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# The Themistocles Naval Decree of 483/2 BCE and the Greek Referendum of 2015: A comparative analysis of choice set under direct democracy procedures

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**Abstract:** In the present essay we examine decision-making and choice under direct democracy procedures, focusing on two famous examples: Themistocles' Naval Law of 483/2 BCE and modern Greece's referendum of June 2015. They concerned, in a broad sense, the choice between the finance of public good(s) versus the increase in available personal income. We analyse the similarities and differences in the institutional setting, the means available for discussion and consensus building and the actual outcomes, which were different: in ancient Athens the outcome was in favour of the "public good" defense and in modern Greece, it was of no consequence since the final actual outcome was contrary to the referendum. Lastly, we offer some thoughts regarding the different outcomes, which were dependent on the specific perceptions of each issue, the possibility of disaggregation of choice elements, the time horizon and historic context and the perception of citizens-voters, as to the "quality" of their government.

**Keywords:** Themistocles' Naval Law, Greece's referendum of June 2015, decision making, consensus building

## 1. Introduction

Choice under democracy has been an ongoing issue for analysis by economists, political scientists and historians, since at least the appearance of the first democracy in Athens, 510-507 BCE.

Thus, although almost 2500 years separate ancient Athens from modern democracies, some elements of the political context under which choices are being made, seem to exhibit common characteristics. Here, we focus on two examples of choice between public good(s) and private consumption, under direct democracy procedures. We focus on direct democracy because it brings to the fore the two well-known problems of principal-agent and unbundling of issues.

We have chosen these two particular cases, instead of others, because of their differences, concerning the actual institutional set-up and historic context, as well as because of their different outcomes: in the first case in favour of the public good defense and increased taxation, and in the second case of no consequence because the outcome was different from the referendum's vote (more or less austerity measures). These differences make, we suggest, the comparison of the two cases interesting.

The essay is organized as follows: in the next part, we discuss some general issues of choice, followed by an analysis of the similarities and differences between the three cases. Sections 3 and 4 analyse our cases: Themistocles' Naval Law and the Greek July 2015 referendum in greater detail. Section 5 offers a comparative analysis of the two cases. In the conclusion we offer our results as to why the outcomes differ and the reasons leading to these differences.

## **2. Choice under direct democracy procedures**

There exists a substantial discussion on the advantages and disadvantages of direct democracy and its economic outcomes, both in ancient Greece (Ober 2008, 2015; Tridimas, 2011, 2012; Economou, Kyriazis and Metaxas 2015) and modern states, usually federal ones like Switzerland, the USA, Canada, Germany, etc. (see among others, Kobach 1993; Butler and Ranney 1994; Feld and Savioz 1997; Cronin 1999; Gradstein and Milanovic 2004; Feld and Kirchgässner 2005; Feld, Kirchgässner and Fischer 2010; Kaufmann, Bóchi and Braun 2010; Linder 2010; Le Duc 2011, Kyriazis and Economou 2015a).

On the whole, econometric studies indicate superior outcomes (measured as GDP growth) and less waste under direct democracy procedures than under representative ones (Voigt and Blume 2006; Blume and Voigt 2010; Matsusaka 2005a, b, 2010). The main reasons advanced are first, that under direct democracy, the principal-agent problem is eliminated (e.g., there is a better monitoring of the "agent", the politicians, by the "principals", the citizens-voters). Under direct democracy, the "agent", the government officials, is denied discretion and is forced to act according to the interests of the "principal".

Secondly, under direct democracy, which permits voting on separate issues, instead of voting on general aggregated political programs, the preferences of citizens regarding

each particular issue are revealed. Under representative democracy, when citizens vote, they must choose a general program proposed by political parties, that include, for example, such diverse issues as education, health, defense, foreign relations, pensions and social security, “civil rights,” taxation, the size of the public sector and its involvement in economy (including, for example, issues of privatization) etc. Under this system, a citizen cannot choose, for example, the proposal of party A concerning education, that of party B for health, or that of party C for taxation, etc. The voter has to make a single choice, accepting the bundle of the program of one party, thus rejecting the programs of the others.

