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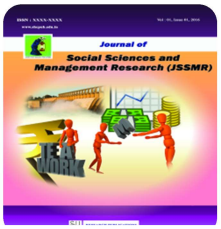

A GAME THEORITICAL VIEW ON INDIA-PAKISTAN TRADE RELATIONSHIP

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Abstract:

The act of buying and selling of commodities within the nation or between the nations is termed as trade. This activity helps to minimize the burden and encourages the relationship between the trading nations and helps to better off. This paper investigates about the broken trade bond between the countries India and Pakistan. Especially, the reason behind the breakdown of trade between the above mentioned countries. With the help of game theoretical analysis, the name of the strategy used to ignore trade has been identified.

INTRODUCTION

According to the theory of comparative cost, each country should concentrate on the production of those goods for which it is best suited, taking into account its natural resources, climate, labour supply, technical know-how and the level of development. Each country specializes in the production of those goods which it can produce at the lowest cost as compared to other countries which leads to international specialization and division of labour. This reduces the cost of production all over the world and improves the standard of living of the people in various countries. International trade improves the welfare of a country by allowing higher levels of consumption and investment. In a country like India where labour is a surplus factor, international trade helps in generating higher employment and higher wage rates with positive implications for income distribution and poverty, thereby raising the level of social welfare. It is universally agreed that foreign trade plays an important role in the development of an economy. [1] Relationship between India and Pakistan has been complex and largely hostile due to a number of historical and political events, from this aspect this paper focused mainly to capture the present scenario.

REVIEW OF LITERATURE

The relevant literature pertaining to the present investigation has been carried out to find the trade relation between India and Pakistan. The main thrust o this paper is to find the relationship between these two countries.

Shrestha (2003) in this study has made an attempt to analyse some of the key issues related with Indo-Nepal trade relation and scope for improving trade relationship between these countries in the future. He states that Indo-Nepal trade is very important for the economic development of both these countries. Trade relation with India is rather crucial to Nepal particularly due to her geographic characteristics. Trade statistics presented by Shrestha shows an increasing trend of trade in both the exports and imports. However, it is worth noting that the trade balance is not in favor of Nepal. Nepal's trade with India is likely to play further a key role in trade and industrial fronts in the future as well. Trade and Perera, (2009) states the next stage of

[1] INDIA'S TRADE RELATIONSHIP WITH SAFTA COUNTRIES: **Daoud Ciddikie**, Prof. (Dr) **M Altaf Khan**

the SAFTA is transforming the SAFTA very fast into the South Asian Customs Union (SACU), which is already a component of the agreement.

Hossain (2005) in his research has analysed the impact of SAFTA on Bangladesh in terms of export generation within member countries. He has used standard gravity model to analyse Bangladesh's export potential using cross-section data. From the result, it is observed that Bangladesh has huge export potential to SAFTA in general and India in particular. If SAFTA Charter is properly implemented, Bangladesh's exports within this region would be much higher than the increase in import by Bangladesh from SAFTA member countries might not be as large as the expected increase in export.[2]

Rahman (2008) examines the macroeconomic structure of SAFTA countries, namely Bangladesh, India, Nepal, Pakistan and Sri Lanka and possibility of trade expansion among these countries by examining the macroeconomic production and consumption, investment behaviour, tax and non-tax structures in the SAARC countries. So there is huge ASEAN and APEC, SAFTA has never been an important player in the international market because of its policy of inward orientation. The share of the SAFTA member countries (SMCs) in world trade has been hovering at around 1%, which is much less compared to other regional trading blocs. Even the share of trade is remarkably lower than the share of SAARC in world output.[3]

Kaur and **Nanda**, (2010) has calculated India's export potential to other SAARC nations (Bangladesh, Bhutan, Maldives, Nepal, Pakistan and Sri Lanka) with the help of gravity model of exports using panel data methodology (such that among SAARC countries, export potential of India exists for Bhutan, Pakistan, Maldives, and Nepal. India is the only SAARC member that shares land border with four members and sea border with two. No other SAARC country has a common border with each other. India is a source of potential investment and technology and a major market for products from all other SAARC members countries. Therefore, it is

[2] **Hossain, Sharif M**. (2009). South Asian Free Trade Area: Implications for Bangladesh. Available at http://mpra. ub.uni-muenchen.de/id/eprint/18517

[3] **Rahman, M.M.** (2008). 'Macro-economic and trade link models of SAARC countries: An investigation for regional trade expansion', , Vol. 13(1):50–62.

essentially in India's interest to put her weight behind SAARC.

