IOSR Journal Of Humanities And Social Science (IOSR-JHSS)
Volume 24, Issue 7, Ser. 6 (July. 2019) 65-74
e-ISSN: 2279-0837, p-ISSN: 2279-0845.
www.iosrjournals.org

Moroccan Economic Diplomacy in the Light Of Game Theory

Elkhaldi Mohammed[1], Azennar Radouane[2]
[1]*Department of Public Law and Political Sciences, Faculty of Law, Economics and Social sciences Agdal, Mohamed V University, Rabat Morocco*
[2]*Department of Mathematics, Faculty of Sciences, Ibn TofaïL University, B.P. 133, Kenitra, 14000, Morocco*
Corresponding Author: Elkhaldi Mohammed

Abstract. The purpose of this paper is to develop the Minimax theorem and to demonstrate its conceptual and operational importance by analysing the strategic challenges imposed on Moroccan economic diplomacy.

Date of Submission: 11-07-2019 Date of acceptance: 26-07-2019

I. INTRODUCTION

Game Theory is a systematic study of strategic interactions between rational individuals [12], aware of their goals, and those of other pro tagonists [13]. It constitutes the mathematical theory of strategic be haviors [14]. based on extensive mathematical research in the field of fixed points before being applied to a multitude of fields and scientific disciplines such as economics, international relations, psychology. etc. It is a scientific approach that goes back to the analyzes of Antoine Augustin Cournot (1801-1877) in his famous work ”Research on the Mathematical Principles of the Theory of Wealth” (1838), particularly with regard to the competition of economic agents, their interactions, and the resulting balance. But the real development of game theory was realized by John von Neumann (1903-1957) in formulating the the orem of minimax (1928) which was enriched jointly by von Neumann and Oskar Morgenstern (1902-1977) in their book ”Theory of Games and Economic Behavior” (1940). Gaming research accelerated after the establishment of Nash equi librium(1950) by the American mathematician and economist John Forbes Nash (1928-2015); game theory gradually spreads in the second half of the twentieth century to a multitude of domains, transforming itself into a practical tool at the same time as it is integrated in the analysis of many diverse phenomena [15]. The adoption of modeled game theory has broadened by reaching several scientific fields includ ing those related to competition issues and strategic decision moking.

The work of Robert Ysra¨el Aumann [16] has linked the concepts of game theory to the problems of economic analysis of the market and contributed to the development of the Nash equilibrium by defining the correlated equilibrium (Aumann, 1987). With regard to strategic conflict and international strategic negotiations, the contribution of Thomas Crombie Schelling (1921-2016) was remarkable, notably in his famous book The Strategy of Conflict (1960). The concepts and models of Game Theory become tools favorable to the researchers to give the scientific character to the analysis of the social sciences. This may explain the emergence and expansion of this scientific approach to the point where many researchers have received the Nobel Prize [17] for Economics through their contributions to the development and application of the theory. Our work aims at contributing to scientific efforts in the field of the development of the minimax theorem and applying the outcoming results to the analysis of the Moroccan economic diplomacy, particularly with regard to its strategic and competitive aspect as a new diplomatic practice, adopted by Morocco to face a multitude of economic, political, security challenges, etc. But to what extent can we develop the minimax theorem in this fields? How can we exploit the mathematical analysis of a zero-sum game for the study of strategic games imposed on Moroccan economic diplomacy?

II. NOTATIONS AND PRELIMINARIES

Definition 2.1. *Let E be a complete locally convex space . An element $x \in E$ is said to be a fixed point of a multivalued mapping $T : E \to 2^E$ if $x \in T(x)$.*

