

Emilia José Peña Ruiz

Ph. D. in Social and Legal Sciences at Universidad Rey Juan Carlos.

Second Lieutenant of the Spanish Navy.

E-mail: emiliaj.pena@gmail.com

THE IRANIAN NUCLEAR ISSUE AND GAME THEORY

Abstract

Iterations triggered by mutual distrust lead to the deterioration of political relations, fuelling negative spirals. Therefore, nations need to consider the risks and benefits of adopting cooperation policies. After a thirty-five year hiatus in diplomatic relations between Washington and Teheran, the nuclear agreement known as the Joint Comprehensive Plan of Action (JCPOA) was a historic milestone in relations between the E₃/EU+₃ and Iran. However, the change of players in the White House has led to a scenario whereby the durability of the JCPOA is currently regarded as unstable. This article provides an analysis that aims to merge energy, security and political elements, thus finding variables outside the nuclear legal framework in order to determine other factors affecting the negotiations and to provide a more complete view of the Iranian nuclear issue from an international relations perspective.

Keywords

Iran, E₃/EU+₃, nuclear programme, Security Council, United Nations, Middle East, European Union, decertification, International Relations.

To quote this article:

PEÑA, Emilia J. "The Iranian nuclear issue and game theory". Journal of the Spanish Institute for Strategic Studies. 2018, n.º 12. pp.

THE IRANIAN NUCLEAR ISSUE AND GAME THEORY

The geostrategic implications of negotiations associated with the nuclear programme of the Islamic Republic of Iran (hereinafter referred to as Iran) and the signing of the Joint Comprehensive Plan Of Action (hereinafter, JCPOA), represent an area of knowledge which, despite its multidisciplinary nature, has not been given sufficient attention by the academic community.

The study of the Iranian nuclear programme has been addressed from numerous different perspectives, ranging from its nuclear policy to the more technical aspects of the programme or in isolation from the perspective of its external relations policy. More often than not, these studies have focused on the strategic evolution of the issue or the technical vicissitudes of the nuclear programme and constitute tangential approaches. However, while they represent essential parts of our study, they have not brought together key political, security and/or energy issues and therefore fall short of offering a complete view from an international relations (hereafter IR) perspective.

In our study we will examine factors beyond nuclear policy *per se*, such as regional stability, external relations and natural resources in the region, with a view to finding variables which, while initially appearing extrinsic to the nuclear legal framework itself, in fact have a considerable bearing on negotiations.

INTERNATIONAL RELATIONS AND GAME THEORY

The fact that certain countries are driven “to acquire more and more power, in order to escape the impact of the power of others” was interpreted by John Herz as the concept of *Security Dilemma*, referring to how certain countries display a trend that leads to a vicious, spiralling, mutual arms race. This concept plays a fundamental role in a multipolar system between states since it follows Game Theory logic in a game of N-people (nations, in this case) and specifically in the so-called ‘Prisoner’s Dilemma’.

The “Security Dilemma” concept was referred to by Immanuel Kant in his essay on *Perpetual Peace*¹, a notion which he addressed 155 years before John H. Herz² developed and elaborated the concept in his work *Idealist Internationalism and the Security Dilemma*³. Meanwhile, the British historian Herbert Butterfield described the same

1 KANT, Immanuel, *Sobre la Paz Perpetua, (Perpetual Peace)* Tecnos, 5th ed., Madrid, 1996.

2 HERZ, John H., “Idealist Internationalism and the Security Dilemma”, *World Politics*, Vol. 2, No 2, Cambridge University Press, 1950, p. 157ff.

3 WHEELER, Nicholas y BOOTH, Ken, *The Security Dilemma. Fear, Cooperation and Trust in World Politics*, Palgrave MacMillan, 2007, p. 21. For further information see: HERZ, John H., “Political Ideas and Political Reality”, *The Western Political Quarterly*, Vol. 3, No 2, 1950, p. 161-178.

situation in *History and Human Relations*, which he referred to as an irreducible dilemma⁴.

In the words of John Herz, the *Security Dilemma* is a situation in which “[States] are driven to acquire more and more power in order to escape the effects of the power of others. This, in turn, renders the others more insecure and compels them to prepare for the worst. Because no state can ever feel entirely secure in such a world of competing units, power competition ensues, and the vicious circle of security and power accumulation is on⁵”.

The essence of this dilemma explains how the steps that a great power needs to take to improve its own security bring about a decrease in the security of other states. Even when the situation arises that no state wants to attack another, no state can be sure that the intentions of the others are peaceful; therefore, each state will accumulate power for defensive purposes. In other words, the principle of self-preservation described by Thomas Hobbes provokes inertia leading to discord. “Anarchy discourages cooperation, because it requires states to worry about the relative gains of cooperation and the possibility that adversaries will cheat on agreements.⁶”

According to standard realistic structural arguments, cooperation between adversaries, although not impossible, is difficult to achieve and, consequently, will rarely contribute to the welfare of the states involved.⁷ Basically it is the simple instinct of self-preservation that in the vicious circle [the Security Dilemma] leads to competition forever more power⁸. Therefore, directly and indirectly, strength and weakness can alter the security equilibrium existing in international relations. It is the so-called “spiral model” developed by Robert Jervis⁹. Even when there are no aggressor states in the system, the *status quo* can cause cyclical situations leading to war.

IR in peace times exemplify situations of continuous conflict, where relations have a long history and opposing interests are conditioned by the need for cooperation¹⁰. The bonding interphase between Game Theory and IR is *a question of equilibrium* and how to find it, as *equilibrium* is an element that is present in all games, as well as

4 TANG, Shipping, “The Security Dilemma: A Conceptual Analysis”, *Security Studies*, No 18, 2009, p. 1.

5 HERZ, John H., “Idealist Internationalism and...” *op. cit.*, p. 157.

6 SNYDER, Glen Harald, “The Security Dilemma...” *op. cit.*, p. 461.

7 GLASER, Charles L., “Realist as Optimists. Cooperation as Self-Help”, *International Security*, Vol. 19, No 3, 1995, p. 50

8 [...] *Básicamente se trata del simple instinto de conservación que, en el círculo vicioso [del Dilema de Seguridad], conduce a competir por tener más poder. [...] Own translation. See JERVIS, Robert, “Perception and Misperception in International Politics”, Princeton University Press, Princeton, 1976, p. 66*

9 *Ibid, op. cit.*, p. 62.

10 BORGATTA, Edgar y MONTGOMERY, Rhonda J. V. *Encyclopedia of Sociology, op. cit.*, p. 333

players, action, information, strategies, rewards and results¹¹. According to the theory put forward by John Nash, a combination of strategies constitutes equilibrium when none of the agents can unilaterally increase their payoff by changing their strategy¹².

Game Theory, like any other general theory, shows how apparently diverse situations have the same logical structure and constitutes the most important analytical material used in the theory of rational choice. Its field of activity is parametric contexts produced in strategic environments¹³; in other words, the decisions adopted by countries in situations of certainty or uncertainty in the international sphere.

International society designates, but without describing it, a totality made up of a set of actors –nations– whose relations generate a power structure that produces a complex network of processes, in accordance with certain rules. Thus, actors, structure and processes correspond to the main Game Theory components: players, game and results¹⁴.

In a parametric context, the agent knows all the parameters that affect his decision; if in addition the decision-maker knows the value of those parameters, the decision, besides being parametric, would be carried out with *certainty*. By contrast, if the value of a parameter is unknown, it would be *low risk*. In strategic situations the results of the choice of agent do not depend only on parameters, but on the choices of others. Strategic interaction between several agents exists when the actions of each one depend on their respective expectations in relation to what the others are going to do¹⁵.

A *game* is any decision-making situation characterized by strategic interdependence, governed by rules and a defined result. Taking the case of two subjects (subject A and subject B) and a strategic situation between them, what A will do depends on what he believes B is going to do, and B will also act depending on what he thinks A is going to do. If we transfer this to a situation within the game of “Rock, Paper, Scissors”, subject A will go for *scissors* if he thinks B is going to go for *paper*, but B will go for *rock* if he thinks A is going to go for *scissors*. Now, if A knows what B thinks, he

11 KRAUSE, Martin, “La teoría de juegos y el origen de las instituciones”, *Revista Libertas* 31, Instituto Universitario ESEADE, 1999, p. 3.

12 NASH, John. “Non-cooperative Games”, *The Annals of Mathematics*, Second Series, Vol.54, No 2, 1951, p. 286ff Accessible at:

<http://links.jstor.org/sici?sici=0003-486X%28195109%292%3A54%3A2%3C286%3ANG%3E2.o.Co%3B2-G> Consulted on 18/01/2014. Reviewed on 01/01/2018.

13 KRAUSE, Martin, “La Teoría de...”, *op. cit.*, p. 6.

14 Game Theory originally arose in a scientific context (specifically in the field of economic science), with the publication in 1944 of *Theory of Games and Economic Behavior* by Von Neumann and Morgenstern. See: POUNDSTONE, William, *El dilema del prisionero*, Alianza Editorial, Madrid, 2012, p. 17-21.

