is low (high).
- In both mixed markets, tariff policy is substitutable for the public firm and strategic tariff has an inverted-U shape in the degree of CSR, but the strategic tariff is higher (lower) than the efficient tariff when the degree of CSR is low (high).
- The strategic tariff in private markets is higher than that in mixed markets, while efficient tariff in private markets is lower than that in mixed markets.
- Both privatization will raise strategic tariff and worsen (improve) domestic welfare when the degree of CSR is low (high).

MAIN FINDINGS: ENDOGENOUS CHOICE

- In asymmetric markets, strategic tariff in a mixed market is lower than that in a private market, and the strategic tariff is higher (low) than efficient tariff when the degree of CSR is low (high) in both markets.
- In the endogenous choice of privatization policy, both countries choose nationalization policy even though privatization policy is globally optimal when the degree of CSR is high.
- There is a prisoner's dilemma problem in the endogenous privatization choice game in the presence of higher CSR.
- It implies that there exists an optimal degree of promotion for CSR and thus an appropriate regulatory framework in both countries is necessary for a higher degree of CSR in international bilateral trade.

THE STRUCTURE OF THIS PAPER

- ◆ Basic model
- ◆ Market equilibrium in private markets
- ◆ Market equilibrium in mixed markets
- ◆ Tariffs and welfare
- ◆ Endogenous choice of global privatization policy
- ◆ Conclusions

THE BASIC MODEL IN A BILATERAL TRADE

- **Two countries:** Home (*country 1*) & Foreign (*country 2*)
- **Four Players:** $SOE_1, SOE_2; PE_1, PE_2$
 - *both SOE and PE-CSR can produce and may export goods*
 - *PE-CSR cares for consumer surplus in both countries when it exports*
- **Linear Inverse Market Demand Function:**
 - $P_i = 1 - Q_i$, where $Q_i = q_{hi}^{SOE} + q_{ej}^{SOE} + q_{hi}^{PE} + q_{ej}^{PE}$ $i \neq j = 1, 2$
- **Quadratic Cost Function:**
 - $C(q_{hi}^M + q_{ei}^M) = \frac{1}{2}(q_{hi}^M + q_{ei}^M)^2$ where $M = SOE, PE$
- **Import tariff revenue:**
 - $T_i = t_i(q_{ej}^{SOE} + q_{ej}^{PE})$

OBJECTIVE FUNCTIONS

State-owned enterprise: welfare-maximization

$$W_i = CS_i + \pi^{SOE}_i + \pi^{PE}_i + T_i$$

$$CS_i = \frac{1}{2}(Q_i)^2$$

Private enterprise - CSR: profits with weighted CS maximization

- $O^c_i = \alpha_i(CS_i + CS_j) + \pi^{PE}_i$ where $\alpha_i \in [0,1]$ is the degree of CSR
- $\pi^{PE}_i = p_i q^{PE}_{hi} + (p_j - t_j)q^{PE}_{ei} - \frac{1}{2}(q^{PE}_{hi} + q^{PE}_{ei})^2$.

GAME STRUCTURES

◆ **Two-stage game**

- ① *Both governments simultaneously choose import tariffs to maximize their domestic welfare in private or mixed market*
- ② *Both firms observe the import tariff and then simultaneously choose their output levels in private or mixed market*

◆ **The three cases**

- 1) *Symmetric private markets*
- 2) *Symmetric mixed markets*
- 3) *Asymmetric private and mixed markets*

RESULTS IN PRIVATE MARKETS

- **LEMMA 1.** *Strategic tariff is positive and decreasing in α .*
 - Strategic tariff will reduce the export of the firms in the foreign country, but it is decreasing as the degree of CSR increases: CSR activities substitute strategic tariff.
- **LEMMA 2.** *Efficient tariff is negative (positive) when α is low (high), and it is increasing in α .*
 - Efficient tariff becomes a subsidy when the degree of CSR is low (due to under-production), while it becomes a tax when the degree of CSR is high: CSR activities complement efficient tariff.
- **PROPOSITION 1.** *In both private markets, strategic tariff is higher (lower) than efficient tariff when the degree of CSR is low (high).*
 - When the degree of CSR is very low, the strategic tariff is positive and the efficiency tariff is negative. But, as the degree of CSR increases, strategic tariff becomes substitutable and it is decreasing while efficient tariff becomes complementary and it is increasing.