In economic terms, the exclusion of the unbundling of issues and choice corresponds to high opportunity costs. If a citizen prefers and opts for party A’s program, but nevertheless puts a high value on the issue of “education” of party B’s program, which he cannot choose, his opportunity cost is exactly that. We postulate that citizens make rational choices in order to maximize their welfare. Two conditions must be met for a proposal to be accepted under direct democracy procedures, which we will analyse in detail in the two cases.

### **3. Ancient Athens and Themistocles’ Naval Law**

In the institutional setting of the 483/2 BCE, choice arose from the introduction of democracy in Athens after Cleisthenes’ reforms (Raaflaub, Ober and Wallace 2007; Ober, 2008). The reforms of Cleisthenes introduced direct democracy in Athens, under which the supreme decision-making body was the citizens Assembly, to which all Athenian citizens could participate, express their opinions, and then vote either by hand or by ballot. A quorum of 6.000 was required, out of an estimated citizen population that could be as high as 60.000 during the fifth century (Hansen 1999).

Important decisions that had to do with state revenues and outlays were taken in the Assembly. Tridimas (2013: 436) writes that “*it was the Athenian assembly of citizens which decided directly on the use of public revenue, rather than the political elite or the representatives of the voters, a procedure that had no equal in ancient or modern polities (at least at the national scale)*”. Proposals which were voted by the majority became law.

The agenda of the Assembly was set by the Boule, which in addition was entrusted with the execution of the laws-decrees passed by the Assembly and was responsible for the day to day running of the affairs of the state as, for example, meeting foreign embassies. But the ultimate decisions lay with the Assembly. Foreign embassies, for example, spoke directly to the Assembly. After hearing their proposals and requests, the Assembly debated and voted (Thuc. Hist, book 1; Ober 2001: 73).

This was the institutional setting when Themistocles, one of the leading “politicians” of the period, introduced his “Naval Law” proposal in 483/2 BCE. Conflict between the Persian Empire and the Greeks had started in 498 BCE with the Ionian revolt. In 490 BCE the Athenians and Plateans repulsed a Persian invasion during the battle of Marathon, but Themistocles foresaw (and was informed of Persian preparations) that a second and larger in magnitude Persian invasion was looming. He concluded that the best strategic plan for Greece and Athens would be to face the Persians on both land and sea, on what we could term today “combined operations”. But neither Athens nor the other Greek city-states had enough ships to face the mighty Persian fleet. This was the reason why the Persians could land unopposed at Marathon, on Athenian soil, in 490 BCE.

So, Themistocles would have to convince the Athenians to build a very substantial fleet. As with all proposals, it had to be specific in terms of how many ships had to be built, how they would be financed, how they would be built. At that time, Athens had a turn of good fortune. At the Lavrion silver mines a very rich new vein was found and exploited. Revenue reached an annual sum of 100 talents or 600.000 drachmae, at a time when one drachma was a little more than a day’s income for a skilled worker (Loomis 1998). Themistocles’ proposal was to use these funds to construct 200 new trireme warships over the course of two consecutive years at a cost of one talent (6000 drachmas) each. This was to be undertaken by a private contractor for each ship (Kyriazis and Zouboulakis 2004; Tridimas 2013: 437-441).

But there was a counterproposal, possibly (according to later sources) by the “conservative” politician Aristides: to share equally the amount of the Lavrion mines, to the sum of 10 drachmae for each citizen. Using the intuition of equation (1), the choice for each citizen was clear: preferring the public good defense (triremes, construction program), according to Themistocles, meant that his cost would be 10 drachmae of

income loss. If, alternatively, preference was given to Aristides' proposal (private income and consumption) his benefit would be the same amount, 10 drachmae, corresponding to about half a month's wages (Loomis 1998).

More difficult to calculate would be the benefit of choosing the public good and the cost of choosing the private good. Here, we must analyse the arguments put forth by Themistocles to convince the Athenians and the means at his disposal to make them known. His arguments appealed to Athenian sentiment and values, democratic ones at that, but also personal interest.

