The Effect of Free Trade Agreement between Market Economy and Non-Market Economy

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Motivation

- Free trade agreement is believed to create trade expansion and welfare enhancement of member countries
- Non-market economies(NMEs) are enthusiastic about forming FTAs with many countries
- The issue of non-market economy has rarely been examined in the FTA literature
- When a market economy forms FTA with the non-market economy, are positive economic effects created?
- The effect of free trade agreement in the context of NMEs

Non-market economies (by EU) and FTAs

Afghanistan (2 FTAs)
Armenia (18 FTAs)
Australia (24 FTAs)
Azerbaijan (9 FTAs)
Bangladesh (6 FTAs)
Bhutan (3 FTAs)
Brunei Darussalam (12 FTAs)
Cambodia (8 FTAs)
China, People's Republic of (28 FTAs)
Cook Islands (4 FTAs)
Fiji (5 FTAs)
Georgia (13 FTAs)
Hong Kong, China (9 FTAs)
India (29 FTAs)
Indonesia (20 FTAs)
Japan (25 FTAs)
Kazakhstan (20 FTAs)
Kiribati (4 FTAs)
Korea, Republic of (27 FTAs)
Kyrgyz Republic (18 FTAs)
Lao PDR (10 FTAs)
Malaysia (23 FTAs)
Maldives (4 FTAs)
Marshall Islands (5 FTAs)
Micronesia, Federated States of (5 FTAs)
Mongolia (1 FTA)
Myanmar (10 FTAs)
Nauru (4 FTAs)
Nepal (3 FTAs)
New Zealand (20 FTAs)
Pakistan (18 FTAs)
Palau (4 FTAs)
Papua New Guinea (6 FTAs)
Philippines (11 FTAs)
Samoa (4 FTAs)
Singapore (36 FTAs)
Solomon Islands (5 FTAs)
Sri Lanka (8 FTAs)
Taipei,China (9 FTAs)
Tajikistan (8 FTAs)
Thailand (23 FTAs)
Timor-Leste (0 FTAs)
Tonga (4 FTAs)
Turkmenistan (5 FTAs)
Tuvalu (4 FTAs)
Uzbekistan (9 FTAs)
Vanuatu (5 FTAs)
Viet Nam (17 FTAs)

Non-market economy

- The EU's "non-market economies" list: **China(28), Vietnam(17), Kazakhstan(20), Albania, Armenia, Azerbaijan(9)**, **Belarus**, **Georgia(13)**, DPRK, **Kyrgyzstan(18)**, **Moldova**, **Mongolia(1)**, **Tajikistan(8)**, **Turkmenistan(5)**, and **Uzbekistan(9)**
- This classification is for the purpose of anti-dumping analysis
- (U.S. Criteria for NME) the non-market economy is a country that does not operate on market principles of cost or pricing structure.
- Sales of good in such country do not reflect the fair value of the good
- Six factors are considered when determining MNE status; among them,
  1) the extent of government ownership or control of the means of production
  2) the extent of government control over resource allocation and over the price and output decision of firms

The Largest Chinese Firms in Fortune 500 List

Rank	Name	HQ	Industry	Type
3	Sinopec Group	Beijing	Oil	Public, State-owned
4	China National Petroleum	Beijing	Oil	State-owned
7	State Grid Corporation	Beijing	Utilities	State-owned
25	Industrial and Commercial Bank of China	Beijing	Banking	Public company, State-owned
38	China Construction Bank	Beijing	Banking	Public, State-owned
47	Agricultural Bank of China	Beijing	Banking	State-owned
52	China State Construction Engineering	Beijing	Construction	State-owned
55	China Mobile	Beijing	Telecommunications	State-owned
59	Bank of China	Beijing	Banking	Public, State-owned
76	Noble Group	Hong Kong	Conglomerate	Public
79	China National Offshore Oil	Beijing	Oil	State-owned
80	China Railway Construction	Beijing	Construction	Public, State-owned
85	SAIC Motor	Shanghai	Automotive	Public, State-owned
86	China Railway Engineering	Beijing	Construction	State-owned
98	China Life Insurance	Beijing	Insurance	Public, Government-owned
107	Sinochem Group	Beijing	Oil/Chemicals	Government-owned
111	FAW Group	Changchun	Automotive	State-owned
113	Dongfeng Motor Group	Wuhan	Automotive	State-owned
115	China Southern Power Grid	Guangzhou	Utilities	State-owned
122	China Development Bank	Beijing	Banking	Government-owned

Non-market economy: why are they ?