15 HARRINGTON, Joseph Emmet, “Games, Strategies, and Decision Making”, *Johns Hopkins University*, Worth Publishers, 2009, p. 17-55.

should go for *paper*, in which case B should go for *scissors*, and so on. This scenario is not dissimilar to a negotiation situation and the present topic, given that the Iranian nuclear programme has been the focal point of negotiations between the government of Teheran and the international community (IC), represented by the E3/EU+3 group and the European Union.

The solution of a game should indicate to each player what result to expect and how to attain it, in order to obtain the best possible result for his interests. If one could predict the behaviour of players in social games, Game Theory would be the universal remedy. However, this is impossible because it only works when players behave *rationaly*. Each participant has a certain way of playing, a *strategy*, regardless of what the other players do and the duration of the game. A strategy must prescribe the actions to be carried out in such precise detail that once one is committed to it, then decision-making is no longer necessary¹⁶.

In relation to our research, *zero-sum games* are *mathematical representations* of a conflict situation involving various parties; clearly if one party wins the other loses¹⁷. In the “share a slice of the pie” -type games the possible net gains are known in advance, that is, only what the parties bring into play can be what one of them wins in its entirety, neither more nor less. The relationship between the participants is one of total struggle, since one wins if, and only if, the other loses everything, so cooperation is not possible¹⁸.

		B	
		Option 1	Option 2
A	Option 1: Split in Equal Slices	A=One Half	A=One Half
		B=One Half	B=One Half
	Option 2: Split one Slice Bigger Than Other	A= Small Slice	A=Big Slice
		B=Big Slice	B= Small Slice

		B	
		Option 1	Option 2
A	Option 1	A=0,5	A=0,5
		B=0,5	B=0,5
	Option 2	A=0,25	B=0,25
		B=0,75	A=0,75

Figure 1.1 – Diagram of payoffs for “slice of the pie”. Source: prepared by the author.

In the payoff diagram in figure 1.3 we have assigned a numerical value to the different possibilities: large chunk (0.75), small chunk (0.25) and equal chunks (0.5), to convert the possible situations of the game into mathematical results. If we analyse

16 RAPAPORT, Annatol. “Prisoner’s Dilemma”. Accessible at: <http://www.anatolrapoport.net/book/export/html/9> Consulted on 28/02/2014. Reviewed 01/02/2018. See also: RAPAPORT, Annatol. “Three Modes of Conflict”. University of Hiroshima, 1978. Accessible at: <http://www.anatolrapoport.net/node/19> Consulted on 28/02/2014. Reviewed 01/02/2018.

17 Vid. SCHELLING, Thomas, *The Strategy of Conflict. Prospectus for a reorientation of game theory*, Rand Corporation. (Harvard University). P-1491, 1958, p. 1-2

18 TADELIS, Steven, “Solution Manual. Game Theory: An Introduction”, *Princeton University Press*, 2013, p. 35-51.

		B	
		Strategy 1	Strategy 2
A	Strategy 1	1,100	0,1
	Strategy 2	2,0	5,2

Figure 1.2 - Diagram of 'non-zero sum' game payoffs and their equilibrium solution. Source: Prepared by the author.

the payoff diagram¹⁹ of Figure 1.4, and consider that the first number expresses the result of A and the second number expresses the result of B, the best solution would be 'Strategy 2' for both players²⁰. In this way player A would get 5 points (the maximum) and player B would get 2 points. If player A had chosen 'Strategy 1', and player B had selected 'Strategy 2', A would have won nothing and B would have earned 1 point. In the case of A choosing 'Strategy 2' and B 'Strategy 1', A would get 2 points and B none.

The Prisoner's Dilemma

In 1950 two researchers from the RAND organisation²¹, Merrill Flood and Melvin Dresher, discovered what is generally viewed as the best finding and the most notable influence on Game Theory until that time. They devised a simple and disconcerting game that put part of Game Theory's theoretical rationale to the test: *The Prisoner's Dilemma*²², introducing irrationality on the part of the players as a new component. In this game, the most socially effective solution would be for both players to collaborate; nonetheless the rational solution is to mislead one's opponent

19 Traditionally, to convert the possible situations of the game into mathematical results, we have assigned a numerical value to the different possibilities: large chunk (0.75), small chunk (0.25) and equal chunks (0.5).

20 MOULIN, Hervé, *Games Theory for the Social Sciences*, Studies in Game Theory and Mathematical Economics, New York University Press, 2nd Ed., 1986, pp. 104-120.

21 RAND Corporation. Accessible at: <http://www.rand.org/about/history/a-brief-history-of-rand.html> Consulted on 24/02/2014. Reviewed 01/02/2018.

22 KRAUSE, Martin, *La teoría de los juegos y el origen de las instituciones*, Revista Libertas 31, Instituto Universitario ESEADE, 1999, p. 4

and take all the dividends; however, a solution of this type, when duplicated, does not lead to anything.²³

PRISONER'S DILEMMA			
		B	
		You Confess	You Deny
A	S/He Confesses	6,6	0,10
	S/He Denies	10,0	1,1

Figure 3. – Payment Diagram ‘Prisoner’s Dilemma’. Source: prepared by the author.

Translating this concept to the issue of international relations, the dominant strategy for any two states is to refuse to cooperate, since in this way the maximum possible benefit will be obtained individually, without considering the other contestant’s choice (continuing an arms race, for example). Moreover it avoids the worst possible negative results, (abandoning the arms race while the other country does not), despite being aware that cooperation would lead to greater social wellbeing²⁴. On the other hand, if none of the parties cooperate, the *Prisoner’s Dilemma* can turn into yet another game offering multiple readings: the “Chicken Game²⁵”.

The fundamental difference between the *Chicken Game* and *Prisoner’s Dilemma* is that in the former the most feared option is where both sides defect from cooperation; in other words, by driving straight on without swerving. The payoff matrix of this game produces several strategies, but none that is a natural solution to the game. The point of equilibrium is found when subject A or subject B defects, but with unequal

23 To analyse the content of *The Prisoner’s Dilemma* and for further information on strategies and payments, consult: POUNDSTONE, William, *Prisoner’s Dilemma*, *op. cit.*, p. 183ff.

24 In fact, Game Theory began with the analysis of card games such as poker, and the term “game” was retained even after the study of games was abandoned in favour of the study of strategic situations. See GASTALDI, Carlota, URREA, Marcel and FERNÁNDEZ DE CORDOBA, Pedro, *Teoría de la Decisión: Contribuciones de von Neumann*, Divulgaciones matemáticas, vol. 6, no 1, 1998, p. 37-42.

25 This model represents a situation in which two cars drive straight at each other on a collision course. The first driver to swerve is the “chicken”, who loses. Herman Kahn, in his book *On Thermonuclear War, 1960*, attributes the discovery of the Chicken Game comparison to Bertrand Russell. POUNDSTONE, William, *El dilema del...*, *op. cit.*, p. 283

payoffs, since one of the two would be the *chicken* and the other would win. However, if one of them chooses not to abandon thereby demonstrating greater bravery than the other, *he will survive*, if and only if, the other makes the decision to swerve because he is a *chicken*. The worst situation is *to be the chicken*, although it is better than dying. The optimal outcome for the two participants deriving from cooperation is when they step aside. Both stay alive and neither can accuse the other of being chicken²⁶.

This game, when applied to our case study, would translate into *going forward* and continuing with the development of the nuclear programme and the threat to the IC; or *defect*, which would entail abandoning the development of the programme. If the option not to abandon is chosen in order to demonstrate greater bravery than one's opponent *that party will survive*, if, and only if, the other makes the decision to swerve. The ideal would be for both parties to abandon the contest, since a *zero-sum game* is an "open war".

If Iran had abandoned non-proliferation activities and the UNSC had imposed new sanctions, it *would have been the sucker*²⁷ but if the E3/EU+3 had trusted the Iranian government and that decision had led to the withdrawal of sanctions while Teheran was developing a military nuclear programme, the IC would have been the one to be side-lined.

This game can be applied to the final stages of a geopolitical debate that could culminate in a destructive situation for both parties. Ideally, both parties should move away from the contest, since a *zero-sum game* between two players is an "open war", with one player only winning when the other loses, what is known in nuclear terms as "Mutual Assured Destruction"²⁸.

In an arms race, if agent A cheats agent B by not ceasing its proliferation activities, it generates a worse scenario for agent B – from a strategic point of view – than if B withdraws from negotiations. For this reason, the parties in dispute choose a non-cooperative strategy, not because they suspect that their opponent is going to defect, but because ending up as a *sucker* is worse than ending up as a *chicken*.