Let E be an ordered locally convex space whose topology is defined by a family $\mathcal{P}$ of continuous semi-norms on E, $\mathcal{B}$ is the family of all bounded subsets of E, and Φ is the space of all functions $\varphi : \mathcal{P} \to \mathbb{R}^+$ with the usual partial ordering $\varphi_1 \leq \varphi_2$ if $\varphi_1(p) \leq \varphi_2(p)$ for all $p \in \mathcal{P}$. The measure of noncompactness on E is the function $\alpha : \mathcal{B} \to \Phi$ such that for every $B \in \mathcal{B}$, $\alpha(B)$ is the function from $\mathcal{P}$ into $\mathbb{R}^+$ defined by

$$\alpha(B)(p) = \inf \{d > 0 : \sup \{p(x-y) : x, y \in B_i\} \leq d \ \ \forall i\}$$

where the infimum is taken on all subsets B_i such that B is finite union of B_i. Properties of measure of noncompactness in locally convex spaces are presented in [4, Proposition 1.4].
An operator $T : Q \subset E \to E$ is called to be countably condensing if $T(Q)$ is bounded and if for any countably bounded set A of Q with

$\alpha(A)(p) > 0$ we have

$$\alpha(T(A))(p) < \alpha(A)(p)$$

III. MAIN RESULTS

In the following theorem, we will use the notion of a closed (have closed graph) mapping in the case of a locally convex space. A Hausdorff locally convex space is regular, [6, see Chapter VI, Section 1]

Theorem 3.2. *Let E be a complete locally convex space. Let $C \subset E$ be a nonempty closed,bounded and convex subset, and let $T : C \to 2^C$ be a monotone closed such that $T(x)$ is nonempty closed and convex for every $x \in C$,and $\exists k \in [0, 1[$: $\alpha(T(\Omega))(p) \leq k\alpha(\Omega)(p)$,for all $\Omega \subseteq K$. Then, T has a fixed point $u \in C$.*

Proof. Let $\Omega_0 = C$ and by induction $\Omega_n = \overline{conv}(T(\Omega_{n-1}))$, for $n \in \mathbb{N}$.
Show that $\Omega_n \subset \Omega_{n-1}$ and $\alpha(\Omega_n)(p) \leq k^n\alpha(\Omega_0)(p) \qquad (*)$
Indeed, $\Omega_1 \subset \Omega_0$,and the properties of α give:

$$\alpha(\Omega_1)(p) = \alpha(\overline{conv}(T(\Omega_0)))(p) = \alpha(T(\Omega_0))(p) \leq k\alpha(\Omega_0)(p).$$

So the relationship $(*)$ is checked for $n = 1$.
Suppose this relations is valid to order $n > 1$, so:

$$\Omega_{n+1} = \overline{conv}(T(\Omega_n)) \subset \overline{conv}(T(\Omega_{n-1})) = \Omega_n,$$

and

$$\alpha(\Omega_{n+1})(p) = \alpha(\overline{conv}(T(\Omega_n)))(p) = \alpha(T(\Omega_n))(p) \leq k\alpha(\Omega_n)(p) \leq k^{n+1}\alpha(\Omega_0)(p).$$

follows that $\lim_{n\to\infty} \alpha(\Omega_n)(p) = 0$; donc $\Omega = \cap_{n\geq 0}\Omega_n$ is non-empty and compact [4, see Lemma 2.4]; Ω is convex.
On the other hand,$T(\Omega_n) \subset T(\Omega_{n+1}) \subset \overline{conv}(T(\Omega_{n-1})) = \Omega_n, n \geq 1$.
So, $T : \Omega \to 2^{\Omega}$.
By the theorem 3.1,T has a fixed point in $\Omega \subset C$.

