

Spatial Model

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The median voter theorem and the possible social change:

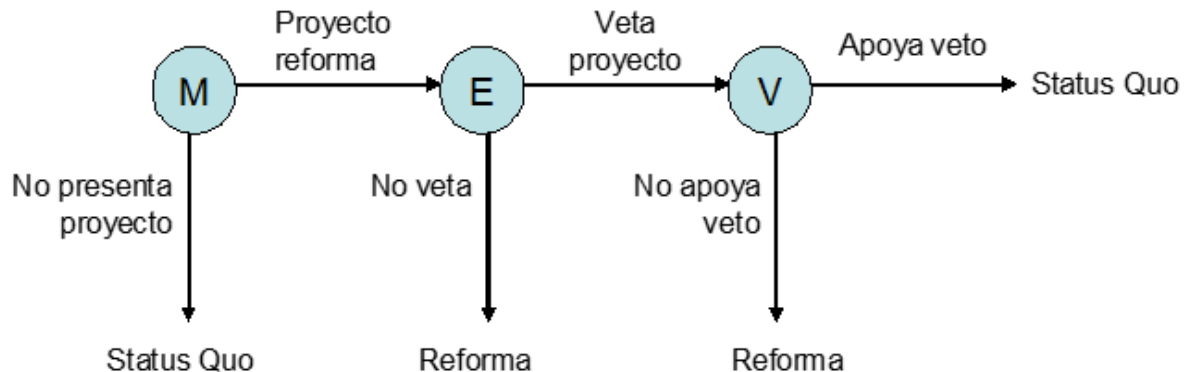
Any group of people that must make collective decisions (for example, a group of citizens or a parliament) imposes more rules on themselves than simple majority to avoid instability in their decisions (why?).

Unfortunately, to satisfy that desire for more stability through more rules, sometimes, those human groups must give up their ability to introduce changes to the status quo they are living in. There are three possibilities:

- (i) When is it possible to reform the status quo and implement what the majority wants?
- (ii) When is only a partial reform possible?
- (iii) When is it not possible to introduce reforms to the status quo?

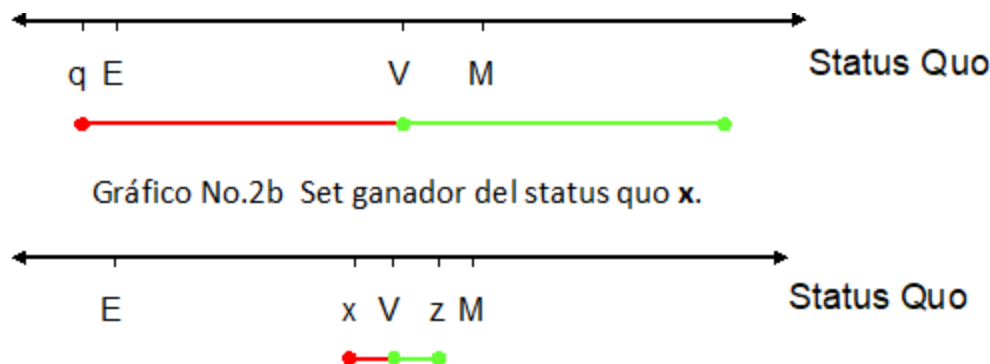
The game we will analyze in this note is summarized in its extensive form in graph 1. A parliament must determine whether to introduce a change (bill) to the status quo. If it decides to present the project and approves a change to the status quo, the executive can veto the project. If the executive does not veto the project, the reform occurs. On the contrary, if it vetoes the project, the parliament can still overturn the veto. To do this, it needs 2/3 of the parliament to be against the veto. If the marginal voter (pivotal voter) supports the president, the project is rejected, and the status quo is maintained. Otherwise, the reform occurs.

Graph 1 - The Game



What graph No. 1 does not show is: what is the bill that will be debated in the parliament? Before that, let's answer the following question: given a status quo, what reforms could be implemented? If q represents the status quo, M the median voter, E represents the executive power, and V represents the proportion of the parliament that can reject the presidential veto, the answer can be understood with graphs like the following (2a and 2b), where we are assuming that we know the preferences of the different political actors.