In the absence of a principal authority imposing cooperation as a solution to the conflict, the dispute becomes projected over time, an intrinsic characteristic of IR. In

26 This solution is called "Minimax Theorem" and is applied to any "slice of the pie" type zero-sum game. GAME THEORY STRATEGIES, *John von Neumann's minimax theory*. Accessible at: <http://www.gametheorystrategies.com/2012/06/07/john-von-neumanns-minimax-theory/> Consulted on 04/03/2014. Reviewed 01/02/2018.

27 The term "sucker" is typical of Game of Theory. For further information, see: SNYDER, Glen H. "Prisoner's Dilemma" and 'Chicken' Models in International Politics", *International Studies Quarterly*, Vol. 15, No 1, 1971, p. 69

28 NuclearFiles.org.Mutual Assured Destruction, Web. (2017). Accessible at: <http://www.nuclearfiles.org/menu/key-issues/nuclear-weapons/history/cold-war/strategy/strategy-mutual-assured-destruction.htm> Consulted on 04/03/2014. Reviewed 01/02/2018.

this way, the parties are obliged to interact an unknown number of times and many of the anomalies associated with one-off games disappear. It is what is called the “projection of the future”. The result of previous and future iterations is a factor to be taken into account in any negotiation since, under the right conditions, cooperation based on reciprocity can develop even among antagonists, because it constitutes self-monitored cooperation.

THE GAME OF CHICKEN		
	SWERVE	KEEP GOING
S/HE CONFESSES	2,2	1,3
S/HE DENIES	3,1	0,0

Figure 1.4 – Payoff diagram for the ‘Chicken Game’. Source: Prepared by the author.

Nested games

Until 2009, relations between the E₃/EU+₃ and the Iranian government had followed that of a sequential game, with each Iranian decision followed by a corresponding decision from the IC. Events at that time mutated into another type of game typical of a so-called “Tit for Tat” scenario²⁹.

In our case study, the “deviations” of the Iranian government were denounced by the E₃/EU+₃ and punished by UNSC resolutions. However, relations between the players in the international sphere had reached an impasse. Since the players always chose the same solution in each of the decision nodes, the game was stuck in a continuous circle of results. This meant that the game had reached a *stalemate* situation, another variant of the ‘Prisoner’s Dilemma’ whose equilibrium consists in the absence of cooperation.

Despite the fact that cooperation is not possible in a *Deadlock* or *Stalemate* situation, this proves to be the least problematic of all the games. While an impasse situation is costly, intransigence can be chosen as a strategy, since the objective is to weaken the opponent’s position and rely on achieving broad gains in the future.

29 AXELROD, Robert. Launching “The Evolution of Cooperation”, *Journal of Theoretical Biology*, 2012, No 299, Ford School of Public Policy, University of Michigan, p. 22.

However, referring to the conclusions drawn from different negotiations between members of international institutions, if nations perceive that their alternatives are deteriorating, they will move their strategy around towards one of cooperation, thus lowering their point of resistance. Similarly, the chances of overcoming a stalemate will be greater provided they have a mediator and agree on a text in writing, although prospective theory tells us that people tend to take the same risks to avoid losing rather than securing a win³⁰.

In seeking to find this type of solution to the Iranian nuclear problem, a *win-win* scenario had to be considered, rather than a situation that would adversely affect any of the parties. There were more inherent difficulties in *how* to reach agreement, than in the agreement itself. It was necessary to find common ground among all the *players* that would facilitate a return to the negotiating table. As we have seen here, a paradoxical context had been reached that, a priori, did not allow any of the actors to maximize their gains.

However, to date no arms race has ever come to an end on account of a cooperation agreement being reached, but rather because events have been altered by an event not directly related to the original root of the problem. What is generally needed is some form of stimulus external to the negotiation *per se* that can trigger game changes, bringing about new solutions to the conflict³¹.

Continuing along the timeline of events, we move forward to 2009, which marked a break in defection dynamics between the players and the first instance of cooperation between the IC and Iran, an event that merits analysis to discover the cause of that alteration in game dynamics. The strategy of posing a threat to cooperation in part answers that question, because if we start from the premise that the parties involved were immersed in a *Chicken Game*, the Iranian government should never have chosen to defect. On the other hand, it could be interpreted that Teheran temporarily opted for cooperation by accepting the Vienna agreement and the Teheran Declaration, although neither of these were to last for long.

This research has closely analysed each of the movements of the players (nations) involved in the nuclear negotiations, with a view to gaining a deeper understanding of their strategies. Once we had determined that the players consisted of the E3/EU+3 on the one hand and the Iranian government on the other, we reviewed each movement for the duration of the conflict, as if the players involved were always the same; although, as we shall see, this was not exactly the case.

When conflict between countries takes place over a period of time, in addition to saving the anomalies of single-set games, changes in administrations can be an

30 ODELL, John S. "Breaking Deadlocks in International Institutional Negotiations: The WTO, Seattle and Doha", *International Studies Quarterly*, Vol. 53, No 2, 2009, p. 273-274.

31 DOWNS, George W., ROCKE, David M. and SIVERSON, Randolph M. "Arms races and cooperation", *World Politics*, Vol. 38, no 1, 1985, p. 119.

additional phenomenon directly affecting the outcome. The nations themselves –the players interpreted as teams– do not change, but their Presidents and their staff do, and consequently their form of management.

One of the characteristics of symmetric games like *Prisoner's Dilemma*, *Chicken Game*, *Stalemate* and *Deer Hunting* is that they are inter-related, so that by changing a single element of the game, a new game is built³². If we consider that Game Theory is the study of a choice of strategies between rational agents³³, when we change one of those agents, the game will restart. We can infer that even if we continue to play poker, when one of the five players is replaced by another, that person's manner of playing and selection of strategies will change, and with it the result. Likewise, in all the games mentioned, if they happen to be n-player games with n-interests, they will become other games.

In 2008, analysts from the Center for Strategic and International Studies (CSIS) suggested that a change in relations between the US and Iran was necessary³⁴. That variation in US diplomacy occurred in January 2009 with the changeover in the White House. Although the alteration was asymptomatic until June of that same year, the change of actors in the presidency had consequences for the “game”. With a new US president, the set of strategies, the game, the payoff diagram, and therefore the game, was restarted.

However, play between the actors remained stagnant without any concrete solution or pact being reached, since the difficulty lay in *how* to achieve consensus rather than getting to the nuts and bolts of the agreement³⁵. With an unchanged scenario, the decision makers had reached an impasse situation. An external stimulus was needed that would provoke game changes and by extension new solutions to the conflict emanating from an alternative payoff diagram. George Tebelis developed the “principle of rationality” that assumes that the actors, be they states, persons or political parties, have preferences which they act upon, seeking the best solution from positions of self-interest. Accordingly, this principle assumes that agents are rational when acting according to their own preferences that meet the characteristics of completeness,

32 SHAHRABI FARAHANI, M. y SHEIKHMOHAMMADY, M. “A review on symmetric games: theory, comparison and Applications”, *International Journal of Applied Operational Research*, Vol. 4, No 3, p. 94. Accessible at: http://ijorlu.liau.ac.ir/files/site1/user_files_b406fb/admin-A-10-1-109-7adf351.pdf Consulted on 23/10/2015. Reviewed on 01/01/2018.

33 McCAIN, Roger A. “Game Theory. A...”, *op. cit.*, position 77. KINDLE version.

34 CORDESMAN, Anthony y BURKE, Arleigh. “Iran and the US: Key Issues From American Perspective”, *Center For Strategic and International Studies (CSIS)*, Washington, 2008, p. 2-3. Accessible at: http://www.bits.de/public/documents/iran/080110_iran.us.pdf Consulted on 17/02/2012. Reviewed 01/01/2018.

35 Document IAEA, INFCIRC/853, par.46, p. 8. Accessible at: https://www.iaea.org/sites/default/files/publications/documents/infcircs/2013/infcirc853_sp.pdf Consulted on 04/12/2013. Reviewed 01/01/2018.

reflexivity and transitivity. Starting from that premise, a change, a different response was needed that would provide an alternative solution giving players more options to choose from and thereby satisfying their preferences; if not, the game would have continued to move within a series of stagnant cyclical situations, as had been the case over the previous twelve years.

That momentum can be associated with the victory of Hassan Rouhani in the Iranian Presidential elections of 2013. As had happened with the arrival of Barack Obama to the White House some years earlier, the change of player caused the game to restart. With a new decision-maker, strategies and payoffs were altered, thus increasing the chances of finding a solution based on cooperation.

George Tsebelis developed the theory³⁶ of “nested games” in which he explained that if an actor’s choice appears to be sub-optimal, this may be due to the incomplete perspective of the observer who focuses his attention on only one game, when in reality the actor is involved in a whole network of games, or “games in multiple arenas³⁷”. While Tsebelis identifies two main kinds of nested games, the one which is of particular interest to us here is the one where the observer focuses his attention on only one arena, generally the principal arena, and classifies as suboptimal the rational alternatives chosen by the actor because he only “sees” the actor’s last choices in that particular arena.