He argued that building a fleet was the only strategy that could save Athenian and Greek independence, freedom, democracy, and the preservation of the people's way of life, instead of their becoming subjects and slaves of an Asian foreign autocratic ruler. This had a strong general emotional appeal. But he went two steps further, with specific proposals to influence the majority of the poorer Athenian citizens, the so-called *thetes* who could be seen, in modern terms, as the median voter. Up to that time, *thetes* had limited political rights, they could vote but not be elected to state positions, the reason being that *thetes* gave only limited service to the armed forces of the city, if at all.

During this period the decisive force in war was the heavily armed *hoplite* infantrymen, who provided for their expensive equipment from their own means.<sup>1</sup> But to man the fleet of such numbers, *thetes* would be required as rowers. A trireme warship required 170 rowers out of a total crew of 200 (Morrison and Coates 1986).

Being liable to military service, they would acquire full political rights. Further, their service on the ships would be paid out of the state's budget. If Athens became the leading sea power of the era, then a bright future of economic and political strength would be opened, to the benefit of all its citizens, a vision of a community of interests. These would be the benefits of choosing the public good  $p$ , and the corresponding costs of choosing private income-consuming  $c$ . But Themistocles had to make his message known and convincing before the actual debate in front of the Assembly. For this, he used all means available: theater, divine counsel, networks.

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<sup>1</sup> For hoplite warfare see Hanson (2009), Kagan and Viggiano (2013) and Kyriazis and Economou (2015a,b). At Marathon, neither horsemen nor light troops are mentioned on the Greek side by our main ancient author, Herodotus in *Histories*.

Theatre can be considered as the only “mass media” of the period. Theatrical performances were performed at the central Athenian theatre but also in many local theatres at the various Athenian demes (municipalities) such as Thorikos. Thus, tens of thousands of Athenians would have seen a particular play. Themistocles asked one of his collaborators to finance a theatrical play performance by the writer Phrynichos, *The Sack of Miletus*. Miletus was one of the big Greek cities on the coast of Asia Minor and was sacked after the siege by the Persians in 494 BCE, in the last battle of the failed revolt of the Greek cities against Persian rule. The city was destroyed and surviving inhabitants were either deported into the depths of Asia, or enslaved.

The play was performed and moved Athenians to tears. Emotions were so strong, that Phrynichos was condemned to pay a fine because he reminded Athenians of their “own woes”. But Themistocles’ warning got through, thus achieving his aim of swaying Athenian opinion. This was not enough, though. Themistocles had to enlist divine aid to his purpose. During this period, city-states sought advice on major issues from Apollo’s oracle at Delphi.<sup>2</sup> Themistocles considered that the first oracle that was delivered was not satisfactory, thus he intervened, or possibly even bribed(!) one of Delphi’s influential citizens, to sway the Pythia, Apollo’s priestess, to deliver a more suitable prophecy. This she did by prophesizing that the “wooden walls” (which Themistocles interpreted as being the ships) would save Athens.

He also used networks to propagate his proposal and convince the Athenians. Such networks were strong (Ober 2008) and took place both at public places, through informal meetings and discussions among friends at the market places and the gymnasia (athletic facilities) as well as at private “dinners” at homes (the famous *symposia*). The friends and supporters of Themistocles would lose no opportunity to discuss the issue (as well as the play and the oracle) during these occasions.

Themistocles and his supporters had to undertake one last major step before putting a proposal to a vote. The principal political opponent who was against the naval policy of Themistocles was Aristides. Thus he had to be eliminated so as to clear the way. Without Aristides present at the discussions at the Assembly prior to the vote, the

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<sup>2</sup> Within less than 25 years, Athenians became much more pragmatic and mundane. By the time of Pericles, seeking divine advice had fallen into disuse, and citizens listened only to the arguments being brought forward at the assembly.

proposal would be more likely to be adopted. In order to achieve this, Themistocles made use of *ostracism*, through which Aristides lost and went into exile, leaving the field free for Themistocles.<sup>3</sup>

When the time came, the Athenians adopted Themistocles' proposal, which became known as his "Naval Law" or Decree, one of the most important decisions in western history. The fleet was victorious at Salamis in 480 BCE, democracy in Athens and Greek independence were saved, leading to Athens' turn to the sea and the classical flourishing of culture (Plut. Arist; Plut. Them; Kyriazis and Zouboulakis 2004).

