

The Greek Government's Pandemic Policy towards Covid-19 as a Parameter of Political Competition through Different Media Channels. Game Theory Application as a Conceptual Framework for the Decision Making Process

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Doi: [10.19044/esipreprint.1.2023.p489](https://doi.org/10.19044/esipreprint.1.2023.p489)

Approved: 28 January 2023
Posted: 30 January 2023

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Cite As:

Markaki E. & Chadjipadelis T. (2023). *The Greek Government's Pandemic Policy towards Covid-19 as a Parameter of Political Competition through Different Media Channels. Game Theory Application as a Conceptual Framework for the Decision Making Process*. ESI Preprints. <https://doi.org/10.19044/esipreprint.1.2023.p489>

Abstract

This research is initially a conceptual framework of how we can use game theory as a tool to represent **the Greek government's pandemic policy towards Covid-19**. With this approach, we can investigate the political competition in different units of time (periods) and understand the differences and the decision-making process as a result of a general strategic political marketing plan and leadership style. We can also assess how citizens viewed the handling of the pandemic and how public opinion was formed about prevention and protection measures, and we can understand how the positive outcome evolves over time, taking into account other measurements such as public opinion surveys. We give an example of how we combine the data and use it in the game theory representation in matrix tables.

Keywords: Covid-19, game theory, public opinion, decision making process, leadership, political marketing

Coronavirus and the international response

In 2020, humanity will be afflicted by a serious disease that mainly affects the respiratory system and sometimes leads to death. This disease has

been named by experts as Coronavirus or, as it is called in English, Covid-19. The entire population is under the impression that coronavirus is an emerging disease, but this is not true. In fact, coronaviruses are a category of viruses that have been known to the scientific community for decades. However, in December 2019, a new type of coronavirus, SARS-CoV-2, emerged in the Chinese city of Wuhan, causing an acute respiratory illness that has hit the entire planet in a big way.

From the first moment of the outbreak of this pandemic, most countries reacted with the aim of minimizing the consequences both at the health level and at the economic and social level. For example, the European Union rushed to create a European Vaccination Certificate to encourage vaccination of all European citizens, and then used funds to try to rebuild Europe before the pandemic to reduce as much as possible the economic damage to businesses and weak countries States (European Council - Council of the European Union, 2020). A similar policy is being followed by the United States of America, which is also trying to promote the vaccination campaign while preventing as much as possible the economic consequences of the lockdown that has hit the American continent hard (White House, 2020). Countries such as Israel have made vaccination of their citizens a priority and have been pioneers in rapidly increasing vaccination of their citizens (Ethnos newspaper, 2021).

China, on the other hand, the country from which the coronavirus spread, has a stricter policy compared to the rest of the world. All citizens are locked up as if in a prison, and those who test positive for the virus must undergo daily tests and are confined to their homes or to facilities called "white cells." The vaccination campaign is also being promoted there, but with different vaccines than in the Western world. Although China's citizens have been deprived of their freedom by this cruel lockdown, the Chinese government demonstrates to the World Health Organization very low rates of positive viral tests compared to other countries that are much smaller in area and population than China (the bmj, 2020).

It seems that the whole planet, governments and the world health system were not prepared for a pandemic, since something similar had not occurred for decades. This attitude of the world community, as well as the fact that there is no action protocol that could be implemented in the event of a pandemic to drastically limit the spread of any infectious virus, can in a sense be attributed to the negligence of these responsible or the naive optimism that through scientific progress the possibility of a pandemic has been confirmed, but even if it occurs, medical science will be able to manage it immediately. The above weaknesses were highlighted by the fact that there was no common plan of action to deal with COVID -19 and governments found themselves in the awkward position of taking action against the spread

of the virus while bearing the cost of possible success or failure and thus political responsibility. Thus, other governments preferred to achieve herd immunity, while others indulged in restrictions such as lockdown. However, if one looks at the evidence base, one finds that almost no state consistently used either option, but rather used both in succession. In terms of personal protective measures, they are almost universally the same and include the use of a surgical mask or FFP2 for greater safety as suggested to prevent coronavirus rather than the first as commonly believed in public opinion, in public and private places where people are, frequent hand disinfection with antiseptic solutions, and good ventilation. In addition, vaccination is the main weapon against the coronavirus, as it protects not only the vaccinated but also the community; unfortunately, as mentioned above, conspiracy theories also touched on this part, with some emphasizing the dangerousness of the vaccine, which they support in grotesque scenarios that touch the limits of exposure to public health. Those who spread such messages run the risk of endangering the public (Iatronet.gr, 2020).

