

Game Theory Analysis of the Israel - Palestine Conflict

Abstract :

This paper Examine the Longstanding Conflict between the Israel and Palestine using the Application of Game Theory . Game Theory Provides the Framework for Analysing the Strategic Decision created by the Rational Nations during Conflicts period. There's a two choices available for each of the of the Players , wheather to choose for Ceasefire or To Escalate War , In order to Achieve the Optimal Outcomes . For both Players , Payoff will be assigned to each outcomes based on how preferable the Consequences are ffrom each of the players . Regardless of Mutual Benefits From Ceasfire , The Study found that Escalating War is Dominant Strategy for both of the Players as they both have possiblity of gaining an Individual Benefits . This Game Nash Equilibrium's Results are where both Players Escalate War, Resulting as a Suboptimal Payoff. This Shed lights that how Individuals Benfits as their Self Intrest Can Prevent Benefecial outcomes during War .

Introduction

Since 1987, Israel and Palestine , Conflict is being continued till today date in the Territory of the Middle East Regions . Where they are Getting humiliated by each others since long with the continous Violence and the Flactuation Of The government . Due to these Geopolitical Tension between them , It Makes Mandatory for bo th of them to make a proper strategies , Inorder to Proceed for their Further Operration which could show a Positive and a Reliable Result . Thus Game theory Plays a Very Big Role here in Providing them a Analytical Framework to Understand the Strategic Decisions Constructed by the Rational Countries while Conflicts . Israel & Palestine are facing the Problem that wheather they Go for Military Action or for Negotiation in order to Achieve their Repective Objectives . Here , The Military Actions Includes Some Advantages as they can Capture the control Over the Enemy Territories Eaisly and Can Reduce the Threat by Deploying the Millitary Actions from the other side . However These also Includes Risk as well. Which could lead to the Deadly Violence , Civilian deaths , Economic Damage , sactions and may Even get Banned from the World International Organisations . Which can further experice banned in all types of connection among the others Countries .

Where as the Method of Diplomatic Approach gives an Opportunity to have a Peaceful Treaty or Resolutions by doing Perfect Negotiations which can further lead to the Stability in the Region for Long time Period . But for these they both have to be Very Honest among each others on their Compromises and Promises they make in their Treaty .

Here, Using Game Theory Principle to Create a Various Framework by applying different Hypothetical strategic Conditions to analyse wheather Palestine and Israel will choose the 'Ceasefire' or Will Choose to ' Escalate Violence ' . By Observing , how each other React to their Choices . Using Game Theory will help to shed light on the Strategies of the both Countries . These will Reflect the Factor behind their Choices , Also Motivation behind it . Further will use to Evaluate the Strategies Consequences for each of them . By Using Methods of Game Theory this will also Enhance our Understanding in dealing with the Strategical Calculations which will use in game used for Conflicts . Captures their different Options Available with them for their Future Movement for Each of their Intrests. The Analysis and Discussion will help to different Pathways using Different Strategies in order to Resolve the Longstanding Conflict between the Palestine & Israel , To Acieve the Stabily together with Peace & harmony in both of the Regions .

Literature Review

The Method of the Game Theory has Already been Used and Applied in many studies Related to the Conflicts and strategical Decision Making though various Context and with different Approach wheather it is International issues or Related to Geopolitical issue . In the Case of Palestine and Israel Conficts , there were Several Studies Conducted and Examined their Research Using the Application of the Game Theory In order to get a Better Understanding of the Reasons , Motives , Stratgies and Resolutions of the Conflicts .

(Avi shlain and G.N Nfahat, 2017) .Both the authors in their Research Utilized the Game theory Principle like 'Prisoners Dillema ' which are Commonly Used to Understand the starategic Interaction between the Possibles Actors of the Game . They Analyse these to understand the Strategies used by Isreael and Palestine ,during their Important Historicall Events . Where as these strategies includes a wide Variety of Military Action to Tuce . By them is that there is a Inefficiency of Credible commitments among the Players. Which Indicates that the Offer and Agreement signed between them is Not Trustable or Believable by each of them . Bt here's a Lag of Trust Between them . Due to these the Optimat Strategic Outcomes Fell short for both of the players . Also the Decsion by both of the

parties unable to Reach at the Best Response Considering their Objective and Interest .