However, had the choices in other arenas been taken into account, which in turn influence the game in question, then the actor’s choices would be considered rational. In this way, the rating of the actor’s behaviour is maximized within a more complex situation than the single observed game. This argument therefore demonstrates the need to take other contextual factors into account. The ‘games in multiple areas’ are a means of studying all possible subgames depending on contextual factors deriving from the interaction of third parties. These elements, which emanate from situations in other areas, affect the actors’ payoffs and guide the choice of their strategies. Therefore, the actors’ payoffs in the game in the principal arena will vary according to the prevailing situations in other areas and consequently, the results of the game will be different³⁸.

Changes in the Iranian and American administrations provoked a new negotiation scenario when the game was restarted with new actors, so the possibilities of finding

36 TSEBELIS, George. *Nested Games. Rational...*, *op. cit.*, p.7

37 Kenneth A. Shepsle used the concept of “interconnected games” to analyse, for example, a legislator immersed simultaneously in two games: one in the legislative sphere and the other in the electoral arena. According to this model, the same action in two different games can maximise the sum of payoffs in the two areas. For further information, see: DENZAU, Arthur, RIKER, William and SHEPSLE, Kenneth. *Farquharson and Fenno: Sophisticated Voting and Home Style*. *American Political Science Review*, No 79, 1985, p. 1117-34. Accessible at: <http://www.jstor.org/stable/1956251> Consulted on 24/02/2017. Reviewed on 01/01/2018.

38 TSEBELIS, George. *Nested Games. Rational...*, *op. cit.*, p. 9

a cooperative solution were extended. Even so, it was necessary to find scenarios, common areas that facilitated cooperation and forged a solution where all the parties involved would obtain optimal gains to guarantee its durability.

These types of games introduce the political environment into the problems of game theory and that is why its use is analysed in situations where the context is vital and the scenarios so complicated that reference to exogenous factors is required³⁹.

A priori, we understand that the study of influencing variables emanating from energy, political and security factors can explain the reasons for the IC's change of strategy in relation to Iran that resulted two years later in the signing of the JCPOA.

FACTORS EXOGENOUS TO THE NUCLEAR QUESTION

As we indicated at the outset, one of the questions that this study aims to solve is to determine whether there are other factors outside the nuclear legal framework that can influence nuclear negotiation. The application of Game Theory to our analysis and, in particular, “games in multiple areas”, underscores the need to analyse which contextual factors influence all possible subgames. To answer this question, we propose a close examination of the political, energy and security factors as elements that can redefine the influencing variables in nuclear negotiation. The approach that we have adopted in our research is that nuclear negotiation can be influenced by factors external to nuclear policy, such as regional stability, political autonomy and natural resources in the region.

The energy factor

According to the *BP Energy Outlook 2017*, Iranian gas reserves total 1,183 trillion cubic feet (Tcf), or 18% of the entire world reserves, followed by Russia with 1139.6 Tcf (17.3%); Qatar con 858.1 Tcf (13%); Turkmenistan con 617.3 Tcf (9.4%) and the US with 307.7 Tcf (4.7%). Close behind are Saudi Arabia, the United Arab Emirates and China. Of all these countries, only the US is a member of the OECD⁴⁰.

In its 2010 report, the Clingendael International Energy Programme (CIEP) indicated that only a limited number of geo-strategic players truly affect extra-regional developments, as far as natural gas flows are concerned. The behaviour of these agents can also determine the level of internationalisation of the natural gas sector of a pro-

39 TSEBELIS, George. *Nested Games. Rational...*, *op. cit.*, p. 58- 61

40 BP, “BP Statistical Review of World Energy June 2017”, Workbook. <https://www.bp.com/content/dam/bp/en/corporate/pdf/energy-economics/statistical-review-2017/bp-statistical-review-of-world-energy-2017-natural-gas.pdf>

ducing country withholding or stimulating investors to develop export capacities, as the cases of Iran and Qatar show⁴¹.

International sanctions seriously hampered the development of the Iranian energy sector, so the main beneficiaries of the JCPOA could be the international companies in the sector that have been awaiting the opportunity to help Iran to revive the area since the 2012 sanctions. The elimination of the energy embargo has the potential to radically restructure the Eurasian energy architecture as a first step towards remodelling its geopolitics⁴².

Given the importance of hydrocarbons in world trade and obvious concerns relating to oil and gas supply and prices, *pipelines* have become strategic factors in the Middle East. This is because their routes must be developed through politically unstable countries, traversing two or three frontiers to terminals for redistribution to the markets and finally encountering US segregationist policy with Iran, all of which make it difficult for them to become transit corridors⁴³.

Despite its vast energy endowments, Iran has had serious difficulties in managing its resources, mainly as a result of its relations with Washington and the IC. After three decades of a sharp upsurge in domestic energy demand and legal restrictions inhibiting exports, the Government has almost entirely oriented the development of its gas resources towards meeting domestic requirements. Sanctions limited their export options but caused the Teheran Administration to approve a massive increase in natural gas plants and refineries, in order to mitigate the negative impact of not adopting the total package of subsidy measures approved in 2010⁴⁴.

Teheran has sought to capitalise on its natural gas to strengthen its industry as part of a broader strategy of diversifying its economy, generating a more robust industrial base and reducing its dependence on oil export earnings. Sanctions and difficulties in raising capital have contributed to delays in the completion of two large new gas refineries, 'Bid Boland-2' and 'Parsian'. At present, Iran's is producing in excess of 15 million cubic feet per day, but Teheran is preparing for new phases of South Pars to feed the system, seeking to add some 9,000 km of pipelines and 65 booster gas pressure stations.

Iran's return to the energy markets creates new rivalries and opportunities. Its importance in world energy markets stems from its geopolitical position, since Teheran

41 YDREOS, Mel. "Geopolitics and Natural Gas", *Clingendael International Energy Program*, International Gas Union, 2009–2012 Triennium Work Report, 2012, p. 16.

42 VVAA, "Energía y geoestrategia", *Instituto Español de Estudios Estratégicos*, MDEF, 2016, p. 163.

43 STANGANELLI, Isabel Cecilia, "Hidrocarburos y Relaciones Internacionales en Asia Central: Implicaciones regionales e internacionales de la producción y exportación de petróleo y gas natural en las Repúblicas Centrales Asiáticas ex soviéticas (Kazakstán, Turkmenistán, Uzbekistán, Kirguizistán y Tadjikistán)". *Relaciones Internacionales*, No. 19, 2000, p. 140

44 MALONEY, Suzanne. "Geopolitics of natural gas. Case study: Iran". *Center of energy studies*, James A. Baker III Institute for Public Policy of Rice University, 2014, p. 6.

has the ability to harness its geography in two very different ways: facilitating energy trade along the east-west axis, or conversely, as a destabilising agent creating new opportunities and/or threats.

Looking to the future, although Iran's short-term goal is to prioritise the economic benefits of energy trade, in the long term it seeks to exploit its energy resources through political leverage. If a similar crisis was to reoccur and sanctions were re-imposed, the ensuing damage to its foreign relations or its domestic economy could be mitigated. This would be consistent with the Iranian doctrine of resistance economy, which consists, basically, in the substitution of imports and weaning itself off its dependence on oil and natural gas exports to diversify state revenues⁴⁵.

Similar to sanctions, heavy domestic consumption of natural gas has weakened its export capacity. In order to increase production, Tehran's main objective is to develop the South Pars field, whose ownership is shared between Iran and Qatar. Although thus far only Iran has been able to develop half of the twenty-four phases scheduled, this number could increase. This would result in greater strategic flexibility, and the diversification of Iran's export routes and destinations, but it would also open the door to becoming a supplier of electricity to its neighbours.

In 2016, Iran's nuclear electricity generation level reached 286 terawatt-hours (TWh, equivalent to one billion kilowatt-hours, kWh). This represented an increase of 5.2% over the decade 2005-2015 and exceeded the consumption of total domestic energy, estimated at 270.70 TWh per capita. According to the Iran Power Report, consumption could grow to 272.4 TWh in the year 2021, while electricity generation would reach 320.16 TWh, which means an annual increase in production of around 3.5%. However, other sources claim that current demand is already beginning to exceed the installed capacity, which is why the Iran Power Development Company has issued bonds totalling one thousand million dollars, through Banco Saderat, for the construction of more electricity power plants.

Iran's electricity generating capacity currently stands at 75,000 MW of electricity and projections indicate an increase of 47,000-50,000 MW in the next ten years. Its natural gas has grown by 6.6%⁴⁶, positioning Iran as the leading energy producer in the Middle East and fourteenth in the world, with plans to expand cooperation with several countries in the region by signing projects with Iraq, Afghanistan and other states.

The Iran-Pakistan gas pipeline – known as the 'IP Pipeline' – reflects Iran's ambitions in the sector. The project was originally conceived in 1995 as the Iran-Pakistan-India pipeline (IPI), until New Delhi withdrew from the project in 2009 under pres-

45 ÜNAL, Serhan. "Post-Sanctions Iran and Regional Energy Geopolitics", *TENVA*, 2016, p. 13-14.