The collective measures taken by governments were either herd immunity, i.e., support for the health system and individual prevention, without a lockdown with the aim of spreading the virus to as many citizens as possible without being prosecuted, with the result of creating immunity for the entire population, or interdiction, which included restrictions on movement, the wearing of masks in various places determined by the internal legislature, the imposition of fines on those who violated the restrictions, and so on.

Greece - coronavirus and political competition. A brief note

In Greece, the first case of coronavirus broke out in February 2020, and since then the government has always tried to take measures against the pandemic based on the advice of scientists. Some of the measures taken in Greece include the use of antiseptics, wearing a mask on public transport and in crowded places, and, most importantly, vaccination for all, while e-learning and teleworking were used during the country's intense epidemiological phases (Covid19.gov.gr, 2022). From the outbreak of the pandemic in the country until now, the ruling party has been New Democracy, which follows a liberal course in its policies and on this basis tries to support the measures against COVID -19. Thus, the opposition parties (Syriza, Kinal, KKE, MERA25 and Elliniki Lysi) most often react to the government's decisions and put forward their own plans to combat the virus.

The New Democracy government is politically self-sufficient and can therefore pass the bills it introduces in parliament without any particular difficulty. The situation is similar in dealing with the pandemic. It is a fact,

however, that the government's actions and the publicly expressed positions of certain political or non-political actors close to the party were contradictory, causing part of the population to become alarmed and lose confidence in it. Opposition parties, led by the leaders of the country's second largest electoral party, Syriza, and the party Greek_Solution, which is positioned between the right and the extreme right, took advantage of this circumstance and did not hesitate to criticize the ruling party regarding its options for dealing with the pandemic. Of the opposition parties closest to the government, KINAL was positive, while MERA25 also took a negative stance. KKE is accustomed to generally rejecting government measures, regardless of which party is in power, and made no exception in this case. Finally, as mentioned above, some government manipulations regarding COVID -19 have fed both conspiracy theorists and ordinary citizens, whose confidence has been shaken to defend science and political will and to establish the anti-vaccination movement, which is dangerous for public health.

Significantly, Nea Dimokratia government spokesman Giannis Economou states that “*Syriza has chosen a corrupted opposition practice regarding the pandemic, both in content and style*”, trying to convince people that the Nea Dimokratia government is the only capable government that can lead the country to "herd immunity" through its measures (Skai, 2021). Even the president of the Panhellenic Medical Association, Athanasios Exadaktylos, in a speech at a Nea Dimokratia conference, stresses that the pandemic did not hit Syriza, pointing out that if Syriza had taken pandemic measures, the situation would be much worse (Voria.gr, 2022). Tassos Evangeliou, in an article in the electronic newspaper Liberal, considers Syriza unfit to deal with the pandemic and only knows how to blame the government for its decisions (Evangeliou, 2021). The journalist of "Kathimerini", Antonis Anzoletos, commented on the fact that Syriza, instead of cooperating with the ruling party, chooses to resist and complicate the work of the government only for ideological reasons (Anzoletos, 2021). On the contrary, there is a part of the people who trust Syriza and share their concerns with the largest opposition party, such as some doctors who are on the front line of the pandemic and who register thousands of shortages in public hospitals. Therefore, they believe that the change of government will only bring positive results in the fight against the pandemic (Kokkaliari, 2021; Documento, 2020). Of course, there is also a part of the citizens that holds the government and the opposition equally responsible for the decisions and actions taken to deal with the pandemic. In a commentary for Athens Voice, Manos Voularinos accuses the government of obstructing decision-making, but also the official opposition of preventing citizens from getting vaccinated against the coronavirus, thereby isolating them

economically (Voularinos, 2021). There were short-term strategies of politicians who longed to be elected or re-elected without thinking strategically about the impact of COVID -19 in the future (AntInews.gr, 2021; Protothema.gr, 2021; Tovima, 2021).

The Game theory

Game theory first appeared in the early 18th century, gained popularity, and did not become an independent scientific discipline until the mid-20th century.

Century to an independent scientific discipline. This theory, which has been recognised as an independent field of research since 1928 with the studies of Neumann and Morgenstern, was first applied to economics in 1944.

In game theory, the focus is on the strategic interdependence of players in competitive environments with zero- or non-zero-sum games (Osborne, 2010).