#### **4. The Greek referendum of June 2015**

Contrary to ancient Athens and the other democratic city-states, participatory democracy has had a poor record in modern Greece, with only two referenda having taken place upon the restoration of democracy after the fall of the dictatorship (24 July 1974). It concerned the choice of the future Greek constitution, which was to choose whether Greece would remain a Kingdom or become a Presidential Republic. The outcome of the referendum was in favour of the second choice.

The referendum held on the 5 July 2015 was thus only the second to be held, 41 years after the first. It showed many weaknesses in its conception. First of all, the issues(s) to be voted on were unclear. Allegedly, it was a vote in favour of or against the measures of the so-called Junker proposal (austerity measures, a mix of expenditure cuts and tax increases so as the government to achieve savings of public expenditure), which in fact had already been withdrawn.<sup>4</sup> Also it was not sufficiently clear to the median voter what the "no" and the "yes" vote signified. Different and conflicting interpretations were offered by the political parties and the media experts. According to some, voting "no" was a vote against EMU participation and the euro e.g., and in favour of Grexit. According to the government's line, "no" would give it a stronger future bargaining

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<sup>3</sup> *Ostracism* was the inspiration for modern *recall* procedures practiced in Switzerland, Uruguay and some USA states such as California (Cronin 1999). For a detailed analysis on *ostracism* see Fordsyke (2005).

<sup>4</sup> So-called after the EU's Commission President. He proposed the package after a five-month period of negotiations with the new Greek coalition government under Prime Minister A. Tsipras which came to power as a result of the elections of 25 January 2015.



position with the EU partners and would in no way threaten Greece's participation in the EMU.

Second, there was no clear cost estimate. If there was an approximation for the "yes" vote (the 8 billion euros measure of the Junker proposal) there was absolutely none for the "no" vote since the result of the "no" option was confused. If it led to Grexit, what would be the cost of this? If it led to a better negotiated result, how high would that cost be? Third, even the drafting of the question was mangled, being both in English and Greek, with the "no" and "yes" options written on the same ballot paper (and not, as was common practice, on different ones) with the "no" preceding the "yes" option, although alphabetically, in Greek the word "yes" comes before "no".<sup>5</sup> Fourth, there was no unbundling of issues, but a vote on a general proposal (the Junker proposal) whose elements and details remained unknown to the majority of voters. Lastly, the period of debate was extremely short which meant that the issues did not become clear enough to the median voters.

The results were also unexpected, both to the "no" and to the "yes" proponents. They did not lead to a Grexit (as those in favour of "yes" were afraid if the "no" option prevailed). But also they did not lead to a better negotiated outcome, as those in favour of the "no" option had maintained. In fact, the "no" vote prevailed with about 65% of the vote. But the outcome was that the package agreed with the EU provided for measures of 12 billion euros, a mixture of expenditure cuts and tax increases (as opposed to the 8 billion euros of the previous Junker package). Furthermore, it led to the dismissal of the former Finance Minister, Yanis Varoufakis who had been empowered by the Prime Minister Mr. Tsipras to negotiate with the troika representatives.

Additionally, it led to economic instability with the closure of banks for three weeks, the imposition of capital controls (still applying at the time of writing, although eased) and a shift of the economy to recession (after a weak upturn in 2014). Both 2015 and 2016 will be recession years, with an estimated total loss of GDP during the two years varying between -2% to -4%. The Greek referendum of 2015 is thus a case study as to how referenda should not be organized!<sup>6</sup>

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<sup>5</sup> The words being "ναι" (yes) and "όχι" (no), *n* coming before *o*!

<sup>6</sup> It is still not clear, if the Finance Minister was forced by the Prime Minister to resign, because the latter lost faith in his negotiating strategy and ability, or if the cause was a disagreement on Greece's future

## 5. The Comparative Analysis of the two case studies

In this section a comparative analysis is undertaken between the two cases we have presented above. The comparative analysis method chosen refers to variables which can easily be compared. Following Lijphart (1971) these variables should have common characteristics in order to investigate the relation between them and the dependent variable. Hence, the comparative analysis method is chosen so as to achieve an in depth knowledge of certain cases, to analyze the relation between a set of variables and to generalize, if possible, for further cases (Collier 1995).