46 BP, "BP Statistical Review 2017. The Middle East energy market in 2016". <https://www.bp.com/content/dam/bp/en/corporate/pdf/energy-economics/statistical-review-2017/bp-statistical-review-of-world-energy-2017-middle-east-insights.pdf>

sure from Washington. Abandoned for twenty years, the IP pipeline was reactivated by China in the wake of JCPOA. On April 20, 2015, Beijing signed an agreement with Islamabad to build a pipeline from the port of Gwadar in Pakistan, to Nawabshah, where it will join the national Pakistani gas distribution network. The pipeline will deliver approximately 8.2 bcm per year from South Pars to Pakistan's national grid, enough gas to generate 4,500 megawatts of electricity to meet the country's current energy production deficit⁴⁷.

This agreement is part of a \$46 billion infrastructure package to set up the China-Pakistan Economic Corridor (CPEC), extending from the Indian Ocean port of Gwadar to Kashgar (Kashi), in Xinjiang, under the economic initiative "One Belt One Road" (OBOR). A CNPC subsidiary will build the IP pipeline with eighty-five percent of the total cost of construction provided by Chinese investors. Theoretically, it would take between five and seven years to build the Nawabshah gas pipeline to Kashgar, so the first gas exports to China would start around 2020.

Another, albeit secondary, project in the making defines the Indo-Iranian relationship in the energy sector. Based on the construction of a port in Chabahar and a deep-sea gas pipeline, the Oman-India Multipurpose Pipeline, or "Oman-India Multi-Purpose Pipeline", (OIMPP), is designed to export Iranian gas to India through Oman. This new pipeline network is intended to transport gas from Qatar to India, and offers an alternative to the Turkmenistan-Afghanistan-Pakistan-India pipeline (TAPI). Thus, the western Indian Ocean could become the main alternative energy trading hub to OBOR, connecting Europe via Iran, with India and Southeast Asia⁴⁸.

These projects, reflecting a perception of Teheran as a reliable energy partner and based on relations with Beijing and President Xin Jinping, offer an example of how energy cooperation between China, Pakistan, India and Iran can alter the geopolitical calculations of the players in the region.

Security factors

Oil and gas pipelines are attractive targets for attacks and require great protection, a task that is difficult to ensure along their entire extension. For the nations involved geographically, the decision on pipelines is crucial: not only do they represent export mechanisms, but a range of other factors are at stake: substantial amounts of money for transit rights, the possibility of supplying domestic needs,

47 TANCHUM, Michael. "A Post-Sanctions Iran and the Eurasian Energy Architecture Challenges and opportunities for the Euro-Atlantic Community", *Atlantic Council, Global Energy Center & Dinu Patriciu Eurasia CENTER*, Washington, 2015, p. 19

48 EBEL, Robert E. "Geopolitics of the Iranian Nuclear Energy Program But Oil and Gas Still Matter", *Center for Strategic and International Studies*, Washington, D.C., 2010, p. 46.

the creation of new sources of employment and infrastructure in addition to a share in the control of the energy flow; in other words, they represent “areas of influence” over neighbouring nations.

In this context, the concept of energy security as a systemic notion involving factors such as resilience, independence and the reduction of vulnerability to multi-vector threats is particularly important. Its structure is made up of many contextual factors that simultaneously influence and demonstrate the multi-layered nature of energy security – combining security, defence, economy and international relations – affecting tangible and intangible aspects of the energy sector.

The threats, risks and aggressions that may arise in the energy sector can be different in origin and cause and encompass non-military as well as strictly war-related activities aimed at a broad range of objectives. To avoid weaknesses in the system deriving from over-dependency, measures must be implemented to optimise energy and economic resources, as well as to strengthen the structure of the sector as a whole, comprising security measures and defensive countermeasures with remedies ranging from physical protection to economic offensive. The guarantee of energy security, which is defined by the close symbiosis between security of supply, reduction of dependence and the environment⁴⁹, implies adequately addressing all of these vectors.

In recent years, ensuring supply is back on national agendas as an important driver of energy and security policies. This is what is known as “resource nationalism”.

Taking into consideration the full range of new threats, security can only be achieved by balancing all the instruments of state and the set of political decisions involved. The IC’s heavy dependence on natural resources in the Gulf region has conditioned international relations rendering them highly complex and fraught with security dilemmas, with their inherent paradoxes and contradictions.

According to the theory of constructivism, certain regimes are motivated by the prestige associated with nuclear arsenal. Membership of the nuclear club is viewed as a declaration to the IC that the state is powerful and deserves respect⁵⁰. Most analysts suggest that the Iranian regime is motivated by security concerns and wants only a deterrent force. Others suggest that the Iranian regime wants nuclear weaponry for offensive purposes. However, there is another factor worth considering here. Although maintaining internal cohesion is a primary geographical imperative for most countries, Iran’s principal focus is keeping its borders secure and, in particular, the area outlined by the Shatt al-Arab river, the west coast of Iran in the Persian Gulf and its southwest oilfields.

49 De ESPONA, Rafael José, “El moderno concepto integrado de seguridad energética”, Discussion paper 32/2013, *IEEE*, 2013, p. 12-13.

50 SHERRILL, Clifton W., “Why Iran wants the bomb and what it means for US policy”, *Nonproliferation Review*, Vol. 19, No. 1, 2012, p. 32

Foreign relations

Following the agreement reached in July 2015 many nations sought to reposition themselves in view of the possibilities offered by the opening up of the Iranian market to international business in the post-sanctions era. With the removal of sanctions and Iran's integration into financial and commercial circuits future economic prospects were bright. Internally repercussions consolidated the regime, which enjoyed an economic bounce-back.

The fact that Teheran demonstrated compliance with the milestones set out in the nuclear agreement served as a starting point for the lifting of sanctions, which was of major significance in the field of energy. Production levels during the period of sanctions had been limited to less than 1.5 million barrels of oil per day. Once the agreement was signed, Iran began to prepare its oil infrastructure for sharp rises in production from January 2016. According to the Iranian Vice-President, Eshaq Jahangiri, in the month of August oil production reached 2.5 million barrels per day, regaining levels in existence prior to the imposition of international sanctions.

Teheran aims at targeting its energy potential towards economic take-off, and while Chinese and Indian companies never left the Iranian market, new opportunities have encouraged companies such as Eni, Total, Lukoip, Shell or Repsol, to make partnerships and share profits with the National Iranian Oil Company⁵¹.

On the international stage, the Iranian government has re-formed alliances, primarily in trade, with the E3/EU+3 member-states excluding the US. Bolstered by compliance with its obligations under the JCPOA, it has found important trade partners on the European front. The visit of Hassan Rouhani to France in 2016 concluded, on the one hand, with the signing of important economic agreements between both States including a credit agreement with the French bank COFACE guaranteeing trade finance on behalf of the French government. Companies such as the Total oil company, the PSA car manufacturer, the Airbus Group and the construction companies Alston, Bouygues and Aeroports de Paris announced the injection of foreign capital into the Iranian economy, while on the other hand, the two presidents also discussed the ongoing conflicts in Syria, Lebanon and Yemen⁵².

Another E3/EU+3 member, Germany, has been much more reticent. Intelligence services have been monitoring compliance with the Treaty since they still suspect that Iran is pursuing a covert nuclear programme related to the development of ballistic missiles. However, following talks between the Iranian Foreign Minister, Javad Zarif,

⁵¹ MONTOYA CERIO, Fernando. "Irán y su estratégico acuerdo Nuclear", *IEEE*, 2016, p. 12.

⁵² MARLOWE, Lara. "'New chapter' as France and Iran reach trade agreements", *The Irish Times*, (January 29, 2016). <http://www.irishtimes.com/news/world/europe/new-chapter-asfrance-and-iran-reach-trade-agreements-1.2514274>

and his German counterpart, Frank-Walter Steinmeier, which resulted in investment agreements, Iran agreed to repay all its export debts to Germany⁵³

In the wake of 'Brexit', the United Kingdom has detached itself from its continental partners and has moved closer to the United States. Although Theresa May stressed that she would continue to promote the implementation of the nuclear treaty and emphasised the importance of collaboration in the banking sector, in March 2016 talks in London between the US Treasury Department, the Iranian Central Bank and European banks were cancelled, triggered by fears of falling foul of sanctions endorsed by Washington. Nevertheless, Iran has been endeavouring to persuade the United Kingdom not to ally itself entirely with Washington⁵⁴.

Regarding relations with Russia, both states have shared interests in more than one project and exchange all kinds of goods and armaments for oil. In addition to the Bushehr nuclear reactor, they have agreed to build a further two power plants in a joint construction project that includes up to ten refineries. Similarly Teheran has signed an agreement with Azerbaijan for the construction of a rail corridor linking Europe and Asia that could eventually attract some of the freight traffic currently transported through the Suez Canal. This Russian alignment with Teheran and the lifting of the ban on the sale of the S-300 missiles has been interpreted by some analysts as a shift in its Middle East policy, an attempt to strengthen Iran, support for instability in the region and a provocation to the American government⁵⁵.