- EU and US are reluctant to treat China as “a market economy” at WTO
- Its huge overcapacities in steel, ceramics, chemical, and aluminum, which induce “distress dumping” on very large scale in international markets
- It retains different types of subsidization policies in direct and indirect ways
- Government is distorting market prices: National Development and Reform Commission(NDRC) in China sets energy prices (including iron and steel, cement, chemicals and petrochemicals, pulp and paper industries), transportation, and buildings sectors
- As well, according to the annual Fortune 500 list in 2016, most of the Chinese 110 firms that operate in the petroleum, finance, automobile, electricity and natural resource sectors are **state-owned**

Literature

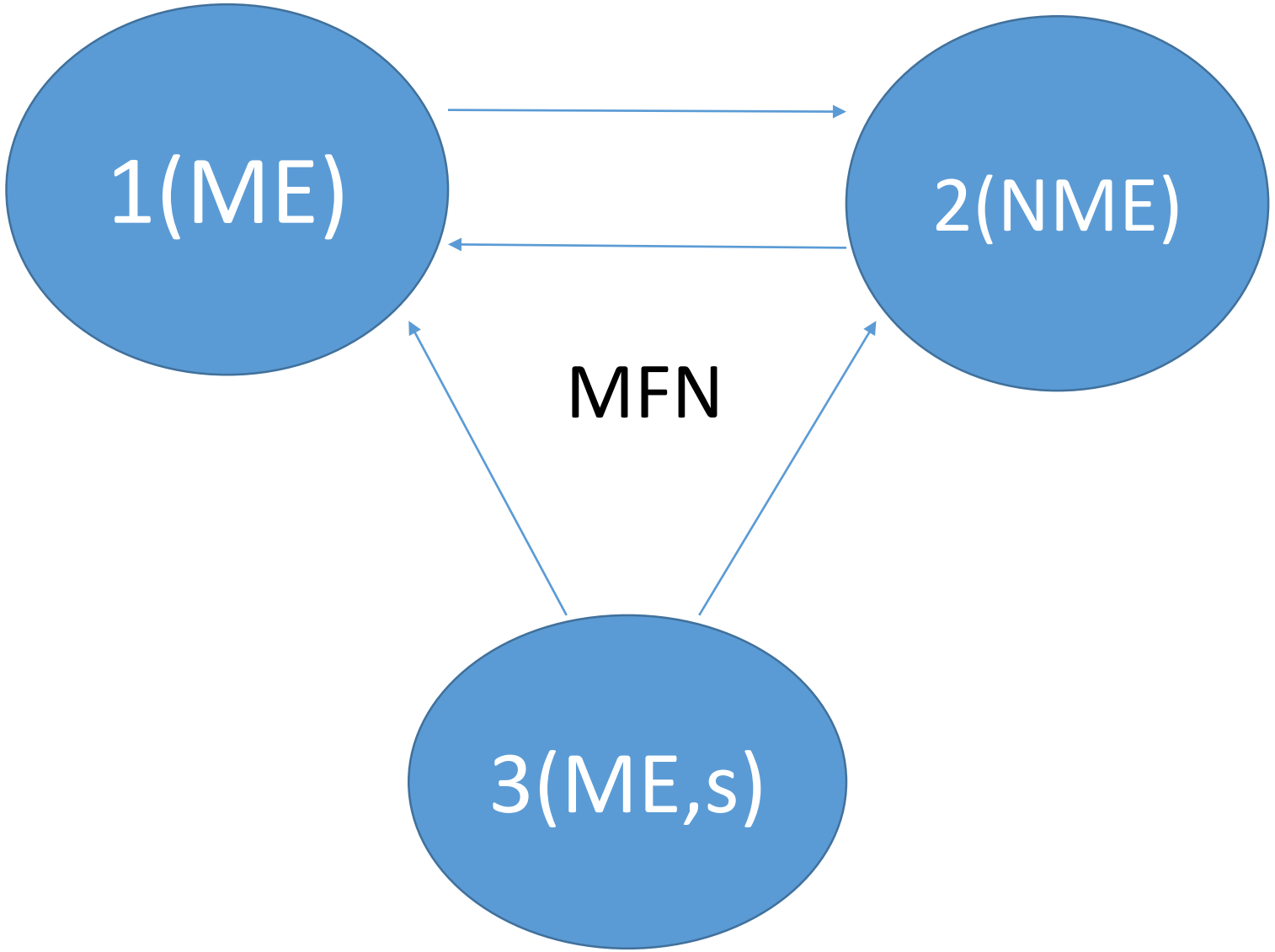
- Baldwin, 1999; Bond et al., 2004; Bond and Syropoulos, 1996; Frankel, 1997; Furusawa and Konishi, 2007; Krugman, 1991; Yi, 1996).3 Ethier (1998), Bagwell and Staiger (2004), and Goyal and Joshi (2006)
- FTA induces a reduction in external tariff liberalization (Bond, Riezman, and Syropoulos,2004; Ornelas, 2005b)
- A significant reduction in external tariff benefits non-member countries ?
- Their products become relatively less expensive after FTA ?
- Tariff reduction leads to a definite welfare gain between FTA members ?
- In our study, we re-examine the above question in the context of FTA with a non-market economy

