

IV.2. Companies in Different States: The common logic of free trade agreements and transfer pricing

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Abstract

This paper explores the strategic decisions of multinational enterprises (MNEs) selling their products to related parties in international markets. In order to minimize cost and maximize profit, companies manipulate their intrafirm activities: they set the transfer price (TP), change the location of their operations (by production displacement, providing services etc.), or create artificial transactions. These patterns guide the formulation of some theory and the development of a microeconomic model. The optimal choices firms make depend heavily on three considerations: where the competitive advantages are at a higher level, where lower tax and tariff rates are paid, and where to produce at a lower level of cost. Firms' reactions to a given import tariff or corporate income tax (CIT) are illustrated by game theory. We identify companies and countries as common actors in economies and examine interactions between them with a scenario analysis of the 8-way interaction. We concentrate on an MNE perspective and evaluate the cooperating behavior of inter-companies which take actions to reach higher profit levels in our game. The game is continued and free trade agreements (FTAs) appear. Profit still retains its centrally important role to multinational enterprises well beyond other political interests. The results suggest that a situation where the lower tax rates combined with eliminated tariff rates generate greater profitability to MNEs.

Keywords: free trade agreements, multinational enterprises, transfer pricing, game theory

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IV.2.1. Introduction and relationship to the literature

Tariff and tax policies have frequently been analyzed, since free trade agreements have spread all over the world. However, modelling the interactions between

intra-group firms and their operating environment (depending on tariffs, taxes, and regulations) through game theory has not been probed by many papers. Global trade trends have changed, since modern free trade agreements may result not just in free trade, but in the elimination of non-

tariff barriers. This phenomenon creates increased intra-firm trade between related companies which are determined to transfer prices to maximize their profits. Some researchers have provided evidence of this. For example, Blouin and others argued that transfer prices are used for corporate tax and tariff savings (BLOUIN, J. et al. 2018).

The application possibility of game theory offers another view, since compared to usual economic models the actors' decisions can also be modelled. Modelling of economic situations with the help of game theory has been adopted by researchers and economists. The mainstream decision-making evaluation approaches introduce different actors in a trade policy who contribute to the desired outcomes. The strategic interdependence among countries' tariff-setting decisions was first illustrated by Harry Johnson (JOHNSON, H. 1953). He regarded tariffs as the outcome of a static game, where the rules are the following: there are two countries – two goods, and the players are welfare-maximizing governments. Gowa and Mansfield report an application of the prisoner's dilemma which is the standard optimal tariff game (GOWA, J. – MANSFIELD, E. D. 1993). In a multinational enterprise context, several researches have focused on

the context of country-firm relations. Rosenthal studies the problem of setting transfer prices in a vertically integrated supply chain with a cooperative game (ROSENTHAL, E. 2008). Pogorelova examines the complex nature of transfer pricing with the determination of strategic considerations of organizations guiding the application of game theoretic models (POGORELOVA, L. 2015). Sung and others study the impact of rule of origin (ROO) requirements, accompanied by free trade agreements (FTAs), on a multinational firm's production decisions (SUNG, H. L. et al. 2016). Zissimos identifies a new terms-of-trade externality related tariff setting (ZISSIMOS, B. 2009).

While prior literature finds evidence that corporate income taxes or tariff rates separately influence on MNEs' transfer pricing behavior, the literature has not addressed the two considerations together from a game theoretical perspective.

In this paper, we develop a model and investigate a game involving the introduction of strategies, and the selection of the best strategy for a corporate group. It could be a new, newly approach in the literature. Our goal in developing the model is to provide a simple rationale for the MNEs' behaviour. Choosing the

best option means the highest profit for players. Determining what is optimal is based on the responses to several questions: What prices are set by related parties? Is it known how much the firms should pay via tariffs or taxes to a certain country? How will a parent company and its affiliates react to a given set of tariff or tax rate changes? As a result, theoretical results are obtained.