In relation to China, as we have indicated above, the lifting of sanctions opened the door to an increase in oil trade and the consolidation of OBOR-related strategic projects, as Xi Jinping's government looks upon Iran as a key state on the economic corridor. Relations between China and Saudi Arabia could represent the only point of friction since both countries –leaving aside religious questions– have common trade interests based on oil and nuclear energy. The construction of state-of-the-art high-temperature gas-cooled nuclear reactors is what has opened the door to new relations between Saudi Arabia and China⁵⁶.

Tensions between Iran and Washington have increased at international level, mainly due to American sanctions on the Iranian supply chain that supports its ballis-

53 SALAL, Andrea. "Iran foreign minister encourages closer business ties with Germany", *Reuters*, (June 15, 2016). <http://www.reuters.com/article/us-germany-iran/iran-foreign-minister-encourages-closer-business-ties-with-germany-idUSKCN0Z12Ko>

54 CASTRO, Jose Ignacio. "El resurgimiento de Irán como potencia tras el levantamiento de las sanciones internacionales", *Revista de Estudios en Seguridad Internacional*, Vol. 2, No 2, 2016, p. 14.

55 KOZHANOV, Nikolay. "Russia's S-300 Sale to Iran: An Expected Surprise", *Carnegie Endowment for International Peace*, (April 17, 2015). <http://carnegie.ru/commentary/?fa=59822>

56 WORLD NUCLEAR NEWS. "China, Saudi Arabia agree to build HTR", (January 20, 2016). <http://www.world-nuclear-news.org/NN-China-Saudi-Arabia-agree-to-build-HTR-2001164.html>

tic missile programme⁵⁷. On Middle East issues, the positions of the US President are contradictory, especially with respect to Iran. Donald Trump is openly anti-Iranian, but he also supports Bashar al-Assad in the Syrian conflict, which ultimately reinforces Iranian regional control. The US leader has openly displayed his animosity towards Teheran and his desire to return to the counterterrorism and containment practices embraced by the Bush Administration⁵⁸.

US President Trump has always been very critical of the nuclear agreement. From the beginning of the electoral campaign he was clearly against it, blasting it as “a bad agreement”, “a disaster” and “the worst deal ever” that would lead to a “nuclear holocaust”, qualifying it as “incompetent” to the Secretary of State, John Kerry, who had negotiated it. Since taking office, Donald Trump has pledged to “dismantle the disastrous agreement” reached by Barack Obama and “compel the Iranians to return to the negotiating table to make a much better deal”⁵⁹.

Some analysts are of the opinion that Teheran is sounding out the new administration to see if it is capable of dismantling the agreement under any pretext and moreover to see how the EU, Russia and China would react if the US threatens to do so. Iran’s testing of ballistic missiles, in particular the new Khorramshahr missile, has provided Congress with a pretext to upset any form of rapprochement and in doing so to derail the JCPOA. Although there has been some controversy about whether the tests violated UN Security Council Resolution 2231 (2015) that endorses the JCPOA, the Resolution does not make direct reference to anything specific in this regard. While it is included in the Security Council’s Resolution 1929 (2010), this is not linked to the nuclear agreement⁶⁰.

Currently, commitment to the Joint Comprehensive Plan of Action on behalf of both the US and the rest of the UN Member States is maintained under UN Security Council Resolution 2231; at least, until one of those countries decides that it is in their interests to seek a new agreement. Most analysts, including the Israelis, agree that the JCPOA is working and ought to be maintained. In addition, the other parties to the Agreement have repeatedly insisted that Iran is complying with its obligations and

57 United States Congress, “H.R. 1698: Iran Ballistic Missiles and International Sanctions Enforcement Act”, (October 26, 2017). https://www.govtrack.us/congress/votes/115-2017/h590?utm_campaign=govtrack_feed&utm_source=govtrack/feed&utm_medium=rss#

58 GARDINER, Harris. “Tillerson Warns Europe Against Iran Investments”, *The New York Times*, (October 22, 2017) <https://www.nytimes.com/2017/10/22/world/middleeast/tillerson-iran-europe.html>

59 Vid. “Donald Trump talks policy: Iran deal ‘will lead to nuclear holocaust’”, *The Guardian*, (August 16, 2015). <https://www.theguardian.com/us-news/2015/aug/16/donald-trump-policy-iran-abortion-immigrants>

60 DAVENPORT, Kelsey y KIMBALL, Daryl (2017). “Iran’s Ballistic Missile Test: Troubling But Not Cause for Provoking Confrontation”, *Arms Control Association*, (February 01, 2017). <https://www.armscontrol.org/blog/ArmsControlNow/2017-02-01/Irans-Ballistic-Missile-Test-Troubling-But-Not-Cause-for-Provoking-Confrontation>

there is no evidence of violations⁶¹, which means that the possibility of the UN Security Council imposing fresh sanctions is currently quite remote.

In the US, with the majority of both houses of Congress opposing it, the JCPOA is based on an executive agreement that the President can revoke. Donald Trump made a public statement on October 13 in which he claimed that the deal had provided over \$100 million for the Iranian government to fund terrorism. On the other hand, he reported violations related to the manufacture of heavy water reactors and the intimidation of Agency inspectors, but none of these statements stand up when compared with Agency reports, which do not report any violations.

In his statement, in addition to announcing sanctions on Iran's Islamic Revolutionary Guard Corps, the President announced that he would not certify the suspension of sanctions as required under the Iran Nuclear Agreement Review Act and that if he could not reach a consensus with his allies that would satisfy Congress, he would terminate the Agreement⁶². It must be said, however, that no president of a UN Security Council member-state can unilaterally cancel a UN Resolution.

According to some analysts, a unilateral US withdrawal from the agreement would be an affront to international law, the NPT and a repudiation of the voice of the transnational allies, giving Iran *carte blanche* to resume its nuclear activities without restrictions and the promise of future sanctions, since there would be no unity and consensus within the UNSC itself. Therefore, another strategy is needed to contain Teheran, and now more than ever as European leaders have all reaffirmed their full support for the JCPOA and the IAEA Director General, Yukiya Amano, visited Iran on October 29, as part of ongoing dialogue between the Agency and Iran in relation to verification and follow-up commitments concluded under the framework of the JCPOA⁶³.

Once the mandatory sixty days have passed, the US Congress may decide to impose more sanctions – which would place the US in breach of the JCPOA terms – expand their scope or nature, or do nothing at all. Paradoxically, the President may consider that with non-certification he is fulfilling an electoral promise, although the message contained in each of these options is radically different. If Congress does nothing, it would be tantamount to stating that the President's opinion is unimportant or wrong. If Congress imposes new sanctions that address some of Teheran's regional security challenges rather than sanctions targeted at nuclear production, it would be sending

61 OIEA, GOV/2017/35. “*Verificación y vigilancia en la República Islámica del Irán a la luz de la resolución 2231 (2015) del Consejo de Seguridad de las Naciones Unidas*”, Junta de Gobernadores, 4 September, 2017, p. 2.

62 The White House, “Remarks by President Trump on Iran Strategy”, *Office of the Press Secretary*, (October 13, 2017) <https://www.whitehouse.gov/the-press-office/2017/10/13/remarks-president-trump-iran-strategy>

63 IAEA, “IAEA Director General to Visit Tehran”, *Statements*, (October 25, 2017). <https://www.iaea.org/newscenter/statements/iaea-director-general-to-visit-tehran>

out a paradoxical message to the effect that Iran is in violation of the “spirit of the agreement” but the nuclear agreement is not “bad”, thus contradicting the President. On the other hand, Congress could eliminate the need for Trump to periodically certify the agreement, thus effectively disengaging the President from that plan of action⁶⁴.

President Trump’s threats are part of what is by now a familiar pattern: the president swears he will “dismantle” the nuclear deal, taking matters to their very limit and then issues a kind of pardon that allows the supporters of the agreement to breathe a sigh of relief when he pulls back. This happened in the spring of 2017, when he renounced sanctions for the first time, as he is obliged to do every few months under the terms of the agreement. He did the same again a few months later in June when he said he was completing his political review; in the following month of October he “decertified” Iranian compliance and demanded that Congress and Europe “fix” the alleged failures, which he repeated in February of this year. On this last occasion, Trump waived the question of sanctions, but questioned the future of the agreement by pledging to withdraw in 120 days unless Congress and Europe agree to restore nuclear sanctions if Iran does not comply with his new conditions⁶⁵.

The US President’s decision not to annul the agreement while imposing new sanctions on Iranian officials is a formula that is gradually undermining it, despite the fact that all international reports from his allies certify that it is working, and that its collapse would severely undermine US credibility.