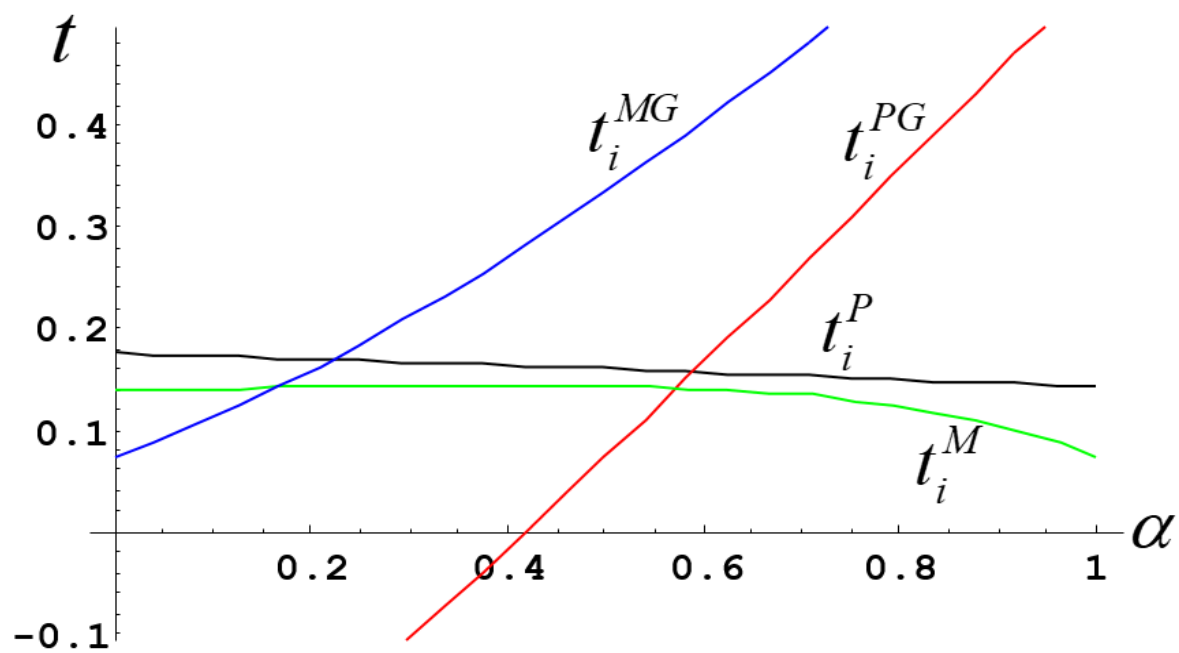
RESULTS IN MIXED MARKETS

- **LEMMA 3.** *Strategic tariff is positive and an inverted-U shape in α .*
 - Strategic tariff and public firm work together for reducing the export of the firms in the foreign country, and thus there is a relative effectiveness in choosing tariffs in mixed market: CSR activities have a non-linear relationship with strategic tariff.
- **LEMMA 4.** *Efficient tariff is always positive and increasing in α .*
 - Efficient tariff relates positively with the degree of CSR: CSR activities complement efficient tariff. It implies that strategic tariff with a subsidy is welfare-distorting.
- **PROPOSITION 2.** *In both mixed markets, strategic tariff is higher (lower) than efficient tariff when the degree of CSR is low (high).*
 - When the degree of CSR is low, the strategic tariff and efficiency tariff complement CSR activities. But, as the degree of CSR increases, strategic tariff becomes substitutable while efficient tariff becomes complementary.