According to Azarian (2011), the purpose of a comparative analysis refers to the identification of the similarities and the differences among social units. In addition, Sartori (1991) argued that comparisons are essential in research so as to control the studied variables and to investigate the circumstances under which an interaction occurs with a *ceteris paribus* clause. From Mahoney's (2000) point of view, the specific method refers to the comparison between a limited number of cases in order to investigate historical data, behaviors or mechanisms compared to a set theory. Therefore, the comparative analysis refers to the research method applied so as to verify or falsify a case (Sartori 1991). Furthermore, it is defined as one of the basic research methods applied that leads to general conclusions and suggestions. Thus, it is used to investigate the empirical relation among a set of variables and hence not to measure them (Lijphart 1971).

The main advantage of the comparative analysis is that the complexity of the research is reduced because of the limited number of variables and observations compared to a specific theory. Thus, the researcher achieves an in depth understanding of the relation between the chosen variables (Mahoney, 2000). Moreover, it is a qualitative research based on a limited number of case studies, compared to other research methods. Finally, it includes a logical combination of a set of variables that influence the dependent variable based on actual data (Dixon–Woods et. al. 2005).

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policy, the Finance Minister proposing plan B, Grexit and going back to the drachma, (as maintained in J. Galbraith's recent book (2016) *Welcome to the Poisoned Chalice*.

On the other hand, the main disadvantages of the specific method refers to the fact that there are too many variables compared to the limited cases. Therefore, a limit should be set to the variables chosen so as to analyze their impact on the dependent variable (Lijphart 1971).

In this section, we provide a comparative analysis between the two cases under a specific set of criteria: institutional setting, strategy, time horizon, historical context, and aggregation-disaggregation of information (about the different aspects of the referendum, yes or no). We have argued that although modern authors qualify political systems which permit popular initiatives as direct democracy, the decision-making process under ancient direct democracy and modern ones are different.

In ancient direct democracy, with the citizen's Assembly as the main and all-powerful decision and lawmaking body, the problem of principal-agent is reduced to almost negligible proportions. With regard to policy aims, the agent-politician has no latitude at all, since they are given by the Assembly. With regard to taxation, the agent-politician had some latitude (in handling the funds provided for each issue) but since under ancient direct democracy, the agents had to give a detailed account of their actions and payments of funds, coupled with the right of any citizen to accuse them and bring them to trial if the particular citizen suspected them of mismanagement, fraud, etc., they faced severe limitations.<sup>7</sup>

In modern direct democracy, there are always representative bodies that shape policies. Initiatives may be introduced ex-post to change policies introduced by the representative body or introduce some that were not provided by the government. We interpret the possibility of initiatives as a check by citizens on the action of the agent(s). Here the perception of the citizens as to the actions of the agent is crucial for the shaping of outcomes. If citizens perceive the actions of agents to be against their welfare, then they may step in through initiatives. The ancient Athenians had considerable mistrust in their politicians.

We suggest that the main difference in our two case studies are that policy proposals before the Assembly are proactive, in the sense of introducing new policies, of which

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<sup>7</sup> One famous example was the accusation against Demosthenes, that he received a bribe by Alexander's ex-treasurer Harpalos. Demosthenes was acquitted.

there are numerous examples in ancient Athens.<sup>8</sup> The modern Greek referendum introduced in a top-down procedure (governmental as against citizens' *initiative*) was deemed to break the negotiations impasse between Greece and the EU partners which had lasted five months up to then, by giving strong support and legitimacy to the government. Thus, it could be considered a reverse agent-principal case, with the agent (government) trying to impose its preference (or utility) to the principals (citizens) by urging them to vote "no". Due to the difficult technical issues involved, and the very short time for debate, the citizens (certainly the median non-experts, but even the "experts") were unable to calculate *ex-ante* their personal cost-benefit welfare repercussions of either the "no" or "yes" options. How could a median citizen calculate his cost-benefit change in the hypothetical case of Grexit?