Graph 2 - Condorcet winners



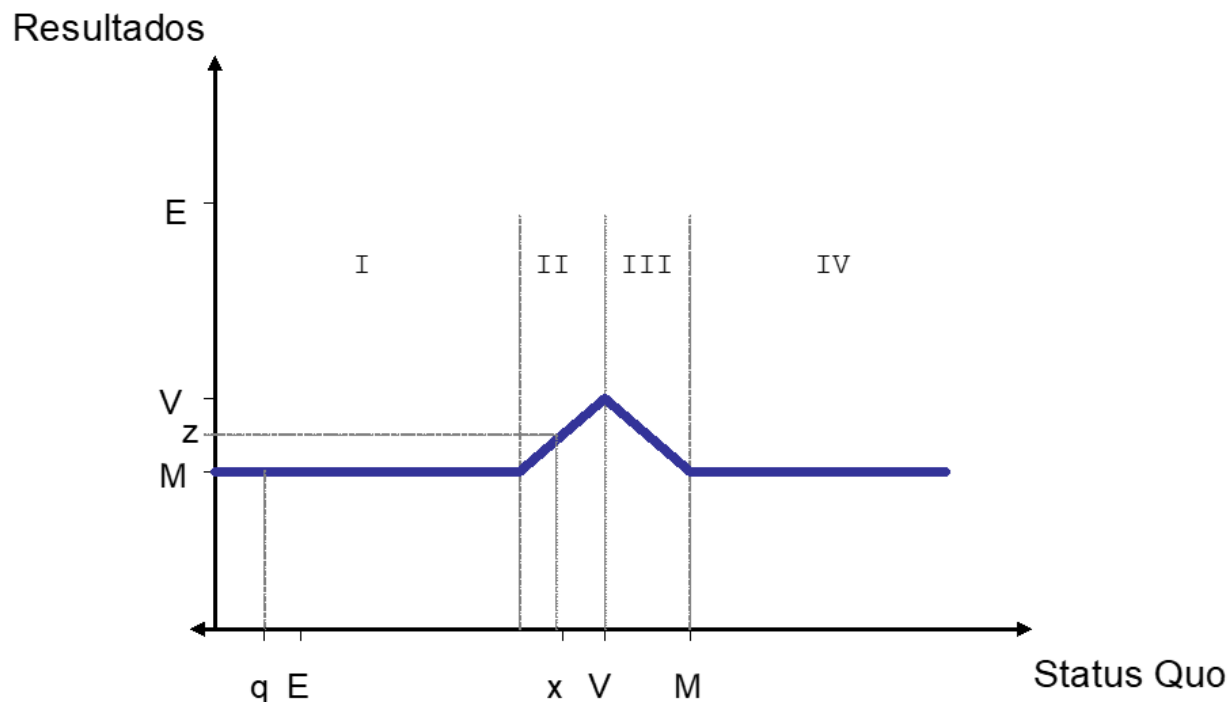
The logic is as follows: for the status quo q in graph 2.a and x in graph 2.b, the voter who can provide the quorum to overturn the presidential veto would prefer any alternative located on the red and green segments. Therefore, if the president vetoes, his veto will prevent the reform if and only if the proposal made is outside those red and green segments. Knowing this, the median voter must propose a reform that is within those segments. As the proposal that the median voter of the congress (M) would most like is in that range of possibilities in graph 2.a, but not in graph 2.b; the parliament will propose their ideal in the first case, but not in the second case.

Let's repeat it with more details:

If the status quo is q , then all points on the red and green lines represent projects that would win against the status quo if they are presented for a vote. Why? Because even though the executive can veto them, all those points are closer to the ideal of the voter who can overturn the presidential veto than the status quo is. The set of these points corresponds to the Condorcet Winner Set of q . On the other hand, if the status quo is x , the projects that could beat it are fewer and are also identified by the union of all points on the red and green lines in graph No.2b. In the same way, we can identify (for this game and for each status quo) all possible projects that would beat the status quo. The remaining question to answer is which of those projects will finally be discussed and put to a vote. As seen in graph No.2a, the ideal project for the median voter of the parliament would beat the status quo if it were q , but it would not beat it if it were x (why?). Therefore, a rational parliament would present its ideal project for a vote in the case that the status quo is q , but it would not do so if the status quo is x . In the latter case, it would present a project z that leaves voter V indifferent between the status quo and the reform project. Such a project would be the best the parliament could do to maximize its own welfare.