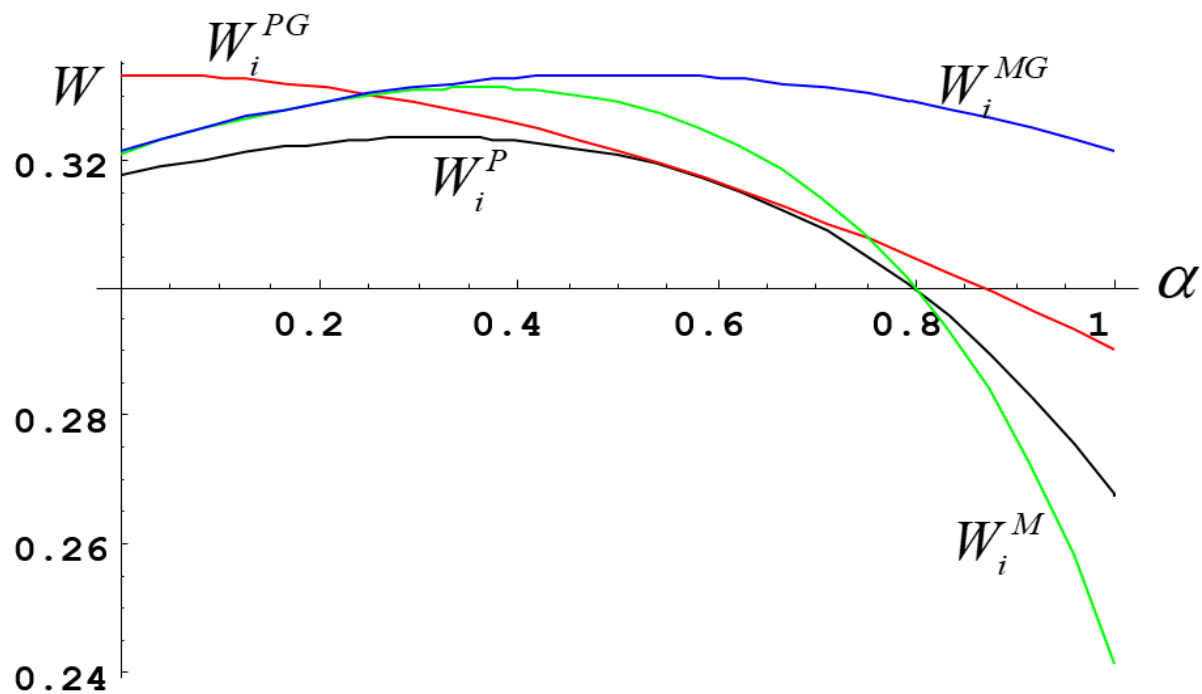
COMPARISONS IN PRIVATE AND MIXED MARKETS

- **LEMMA 5.** $t_i^{P*} > t_i^{M*}$ and $t_i^{PG} < t_i^{MG}$
 - strategic tariff in private markets is higher than that in mixed markets, while efficient tariff in private markets is lower than that in mixed markets.
- **LEMMA 6.** *The comparison of strategic and efficient tariffs yields:*
 - *If $0 \leq \alpha \leq 0.17$, strategic tariffs are higher than efficient tariffs in both markets.*
 - *If $0.17 \leq \alpha \leq 0.59$, strategic tariff is lower than efficient tariff in mixed markets, while it is higher than efficient tariff in private markets.*
 - *If $0.59 \leq \alpha \leq 1$, strategic tariffs are lower than efficient tariffs in both markets.*
- **PROPOSITION 3.** *Privatization policy in both the countries will raise strategic tariff and worsen (improves) domestic welfare when the degree of CSR is low (high).*