On the other hand, it remains to be seen whether US pressures on the EU and the threat of sanctions on companies that have signed up to economic agreements with Iran will tip the balance in favour of the US; how the support Teheran has received from Russia and China in the past will eventuate on this occasion⁶⁶; or if Iran unilaterally pulls out of the agreement yielding to economic pressure exerted by the Trump Administration, the chances of which are considered remote.

The nuclear programme is at the heart of the Iranian national identity, since it embodies the central principles of the Islamic Republic: the struggle for independence, the injustice of foreign powers, the need for self-sufficiency and Islam’s high regard of science. The Iranian President, Hasan Rouhani, is beginning his second term and JCPOA continuity is one of the challenges he faces in this, his second term. In his

64 BELIN, Celia. “When American politics jeopardize American global leadership”, *The Brookings Institution*, (October 16, 2017). <https://www.brookings.edu/blog/order-from-chaos/2017/10/16/when-american-politics-jeopardize-american-global-leadership/>

65 See GORDON, Phillip and MALLEY, Robert. “Destroying the Iran Deal While Claiming to Save It”, *The Atlantic*, (January 21, 2018). <https://www.theatlantic.com/international/archive/2018/01/trump-iran-deal-jcpoa/551066/>

66 SADJAPOUR, Karim. “Why Donald Trump’s new Iran policy is uniting Tehran while dividing the world”, Carnegie Endowment for International Peace, (October 27, 2017). <http://carnegie-mec.org/diwan/73552>

inaugural address he emphasised the need to strengthen the process of nuclear negotiations, while warning against US policies that could endanger the pact⁶⁷.

With Rouhani returned for a further four years to the presidency nothing will change in this regard, since the parliament, led by Ali Larijani, and the Supreme Leader of Iran, Ali Khamenei, all support the nuclear agreement and there are no expectations of a change in the short or medium term. However, we must also bear in mind that Ali Khamenei, in a speech delivered on the occasion of Rouhani's second presidential inauguration, stressed the need to prioritise the living conditions of the Iranian population, clearly pointing to the lack of visible results since the signing of the JCPOA in 2015.

The erstwhile leader of the Revolution firmly believes that the United States opposes Iran's nuclear ambitions not because of the threat of proliferation, but on account of the independence and potential economic power that could result from the nuclear programme. His perception is that Washington is still trying to bring about a change of regime rather than a behavioural change and firmly argues that Teheran should not give in to pressure or intimidation from the United States, since this would project an image of weakness and encourage even greater pressure⁶⁸.

CONCLUSIONS

Nuclear confrontation is so characteristically idiosyncratic in nature that it demands delving into the challenge of translating its negotiation phases into useful policies. Throughout this article we have seen how Game Theory plays a fundamental role in the defence of states and therefore within the sphere of international relations.

The contest between Iran and the E3/EU+3 started out as a *Prisoner's Dilemma* before developing into another type of game known as *The Chicken Game* which, far from obtaining its equilibrium through negotiation, attains it in a situation of all-out challenge.

Without any principal authority imposing cooperation as a solution to the conflict, the dispute is consequently projected into the future, showing us that conflicts do not disappear but evolve over time and tend to extend into other areas where the parties involved are forced to interact numerous times, and thereby find a solution based on cooperation.

We cannot ignore the fact that the *deadlock* situation has been altered by leadership changes in the Iranian and American administrations. This led to a scenario where the games were restarted, thereby increasing the possibility of finding a solution based

67 ZACCARA, Luciano. "Los desafíos del segundo mandato de Rohaní", Real Instituto Elcano, ARI 73/2017, 2017, p. 2

68 KHALAJI, Mehdi. "Through Khamenei's Eyes", The Washington Institute for Near East Policy, 2012, p. iff.

on cooperation where all the parties involved would achieve optimal gains, finding common ground among the players, and facilitating a return to the negotiating table.

The theory of ‘nested games’ has served as an instrument with which to analyse possible subgames that depend on contextual factors involved in nuclear negotiation. The fulfilment of the JCPOA milestones served as a starting point for the lifting of sanctions, especially significant in the field of energy. With its important gas reserves and energy infrastructure, Iran is a key geostrategic player in the flow of energy and gas in particular, as the leading producer in the Middle East and fourteenth in the world ranking. As we have seen, this in turn has afforded it decisive power within the Eurasian sphere of energy and of geopolitics.

Likewise, pipelines act as strategic security elements, exerting pressure in their areas of influence. As dependence can make them vulnerable, countries need measures that combine energy and economic resources, which in turn strengthen the overall structure. Guaranteeing energy security implies facing these vectors with measures defined by a symbiosis between security of supply and reduced dependence. This security is a driving force of energy policy and national security.

When a state belongs to the nuclear club this is understood as a declaration of its power to the world at large and accordingly deserves respect. Most analysts suggest that the Iranian regime is motivated by security concerns and simply wants a defensive deterrent force. Others suggest that Teheran could be pursuing a nuclear weapons capacity for offensive purposes.

These political, energy and security concerns favour cooperation and offer an explanation for the achievements of the JCPOA.

However, there is another factor to bear in mind. Whereas for most countries their main geographical imperative is to maintain internal cohesion, for Iran it is to keep its borders secure and, in particular, the areas outlined by the Shatt al-Arab river, the west coast of Iran in the Persian Gulf and the oil fields of the southwest, since it hopes to exploit its energy potential to the full to guarantee economic take-off. In this context, the concept of energy security is vitally important, as an important driver of energy and security policies, otherwise known as “resource nationalism”. Teheran looks upon its nuclear programme as a means to increase its prestige and influence in the region and the world, hypothetically underpinned by the idea of the defence of state, its natural resources and the values of the Islamic Revolution. For Ali Khamenei, the nuclear programme embodies the central principles of the Islamic Republic, reflecting a clear link between scientific progress, self-sufficiency and political independence; hence his ideal vision of an Iran advanced enough to be self-sufficient, economic and politically independent. The erstwhile leader of the Revolution firmly believes that the US is opposed to Iran’s nuclear ambitions because of the potential economic power that can derive from its nuclear programme.

President Trump’s refusal to certify the JCPOA has generated new prospective scenarios where crisis situations have been gathering momentum, whether between the US and the EU, involving a power struggle for the survival of the agreement, or between Iran and the US over Iran’s defence of its nuclear programme.

BIBLIOGRAPHY

- “Donald Trump talks policy: Iran deal ‘will lead to nuclear holocaust’”, *The Guardian*, (August 16, 2015). <https://www.theguardian.com/us-news/2015/aug/16/donald-trump-policy-iran-abortion-immigrants>
- ALBRIGHT, David y SHIRE, Jacqueline. “Better Carrots, Not Centrifuges: Why Iran must halt enrichment and How the U.S. can make it happen”, *Institute for Science and International Security (ISIS)*, 2006.
- AXELROD, Robert. Launching “The Evolution of Cooperation”, *Journal of Theoretical Biology*, 2012, Num. 299, Ford School of Public Policy, University of Michigan.
- BELIN, Celia. “When American politics jeopardize American global leadership”, *The Brookings Institution*, (October 16, 2017). <https://www.brookings.edu/blog/order-from-chaos/2017/10/16/when-american-politics-jeopardize-american-global-leadership/>
- BORGATTA, Edgar y MONTGOMERY, Rhonda J. V. *Encyclopedia of Sociology*, Vol. I, 2nd Ed., MacMillan Reference USA, 2000.
- BP, “BP Statistical Review 2017. The Middle East energy market in 2016”. <https://www.bp.com/content/dam/bp/en/corporate/pdf/energy-economics/statistical-review-2017/bp-statistical-review-of-world-energy-2017-middle-east-insights.pdf>
- BP, “BP Statistical Review of World Energy June 2017”, Workbook. <https://www.bp.com/content/dam/bp/en/corporate/pdf/energy-economics/statistical-review-2017/bp-statistical-review-of-world-energy-2017-natural-gas.pdf>
- CAPLOW, Thomas. “Two Against One: Coalitions in Triad”, Paris: Prentice-Hall, 1968.
- CASTRO, José Ignacio. “El resurgimiento de Irán como potencia tras el levantamiento de las sanciones internacionales”, *Revista de Estudios en Seguridad Internacional*, Vol. 2, No 2, 2016.
- DAVENPORT, Kelsey y KIMBALL, Daryl (2017). “Iran’s Ballistic Missile Test: Troubling But Not Cause for Provoking Confrontation”, *Arms Control Association*, (February 1, 2017). <https://www.armscontrol.org/blog/ArmsControl-Now/2017-02-01/Irans-Ballistic-Missile-Test-Troubling-But-Not-Cause-for-Provoking-Confrontation>
- De ESPONA, Rafael José, “El moderno concepto integrado de seguridad energética”, Discussion paper 32/2013, *IEEE*, 2013.
- EBEL, Robert E. “Geopolitics of the Iranian Nuclear Energy Program But Oil and Gas Still Matter”, *Center for Strategic and International Studies*, Washington, D.C., 2010.