IV. APPLICATION TO GAME THEORY

The triumph of the market economy has led to the return of the role of trade as the main area of competition between nations. Militaryideological conflicts has been transformed into economic and cultural conflict. International conflicts are now essentially of a commercial nature and the conquest of markets has taken the place of territorial conquests. Nowadays, economy directs more and more the international politics[18]. The acceleration of global connectivity and the international market, which has become united in the context of a globalized economy, have encouraged all states to innovate their diplomatic practices and respond to new challenges, particularly those of an economic nature. Economy has become one of the major fields of diplomatic activity [19] . What gave birth to economic diplomacy or rather a ”new economic diplomacy” to indicate this practice that unfolds in an environment born of the end of the Cold War is the acceleration of globalization and the increase of non-governmental actors [20]. This is a new approach to economic diplomacy, which is no longer limited to its punitive aspect as was the case during the Cold War. The Sino-American scientist Shu Guang Zhang has opportunely emphasized the assimilation of economic diplomacy of the Cold War to its negative aspect, namely the use, or threat of use, of economic means against a country for the purpose of weakening it economically and politically [21]. Its object has become much wider and more varied and it has penetrated more deeply into domestic politics [22]. It is a new vision with new goals and new means that challenges the paradigms of international relations and Geoeconomy and creates new realities on the international stage. The economic knowledge and the proliferation of mechanisms for exchange and international cooperation open wide possibilities of action to various actors and allow emerging countries to integrate the various fields of global economic competition. Economic diplomacy, whether of influence or cooperation, is no longer reserved for major economic and political forces; it has become an inevitable reality for all the countries of the world to face the challenges of a globalized economy in permanent mutations. It is in this context that the emergence and development of economic diplomacy in Morocco is taking place. It has become a priority to the diplomatic action of the Moroccan State to mobilize energies, develop partnerships, attract investment, promote the attractiveness of the country, adjust to new positions and intensify foreign trade [23].

It is then a choice of a country that wants to make the economic dimension an essential lever to develop its foreign policy and make it more efficient and effective. For this reason, Morocco integrates its economic means and strategies in all aspects of diplomatic action. At the level of the diplomatic administration, two central directorates of the Department of Foreign Affairs are responsible for international economic cooperation [24]. Besides, the economic advisers have been serving Moroccan embassies since 1983, whose main task is to list the real needs of the Moroccan economy and Morocco’s economic interests abroad. To perfect Morocco’s participation in the Doha Round to defend its national trade interests, Morocco set up the National Committee for Multilateral Trade Negotiations (NCMTN) in April 2002 [25] as a committee to decide on the national strategy based on recommendations issued by the various sectoral negotiating bodies and consultations with the various political, economic and social actors [26]. Morocco’s adherence to mechanisms and standards of global governance has required the involvement of all stakeholders capable of supporting the competitive capacity of Moroccan companies and enhancing the attractiveness of the national market. The partnership between the public and the private sector has become a strategic necessity and the coordination mechanisms between business representatives and the relevant government departments have become important. State and company act together - the first caregiver and supporting the ambitions of the second - in full awareness of each other’s strategic imperatives [27]. Moroccan companies are committed to the actions of economic diplomacy, particularly within the framework of the General Confederation of Moroccan Enterprises (GCEM), because diplomacy is no longer reserved to states. These are the external relation policies of companies and their associations, which become mandatory with the increase of their international role [28]. Moroccan economic actors also contribute to diplomatic actions through the chambers of commerce, industry and service that represent the professionals of the trade, industry and services sectors to international organizations and institutions [29]. Territorial decentralization of power, particularly in the context of advanced regionalization, has given the role of local and regional authorities to diplomatic issues through decentralized cooperation [30] which can be a multiform tool of territorial economic diplomacy of influence and a real territorial marketing as the French-Moroccan decentralized cooperation demonstrates it well. Thanks to the two French laws, the ATR of 1992 and the Thiolli`ere law of February 2, 2006, the French territorial entities lead a real French economic diplomacy of influence in Morocco through the French Development Agency (AFD) [31]. Economic diplomacy then encompasses a multitude of means and opens the door to the various actors for economic purposes; it is a new vision of diplomatic action in the era of the global economy and the surprising acceleration of technological and communication innovation. It is a vision that has changed the aims and methods and the profiles of the staff of the diplomatic apparatus. Economic diplomacy is not limited to the introduction of economic objectives to the traditional questions of foreign policy; it also concerns the innovation of diplomatic practices by adopting methods of economic intelligence and new mechanisms of soft power. The emergence of new diplomatic professions is an important aspect of economic diplomacy; Experts and advisers with economic experience have become real pillars for the implementation of influence strategies. All actors (State, firms, local authorities, civil society, etc.) are called upon to develop strategies and improve decision-making processes to maximize profits and minimize losses. But how can one analyze the behavior of an actor, interpret his decisions or predict his trends without being rational? Despite all the criticisms of rational choice theory, it remains an essential tool for the analysis of the decision-making process; it is an approach based on maximizing the utility of the actor by relating: preferences, action and consequences [32]. The use of rational choice theory is an operational approach that facilitates the understanding and analysis of decision-making processes and strategic interactions of actors and allows the use of mathematical methods to diplomatic questions. But how to exploit the possibilities offered by the game theory to analyse the challenges imposed on the actors of the Moroccan economic diplomacy? how can one examine the conflict situations in which the Moroccan diplomatic actor finds himself? The use of alliances and the strengthening of cooperation measures are not always possible to manage all the competitive situations faced by Moroccan actors in the context of economic diplomacy. A lot of these strategic games are conflicting and zero-sum. The Sahara conflict aggravates and stimulates this conflictuality and incites the adversaries to adopt strategies diametrically opposed to those of Morocco in order to weaken its diplomatic actions. Hence the importance of the minimax theorem as a tool of analysis and reflection to examine the possibility of a balance maximizing gains and minimizing losses.