In game theory, the "opponents" are players who decide each other's strategies and actions. In this situation, the strategies are either pure strategies - each player chooses a single strategy - or mixed strategies - a combination of many techniques with different frequencies. There are some general assumptions in game theory. Players ("opponents") are assumed to be logical and uncaring. They are motivated solely by the desire to defeat their adversary (Osborne, 2010). Players ("opponents") are assumed to be logical and uncaring. They are motivated solely by the desire to defeat their opponent. Each player follows the "principle of common knowledge," which states that each player knows the options available to both him and his opponent. Finally, there is no cooperation for mutual support, as players simultaneously apply strategies without being aware of each other's actions.

The Nash equilibrium is another key concept in game theory and was so named by mathematician John Forbes Nash. When there are two or more opponents, "non-cooperative games" can be strategically solved using Nash equilibrium. The Nash equilibrium provides a strategy profile a^* that is the best option for player I and the best alternative if player I chooses something other than $a^* i$.

Game theory has impacted the development of many disciplines, including microeconomics, macroeconomics, engineering, biology, and sociology and political science. Competitive games also exist in the business world and in election campaigns between candidates of different parties (Kreps, 1990).

Each game has its own set of guidelines and tactics from which players can choose, leading to specific outcomes.

Three of the most important game-determining factors are rules, strategy, and interaction. Outcomes can result from the players' interrelated actions. At least two decision makers interact at any time during the game. The decisions made during the interaction are strategic, mutual, and interdependent. By applying game theory to these interactions, mathematical principles are used in the decision-making process.

Kreps (1990) claims that game theory enables economists to provide more accurate explanations and forecasts. In addition to its advanced mathematical applications in politics, it can also provide political science explanations.

Leadership as an Indicator of the Decision-Making Process

Studying the primary factor that ensures humanity's survival in the current era, which has been greatly altered by the COVID -19 pandemic, could be a path to a robust, albeit difficult, future. Although the current global scenario is largely unknown, certain carefully crafted and implemented solutions have contributed to the sustainability of the essential aspects of a modern lifestyle. However, the crisis will not be solved without a vision and a healthy attitude towards progress and development. And one of them, leadership, has been a key factor in the realisation of all these facts for quite some time (Nikolaou & Markaki 2021).

A simple definition of leadership is "a method of social influence by which a person can enlist the assistance and support of others in the fulfilment of a common task" (Chemers, 1997). Because it is a social act, it is closely associated with the growth of all civilizations, and leaders exhibit a variety of characteristics that have been extensively studied and observed. "The great leader," said Henry Miller, "has no desire to lead; he is satisfied to guide the way"

Methodology

This research aims to examine political competition using game theory in the context of government action against COVID -19 and the reactions of competing political parties and the mass media. To obtain data on measures against COVID -19, we used the Government Response Tracker (OxCGRT). From this, we created an Excel file with the following information:

We documented the week in which the measurements were taken. We recorded the date. We recorded the C-index, which refers to general or collective action against the pandemic. This indicator has 8 measurement levels, which we coded as follows:

- 0/1 = low or medium (0-11)

- 2 = high (12-16)

We recorded indicator H, which refers to personal hygiene measures. It has six measurement levels, which we coded as follows:

- 0/1 = low/medium (0-8)
- 2 = high (9-12)

These two coding levels were used to define the government's strategy in each iteration of the game. In this work, we used only column C. We considered an iteration of the game each time the measures changed significantly between 2/2020 and 4/2022. We have a game with 97 repetitions, as many as the annual Sunday editions of newspapers. For simplicity, we examine 54 of the 97 weeks, i.e., every two weeks. The Sunday editions of the newspapers were selected, and the articles in the electronic media were examined during those weeks. The 25 sources used in this study are the following: Documento/Estia Sunday edition/Kyriakatiki Kontra/Macedonia/Political.gr/Free Sunday/Free Time of Sunday/Free Press of Sunday/Zougla.gr/Makeleio.gr/Avgi of Sunday/Kathimerini of Sunday/Kyriakatiki /Republic/Capital.gr/Cnn.gr/ BAM in reportage/O Logos tis Kyriakis /Proto Thema/in.gr/Cosmos.gr /real news/To Vima Tis Kyriakis/To Paron/iNews. GR /Pronews. GR).

In examining the cited sources, we recorded the number of positive reports compared to the total number of reports on all opposition parties we considered. As a reference, we define the way in which the press comments on a party's stance on the measures. E.g. Kinal may disagree with a measure and the press praises it. This is a positive reference.

After collecting the information, the games are formed based on our teams with the following players:

- ND –Syriza
- ND –Kinal
- ND –Elliniki Lysi
- ND –MERA 25
- ND –KKE

First, for each iteration, we mark the government's reference level based on the calculations we performed, which are included in the Excel file on the oxford tracker sheet in the column with the C code. Then, for each opposition party, we note its attitude as rated us. If the negative attitude predominates, its attitude is "I disagree," if the positive predominates, "I agree," and if they are divided, "neither-nor".