IV.2.2. Boundaries have disappeared, players have become interconnected

The appearance of multinational enterprises (MNEs), and the creation of free trade agreements around the world has continued to increase for over half a century. These processes have opened the borders of national economies, in both economic and physical terms. MNEs have integrated their processes, while countries have chosen a certain form of interaction. In the early years, the major principle was liberalization under non-discrimination; since then this trend has shifted to the creation of free trade agreements. With the “modernization” of these agreements, the concept has changed; now FTAs mean the elimination of tariff-, and non-tariff barriers (GEP 2015). The importance of access to mutual

benefits has drawn attention to the fact that there is a need for close cooperation among economic actors. As Freund and Ornelas highlight (FREUND, C. – ORNELAS, E. 2010), the most popular form of reciprocal trade liberalization in the past 15 years has been the regional trade agreement (RTA). On 9 March 2020, 304 RTAs were in effect (homepage of WTO DATABASE).

The Cobden–Chevalier Treaty was the first modern bilateral trade agreement between Britain and France. It was concluded in 1860 when France eliminated import barriers to British manufactured goods. Britain in turn removed import prohibitions from French commodities. Each country reduced its tariffs and granted the other most-favored-nation (MFN) consideration. After the 1944 Bretton Woods conference, intergovernmental economic relations and interactions emerged. In 1948, the General Agreement on Tariffs and Trade (GATT) became the first multilateral trade agreement, with 23 signatories. It included more than 45,000 tariff concessions. The Uruguay Round negotiated between 1986 and 1994 created the World Trade Organization (WTO) in 1995 with the signatures of the contracting parties. The WTO extended reductions in duty to services,

created the dispute settlement procedure and negotiated intellectual property rules for the first time. Regional trade agreements created under the first wave of regionalism are inactive today, due to political and economic changes. In the 1990s, increased economic interdependence prompted the creation of new organizations; thus the second wave was more successful (KUTASI G. 2014).

Several different types of interactions are possible, inter alia, extending through a gradual deepening of interactions in four stages: 1. competition, 2. coordination, 3. cooperation, and 4. integration. Economic relations begin with a mutual understanding that brings participants together. In the world economy global conditions have changed and interdependency has intensified as international collaborations have emerged in the last fifty years (PALÁNKAI T. et al. 2014). There is an impressive amount of literature that examines trade relations, their aspects, features and effects; however, many theories tend to increase the confusion, rather than

aid understanding. Interactions are analyzed from many points of view.

In this paper, I refrain from analyzing international economic relations in terms of distinctions among competition, coordination, cooperation and integration, but I introduce intra-group transactions as a necessary part of global free trade. Therefore, I argue that any type of interaction may be preferred. Competition refers to conflicting parties who are involved in a game to gain certain advantages. Coordination assumes a kind of commitment, a willingness to displacement towards the other party. Commitment is not certain in this case. Cooperation means compliance with rules which are derived from commitment. In this situation, the commitment is certain, and parties only decide on the degree of interaction. Integration occurs when parties choose a form of commitment, and determine the degree of dependence. *Table 4* shows these strategic options, with darker tones indicating stronger characteristics (FELDSTEIN, M. S. 1988).

	willingness to commitment	interaction	interdependency
competition			
coordination			
cooperation			

	willingness to commitment	interaction	interdependency
integration			

Table 4: Types of integrations by the gradual deepening of their characteristics
Source: Edition of the author

These concepts introduce the optional strategy of players from a game theoretical perspective. In game theory, coordination is the harmonization of individual interests, while cooperation occurs when the individual's actions are directed to a common purpose that does not necessarily coincide with the individual's own interests (KÓCZY Á. L. 2006). In this research, I deal with only the cooperation of corporate group members.

In the global economy, all participants' common cooperation is better placed to achieve higher global growth, while individual instances of cooperation by actors does/do not necessarily generate higher utility. That is why we have to differentiate between utility, profit, and the welfare level. On the microeconomic level, customers may cooperate or compete in order to acquire greater utility. Global companies, in general, compete with each other to maximize utility, while intragroup cooperation creates increased profit for members, and cooperation between nations generates higher welfare for countries. Frieden and

others highlight the importance of international cooperation, since uncoordinated national policies have caused global crises (FRIEDEN, J. et al. 2012). However, this study only shows the generally accepted view and does not deal with extreme opinions.