We analysed previously the strong emotions generated in ancient Athens which arose prior to the actual voting in the Assembly. Similar emotions may arise in modern citizens, by a campaign, for example, "against state/government's abuse of citizens' property rights, waste of resources etc.", and emotions shape preferences. Here, we must address an apparent contradiction, our postulate of rational citizens and strong emotions. The contradiction is apparent only if we use a wide definition of welfare, as we do. It must also be added that in the modern Greek referendum, numerous citizens voted in favour of "no", also as a kind of defiance against what they considered to be an infringement of national sovereignty and pride by the EU and Germany, in particular.<sup>9</sup>

A second element influencing the voting outcome is the time horizon adopted. In the Athenian case, the time horizon was specific, that of two years: 100 ships had to be built each year, for two years. In the Athenian case, the citizens knew that their cost would be exactly 20 drachmae (for the two consecutive years), no more, no less. Short time horizons make calculations of future costs and benefits easier, avoiding complex discounting calculations, and reducing uncertainty. This again means that precise time horizons reduce transaction costs, a point which we address in more detail further on.

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<sup>8</sup> As, for example, the Decree of Nicophon of 376/5 BCE on the circulation of parallel currencies in Athens (Ober 2008).

<sup>9</sup> That this was so was demonstrated by the "no" partisans, including the president of the government coalition party ANEL and Defense Minister who compared the resistance to accept the memoranda with the Greek Revolution heroes of 1821 (against Ottoman rule), and acts of heroic sacrifice!

Our view implies of course less than perfectly rational individuals, in the sense of them being unable to look forward into a distant future and take into account distant future flows.<sup>10</sup>

The Greek referendum was decided by the Greek coalition government on 28 June 2015 and it took place on 5 July. This meant that citizens did not have enough time to inform themselves sufficiently regarding the real economic situation of their country. Citizens had a lack of information concerning critical aspects of the two proposals. Thus they proceeded to vote in favour or against the possible agreement of the Greek government with the EU institutions without having a sufficient level of information regarding the economic consequences of their decisions.

A third element is the historical context. The Athenian case was clearly one of extraordinary external circumstances, facing a great external threat, which Themistocles capitalized with his campaign. The modern Greek case stands somewhat in the middle: no war, but no “normal times” either due to the existence of (up to that time) a five-year period of economic crisis, memoranda, reduction of incomes, etc. The modern Greek referendum took place in an extraordinary period (economic recession and crisis, GDP loss of approximately 30% in five years during the 2010-15 period and with the unemployment rate having increased as high as 26% of the total active workforce).

A fourth element in shaping voting outcomes is the possibility of disaggregation of issues. In the Athenian case, the disaggregation (or unbundling) was complete: the choice was between a public good, ships, or private income. On the other hand, the modern Greek referendum was a case of no unbundling at all, thus leading to confusion. Thus, our argument here is that the more specific (unbundled) the choice is, the more it facilitates individuals’ calculations of cost and benefit, and thus influences their vote.

A fifth element, a general issue that must be addressed is the total cost of voting for individuals, such as information gathering, physical presence if required, in order to vote, etc. (Buchanan and Tullock 1962; Bowles and Gintis 1986; Barzel and Sass 1990). This is a general transaction cost which is related to the voting procedure and not linked to the choice of either the public or the private good, called decision- making or

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<sup>10</sup> This would fit well with a bounded rationality assumption. Alternatively, the same result could be true with rational individuals with high discount rates for the future, e.g., impatient citizens.

strategic bargaining cost (Barzel and Sass 1990: 750) and may be substantial. Thus, the issue is how do direct democracy procedures influence this cost?

As Bowles and Gintis (2011) remark, we acquire preferences through inheritance and learning. The learning process, as with all learning, involves effort (time etc.) which is costly. We have indicated for the Athenian case how information was “processed” and diffused. Concerning the theatrical plays, watching them would entail costs for each individual, since he would have to lose the equivalent of four days’ wages which was the duration of the theatrical contests. The incentive for watching them would be the pleasure derived, social meetings, etc. But Athenians recognized that for poorer citizens this might not be enough: so, later in the fifth century, they introduced the *theorika* payments, which were payments out of public revenue, made to the poorer citizens, so that they could watch the theatrical performances (Kyriazis 2009).