The value of the game is the sum of the positive reports from all sources to the total references for the week, which we check for each iteration, i.e., for each week. For example, if we have 3 positive references

for a total of 5, the result will be the ratio 3/5, i.e. 0.6. At the end, after we have sum all the iterations, we will collect all the numbers in a table to get the average.

We have to make sure that in each cell of the game matrix we put the average of the percentages, that is, if in one iteration it is 3/5 and in another iteration it is 10/30, the value will be $(0.6 + 0.33)/2$ and not 23/35. Then we work on the finished board.

- A) There is a point of equilibrium;
- B) If not, we look for dominant and dominated to arrive at a 2x2 game.
- C) We solve with the mixed strategy methodology

Example of use – result

In the following, we briefly present an example to show how to calculate the final tables using the above games of political competition. Let us assume that this is the game between the government and MERA 25. In the table below we can see the final assignments of the references studied.

Table 1. Game with odds between the government and MERA 25

		MERA 25	
		Disagreement	Agreement
GOVERNMENT	Low/Medium Measure	0,10 Maximin, Minimax	0,15
	High Measure	0,01	0,25

First, we can see that there is an equilibrium point in this game. That is, we can see that Maximin and Minimax are the same number. In this case, the solution of the game lies in the confrontation of "low to medium measures" for the government and "disagreement" for the opposition party.

This table shows that when the government takes low-medium intensity measures and the opposition party disagrees, the party receives positive reports in only 10% of media references. The government accounts for the remaining 90% of positive references.

In the table below, we see the percentages of players who solve the game. The cutoff for determining which player wins or loses is 50%. Thus, the numbers in the tables indicate the difference between the percentage of positive references and 50%. If the numbers are above 50%, then the government is off the hook.

Table 2. Game to solve the game between the government and Day 25

		MERA 25	
		Disagreement	Agreement
GOVERNEMNT	Low /Medium Measure	40	35
	High Measure	49	25

In this example, the government wins in terms of public opinion and handling of the pandemic, since the percentage is less than 50%. Similarly, mixed strategies and other games will be also examined.

Discussion

This research is initially a conceptual framework for an important analysis that will be conducted with a greater concentration of data and many iterations of games of political competition for all parties with respect to government until it is presented in a final form.

Given the difficulty of finding data and statistics on the spread of the pandemic, on how the virus enters the human body, and finally deciding on response measures, the gradual model offered the Greek government the opportunity to adapt to the current phase of the pandemic. And when we refer to adaptation, we mean the measures that the government had to design and implement each time based on the experts who analysed the epidemiological data. It is worth noting that, perhaps for the first time, there was a particularly close relationship between public policy and the advice of health scientists who were not - at least not all, but certainly not all - in the political arena of the fight. Of course, this situation was most evident in the early stages of the spread of the virus, when politicisation of the issue was impossible. Impossible because the data were incomplete and public health took precedence over all other data.

In Greece, during the major crises, whether they affected the political, economic or social space, which are essentially intertwined, the incremental model was applied. That is, in colloquial terms, the application of the logic of "seeing and doing."

Later, when the first decline of the pandemic was recorded and societies around the world suffered, it was logical that different views on the mitigation of the pandemic and the presentation of different models to solve its spread gradually emerged (The White House, 2020).

Significant efforts have been made at both the intergovernmental and national levels to stop the spread of the pandemic, and no doubt we owe them to some extent the turnaround of the last few months and, of course, the

saving of many lives. However, all important issues that are of relative duration in modern societies tend to be politicised as they influence political actors in devising tactics to deal with them. In politics, when an issue is at the top of the government's agenda for an extended period of time, certain things are known to be at stake that political parties must deal with by developing their own policies to both mobilise their voters or attract young people and solve the problem (Consilium.europa.eu. COVID-19, 2022).

With this approach we can investigate the political competition in different units of time (periods) (Chadjipadelis, 2022, 2023) understanding the differences and the decision making process as a result of a general strategic political marketing plan and leadership style (Nikolaou & Markaki 2021). We can also assess how citizens viewed the management of the pandemic and how public opinion was formed on prevention and protection measures as well as understand how the positive outcome evolves over time, taking into account other measurements, such as public opinion surveys (Markaki & Chadjipadelis 2023; Markaki & Chadjipadelis 2017).

Acknowledgement

We thank Kyriaki Nikolaou, Pre IB Student at St. Catherine's British School (Statistics, Economics, History) for her contribution in data collection and translation of the following research paper into English.

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