Assumptions in the model

- Country 1,2,3 and firm 1,2,3, respectively
- All firms sell their product in country 1(market economy) and country 2(non-market economy) with identical market size
- Country 3's market size is really small
- Firm 1 and firm 3 are a private firm and firm 2 is state owned
- Each firm produces a differentiated good, and there is intra-industry trade (domestic sales and foreign sales)
- There are 6 inverse demand functions in the model: $p_{ii} = 1 - q_{ii} - \gamma q_{ji} - \gamma q_{ki}$

Assumptions in the model

- Perfect and symmetric information → SPNE
- Two-stage game
  1st stage: Government 1 and 2 choose an optimal tariff
  2nd stage: After observing the tariff, firms compete with a quantity
- All firms sell their product in country 1(market economy) and country 2(non-market economy).
- Firm 1: $\pi_1 = (p_{11} - w)q_{11} + (p_{12} - w - t_{12})q_{12}$
- Firm 3: $\pi_3 = (p_{31} - w - t_{31})q_{31} + (p_{32} - w - t_{32})q_{32}$
- Firm 2: $SW_2 = \pi_2 + CS_2 + GS_2$
  $= (p_{22} - w)q_{22} + (p_{21} - w - t_{21})q_{21} + CS_2 + (t_{12}q_{12} + t_{32}q_{32})$
- Mixed oligopoly with intra industry trade


1(ME)
2(NME)
MFN
3(ME,s)

Result 1 under MFN: second stage

- Best response functions in country 1(market economy): $q_{11}^{BR} = f(q_{21}, q_{31}), q_{21}^{BR} = f(q_{11}, q_{31}), q_{31}^{BR} = f(q_{11}, q_{21})$

- Best response functions in country 2(non-market economy): $q_{12}^{BR} = f(q_{22}, q_{32}), q_{22}^{BR} = 1 - w, q_{32}^{BR} = f(q_{12}, q_{22})$

- **Lemma 1**. *Choosing q_{22} that is the social welfare maximizing quantity is a dominant strategy for firm 2.*