This "parliamentary sophistication" to distinguish which project to present in each possible scenario is what is summarized in graph 3. On the horizontal axis, we present all possible status quos, as well as the ideal points of the executive (E), the median voter (M), and the pivotal voter (V). The vertical axis presents the expected equilibriums of the game. As we saw before, if the status quo is at point q (to the left of the executive's ideal point), the parliament can introduce a reform that leaves the median voter of the parliament at their maximum happiness (M). Why? Because even though the Executive will veto the project, the parliament can overturn the veto because the pivotal voter is better off with the reform than with the status quo (i.e., will not support the Executive). Therefore, if we are at point q on the horizontal axis, we will be at point M on the vertical axis. In other words, our prediction should be that the parliament will be able to change the status quo and impose the "sentiment of the majorities". On the contrary, if the status quo is x , the parliament can only achieve a partial reform from x to a point like z . In the same way, we can identify all possible reforms in this game. They are summarized in the blue line of graph No.3

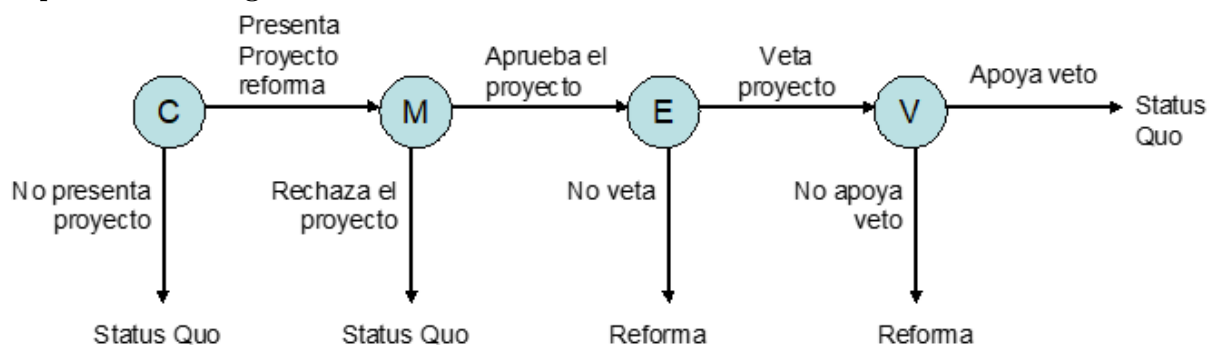
Graph No.3 – Expected results of the game for each possible status quo



We can identify four areas in the graph. Areas I and IV correspond to status quos that can be completely changed by the parliament. If the status quo is in these areas, our prediction should be that a reform can be made that leaves the median voter of the parliament at their maximum happiness. On the contrary, when the status quo is in area II, the reform can only be partial (as in the case of x). Finally, area III shows the cost of having more rules than the simple majority. In this area, it is not possible to make reforms. If the status quo is between V and M, then the Condorcet Winner Set of that status quo will be empty. Why? Because the majority of the parliament would wish to change the status quo, but the executive would veto it, and the pivotal voter would support the executive. We call this area gridlock.

Now, bills are not voted on directly in the plenary session of a Congress. Before that, the project is studied in legislative committees. How does the analysis change if we consider a legislative committee that must study a legal initiative and decide whether to submit it to parliamentary vote or not? The game now includes one more actor and is summarized in graph No.4.

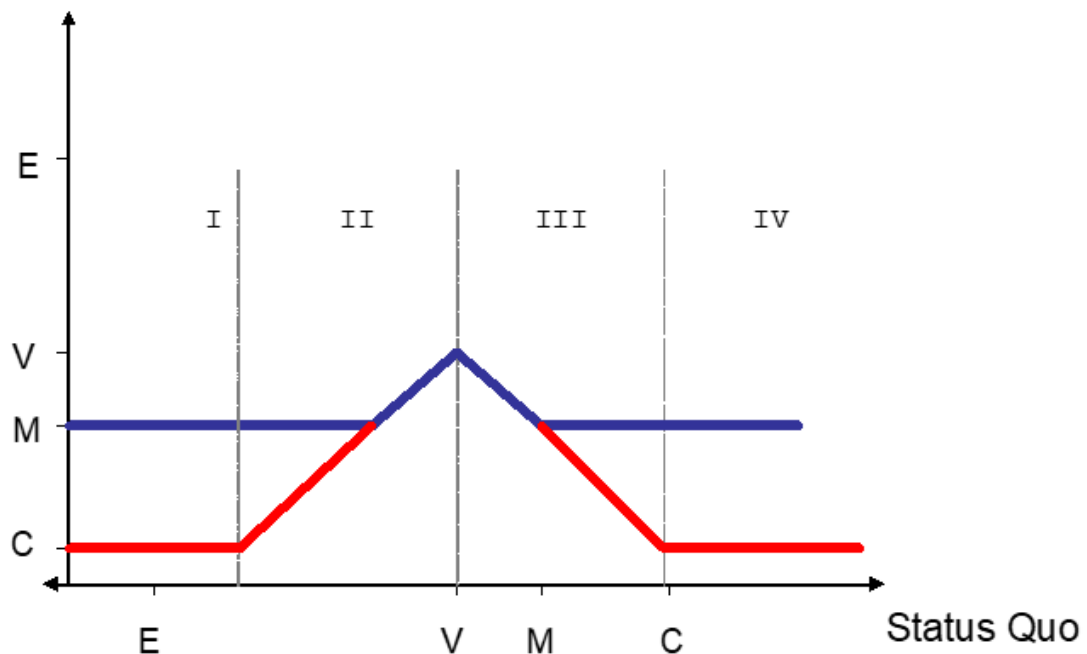
Graph No.4 – The game modified with the introduction of a committee