A number of empirical research studies have demonstrated that free trade agreements appear to have a relatively large positive effect on the behavior of a multinational firm within a free trade area. Antrás and Foley pointed out that increased multinational firm activity in a regional free trade area is likely to generate benefits within the region, as multinationals typically exhibit high levels of productivity, pay high wages, and create positive spillovers for other firms (ANTRÁS, P. – FOLEY, F. 2009). CHEN (2009) highlighted that an increasing number of multinational firms move their production inside an integrated zone, and benefits are generated by lower costs and better access to markets; thus free trade agreements are dedicated to achieving global economic growth. International trade transactions

involve complex issues, and thus must be examined jointly.

Before making a decision on a transfer price, firms must consider the possible revenue, the costs of their activities, and preferable taxation and tariff assumptions, particularly when corporate group members operate in a broad international network and their activities are highly integrated. Many examinations have analyzed optimal MNE strategies (HYDE, C. E. – CHOE, C. 2005; DÜRR, O. M. – GÖX, R. F. 2011). Different countries may prescribe different administrative requirements that may create additional options to maximize profit. Global firms need to comply with tax and tariff laws, while countries tax their profits.

Modern free trade agreements

The general trend is that modern trade agreements consist of eliminating tariff and nontariff barriers (free movement of capital flows), protecting intellectual property rights (patents, copyright), operating investor-state dispute settlements (ISDS), and rule of origin (ROO) regulations, and harmonizing regulatory standards (LAURSEN, F. 2003; GNANGNON, S. K. 2018; RODRIK, D. 2018). When a government's economic policy

is carried out concerning trade and the enhancement of welfare, it essentially creates winners and losers in the economy. This situation provides a context to investigate which scenario brings greater economic benefits to various players.

It is especially important to note the rule of origin, which determines product requirements regarding the “made in” label. FTA members export to other member countries without tariffs, but the regulation requires that the exported product should originate from a member country. Most FTAs (CETA, NAFTA, EU – Mexico FTA, etc.) apply the ROO in several product categories.

Main characteristics of a corporate group

A general presentation of MNEs helps to understand the optimal strategy of these firms, which is profit maximization. MNEs' core activity describes the participants' contributions to value creation and highlights the main functions, risks and assets used by members within the group. Their business activity helps to understand how the profit is allocated between subsidiaries. A corporate group divides its activities into divisions (such as procurement, production,

wholesale, services, marketing, logistics etc.) and places them in the relevant markets (YAO, L. – YINZHENG, S. 2016).

Firms and transfer prices

The operation of MNEs includes several intercompany transactions between related parties. To price these transactions, companies use a transfer price (TP) that could be below, above or equal to the real market price. “Transfer prices are the prices at which an enterprise transfers physical goods and intangible property or provides services to associated enterprises.” (OECD, 2017 p. 17.)

The taxable profit of entities is based on the transfer prices that have been used among parties. Normally, TP would alter the calculated profit before tax of entities but this does not affect how that combined profit is split between the related parties. Consequently, this means that profit will shift from one country to another. If those entities are taxpayers in different countries, transfer pricing therefore affects the share of that combined profit taxable by each country.

Pricing in line with the “arm’s length principle”

According to international

standards, all participants in a corporate group must be taxed on the basis that they act following the arm’s length principle in their transactions. The OECD (2017) highlights the importance of real pricing and determines the arm’s length principle in Article 9 (1) of the OECD Tax Convention: „[When] conditions are made or imposed between... two [associated] enterprises in their commercial or financial relations which differ from those which would be made between independent enterprises, then any profits which would, but for those conditions, have accrued to one of the enterprises, but, by reason of those conditions, have not so accrued, may be included in the profits of that enterprise and taxed accordingly.” The principle is a comparison between dependent and independent parties.

IV.2.3. Model

In this section, we develop a simple extension of microeconomic profit model and set up a game to define and analyze players’ possibilities concerning profit maximization. For this experiment, we use a 3 player – 3 country game, and determine the combinations of these factors, thus the model contains 8 strategies (*Figure 17*). Under perfect information

conditions, players will select an option that is the best strategy for profit maximizing.

