

The Origins of Democracy: A Model with Application to Ancient Greece

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Abstract: This paper seeks to provide an improved understanding of the origins of democracy. It begins by developing a theoretical model to demonstrate how exogenous economic conditions can influence both the incentives to establish democratic institutions and the likelihood that such institutions survive. The model predicts that democratic institutions will expand where they mitigate important time-inconsistency problems and, therefore, encourage investment. Exogenous conditions determine the magnitude of those time-inconsistency problems and, hence, the likelihood of democracy. A comparison of ancient Greek city-states suggests that the conditions under which democracy first emerged support the model. Other potential applications are discussed.

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I. Introduction

The democratic form of government has fascinated philosophers since the first democracies appeared in ancient Greece about 2500 years ago. (Indeed, “democracy” is a Greek word, meaning rule by the *demos*, or “people.”) Plato, for example, regarded democracy suspiciously, but viewed certain manifestations as preferable to others. Aristotle theorized about the emergence of democracy, tracing its development in a series of steps. Modern democracy differs in many ways from the Greek version, but it fascinates modern scholars to the same degree. Particularly in recent years, economists have become greatly concerned with the question of how different democratic institutions arise, and what underlies their persistence in some cases and failure in others.¹

In order to improve understanding of the origins and persistence of the democratic form of government, this paper develops a theoretical model and applies it to the first democracies: the *poleis* (city-states) of ancient Greece. The analysis begins from the general premise that time-inconsistency problems create incentives for governments to find ways to constrain their power (e.g., Kydland and Prescott 1977, 1980). The model presents a stylized aristocrat deciding whether to extend political rights to an initially disenfranchised *demos*. Without political rights, the *demos* will not undertake a wealth-enhancing investment, because the aristocrat cannot commit ex ante to refrain from expropriating the fruits of that investment ex post. Whether this is sufficient to ensure the extension of political rights depends on the size of the loss from underinvestment: Ceteris paribus, the model predicts that the likelihood of adopting democratic institutions is higher when the economic losses resulting from the aristocrat's time-inconsistency problems are greater.

¹See, for example, North and Weingast (1989), Kiser and Barzel (1991), Barzel (1992, 2000), North (1993), Olson (1993), Weingast (1993, 1995, 1997), Londregan and Poole (1996), McGuire and Olson (1996), Barro (1997, 1999), Acemoglu and Robinson (2000, 2001), Acemoglu, Johnson, and Robinson (2001, forthcoming), and Minier (2001). See Lipset (1959) for a seminal contribution to the earlier literature.

To test the model, the paper turns to an analysis of ancient Greece, making use of recent advances in the study of ancient Greek agriculture.² In ancient Greece, as in most ancient civilizations, the paramount productive asset was agricultural land. Consistent with the model's predictions, the paper finds that differences in the extent of democracy between Athens and Sparta, the rise and fall of democracy in Athens over time, and variations in levels of democratic participation between these and other city-states all correspond to exogenous differences in the potential returns to difficult-to-monitor agricultural investment. These exogenous differences in potential returns (brought about by variations in terrain) produced corresponding differences in the value of granting members of the *demos* secure rights to the agricultural land they worked. However, for these rights to land to be secure, the property holders had to be given direct influence over public policy; otherwise a time-inconsistency problem with respect to the aristocracy's incentives would leave the *demos*' residual claims subject to expropriation.³ The potential losses from the time-inconsistency problem (i.e., the potential returns to difficult-to-monitor agricultural investment) determined the extent to which an aristocracy would have found it in its interest to cede policy influence to the *demos*. In short, governments were the most *democratic* where the value of granting members of the *demos* secure property rights to agricultural land was greatest.

Before continuing, it is essential to be clear about the word "democracy."⁴ As noted in the

²Although the details of agriculture and agricultural landholdings discussed in this paper are now well established, the importance of agriculture in the study of ancient Greek history has only recently been widely recognized. See, e.g., Gallant (1991), Hanson (1999), Isager and Skydsgaard (1992), Wells (1992).

³Ancient regimes of course lacked independent judiciaries and other independent third-party enforcers.

⁴Democracy is a term that connotes different things to different people. For example, many of the political institutions of the United States (e.g., decision-making by competitively-elected representatives) would not have appeared democratic to the ancient Greeks. And modern Americans may be troubled by the fact that "democratic" Athens allowed slavery and denied political participation to women.

opening paragraph, democracy literally means “rule by the people,” and it is in that sense that the word is used here. As far as this paper is concerned, one regime is more democratic than another to the degree that a larger proportion of its population is able to participate in public decision-making, and thereby influence policy. There are a variety of mechanisms that establish how widely such participation is spread: voting rules, office-holding requirements, the division of responsibilities between governing bodies, and so forth. Classical Athens was more democratic than Classical Sparta because in Athens, native-born males generally had equal political rights—to vote, to sit on the popular assembly, to hold public office—and final decisions were made by the broadly-representative popular assembly. By contrast, although Sparta’s political institutions were on the surface very similar to those of Athens, only members of the warrior class were allowed to participate within them. The city-state of Corinth (one of several other city-states examined in this paper) falls between Athens and Sparta, because a much broader spectrum of Corinthian society had the right to political participation (to vote and sit on the popular assembly) than in Sparta, yet the popular assembly’s role was substantially more circumscribed in Corinth than in Athens. Explaining such differences is the objective of this paper. Similar differences are found—and will be explored—in the expansion of democracy over time: Athens initially restricted political participation to a warrior class, then expanded participation to include farmers and, eventually, the landless.