The impact on the outcomes of incorporating one more actor into the game is reflected in graph No.5. The red lines show the results of the modified game. There are three changes. First, area II is now larger. That is, there are more status quos for which only a partial reform is possible. Second, area III is also larger. That is, there are more status quos for which no reform is possible. Finally, in areas I and IV, the expected results are that the status quo will be reformed not up to M but up to C.

Graph No.5 – Results of the Modified Game

Resultados



In summary, the incorporation of an actor C with the capacity to decide what is subject to debate and what is not shows a significant change in the expected outcomes. As the only thing that has changed is the introduction of one more political actor with decision-making power over what should or should not be voted on, we must conclude that this actor has power. A special power. A power that derives, precisely, from their privileged position as a gatekeeper (actor responsible for deciding what is voted on and what is not).

Exercise:

0. Conduct the same analysis assuming there was an election and the president changed. And now the political actor E is on the other side of the political spectrum.
1. How does the analysis change if the parliament is not unicameral (as proposed here) but bicameral, and the president has a minority in one chamber but not in the other?
2. Suppose the executive has an extra faculty: the ability to determine the urgency with which a bill must be treated in parliament, how does that information alter the previous analysis?
3. Now suppose that in the initial problem there is also a parliamentary committee that must study the bill and present it for parliament's vote. Evaluate in which situations the existence of this committee could have an impact on the final outcome regarding whether or not reforms to the status quo occur.

Now we have the required tools to think analytically on politics. Hereafter we will move to put into practice those tools. In this section of the course our task is focused on four points that will be overlapped one with the other.

Analyzing Classic Social Dilemmas in Politics:

This part focuses on exploring fundamental social dilemmas, such as the Prisoner's Dilemma, the Tragedy of the Commons, and the Free Rider problem, within the context of political decision-making. Your task will be to identify how these dilemmas manifest in politics, obstructing collective goals and complicating governance.

Case: Navigating the Waters of Climate Change Action Agreements

The United Nations Climate Conferences, held annually, serve as the premier global forum for nations to discuss and negotiate agreements aimed at mitigating climate change. Despite a shared understanding of the urgent need to reduce greenhouse gas emissions, reaching consensus on the specifics of these agreements often proves challenging. The complexity of the negotiations is exacerbated by varying national interests, economic considerations, and the inherent dilemmas associated with collective action.

At the heart of the negotiation process is a classic example of the Prisoner's Dilemma. Each country faces a choice: make significant commitments to reduce emissions or minimize their commitments to gain short-term economic advantages. While mutual cooperation would lead to the best overall outcome in combating climate change, the fear of being the only one to make substantial sacrifices tempts nations to defect, leading to suboptimal outcomes for the global community.

Try to represent the problem as a collective decision problem in which the output is the total reduction of greenhouse gas emissions [0-100%]. What information do you need to formalize the problem?

Strategies for Resolving Collective Action Problems

Collective action problems present significant challenges in the context of international climate change agreements. Nations must navigate the delicate balance between individual short-term interests and the long-term collective good. Various strategies, such as binding commitments, financial incentives, and technological support, have been proposed to encourage cooperation. Each of these mechanisms has its pros and cons, influencing countries' stances within the negotiation process.