Three basic elements are required and established to create and use a game theoretic model: the players, the laws of a game

(strategies), and the consequences of the players' choices (payoff). The object of the game is to find the winning strategy, or strategies (AXELROD, R. – HAMILTON, W. D. 1981; KÓCZY Á. L. 2006; COLMAN, A. M. – GOLD, N. 2017).

players	$N = \{3\}$
strategies	$S = \{\text{Scenarios}\}$
payoffs	$\pi = \{\text{Profit of a player}\}$

Table 5: Basic elements of the game
 Source: Edition of the author

To set up a game, it is necessary to set axioms. According to Neumann and Morgenstein (NEUMANN J. – MORGENSTEIN, O. 1944), utility theorem rational behavior operates under axioms, which are completeness, transitivity, continuity, and independence. An individual who has to decide when faced with the probabilistic consequences of different choices is to behave as if the players were maximizing the expected value of some function. In future, this is defined in terms of the possible outcomes at some specified point.

Axiom 1. Completeness: either M is preferred, L is preferred, or the individual is indifferent. $L < M, M < L, L \sim M$;

Axiom 2. Transitivity: assumes that preferences are consistent across any three options. If $L < M$ and $M <$

L , then $L < N$, and similarly for \sim ;
 Axiom 3. Continuity: if $L \leq M \leq N$, then there exists a probability $p \in [0,1]$, such that $pL + (1 - p) N \sim M$;
 Axiom 4. Independence: if $L \leq M$, then for any N and $p \in [0,1]$, $pL + (1 - p) N \leq pM + (1 - p) N$.

Assumptions: The players are interconnected, they are parts of a corporate group and cooperate with each other: the producer subsidiary (P) procures the materials from its input provider company (I), manufactures final goods in country B and sells the products to its other related party, who is a Distributor (D). Company P has two options for procuring input materials, and two options for selling: from inside, or outside of country B. Country B and Country C are potential FTA members, while Country C is outside the

agreements (Figure 17). Country A has both a location advantage relating to inputs and a corporate income tax advantage, while country B has low factor skills. The governments apply a variant CIT rate (t) on reported profit. Without a free trade agreement, if two of the three countries (namely countries B and C) interact, a specific tariff rate (T) is applied on import goods,

according to ROO. Country B does not impose tariffs on raw materials imported from country A. Firm I provides all the input materials to Company P, while P sells all its products to Company D. Products are homogenous. Finally, we assume that $t^C > t^B > t^A$. Given these assumptions, we expect the three players to seek greater benefit in their strategies.

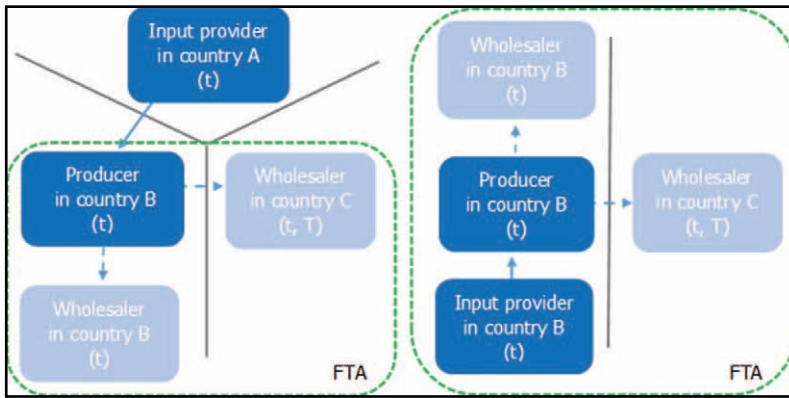


Figure 17: (a) (b): Model
 Source: Edition of the author

For the sake of simplicity, the research does not address the allocation of costs to certain types of costs, except in situations where this may be explicitly necessary for the analysis of the corporate income taxes and tariff examined, as the division of revenues is not intended to be discussed; therefore, we use a simple variant of general equation of profit used in microeconomics.

The players' decisions are

not centralized, but they can make decisions together; thus their choices depend on the decisions made by states. Although states are actors in our game, in this research study, we analyze only the MNEs' perspectives and reactions to a certain settlement made by a government.

In our transfer pricing problem, we formulate a cooperative game with total profit

sharing. In cooperative games, parties are allowed to formulate coalitions in order to reach higher profits. It can happen that a player creates significant advantages for the others at his/her own expense (AXELROD, R. – HAMILTON, W. D. 1981).

The structure of this game

needs to be generalized according to game theoretic settings. Supposed that the three players are presented with their options.