Suppose MA the Moroccan diplomatic actor is part of a strategic zero-sum game against a strategic competitor SC, and each one of them aims to maximize his winnings and to minimize his losses whatever the preferences of the other and without any intention of cooperation.
A game is a triple (A, B, K), where A, B are nonempty compact sets ([5, page 326]), whose elements are called strategies, and $K : A \times B \to \mathbb{R}$ is the gain function. There are two players, MA and SC, and $K(x, y)$ represents the gain of the player MA when he chooses the strategy $x \in A$ and the player SC chooses the strategy $y \in B$. The quantity $-K(x, y)$ represents the gain of the player SC in the same situation. The target of the player MA is to maximize his gain when the player SC chooses a strategy that is the worst for MA, that is, to choose $x_0 \in A$ such that :

$$\inf_{y\in B} K(x_0, y) = \max_{x\in A} \inf_{y\in B} K(x, y). \tag{4.1}$$

Similarly, the player SC chooses $y_0 \in B$ such that:

$$\sup_{x\in A} K(x, y_0) = \min_{y\in B} \sup_{x\in A} K(x, y). \tag{4.2}$$

It follows

$$\sup_{x\in A} \inf_{y\in B} K(x, y) = K(x_0, y_0) = \inf_{y\in B} \sup_{x\in A} K(x, y). \tag{4.3}$$

The common value in (4.3) is called the value of the game, $(x_0, y_0) \in A \times B$ a solution of the game and x_0 and y_0 winning strategies. It follows that to prove the existence of a solution of a game we have to prove equality (4.3).
For more details on game theory and minimax theorems, we refer to the book of Carl, S, Heikkilä, S [5].
We set that :

$$\phi(x) = \min_{y \in B} K(x, y) = \min K(x \times B), x \in A$$

and

$$\psi(y) = \max_{x \in A} K(x, y) = \max K(A \times y), y \in B$$

And

$$N_y = \{x \in A : K(x, y) = \psi(y)\} \text{ and } M_x = \{y \in B : K(x, y) = \phi(x)\}$$

In the sequel, we consider the measure of noncompactness $\alpha^{\times}(p)$ on a product of locally convex spaces. See [7]

Theorem 4.1. *Let $X_1, X_2, ..., X_n$ be a complete locally convex spaces. Assume that $\alpha_1, \alpha_2, ..., \alpha_n$ be the measure of noncompactness in $X_1, X_2, ..., X_n$ respectively, Suppose $F : ([0, +\infty[)^n \to [0, +\infty[$ is :*

(1) *Convexe.*
(2) *$F(x_1, x_2, ..., x_n) = 0$ if and only if $x_i = 0$ for $i = 1, 2, ..., n$.*

then, for each $D \in \mathcal{B}(X_1 \times X_2 \times ... \times X_n)$:

$$\alpha^{\times}(D)(p) = F(\alpha_1(D_1)(p), \alpha_2(D_2)(p), ..., \alpha_n(D_n)(p)).$$

defines a measure of noncompactness in $X_1 \times X_2 \times ... \times X_n$ where $D_1, D_2, ..., D_n$ denote the natural projection of D into X_i for $i = 1, ..., n$.