Jayachandran. G and **Seilan. A** (2010) explores and investigates about the trade relationship of India and its economic growth for over the period from 1970 to 2007. The literature on foreign direct investment (FDI) and economic growth has been made. Granger causality test has been used as methodology in this paper has been used and results have been discussed.

GAME THEORETICAL ANALYSIS

Game Theory

Game theory is the study of human conflict and cooperation within a competitive situation. In some respects, game theory is the science of strategy, or at least the optimal decision-making of independent and competing actors in a strategic setting. Game theory brought about a revolution in economics by addressing crucial problems in prior mathematical economic models. For instance, neoclassical economics struggled to understand entrepreneurial anticipation and couldn't handle imperfect competition. Game theory turned attention away from steady-state equilibrium and toward market process. In game theory, every decision-maker must anticipate the reaction of those affected by the decision. In business, this means economic agents must anticipate the reactions of rivals, employees, customers and investors.[4]

Hawk-Dove game

The game of chicken, also known as the hawk–dove game or snowdrift game,[1] is a model of conflict for two players in game theory. The principle of the game is that while it is to both players' benefit if one player yields, the other player's optimal choice depend on what his opponent is doing: if his opponent yields, the player should not, but if the opponent fails to yield, the player should. In the biological literature, this game is known as Hawk–Dove. The earliest presentation of a form of the Hawk–Dove game was by John Maynard Smith and George Price in their paper, "The logic of animal conflict".

The traditional payoff matrix for the Hawk–Dove game, where V is the value of the contested resource, and C is the cost of an escalated fight. It is (almost always)

[4]https://www.investopedia.com/terms/g/gametheory.asp

assumed that the value of the resource is less than the cost of a fight, i.e., $C > V > 0$. If $C \leq V$, the resulting game is not a game of Chicken but is instead a Prisoner's Dilemma. Hawk–Dove transforming into Prisoner's Dilemma. As C becomes smaller than V, the mixed strategy equilibrium moves to the pure strategy equilibrium of both players playing hawk (see Replicator dynamics). The exact value of the Dove vs. Dove payoff varies between model formulations. Sometimes the players are assumed to split the payoff equally (V/2 each), other times the payoff is assumed to be zero (since this is the expected payoff to a war of attrition game, which is the presumed models for a contest decided by display duration).[5]

Hawk-Dove game (India-Pakistan)

2 players - India-Pakistan

Strategies - Fight (or) Quit and Defect(or)Co-operate.

Pay-Offs -

1. Good News - If the other player quits first, then you win a price, (V).
2. Bad News - Each period in which both fight, each player pays a cost of (-C).

(If both quit at once they get zero)

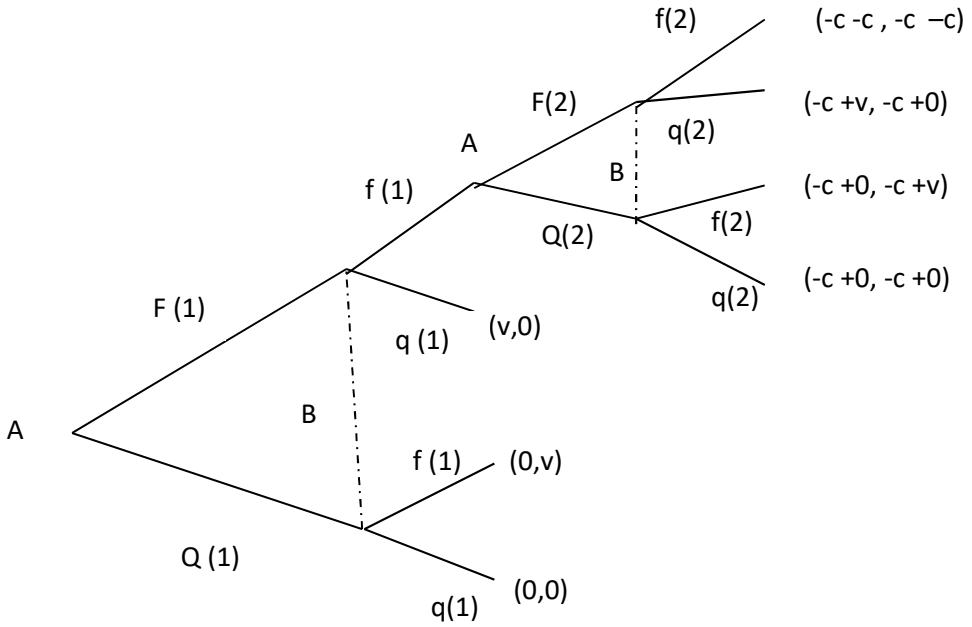
[Note: Both players care about Winning, Pride and Reputation]. This kind of game strategy is called as warfare attrition.