With three intra-group firms and three countries in the model, we are able to define the following strategies from the producer’s point of view.

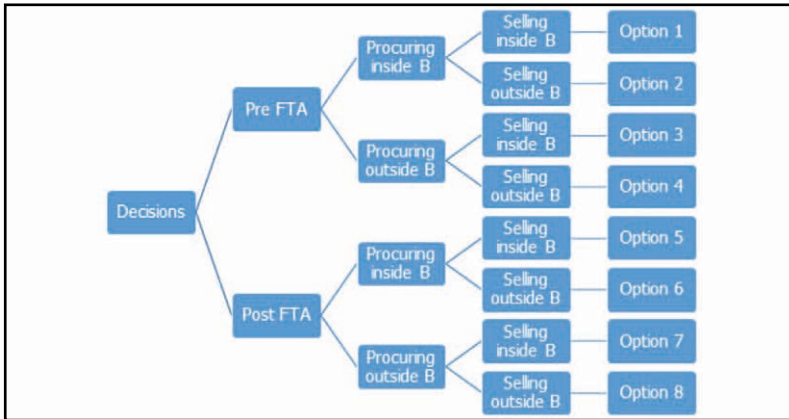


Figure 18: Decision-tree for companies’ profit analysis
 Source: Edition of the author

To construct a payoff matrix for the model, we obtain the profits for all companies and scenarios. Let the set of total revenue include the price and quantity of products sold to the other related party. Let the

set of total costs include the cost of materials and goods sold to relevant companies, and operating as well as other costs.

In our model, we use the following abbreviations.

i:	index (I; P; D) to represent the companies, respectively
x_i :	product quantity
p_i :	price applied by company i
c_i :	company i’s costs
TR_i :	company i’s total revenue
TC_i :	company i’s total costs

π_i :	company i's profit according to strategic options
t :	tax rate (different in country A, B, and C)
τ :	tariff rate applied by country C
r_i :	raw material price appearing in companies I, P and D
f_i :	final goods production price relating to companies P and D
m :	margin applied by company D
o_i :	operating expenses appearing in company i
e_i :	Other costs appearing in Company i
ρ :	rule of origin value ($0 < \rho < 1$)

Table 6: List of mathematical symbols used in determining profit
 Source: Edition of the author

Option 1 When all members of a corporate group operate in country B, tariff payment obligation cannot be interpreted. Regarding tax payments, the three companies are obliged to pay the same CIT rate (t^B). Therefore, Company I's profit is:

$$\pi_i^B = TR_i^B - TC_i^B = (p_i^B - c_i^B) \cdot x_i^B \cdot (1 - t^B), \quad (1)$$

on condition that the three firms' costs and product prices are as follows:

$$c_I = o_I + e_I, \quad c_P = r_P + o_P + e_P, \quad c_D = \underbrace{r_D + f_D}_{\text{(Cost of good sold)}} + o_D + e_D, \text{ and}$$

$$p_I = r_I, \quad p_P = \underbrace{r_P + f_P}_{\text{(Final product price)}}, \quad p_D = r_D + f_D + m_D,$$

The corporate group's total profit is:

$$\sum_{i=I}^D \pi_i^B = \pi_I^B + \pi_P^B + \pi_D^B \quad (2)$$

Option 2 The corporate group decides to appear in foreign markets, so the producer exports the products to its related party D, to country C.

In this situation, the distributor firm faces a tariff rate (τ) and a higher CIT rate (t^C) compared to option 1. Companies I and P's profits are as in eqs. (1). In country C, as the government imposes a tariff rate on import goods, and determines a CIT rate, its profit is:

$$\pi_D^C = TR_D^C - TC_D^C = (p_D^C - c_D^C) \cdot x_D^C \cdot (1 - t^C), \text{ where}$$

$$c_D = (r_D + f_D) \cdot (1 + \tau) + o_D + e_D,$$

$$p_D = r_D + f_D + m_D. \quad (3)$$

with full corporate group profits as in eqs. (2).