Theorem 4.2 ([2, Theorem 3])**.** *Let X and Y be a complete locally convex spaces, Let $A \subset X$, $B \subset Y$ be nonempty compact convex sets. Suppose that $K : A \times B \to \mathbb{R}$ is continuous and*

(1) *for every $x \in A$, the function $K(x, \Delta)$ is convex.*
(2) *for every $y \in B$ the function $K(\Delta, y)$ is concave.*

Then, $\max_{x \in A} \min_{y \in B} K(x, y) = min_{y \in B} \max_{x \in A} K(x, y)$, and The game (A, B, K) has a solution.

Now, we present our theorem.

Theorem 4.3. *Let X and Y be a complete locally convex spaces, Let $A \subset X$, $B \subset Y$ be nonempty closed,bounded and convex sets. Suppose that $K : A \times B \to \mathbb{R}$ is continuous and*

(1) *for every $x \in A$, the function $K(x, \Delta)$ is convex.*
(2) *for every $y \in B$ the function $K(\Delta, y)$ is concave.*
(3) *ϕ and ψ are continuous.*
(4) *$\alpha^{\times}(N_{\pi_{B(Q)}} \times M_{\pi_{A(Q)}})(p) \leq k\alpha^{\times}(Q)(p)$ for any $Q \subseteq A \times B$ such that Q is a countable and bounded set and $k \in [0, 1[$*

Then, $\max_{x\in A} \min_{y\in B} K(x, y) = min_{y\in B} \max_{x\in A} K(x, y)$, *and The game (A, B, K) has a solution.*

Proof. We pose : $C = A \times B$ and $c = (x, y)$.
the product set C is closed and bouned (product of two closed and bounded)
therefore, the following two mapping can be defined by:

$$\begin{aligned} T : C &\to 2^C \\ c &\mapsto N_y \times M_x \end{aligned}$$

whith $c = (x, y) \in A \times B$.
First, we will show that T have the closed graph.
Indeed, Let $\{(x_\alpha, y_\alpha)\}$ be a net in C such that $(x_\alpha, y_\alpha) \to (x, y) \in C$, let $\{(u_\alpha, v_\alpha)\}$ be a net such that $(u_\alpha, v_\alpha) \in T(x_\alpha, y_\alpha)$,
and $(u_\alpha, v_\alpha) \to (u, v)$, We shall show that $(u, v) \in T(x, y)$,

we have :

$$\begin{aligned} (u_\alpha, v_\alpha) \in T(x_\alpha, y_\alpha) &\Leftrightarrow (u_\alpha, v_\alpha) \in N_{y_\alpha} \times M_{x_\alpha} \\ &\Leftrightarrow K(u_\alpha, y_\alpha) = \psi(y_\alpha) \text{ and } K(x_\alpha, v_\alpha) = \phi(x_\alpha) \end{aligned}$$

Since K and ϕ are continuous, for $\alpha \in I$, we will have that :

$$K(u, y) = \psi(y) \text{ and } K(x, v) = \phi(x)$$

So, $(u, v) \in T(x, y)$, which implies that T has a closed graph.
Now, we show T is countably condensing map.
Indeed, Let $Q \subseteq C$ a countable and bounded set,
using the hypothesis (3), we will have :

$$\begin{aligned}\alpha^{\times}(T(Q))(p) &= \alpha^{\times}(\cup_{c\in Q} Tc)(p)\\ &= \alpha^{\times}(\cup_{(x,y)\in Q} N_y \times M_x)(p)\\ &= \alpha^{\times}(\cup_{(x,y)\in Q} N_{\pi_B(x,y)} \times M_{\pi_A(x,y)})(p)\\ &= \alpha^{\times}(N_{\pi_B(Q)} \times M_{\pi_A(Q)})(p)\\ &\le k\alpha^{\times}(Q)(p)\end{aligned}$$