- GAMSON, William. "A Theory of Coalition Formation". *American Sociological Review*, 1961, Vol. 26, No 3.
- GARDINER, Harris. "Tillerson Warns Europe Against Iran Investments", *The New York Times*, (October 22, 2017) <https://www.nytimes.com/2017/10/22/world/middleeast/tillerson-iran-europe.html>
- GARRIDO REBOLLEDO, Vicente, "El Programa Nuclear Iraní y las Implicaciones del Plan de Acción Integral Conjunto (JCPOA)" en BOLLO AROCENA, M. Dolores y QUEL LÓPEZ, F. Javier (coord.), *Cursos de Derecho Internacional y Relaciones Internacionales de Vitoria-Gasteiz 2016*, Thomson-Reuters, Aranzadi, Bilbao, 2017.
- GLASER, Charles L., "Realist as Optimists. Cooperation as Self-Help", *International Security*, Vol. 19, No 3, 1995.
- GORDON, Phillip y MALLEY, Robert. "Destroying the Iran Deal While Claiming to Save It", *The Atlantic*, (January 21, 2018). <https://www.theatlantic.com/international/archive/2018/01/trump-iran-deal-jcpoa/551066/>
- HARRINGTON, Joseph Emmet, "Games, Strategies, and Decision Making", *Johns Hopkins University*, Worth Publishers, 2009.
- HERZ, John H. "Idealist Internationalism and the Security Dilemma". *World Politics*, 1950, Vol. 2, No 2.
- HERZ, John H., "Political Ideas and Political Reality", *The Western Political Quarterly*, Vol. 3, No 2, 1950.
- IAEA, "IAEA Director General to Visit Tehran", *Statements*, (October 25, 2017). <https://www.iaea.org/newscenter/statements/iaea-director-general-to-visit-tehran>
- JERVIS, Robert, "Perception and Misperception in International Politics", *Princeton University Press*, Princeton, 1976.
- KANOUSE, David y WIEST, William. "Some Factors Affecting Choice in the Prisoner's Dilemma." *The Journal of Conflict Resolution*, 1967, Vol. 11, No. 2.
- KANT, Immanuel, *Sobre la Paz Perpetua*, Tecnos, 5th Ed., Madrid, 1996.
- KHALAJI, Mehdi. "Through Khamenei's Eyes", The Washington Institute for Near East Policy, 2012.
- KOZHANOV, Nikolay. "Russia's S-300 Sale to Iran: An Expected Surprise", Carnegie Endowment for International Peace, (April 17, 2015). <http://carnegie.ru/commentary/?fa=59822>
- KRAUSE, Martin, "La teoría de juegos y el origen de las instituciones", *Revista Libertas* 31, Instituto Universitario ESEADE, 1999.

- MALONEY, Suzanne. "Geopolitics of natural gas. Case study: Iran". *Center of energy studies*, James A. Baker III Institute for Public Policy of Rice University, 2014.
- MARLOWE, Lara. "'New chapter' as France and Iran reach trade agreements", *The Irish Times*, (January 29, 2016). <http://www.irishtimes.com/news/world/europe/new-chapter-asfrance-and-iran-reach-trade-agreements-1.2514274>
- MILLS, Theodore. "The coalition pattern in three persons group". *American Sociological Review*, 1954, Vol. 19, No. 6.
- MONTOYA CERIO, Fernando. "Irán y su estratégico acuerdo Nuclear", *IEEE*, 2016.
- MOULIN, Hervé, *Games Theory for the Social Sciences*, Studies in Game Theory and Mathematical Economics, New York University Press, 2nd Ed., 1986.
- NASH, John. "Non-cooperative Games", *The Annals of Mathematics*, Second Series, Vol. 54, No 2, 1951. <http://links.jstor.org/sici?sici=0003-486X%28195109%292%3A54%3A2%3C286%3ANG%3E2.o.Co%3B2-G>
- ODELL, John S. "Breaking Deadlocks in International Institutional Negotiations: The WTO, Seattle and Doha", *International Studies Quarterly*, Vol. 53, No 2, 2009.
- OIEA, GOV/2017/35. "Verificación y vigilancia en la República Islámica del Irán a la luz de la resolución 2231 (2015) del Consejo de Seguridad de las Naciones Unidas", Junta de Gobernadores, 4 September, 2017.
- PORTELA, Clara. "La contribución de las sanciones a la paz", in *La UE, ¿Un Actor De Paz Real?*, *Revista por la Paz*, 2015, No 23.
- POUNDSTONE, William. "El dilema del prisionero", Alianza Editorial, Madrid, 2012.
- RAPAPORT, Annatol. "Prisoner's Dilemma". <http://www.anatolrapoport.net/book/export/html/9>
- RAPAPORT, Annatol. "Three Modes of Conflict". University of Hiroshima, 1978. <http://www.anatolrapoport.net/node/19>
- RUSSETT, Bruce. "Components of an Operational Theory of International Alliance Formation". *The Journal of Conflict Resolution*, 1968, Vol. 12, No 3.
- SADJAPOUR, Karim. "Why Donald Trump's new Iran policy is uniting Tehran while dividing the world", Carnegie Endowment for International Peace, (October 27, 2017). <http://carnegie-mec.org/diwan/73552>
- SALAL, Andrea. "Iran foreign minister encourages closer business ties with Germany", *Reuters*, (June 15, 2016). <http://www.reuters.com/article/us-germany-iran/iran-foreign-minister-encourages-closer-business-ties-with-germany-idUSKCN0Z12Ko>

- SCHELLING, Thomas. "The Strategy of Conflict. Prospectus for a reorientation of game theory", *Rand Corporation*, Harvard University, 1958.
- SHERRILL, Clifton W., "Why Iran wants the bomb and what it means for US policy", *Nonproliferation Review*, Vol. 19, No 1, 2012.
- SNYDER, Glen H. "The Security Dilemma in Alliance Politics". *World Politics*, Vol. 36, no 4, 1984.
- SNYDER, Glen H." 'Prisoner's Dilemma' and 'Chicken' Models in International Politics", *International Studies Quarterly*, Vol. 15, No 1, 1971.
- STANGANELLI, Isabel Cecilia, "Hidrocarburos y Relaciones Internacionales en Asia Central: Implicaciones regionales e internacionales de la producción y exportación de petróleo y gas natural en las Repúblicas Centrales Asiáticas ex soviéticas (Kazakstán, Turkmenistán, Uzbekistán, Kirguizistán and Tayikistán)". *Relaciones Internacionales*, No 19, 2000.
- TADELIS, Steven, "Solution Manual. Game Theory: An Introduction", *Princeton University Press*, 2013.
- TANG, Shiping, "The Security Dilemma: A Conceptual Analysis", *Security Studies*, No 18, 2009.
- TANCHUM, Michael. "A Post-Sanctions Iran and the Eurasian Energy Architecture Challenges and opportunities for the Euro-Atlantic Community", *Atlantic Council*, Global Energy Center & Dinu Patriciu Eurasia CENTER, Washington, 2015.
- THE WHITE HOUSE, "Remarks by President Trump on Iran Strategy", *Office of the Press Secretary*, (October 13, 2017) <https://www.whitehouse.gov/the-press-office/2017/10/13/remarks-president-trump-iran-strategy>
- TSEBELIS, George. "Nested Games. Rational Choice in Comparative Politics", *University of California*, Los Angeles, 1990.
- ÜNAL, Serhan. "Post-Sanctions Iran and Regional Energy Geopolitics", *TENVA*, 2016.
- UNITED STATES CONGRESS, "H.R. 1698: Iran Ballistic Missiles and International Sanctions Enforcement Act", (October 26, 2017). https://www.govtrack.us/congress/votes/115-2017/h590?utm_campaign=govtrack_feed&utm_source=govtrack/feed&utm_medium=rss#
- VVAA, "Energía y Geoestrategia", *Instituto Español de Estudios Estratégicos*, MDEF, 2016.
- WALTZ, Kenneth. "The Spread of Nuclear Weapons: More May Better". *Adelphi Papers*, 1981, No 171, London: International Institute for Strategic Studies.

WILLIAMS, John D. "The Compleat Strategyst. Being a Primer on the Theory of Games of Strategy", *RAND Corp.*, New York, 1966.

WHEELER, Nicholas y BOOTH, Ken, *The Security Dilemma. Fear, Cooperation and Trust in World Politics*, Palgrave MacMillan, 2007.

WORLD NUCLEAR NEWS. "China, Saudi Arabia agree to build HTR", (January 20, 2016). <http://www.world-nuclear-news.org/NN-China-Saudi-Arabia-agree-to-build-HTR-2001164.html>

YDREOS, Mel. "Geopolitics and gas natural", *Clingendael International Energy Programme*, International Gas Union, 2009–2012 Triennium Work Report, 2012.

ZACCARA, Luciano. "Los desafíos del segundo mandato de Rohaní", Real Instituto Elcano, ARI 73/2017, 2017.

Submitted: November 7, 2017.

Accepted: November 27, 2017.