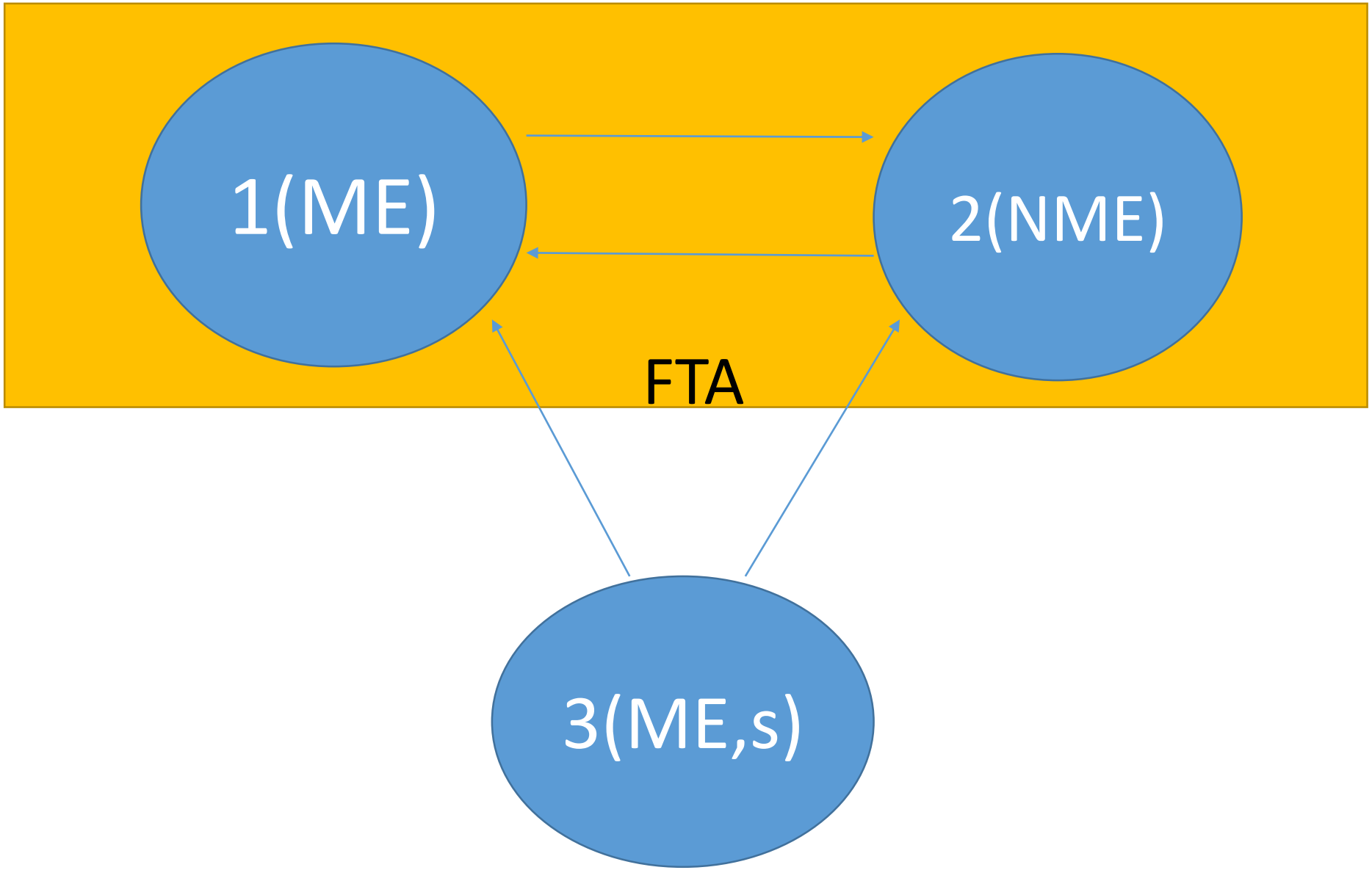
Result 2 under MFN : first stage

- Country 1 and country 2 determine optimal tariff rates to maximize the social welfare levels in their respective countries;
- The objective function for government 2 and for firm 2 are identical
- We obtain the equilibrium tariff rate as
- $t_{12}^* = t_{13}^* = \frac{(1-w)(2+\gamma)(2-\gamma)}{12+4\gamma-6\gamma^2}$, $t_{21}^* = t_{23}^* = \frac{(1-w)\,(4-\gamma^2)}{3+\gamma}$
- $t_{12}^* > t_{21}^*$: the optimal tariff in the market economy is higher than in the NME.
- $SW_1^* < SW_2^*$: the social welfare is higher in the non-market economy