Warfare Attrition: It is a military strategy consisting of belligerent attempts to win a war by wearing down the enemy to the point of collapse through continuous losses in personnel and material. The war will usually be won by the side with greater such resources.

[5] ***Cressman, R.*** *(1995). "Evolutionary Stability for Two-stage Hawk-Dove Games". Rocky Mountain Journal of Mathematics. **25**: 145–155. doi:10.1216/rmjm/1181072273.*

Two period game:

Case: V > C



A-India B-Pakistan

Second sub-game:

	f(2)	q(2)
F(2)	-c,-c	V,0
Q(2)	0,v	0,0

[Sub-Game: Game within a game]

In this above game there are two pure strategy, Nash equilibrium [F(2) , q(2)] and [Q(2) , f(2)]. Then the pay-offs will be (v,o) for the first Nash equilibrium and (0,v) for the second one.

First sub-game:

	f(1)	q(1)
F(1)	-c+v,-c+0	V,0
Q(1)	0,v	0,0

In this first sub game, (-c + v , -c + 0) were the continuation pay-offs.

A has a dominant strategy so he is going to fight. So Nash equilibrium is [F(1), q(1)]. If he considers about the cost then the fight should be ignored. (i.e, v > c – which reduces the victories pay-offs).

If this game repeated for several times then it is notes as the Repeated Interaction in the game theory. It will emerge when we practice the same thing in a repeated mode. Repeated games allow for the study of interaction between immediate gains and long-term incentives. This can be explained with the popular game prisoner's dilemma.

Prisoner's Dilemma

		B	
		COOPERATE	DEFECT
A	COOPERATE	2,2	-1,3
	DEFECT	3,-1	0,0

This game induces the strategies to defect or cooperate, when it is repeated then it leads to **grim trigger strategy**.

Grim trigger strategy

In game theory, grim trigger (also called the grim strategy or just grim) is a trigger strategy for a repeated game. Initially, a player using grim trigger will cooperate, but as soon as the opponent defects (thus satisfying the trigger condition), the player using grim trigger will defect for the remainder of the iterated game. Since a single defect by the opponent triggers defection forever, grim trigger is the most strictly unforgiving of strategies in an iterated game.

India to Pakistan – [Grim trigger strategy] – **"If cooperation breaks forever, I'm going to defect for remainder"**

Conclusion

In Game theories view, in repeated interaction it sough's that, "**If the Reward is higher than before, then the relationship continues otherwise it will be lesser**".[6]

Reference:

1. ***Cressman, R.*** *(1995). "Evolutionary Stability for Two-stage Hawk-Dove Games". Rocky Mountain Journal of Mathematics. **25**: 145–155. doi:10.1216/rmjm/1181072273.*
2. ***Hossain, Sharif M****. (2009). South Asian Free Trade Area: Implications for Bangladesh. Available at http://mpra. ub.uni-muenchen.de/id/eprint/18517*
3. *India's trade relationship with SAFTA countries:* ***Daoud Ciddikie****, Prof. (Dr)* ***M Altaf Khan***
4. ***Rahman, M.M.*** *(2008). 'Macro-economic and trade link models of SAARC countries: An investigation for regional trade expansion', , Vol. 13(1):50–62.*

[6] Game Theory – Yale University, Dr. Ben Pollack