(Alexis Tan's, 2022) in his paper for the analysis of the Israel vs Palestine War Using the Game theory approach , he defined the Basic that game theory is like a tool box which helps to determine and understand the Behaviour of a person how they Make decision while They do interact with each others . When they specially engaged in situations like War and Conflicts . He Belief a conflict as a Repeated game . He says that Conflict is not a single Day event as it is a long day Event which continuously In Action , however the today's action can affect the Actions of tomorrow . Simply we can say that the future actions is dependent on the past action or Historical Events . The pattern of the War is continuously Repeating itself which shows that the Players are constantly adjusting their strategies as per their Opponent players strategies .

(Saqr Imseeh's, 2022)work , he looked the case of Israel vs Hamas . By using Game theory Analysis to study about the strategies and different Interactions which is possible between the two players . In his model he used the Ultimatum Game , where one player has to Decide the Amount of resources which have to be distributed among themselves , where the Other player has two options either accept the proposal or reject the proposal . Here Imseeh signifies the game for the Deal with Israel and Hamas army for distribution of the Resources like , Border land , security threats , and others . Thus Hamas has to decide whether the proposal of Israel will be accepted or rejected by them . However Imseeh also explained the interesting term by including the role of the third party in influencing the decision of proposal and responder , Here Egypt has allies with both Israel and Hamas as he can convince both of them to Settle the agreements . Which can further lead to the stability and referred as 'Mutually preferable deal ' Outcomes for the Longstanding conflicts. Motives to provide a potential path in order to Reduce and Vanishes the Violence .

(Daniel Arce et al.'s, 2022)paper , He Determines that treating as one sided unified group to Palestine in the game theory analysis against the Israel is Oversimplified . As he noted that there are many groups in Palestinian societies , which differs from their Goals, motive and the level of the powers having it . To Examine it the Author use the Principle of the Nested Game model , where Game exist with the another Bigger Game. Like there's a one Game is the Conflict between the Israel and the Palestine , and together with there is internal conflict within Palestine in different groups like Hamas and Islamic Jihad . For their own perspective to be involved either in war or Diplomacy . As he gave a term " Mini Game " within

their own societies . And each of them are trying to create and build the strong influence based on their strategies and different possible Ideologies to have an action . The Uncertain Strategies within the society is Unobserved which creates a Complexity .

(Asal and Wickenfield, 2016) in their paper they discuss about the strategic decision Making Process the Two players have to make their Choice independently amongst themselves . Where the Main Motive of each of the players has to maximize their Personal Outcome . Without consulting or Coordinating with the Other parties . The Author defined the three important strategies which are involved in the conflicts within the two parties (1) Military force : Use of the Military power in order to achieve their Objective , it includes Drone Attack , Rockets launching , Raid and other military actions. (2) Negotiation among the parties : Mutual Understanding and forming a Truce between them , includes Peace talk , Diplomacy , Agreements , Compromises . (3) Status Quo : means Management of the current Situation going on without any intervention , like as it was . Coming to the equilibrium of the game it is a situation where both parties strategy is Optimal compared to each of them . Also under certain Condition there may be stable Conditions while agreeing for Negotiations . If both goes for Negotiation then that will become best Outcome for both parties.

(Hausken, 2019) in his study he used the Game theory Principle to find the Interaction between the Israel and the Palestine Administrative Authorities . He describes the possible strategies the both parties can hold in order to achieve their Objective. He highlighted the Term Violence : as they both can use the violence to achieve their objective and to keep themselves safe and secure , Economic Incentive : these is very Crucial factor which can backup the war and resist the conflict , it includes Economic Aid, Agreements for supply of Weapons and Armies , and others . Security Measure : By controlling their Border line , Checkpoints, Active Military actions . The Author Described the Factor which makes complex to achieve the Equilibrium during Conflicts like situations : (a) Multiple actors (b) Uncertainty (c) Dynamic of Conflict . Hausken define that the strategies of the both parties can Influence the Chances of Escalation or De-Escalation during Conflict , mean if both parties involves in Violence and Retaliation , these can Lead to an Escalation of the Conflict

Breakdown of the Game

This is Game whose Scenario is the Conflict between Israel and Palestine , where Both parties make theire Best strategy and decision to maximixe their own benefits with Maximum payoffas they are considered as Rational Descion makers . Each parties action and startegy like Ceasfire or to Escalate war , directly influence on the Outcomes and the choices of the other parties . This Game aids each of the Parties in crafting well considered strategies and policies which aimed at fostering and stability within their Regions and Societies .