TARIFFS COMPARISON IN PRIVATE AND MIXED MARKETS



WELFARES COMPARISON IN PRIVATE AND MIXED MARKETS



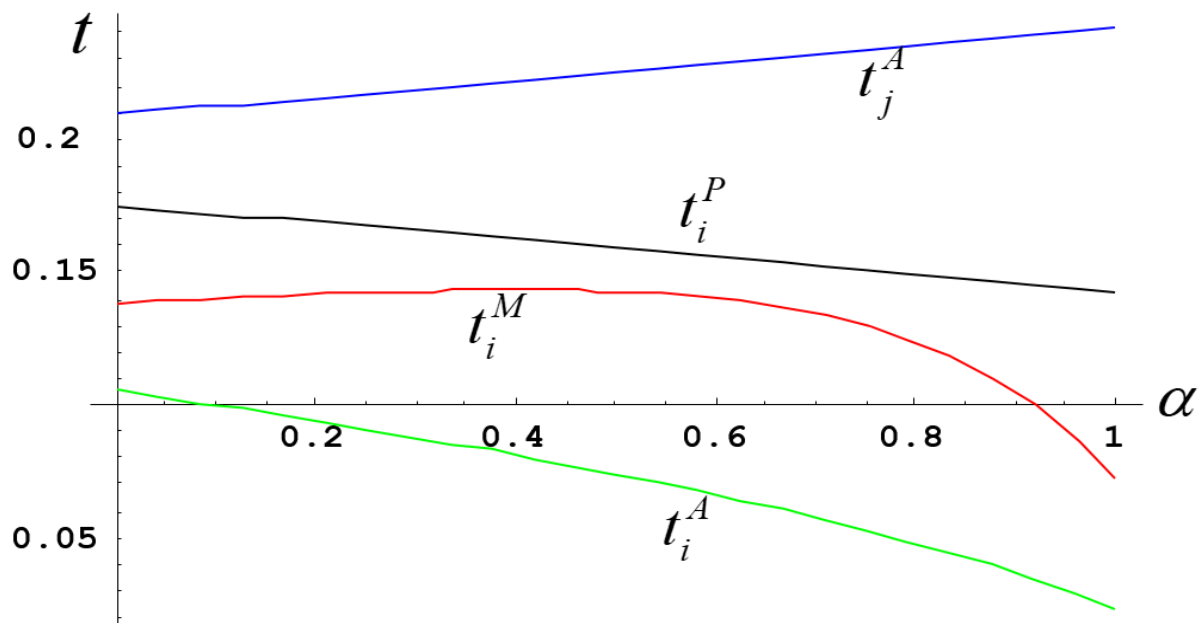
ASYMMETRIC CHOICE OF PRIVATIZATION POLICY

- **LEMMA 7.** *In an asymmetric case, the strategic tariff in a mixed market is lower than that in a private market, and it is decreasing (increasing) in α in a mixed (private) market.*
 - Tariff policy in a mixed market is substitutable with the degree of CSR while tariff policy in a private market is complementary to the degree of CSR.
- **LEMMA 8.** *In an asymmetric case, efficient tariff is increasing in α . However, it is always positive in a mixed market, but can be negative (positive) when α is low (high) in a private market.*
- **PROPOSITION 4.** *In an asymmetric case, strategic tariff is higher (low) than efficient tariff when the degree of CSR is low (high).*