1. Binding Commitments:

Pros: They create a formal and legal obligation for countries to meet their emission reduction targets, potentially leading to more predictable and reliable outcomes. Binding commitments can also provide a clear framework for accountability and recourse in case of non-compliance.

Cons: The prospect of legal obligations may deter some countries from participating or committing to ambitious targets due to fears of economic repercussions or sovereignty infringement. Negotiating binding terms that are acceptable to all parties can be exceedingly complex and time-consuming.

2. Financial Incentives:

Pros: Financial mechanisms, such as climate funds or carbon pricing, can motivate countries by offsetting the costs of transitioning to greener technologies or by rewarding emission reductions. They can make cooperation more attractive, especially for developing countries that face financial barriers to implementing climate change mitigation strategies.

Cons: Determining the source, scale, and distribution of financial incentives can be contentious. Wealthier countries may be reluctant to commit significant financial resources, while developing countries may demand more support than is offered. The effectiveness of financial incentives also depends on their design and implementation, which can vary widely.

3. Technological Support:

Pros: Sharing or transferring green technologies can help countries leapfrog to cleaner energy solutions, reducing global emissions more efficiently. Technological support can address capacity gaps and reduce the cost of compliance, making ambitious targets more achievable for all.

Cons: Intellectual property rights, competitive advantages, and the cost of technology transfer are potential stumbling blocks. There may also be challenges in ensuring that transferred technology is appropriate for the local context and is supported by adequate training and infrastructure. Discussion Points for Students:

Consider the motivations behind each relevant player's stance on binding commitments, financial incentives, and technological support. What drives their preferences, and how do these motivations align or conflict with the collective goal of addressing climate change?

Reflect on the strategic rationality behind advocating for or against each of the mechanisms discussed. How do these strategies fit within the broader negotiation dynamics, and what implications do they have for the possibility of reaching effective and inclusive agreements?

Based on the pros and cons of each strategy, evaluate their potential effectiveness in overcoming the collective action problem inherent in international climate change agreements. Consider the roles of equity, fairness, and feasibility in your analysis.

Identifying Opportunities for Pareto Improvements:

Imagine you are a key player in the global effort to mitigate climate change, tasked with advancing this agenda in a world of diverse national interests and priorities. Your ultimate goal is to achieve significant progress in reducing global greenhouse gas emissions, understanding this as a problem that can be collapsed into a one-dimensional preference dimension: from complete inaction (0) to full commitment to mitigating climate change (100).

The landscape is populated by various players, each with their unique position on this spectrum based on their current commitment to climate action. These players include:

High-Income Countries (HICs): Positioned around 70-80, indicating a relatively high commitment due to international pressure, technological capabilities, and societal demand for sustainable practices. Emerging Economies (EEs): Located around 40-60, showing a moderate commitment influenced by developmental priorities, economic growth considerations, and increasing vulnerability to climate impacts.

Oil-Exporting Nations (OENs): Found around 20-30, reflecting a lower commitment due to their economic dependence on fossil fuel exports.

Small Island Developing States (SIDS): Positioned at 90, representing a very high commitment driven by their direct risk from climate change effects like sea level rise.

Your motivation is to move the needle towards greater collective action. The challenge is to identify which actors you should try to convince first to get a Pareto improvement in a reasonable period of time, where at least one player is better off without making anyone worse off.

High-Income Countries (HICs) already have a relatively high commitment level but also possess the technological and financial resources to make more significant strides. Convincing HICs to adopt even more ambitious targets and provide support to other nations can catalyze broader action.

Small Island Developing States (SIDS) are highly motivated but lack influence. Forming a coalition with them can help amplify their voice and moral standing, putting pressure on other players.

Emerging Economies (EEs) are pivotal in this landscape. They have the potential for substantial emissions reductions and can sway the overall direction towards more aggressive climate action. Demonstrating the economic and developmental benefits of green technologies and climate resilience can be persuasive.

Oil-Exporting Nations (OENs) are the most challenging to convince due to their vested interests in fossil fuels. However, highlighting the long-term economic risks of climate inaction and the benefits of diversifying their economies might create openings for change.

Questions Based on the given landscape, which actors would you prioritize engaging with to create momentum towards more substantial climate action? Why?

What specific strategies would you employ to shift the positions of the identified priority players towards greater commitment?

Achieving Pareto Improvements: How can you ensure that your strategies lead to Pareto improvements, making at least one player better off without worsening the position of others?