This shows that T is a countably condensing on C.
we easily show that N_y and M_x are convex too by the hypotheses (1) and (2).
So that, by Theorem 3.2, T has a fixed point $c^\star = (x^\star, y^\star)$.
So, we have $c^\star \in Tc^\star = N_{y^\star} \times M_{x^\star}$.
in other words,

$$x^\star \in N_{y^\star} \Leftrightarrow K(x^\star, y^\star) = \max_{x\in A} K(x, y^\star) \ge \inf_{y\in B} \max_{x\in A} K(x, y)$$

$$y^\star \in M_{x^\star} \Leftrightarrow K(x^\star, y^\star) = \min_{y\in B} K(x^\star, y) \le \sup_{x\in A} \min_{y\in B} K(x, y)$$

Taking into account these last two inequalities, we get

$$K(x^\star, y^\star) \le \sup_{y\in B} \min_{x\in A} K(x, y) \le \inf_{x\in A} \max_{y\in B} K(x, y) \le K(x^\star, y^\star)$$

implying

$$\max_{x\in A} \min_{y\in B} K(x, y) = K(x^\star, y^\star) = \min_{y\in B} \max_{x\in A} K(x, y)$$

This completes the proof.

V. CONCLUSION

In the context of economic diplomacy, economic profit is a primary objective that conditions any strategic game especially those with zero sum. That is why each actor should have a set of choices X closed and bounded according to the importance of their economic gains. Economic gain should be an essential and decisive element in dealing with the strategic choices of the actors considering the choices of the competitors and their gains. Despite the conflicting nature of zero-sum games, the solution can only be developed as part of a win-win reconciling pragmatism and rationality.

The mappinf $K : A \times B \to \mathbb{R}$ is characterized by its values $K(x_{\alpha_i}, y_{\beta_j})$ when $\alpha_i \in I$ and $\beta_j \in J$ such that I and J are a ordred sets. This is the reason why such games are called matrix game.

$MA\backslash SC$	B
A	$\begin{pmatrix} K(x_{\alpha_1}, y_{\beta_1}) & K(x_{\alpha_1}, y_{\beta_2}) & \dots \\ K(x_{\alpha_2}, y_{\beta_1}) & K(x_{\alpha_2}, y_{\beta_2}) & \dots \\ \vdots & \vdots & \ddots \end{pmatrix}$

Once the game is represented by a matrix as above, we identify the i^{th} strategy of Morocco with the i^{th} row of the matrix and the j^{th} strategy of strategic competitor with the j^{th} column.
In other words, one regards Morocco as selecting rows and strategic competitor columns.
In this case Morocco loss (or strategic competitor utility) is the entry $K(x_{\alpha_i}, y_{\beta_j})$ appearing in the corresponding row and column of the matrix.
For Morocco, the worst loss $K^{\star}(x_{\alpha_i})$ is the maximum loss in the i^{th} row, i.e.

$$K^{\star}(x_{\alpha_i}) = \max_{y_{\beta_j} \in B} K(x_{\alpha_i}, y_{\beta_j})$$

and a conservative strategy is a row which has the smallest worst loss.

$$K^{\star}(x_{\alpha_i}) = \min_{x_{\alpha_i} \in A} \max_{y_{\beta_j} \in B} K(x_{\alpha_i}, y_{\beta_j})$$

For strategic competitor, the situation is symmetric.
The worst gain $K^{\#}(x_{\alpha_i})$ is the minimum gain in the j^{th} column, i.e.