Players of the Game

The Main Player in this Game are Israel and Palestine , both of them are associated with their own Respective Admistration and their Best decision makers for Conflicts .

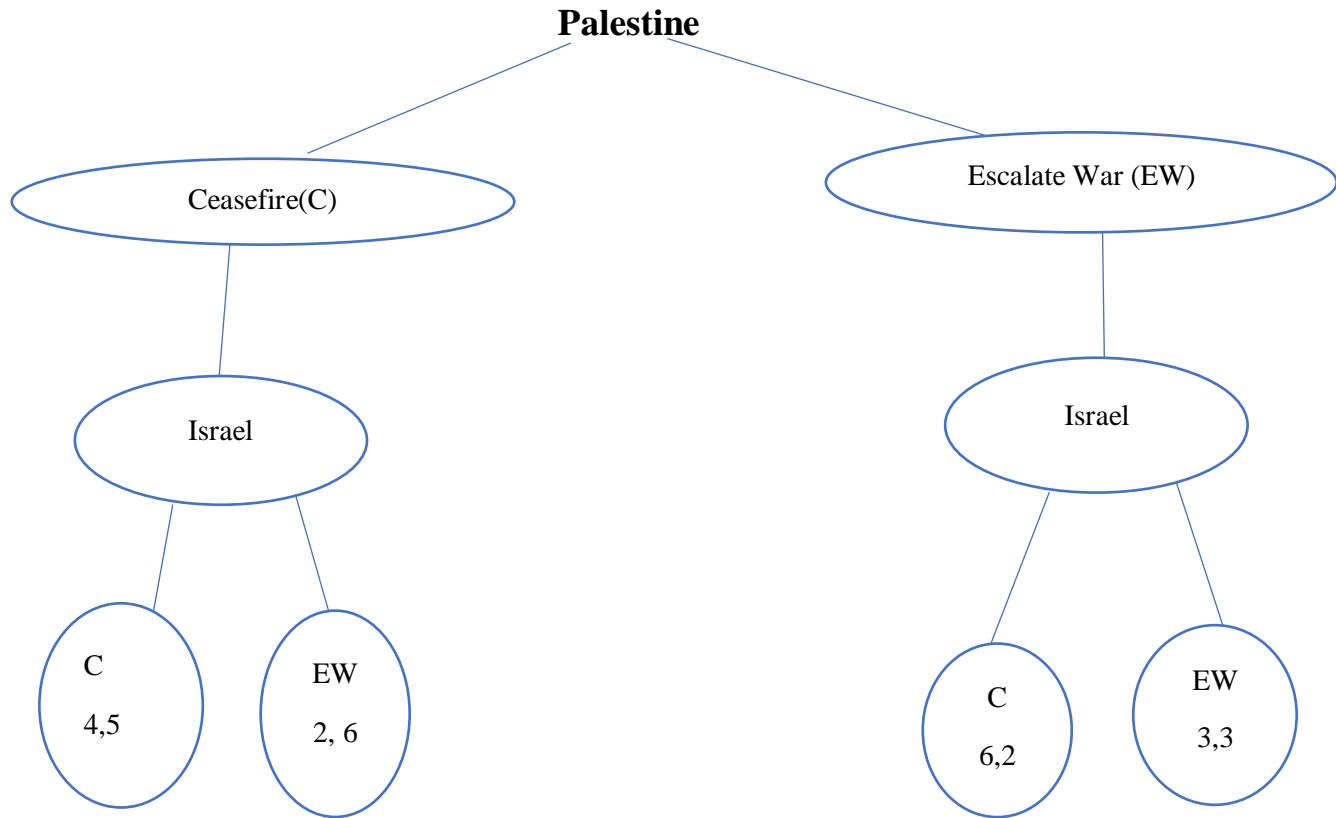
Payoff Matrix

The payoff matrix shows the potential Results for Israel and Palestine based onupon their possible strategic choices. The values allocated in the provided matrix are subjective and represent the associated desirability of outcomes for the each player based upon their respectives interests and motivations.