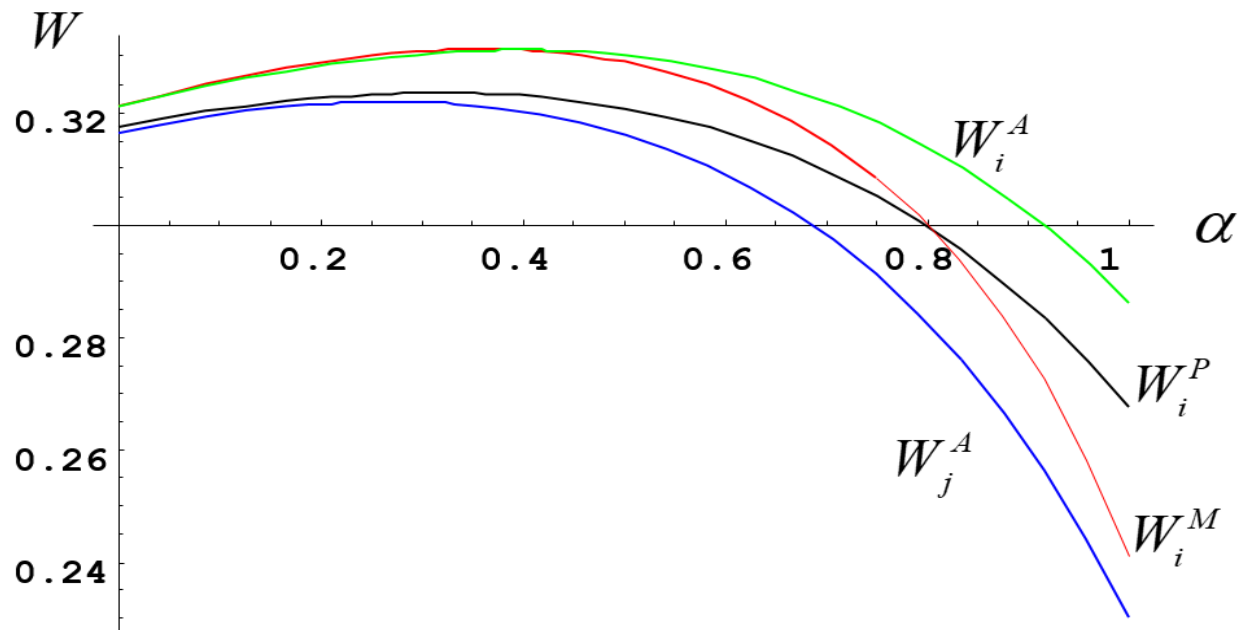
COMPARISON: SYMMETRIC VS. ASYMMETRIC CASE

- **LEMMA 9.** $t_j^{A*} > t_i^{P*} > t_i^{M*} > t_i^{A*}$.
- **LEMMA 10.** *We have the following welfare ranks:*
 - (i) $W_i^M \geq W_i^A > W_i^P > W_j^A$ when $0 \leq \alpha \leq 0.40$
 - (ii) $W_i^A > W_i^M \geq W_i^P > W_j^A$ when $0.40 < \alpha \leq 0.85$
 - (iii) $W_i^A > W_i^P > W_i^M > W_j^A$ when $0.85 < \alpha \leq 1$

TARIFFS COMPARISON: SYMMETRIC VS. ASYMMETRIC CASE



WELFARES COMPARISON: SYMMETRIC VS. ASYMMETRIC CASE



PRIVATIZATION CHOICE GAME

Country	Nationalization	Privatization
Nationalization	W_i^{M*}, W_j^{M*}	W_i^{A*}, W_j^{A*}
Privatization	W_j^{A*}, W_i^{A*}	W_i^{P*}, W_j^{P*}

ENDOGENOUS CHOICE OF PRIVATIZATION POLICY

- **PROPOSITION 5.** *In an international privatization choice game, nationalization policy in both countries is the unique Nash equilibrium.*
- **PROPOSITION 6.** *Nationalization (Privatization) policy in both countries is a Pareto-efficient outcome when the degree of CSR is low (high).*
 - When the degree of CSR is high, simultaneous choice of privatization policy in both countries is globally optimal, while the equilibrium is the simultaneous choice of nationalization policy in both countries.
 - There is a prisoner's dilemma in choosing privatization policy in the presence of higher CSR. Thus, an appropriate regulatory framework in both countries is necessary for a higher degree of CSR in international bilateral trade.

CONCLUSIONS

- ✓ *CSR activities are critical in the strategic interaction of two countries' optimal choices on tariffs and privatization policy in internationally bilateral mixed markets.*
- The strategic tariff in private markets is higher than that in mixed markets, while efficient tariff in private markets is lower than that in mixed markets.
- Both privatization will raise strategic tariff and worsen (improve) domestic welfare when the degree of CSR is low (high).
- In the endogenous choice of privatization policy, both countries choose nationalization policy even though privatization policy is globally optimal when the degree of CSR is high.
- Prisoner's dilemma problem occurs in the presence of higher CSR and thus, an appropriate regulatory framework in both countries is necessary for a higher degree of CSR in international bilateral trade.



THANKS FOR YOUR ATTENTION

Comments at sangho@jnu.ac.kr will be appreciated!