Result 3 under MFN : the equilibrium quantity

- $q_{11}(t_{12}^*, t_{13}^*, t_{21}^*, t_{23}^*) = \frac{(1-w)(3-\gamma)}{6+2\gamma-3\gamma^2}$, $q_{21}(t_{12}^*, t_{13}^*, t_{21}^*, t_{23}^*) = \frac{(1-w)(4-3\gamma)}{12+4\gamma-6\gamma^2}$,
- $q_{31}(t_{12}^*, t_{13}^*, t_{21}^*, t_{23}^*) = \frac{(1-w)(4-3\gamma)}{12+4\gamma-6\gamma^2}, q_{22} = 1-w,$
- $q_{12}(t_{12}^*, t_{13}^*, t_{21}^*, t_{23}^*) = \frac{(1-w)(1-\gamma)}{3+\gamma}, q_{32}(t_{12}^*, t_{13}^*, t_{21}^*, t_{23}^*) = \frac{(1-w)(1-\gamma)}{3+\gamma}$

- At the value of γ=1, firm 1 and firm 3 cannot export to country 2.
- **Proposition 2**. *If firms produce highly differentiated product, they have more chance to enter the country in which a state-owned firm produces.*


1(ME)
2(NME)
FTA
3(ME,s)

Result 1 under FTA: second stage

- Best response functions in country 1(market economy): $q_{11}^{BR} = f(q_{21}, q_{31}), q_{21}^{BR} = f(q_{11}, q_{31}), q_{31}^{BR} = f(q_{11}, q_{21})$

- Best response functions in country 2(non-market economy): $q_{12}^{BR} = f(q_{22}, q_{32})$, $q_{22}^{BR} = 1 - w$, $q_{32}^{BR} = f(q_{12}, q_{22})$

- *Choosing q_{22} that is the social welfare maximizing quantity is a dominant strategy for firm after FTA.*

Result 2 under FTA : first stage

- $\max SW_1(t_{21}, t_{31}) \quad s.t \ t_{21} = t_{12} = 0$
- $\max SW_2(t_{12}, t_{23}) \quad s.t \ t_{21} = t_{12} = 0$

- $t_{13}^{FTA} = \frac{(1-w)(2-\gamma)}{6+3\gamma-2\gamma^2}, \quad t_{23}^{FTA} = \frac{1}{4}(1-w)(2-\gamma)(1+\gamma)$

- $t_{13}^{FTA} > t_{23}^{FTA}$: from firm 3's perspective, the market access to the market economy is more difficult.
- $SW_1^* > SW_2^*$: the social welfare of the non-market economy is higher

Result 3 under FTA : the equilibrium quantity

- $q_{11}\left(t_{13}^{FTA}, t_{23}^{FTA}\right) = \frac{(1-w)(3-\gamma)}{6+3\gamma-2\gamma^2}$, $q_{21}\left(t_{13}^{FTA}, t_{23}^{FTA}\right) = \frac{(1-w)(3-\gamma)}{6+3\gamma-2\gamma^2}$,
- $q_{31}\left(t_{13}^{FTA}, t_{23}^{FTA}\right) = \frac{(1-w)(2-\gamma)}{6+3\gamma-2\gamma^2}$
- $q_{22} = 1 - w$, $q_{12}\left(t_{13}^{FTA}, t_{23}^{FTA}\right) = \frac{2(1-w)(3-4\gamma+\gamma^2)}{12-\gamma^2}$
- $q_{32}(t_{13}^{FTA}, t_{23}^{FTA}) = \frac{(1-w)(4-5\gamma+\gamma^2)}{12-\gamma^2}$

- At the value of γ=1, there is no export from firm 1 and firm 3 to country 2.