All possible payoff matrix

		Palestine	
		Ceasfire (C)	Escalate War(EW)
Israel	Ceasfire (C)	5, 4	2, 6
	Escalate War (EW)	6, 2	3, 3

Representation of the Game in Extensive Form –



Terminal Histories of the Game :

1. (C, C) - Palestine chooses Ceasefire (C), Israel chooses Ceasefire (C)
2. (C, EW) - Palestine chooses Ceasefire (C), Israel chooses Escalate War (EW)
3. (EW, C) - Palestine chooses Escalate War (EW), Israel chooses Ceasefire (C)
4. (EW, EW) - Palestine chooses Escalate War (EW), Israel chooses Escalate War (EW)

Player Functions of the Game :

1. (C, C): (4,5)
2. (C, EW): (2,6)
3. (EW, C): (6,2)
4. (EW, EW): (3,3)

Description of Game :

This is a Sequential game , that shows the Strategic Interaction between Israel and Palenstine . In this Game Palestine makes the First move by deciding either to Ceasefire or Escalate war, whereas Israel then further responds by Observing Palestine Action to either Escalate war or Ceasefire . This Game will be solved Using Backward Induction .

Actions/Strategies of the Players

Action I: The Ceasefire - This action involves engaging in diplomatic efforts and negotiations to resolve the conflict peacefully.

Action II: Escalate war - This action refers to the use of military force and the threat of force to achieve their desired objectives with Optimal outcomes .

Interpretation:

Palestine moves first and chooses between Ceasefire (C) or Escalate War (EW).

After observing Palestine's move, Israel then moves and also chooses between Ceasefire (C) or Escalate War (EW).

The payoffs at the terminal nodes correspond to the values in the given payoff matrix (Palestine's payoff, Israel's payoff).

Now Solving the Game Using Backward Induction :

1. If Palestine chose Ceasefire (C):

- If Israel chooses Ceasefire (C), Israel gets 5
- If Israel chooses Escalate War (EW), Israel gets 6
- Therefore, Israel's best response when Palestine chose Ceasefire is Escalate War (EW)

2. If Palestine chose Escalate War (EW):

- If Israel chooses Ceasefire (C), Israel gets 2
- If Israel chooses Escalate War (EW), Israel gets 3
- Therefore, Israel's best response when Palestine chose Escalate War is Escalate War (EW)

3. Going back to the beginning, anticipating Israel's best responses, Palestine reasons:

- If Palestine chooses Ceasefire (C), Israel will Escalate War, giving Palestine 2
- If Palestine chooses Escalate War (EW), Israel will Escalate War, giving Palestine 3

4. Therefore, Palestine's best move is to choose Escalate War (EW).

Subgame Peerfect Nash Equilibrium :

So using backward induction, the Subgame Perfect Nash Equilibrium of this sequential game is for Palestine to choose Escalate War (EW) first, and then Israel choosing Escalate War (EW) in response, leading to the payoffs (3, 3).

This sequential game analysis further reinforces the finding from the simultaneous move game that the dominant strategies for both Israel and Palestine is to Escalate War, resulting in the suboptimal (3, 3) outcome due to a lack of credible commitment not to exploit the other side's cooperation.

Conclusion :

The game theory analysis of the longstanding Israel-Palestine conflict reveals some stark realities about the incentives and strategic dynamics at play. Even though both sides could mutually benefit from a peaceful ceasefire, the model shows their dominant strategies are to escalate the violence and conflict instead. This is because each side can potentially gain more individual benefits by exploiting the other's cooperation.

The resulting Nash equilibrium has both players escalating war, leading to a suboptimal outcome where they both end up worse off compared to if they could commit to ceasefire. This demonstrates how a lack of trust and credible commitment mechanisms can prevent cooperation, even when it is mutually beneficially. Each side's nationalist self-interest and short-term incentives to take advantage overwhelm the potential for a better collective outcome.

While game theory models have limitations, this analysis sheds light on the difficult tradeoffs and strategic tensions perpetuating the Israel-Palestine conflict. Resolving such entrenched conflicts likely requires changing the very incentive structures and institutional frameworks in which the players operate. Third-party enforcement, altering payoffs, or reframing the game itself may be needed to make cooperation more enticing than perpetual conflict. Ultimately, this highlights the immense challenges of achieving stable peace between adversaries trapped in a deadlocked, distrustful strategic environment.

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