$$K^{\star}(x_{\alpha_i}) = \max_{y_{\beta_j} \in B} K(x_{\alpha_i}, y_{\beta_j})$$

and a conservative strategy is a row which has the smallest worst loss.

$$K^{\star}(x_{\alpha_i}) = \min_{x_{\alpha_i} \in A} \max_{y_{\beta_j} \in B} K(x_{\alpha_i}, y_{\beta_j})$$

For strategic competitor, the situation is symmetric.
The worst gain $K^{\#}(x_{\alpha_i})$ is the minimum gain in the j^{th} column, i.e.

$$K^{\#}(y_{\beta_j}) = \min_{x_{\alpha_i} \in A} K(x_{\alpha_i}, y_{\beta_j})$$

and a conservative strategy is a column which has the largest worst gain

$$K^{\#}(y_{\beta_j}) = \max_{y_{\beta_j} \in B} \min_{x_{\alpha_i} \in A} K(x_{\alpha_i}, y_{\beta_j})$$

Competing interests:
The authors declare that they have no competing interests.

ACKNOWLEDGMENT

This work is dedicated to the memory of my dear son Ziyad Azennar, may God have mercy on him.

REFERENCES

[1]. Radouane Ziyad Azennar, Common fixed point theorems for single and multivalued mappings in complete ordered locally convex spaces. Math-Recherche et Application, Vol.16, (2017-2018), pp. 46-54
[2]. Ky Fan, Fixed-Point And Minimax Theorems In Locally Convex Topological Linear Spaces, Departement Of Mathematics, University Of Notre Dame Communicated by John von Neumann, December 13, 1951.
[3]. K. Deimling, Nonlinear Functional Analysis. Springer-Verlag (1984).