In the Greek referendum of 2015 case, the information cost for the citizens would depend on the time they devoted to gather information through hearing advocates in favour and against the initiative, reading newspapers, hearing debates. In ancient times, theatrical performances linked to *theorika* were a transaction cost-reducing device, which influenced the shaping of preferences.<sup>11</sup> The use of existing networks (both ancient and modern) functioned also as transaction cost-saving devices. When you meet with friends at the ancient market place or modern supermarket, at ancient symposia or modern dinners or clubs, you do it for pleasure, but you exchange and acquire information without, for example, investing additional time and effort for this. So, networks can be seen as “free information providers” (Ober 2008).

Lastly, a clarification as to our discussion of preferences. Social choice models take preferences (and utility linked to them) as given, and inquire if choice A yields higher or lower utility (or, in a more general term, welfare) than choice B. This is exactly the static situation depicted in equations 1 and 2. But a more important (and exciting) question, is how preferences are influenced, which is a dynamic issue, since preferences may change over time.

We are aware, that a more general point is involved here: do preferences change over time, and if yes, how and why? In general, in static models, preferences are given and

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<sup>11</sup> The fourth century Athenian orator Demades recognized the importance of *theorika*, calling them “the glue of democracy” (Plutarch *Moralia*, 1017b). For *theorika* see Kyriazis (2009) and Tridimas (2015).

invariable, so that each individual has a certain utility function. This again permits clear and simple maximizing solutions and avoids the problem, that if preferences change can explain anything and everything in an ad hoc manner.

On the other hand, in the long run preferences do change, due, among others, to new knowledge, new technologies and social change. A Modern Greek certainly has not the same preferences with an ancient Athenian!<sup>12</sup> Even external shocks etc., may change preferences, as in the ancient Athenian example, or perhaps in a modern context, some constraints of liberty versus higher security against terrorist attacks. The in-depth discussion of how preferences change and become endogenous is beyond the scope of this paper. The following table summarizes our discussion:

Table 1: Choice of Athenians and modern Greeks

Elements influencing preference	Athenians	Modern Greeks
Institutional setting	Pure direct democracy, Assembly	Representative government
Strategy	Active	Top-down procedure being introduced by the government
Time horizon	long and precise, two years	Very short. Citizens faced lack of information concerning critical aspects of two proposals
Historical context	Abnormal (grave external threat)	Abnormal (economic recession and crisis)
Aggregation-disaggregation	Disaggregation on “public” good to be financed	Aggregation of public goods to be financed

## 6. Conclusions

Our discussion of the Athenian situation before the vote on Themistocles’ Law, purports to show the means by which the preferences were influenced. The diffusion of knowledge and information shapes the preferences. In order to make their individual cost-benefit analysis, Athenian citizens had to be aware of the Persian threat, the possible outcomes involved (destruction of the city, enslavement etc.).

The shaping of preferences is thus a first step in the choice procedure. Once preferences have been established (by information gathering, etc.) then, during a second step, the cost-benefit calculation becomes possible. We believe that, in the modern Greek case, due to the very short time period involved, the dynamic step of establishing

<sup>12</sup> An ancient Athenian for example might have a preference (in this choice set) to buy a slave, while modern ones would rather prefer PC’s, smartphones etc.. We have presented a model of gaining new knowledge (Kyriazis 2006).

the preferences may not have been complete, thus proceeding to step two, voting with incomplete (or imperfect) information. We would suggest the analysis of further historical cases in order to establish links between the shaping of preferences and the choices once they have been established.<sup>13</sup>

In modern times, electronic voting, which makes physical presence at the voting booth unnecessary, would also reduce this aspect of transaction-decision making costs. Thus, since we have already raised these issues, we think that research may be extended in two directions: the analysis of further cases of choice under direct democracy and the inclusion of more elements that shape preferences.

We believe that the frame provided here, in a twostep analysis, is helpful in analyzing in general referenda, outcomes, with an emphasis on the calculation of the costs and benefits as the driving force of citizens-voters' choice. Our typology may serve to analyse referenda and perhaps even to prepare them better.

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<sup>13</sup> Similar issues, e.g. how is additional knowledge being created, have been addressed in a number of studies (see Kyriazis 2006) and Kyriazis and Economou (2015b).



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