Option 3 The headquarters of the MNE is obliged to reallocate its profits to a lower CIT rate country, thus one part of the value chain is moved to another country. Since the corporate tax rate is the lowest in country A, the materials have been imported and shipped from country A, and the final products have been sold to D, operating in country B. The manufacturer and the wholesaler MNEs' profit is determined as in eqs. (1); Company I's profit is given by:

$$\pi_I^A = TR_I^A - TC_I^A = (p_I^A - c_I^A) \cdot x_I^A \cdot (1 - t^A), \text{ where}$$

$$c_I = o_I + e_I,$$

$$p_I = r_I. \quad (4)$$

The full corporate group profit is derived from eqs. (2).

Option 4 When the corporate group locates its input production in country A and exports the final product to its distributor, a related party operating in country C, it faces a lower tax rate, and a tariff rate compared to option 1. The lower level of CIT increases, while the tariff rate reduces the total corporate profit. I's profit is as in eqs. (4), P's profit as in eqs. (1), and D's profit as in eqs. (3).

Option 5 All corporate group members operate in country B, thus tariff elimination has no influence on the members' profit levels.

Option 6 Company P procures its input goods in country B, and sells the final goods in country C. Firm D decides to comply with ROO to make tariff-free transactions, which is why it produces inputs within the free trade agreement.

Option 7 Company I (located in country A) provides its input materials to Company P (located in country B), which produces and sells the final goods in country B. For tax optimization, all members of the company group are able to manipulate transfer prices.

Option 8 The procurement process occurs from country A, while final goods are sold to country C. In this situation, the corporate group is forced to make a choice. On the one hand, if it manipulates the transfer prices to save profits in country A, where the lowest tax is, it will only be able to obtain its raw materials at a high price.

On the other hand, if it intends to exploit the benefits of a free trade agreement, the company is not able to manipulate transfer prices to precisely the point where:

$$\frac{f}{p} > \rho \rightarrow p, \quad \frac{f}{p} < \rho \rightarrow p \cdot (1 + \tau) \tag{5}$$

IV.2.4. Analysis of results

In a game theoretic model, rational players must select the best strategy among all alternatives in order to maximize their rewards (CHEN 2008), which, at the same time, is the purpose of the game.

If all players operate in country B, they will all reach a different level of profit. At the group level, the corporate group’s payoff is B, which means a certain profit level is included in tax rate (see options 1 and 5).

In option 2, since it is

necessary to pay tariffs, and the CIT rate is the highest in country C, it is certain that the total profit level is lower than in option 1, thus the payoff is worse than in country B. Let this payoff be E.

Regarding options 3 and 7, we face the lowest tax rate in country A, and as the corporate group allocates its profits to country A, this is the most profitable of all the options. Let this scenario’s payoff be A.

Options 4 and 6 suggest a complicated structure, which is why it is hard to define the payoff; however, we can be certain that it is

worse than B, although it is better than in option 2. Let this payoff be C or D.

Finally, concerning option 8, if the MNEs are committed to comply with ROO, they cannot move their profits; at least, not as much as they can in options 3 and 7. In that case, where the value added to a product created within

a free trade agreement is less than the ROO value, the distributor company has to pay customs duties, but is able to manipulate its transfer prices. Therefore, the payoff of this option is worse than A, but better than D.

The predicted strategies of the game are presented as a solution:

Companies with different profit levels		Total profit, $\sum_{i=I}^D \pi_i$
Option 1	$\pi_I^B = [r_I^B - (o_I^B + e_I^B)] \cdot x_I^B \cdot (1 - t^B)$	B
	$\pi_P^B = [(r_P^B + f_P^B) - (r_P^B + o_P^B + e_P^B)] \cdot x_P^B \cdot (1 - t^B)$	
	$\pi_D^B = [(r_D^B + f_D^B + m_D^B) - (r_D^B + f_D^B + o_D^B + e_D^B)] \cdot x_D^B \cdot (1 - t^B)$	
Option 2	$\pi_I^B = [r_I^B - (o_I^B + e_I^B)] \cdot x_I^B \cdot (1 - t^B)$	E
	$\pi_P^B = [(r_P^B + f_P^B) - (r_P^B + o_P^B + e_P^B)] \cdot x_P^B \cdot (1 - t^B)$	
	$\pi_D^C = \{[r_D^C + f_D^C + m_D^C] - [(r_D^C + f_D^C) \cdot (1 + \tau) + o_D^C + e_D^C]\} \cdot x_D^C \cdot (1 - t^C)$	
Option 3	$\pi_I^A = [r_I^A - (o_I^A + e_I^A)] \cdot x_I^A \cdot (1 - t^A)$	A
	$\pi_P^B = [(r_P^B + f_P^B) - (r_P^B + o_P^B + e_P^B)] \cdot x_P^B \cdot (1 - t^B)$	
	$\pi_D^B = [(r_D^B + f_D^B + m_D^B) - (r_D^B + f_D^B + o_D^B + e_D^B)] \cdot x_D^B \cdot (1 - t^B)$	
Option 4	$\pi_I^A = [r_I^A - (o_I^A + e_I^A)] \cdot x_I^A \cdot (1 - t^A)$	C/D
	$\pi_P^B = [(r_P^B + f_P^B) - (r_P^B + o_P^B + e_P^B)] \cdot x_P^B \cdot (1 - t^B)$	
	$\pi_D^C = \{[r_D^C + f_D^C + m_D^C] - [(r_D^C + f_D^C) \cdot (1 + \tau) + o_D^C + e_D^C]\} \cdot x_D^C \cdot (1 - t^C)$	
Option 5	Eqs. Option 1	B
Option 6	$\pi_I^B = [r_I^B - (o_I^B + e_I^B)] \cdot x_I^B \cdot (1 - t^B)$	C/D
	$\pi_P^B = [(r_P^B + f_P^B) - (r_P^B + o_P^B + e_P^B)] \cdot x_P^B \cdot (1 - t^B)$	
	$\pi_D^C = \{(r_D + f_D + m_D) - [(r_D + f_D) + o_D + e_D]\} \cdot x_D^C \cdot (1 - t^C)$	
Option 7	Eqs. Option 3	A
Option 8	$\pi_I^A = [r_I^A - (o_I^A + e_I^A)] \cdot x_I^A \cdot (1 - t^A)$	

Table 7: Payoff matrix for Companies I, P, and D
Source: Edition of the author

and to be a game, in the strong sense, the following conditions must hold for the payoffs:

$$A > B > C > D > E$$

With these options determined, we showed why three rational players might cooperate, even if it appears that it is in their individual interest not to do so.

We conclude that rule of origin and transfer pricing are essential parts of analyzing multinational enterprises and free trade agreements, since they influence the players' strategies on both sides: on the corporate and the government side.

Reviewing these options, we assume trade liberalization usually lowers import prices, benefitting the importer country. However, rules of origin affect exporter companies' decisions regarding raw material procurement or production location.

MNE's profit allocation activity across countries is more likely when the tax gap is large. When exporting within the FTA, firms have to give up profit shifting, at least to ensure value added criteria can be preserved. It should be noticed that even though companies sell products without tariffs, it does not mean they

benefit from free trade, even if they manipulate their transfer prices. Our model can explain this fact.

IV.2.5. Conclusion

Model based analysis with game theory offers a relatively broad introduction to multinational enterprises' strategic decisions concerning profit maximization. The main objective of this paper was to determine and characterize the optimal decisions of players. Our theoretical analyses focused on the behavior of multinational enterprises. We used a game theoretic model to analyze how firms react to different corporate taxes. In addition to our work, we presented the effects of nontariff rates. The relationship between tariffs and taxes created different strategies which are applicable to large corporations.

Our main findings are the following: Firstly, a firm's strategy necessarily changes when the additional tariff disappears compared to the original sets. A free trade agreement increases the profits after tax of an MNE. Secondly, raising the tax rate encourages the company to shift its profits to another country where tax rates are lower. Thirdly, reciprocal tariff elimination – *ceteris paribus*

– affects the company’s decisions relating transfer pricing. These findings are in line with the general economic view and are in close accord with the real corporate decisions, and might describe the main characteristics of a corporate group concerning its profit maximizing activities.

As a final note, analyzing FTAs with ROO, we conclude ROO has a positive and negative effect at the same time; it can be a good tool for tax authorities to prevent profit allocation, but also a poor tool, since firms stop utilizing tariff concessions to relocate their activities in order to save profits.

We have introduced an MNE perspective, but there remains room

for further research. It is intriguing to investigate how states react to MNEs’ decisions: i.e. What is the degree of the concessions? What are parties willing to advance to each other in terms of optimal tariffs and tax rates set.

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