[4]. A. Hajji, E. Hanebaly, Commutating mappings and α-compact type fixed point theorems in locally convex spaces, Int. J. Math. Anal. 1 (2007), 661-680.
[5]. Carl, S, Heikkil¨a, S: Fixed Point Theory in Ordered Sets and Applications: From Differential and Integral Equations to Game Theory. Springer, New York (2010)
[6]. R. Engelking, General Topology, 2nd ed., Sigma Series in PureMathematics, vol. 6, Heldermann, Berlin, 1989.
[7]. J. Banas, K. Goebel, Measure of noncompactness in Banach spaces, 60 Dekker, New York, (1980).
[8]. S. COBZAS, Fixed Point Theorems in locally Convex Spaces the Schauder Mapping Method,Hindawi Publishing Corporation Fixed Point Theory and Applications Volume 2006, Article ID 57950, Pages 1–13 DOI 10.1155/FPTA/2006/57950
[9]. Nash, JF: Equilibrium points in n-person games. Proc. Natl. Acad. Sci. 36, 48-49 (1950)
[10]. Espaces topologiques, fonctions multivoques - Claude Berge
[11]. J. vonNeumann, Uber ein okonomisches Gleichungssystemund eine Verallgemeinerung des Brouwerschen Fixpunktsatzes, Ergebnisse eines Mathematischen Kolloquiums 8 (1937), 73–83 (German).
[12]. Leyton-Brown, K, Shoham, Y. (2008). Essentials of game theory: A concise, multidisciplinary introduction. San Rafael, Calif (1537 Fourth Street, San Rafael, CA 94901 USA): Morgan Claypool Publishers.
[13]. GABRIELLE DEMANGE DELTA, JEAN-PIERRE PONSSARD (1994). Th´eorie des jeux et analyse ´economique. coll (´economie),presses universitaires de france.p.09
[14]. Nicolas Eber(2013). Th´eorie des jeux, Dunod, Paris, p.06(128pages).
[15]. Gethin, Amory. Apports et limites de la th´eorie des jeux , Regards crois´es sur l'´economie, vol. 22, no. 1, 2018, pp. 68-71.
[16]. Robert Ysrael Aumann is an American-Israeli mathematician and economist, born in 1930.
[17]. Nobel Prize in Economics, 1994: John Nash, Reinhard Selten and John Harsanyi Nobel Prize in Economics, 2005: Thomas Schelling and Robert Aumann Nobel Prize in Economics, 2007: Leonid Hurwicz, Eric Maskin and Roger Myerson Nobel Prize in Economics, 2012: Alvin Roth and Lloyd Shapley Nobel Prize in Economics, 2014: Jean Tirole
[18]. Eric Den´ec´e (2011). Diplomatie ´economique et comp´etition des Etats, ´ G´eo´economie, 2011/1 (n 56), p. 71-78., p.71
[19]. C.CHAVAGNEUX(1999). La diplomatie ´economique : plus seulement une affaire d'Etats, Pouvoirs n 88 - La politique ´etrang`ere aujourd'hui - janvier 1999 ´ - p.33-42
[20]. Badel, Laurence. Pour une histoire de la diplomatie ´economique de la France , Vingti`eme Si`ecle. Revue d'histoire, vol. no 90, no. 2, 2006, pp. 169-185.
[21]. Laurence Badel(2010). Diplomatie et grands contrats : L'Etat fran¸cais et les ´ march´es ext´erieurs au xxe si`ecle, Publications de la Sorbonne, p.13
[22]. Szatlach, M. E. (2015). The importance of economic diplomacy in the era of globalization (the case of China).
[23]. Speech of King Mohammed VI at the Conference of Ambassadors, 30.08.2013
[24]. The Directorate for Economic Promotion and Cooperation and the Directorate for Multilateral Cooperation and International Economic Affairs.
[25]. Mouna KADIRI, OMC/Cancun: Des enjeux qui inqui`etent.., l'´economiste, Edition N:1562 Le 16/07/2003, http://www.leconomiste.com/article/omccancun-des-enjeux-quiinquietent8230-0, consult´e le 25-06-2016.
[26]. Mission Permanente du Royaume du Maroc aupr`es de l'Office des Nations Unies et des autres Organisations Internationales `a Gen`eve, Le Maroc et le cycle des N´egociations Commerciales Multilat´erales de Doha, http://www.missionmaroc.ch/fr/pages/102.html.
[27]. Pascal Lorot(2009).De la g´eopolitique `a la g´eo´economie. G´eo´economie 2009/3 (n 50), p. 9-19. DOI 10.3917/geoec.050.0009 P.06.
[28]. Claude Revel, LA DIPLOMATIE ECONOMIQUE AU COEUR ´ DE L'INFLUENCE, http://www.clauderevel.com/wiki/tiki-download- file.php?fileId=70. Consult´e le 06/10/2016.
[29]. Loi n 38-12 portant statut des chambres de commerce, d'industrie et de services, article 03.
[30]. Organic Law No. 113-14 relating to municipalities, Art 86, Official Bulletin No. 6440 of 09 Joumada I 1437 (February 18, 2016).
[31]. Mohcine Karzazi. La coop´eration d´ecentralis´ee franco-marocaine : entre coop´eration au d´eveloppement et diplomatie ´economique d'influence. Droit. Universit´e de Cergy Pontoise, 2013. Fran¸cais.p.269

[32]. Jean-Yves Haine, Rationalit´es et relations internationales: l'inaccessible synth`ese , Cultures et Conflits [En ligne], 36 — hiver 1999 - printemps 2000, mis en ligne le 20 mars 2006, consult´e le 06 f´evrier 2019. URL : http://journals.openedition.org/conflits/310 ; DOI : 10.4000/conflits.310
[33]. Moroccan initiative for negotiating an autonomy statute for the Sahara region", 11-04-2007.

IOSR Journal Of Humanities And Social Science (IOSR-JHSS) is UGC approved Journal with Sl. No. 5070, Journal no. 49323.

Elkhaldi Mohammed. " Moroccan Economic Diplomacy in the Light Of Game Theory." IOSR Journal of Humanities and Social Science (IOSR-JHSS). vol. 24 no. 07, 2019, pp. 65-74.