Result 4 : comparison of the equilibrium

- After the elimination of tariff between country 1 and country 2, the optimal tariff on firm 3 in the external region goes down:

$$t_{23}^{FTA} < t_{23}^{*}, \qquad t_{13}^{FTA} < t_{13}^{*},$$

➢ There exists "trade liberalization effect toward non-members" (Bagwell and Staiger, 1997b; Bond et al, 2004; Ornelas 2005a)

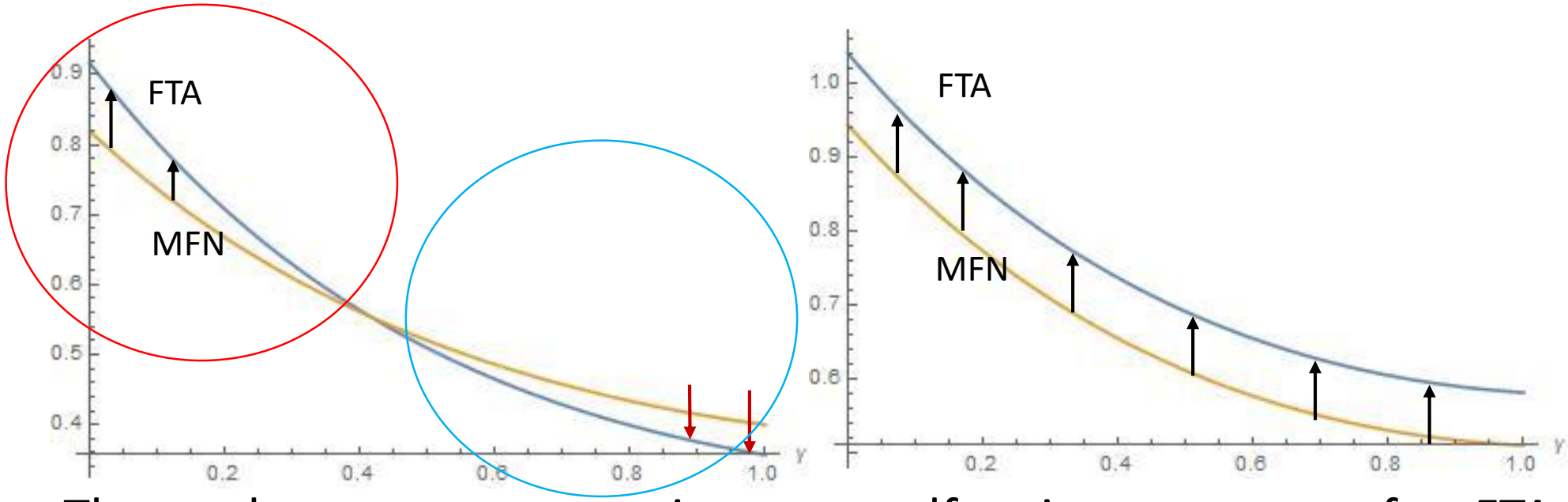
$$q_{31}\left(t_{13}^{FTA}, t_{23}^{FTA}\right) > q_{31}(t_{12}^{*}, t_{13}^{*}, t_{21}^{*}, t_{23}^{*}),\ q_{32}\left(t_{13}^{FTA}, t_{23}^{FTA}\right) > q_{32}(t_{12}^{*}, t_{13}^{*}, t_{21}^{*}, t_{23}^{*})$$

- Member countries' change in production is as follows:

$$q_{11}\left(t_{13}^{FTA}, t_{23}^{FTA}\right) < q_{11}(t_{12}^{*}, t_{13}^{*}, t_{21}^{*}, t_{23}^{*}),\ q_{12}\left(t_{13}^{FTA}, t_{23}^{FTA}\right) > q_{12}(t_{12}^{*}, t_{13}^{*}, t_{21}^{*}, t_{23}^{*}),$$

$$q_{21}\left(t_{13}^{FTA}, t_{23}^{FTA}\right) > q_{21}(t_{12}^{*}, t_{13}^{*}, t_{21}^{*}, t_{23}^{*}),\ q_{22}\left(t_{13}^{FTA}, t_{23}^{FTA}\right) = q_{22}(t_{12}^{*}, t_{13}^{*}, t_{21}^{*}, t_{23}^{*})$$

Result 5 : welfare implication



- The market economy experiences a welfare improvement after FTA only when firm 1 produces highly differentiated good
- The non-market economy always achieves a welfare enhancement after FTA regardless of the level of product differentiation.

Thank you