This paper thus builds upon and extends the substantial literature on the rational relinquishment of political rights. For example, North and Weingast (1989), Kiser and Barzel (1991), Weingast (1993, 1995, 1997), and Barzel (2000) discuss ways in which rulers have voluntarily reduced their power in order to provide the incentive for their subjects to engage in productive activity, while Acemoglu and Robinson (2000, 2001) demonstrate how the threat of civil unrest may inspire the wealthy to enfranchise the poor as a means of committing to redistribution from wealthy to poor. In

addition, this paper's findings complement the evidence in Acemoglu, Johnson, and Robinson (2001, forthcoming), who argue that differences in geography have led to differences in institutions (most notably through the choices of European colonizers), which in turn have influenced economic outcomes.⁵

The paper also has important implications for the debate over whether democracy causes economic growth and/or economic growth causes democracy (e.g., Barro 1997, 1999). The model developed here illustrates a mechanism by which democratic reforms may indeed lead to increases in wealth. However, the root cause of the increased wealth is not democracy per se. Rather, both wealth and democracy depend on a third factor: the nature of the important productive assets in that society.⁶

II. Theoretical Model

The purpose of the theoretical model is to illustrate how exogenous economic factors can influence whether or not democratic institutions will arise to replace non-democratic institutions. To keep the analysis tractable, the model considers a country with two representative actors: an aristocrat and a *demos*. The aristocrat provides a stylized representation of the monarch, emperor, nobility, and/or other members of a ruling class. The *demos* provides a stylized representation of the non-aristocratic population, such as peasants, or more generally those who are, at least initially, disenfranchised. To maximize the present value of a benefit stream, the aristocrat seeks to avoid

⁵For a diverse set of additional examples from the large recent literature on institutions and credible commitment, see North (1990), Greif (1993, 1994), Greif, Milgrom, and Weingast (1994), Levy and Spiller (1994), Anderson (1995), Alston, Libecap, and Schneider (1996), Knack and Keefer (1997a, 1997b), Fleck (2000), Wittman (2000), and Hanssen (2002).

⁶For additional examples from the large recent literature on the relationship between democracy and economic performance, see Alesina and Drazen (1991), Fernandez and Rodrik (1991), Alesina and Rodrik (1994), Rodrik (1999), and Mueller and Stratmann (2001).

conquest by foreign invaders. The *demos* seeks to maximize its expected net income.

The aristocrat's key decision is whether to retain control of tax rates. If the aristocrat retains control, the aristocrat chooses the level of taxes imposed on the *demos*. The tax rate can be no higher than that which leaves the *demos* at a reservation wage. The alternative to retaining control of tax rates is for the aristocrat to establish a system in which the *demos* chooses the level of taxes to collect from itself, i.e., to establish a "democracy." Once a democratic system is established, the aristocrat cannot reassume control of tax rates. Under either system, the tax revenue is used entirely for defense against foreign attack. The advantage of the democratic system is that it avoids a potential time-inconsistency problem that arises because of differences between the aristocrat's ex ante and ex post incentives when setting tax rates on income from investments made by the *demos*. The disadvantage of the democratic system, from the aristocrat's perspective, is that the *demos* values its own consumption when setting tax rates.

Assumptions

- A1 *Decisions in the initial period.* First, the aristocrat chooses either to retain control of tax rates or to relinquish control permanently by allowing the *demos* to set tax rates. Second, the *demos* decides whether to make an investment to increase its output in future periods. The aristocrat cannot observe whether the *demos* makes the investment.
- A2 *Order of events in subsequent periods.* Five events occur in the following order: (i) The *demos*' potential output becomes public knowledge. (ii) The tax rate on the *demos*' income is set (by either the aristocrat or the *demos*, depending upon the initial period decision). (iii) The *demos* chooses whether to realize the potential output or end the relationship with the aristocrat (e.g., quit or flee). (iv) The tax on the *demos*' output is collected and used for defense. (v) Foreigners may attack and conquer the country.
- A3 *The aristocrat seeks to avoid conquest.* The aristocrat maximizes the expected present value of avoiding conquest, with m the per period value of avoiding conquest and μ the discount rate. If foreigners conquer the country, the aristocrat no longer receives m .
- A4 *The *demos* maximizes the expected value of its net income.* The *demos* uses a discount rate ρ to value a net income stream $\{I_t\}$ that extends infinitely into the future. The *demos*'

relationship with the aristocrat yields I_t equal to the value of output, less the cost of investment, and less taxes. The *demos* makes the investment if doing so maximizes the expected value of $\{I_t\}$. The *demos* ends the relationship with the aristocrat if (i) doing so would increase the expected value of $\{I_t\}$ or (ii) foreigners conquer the country. If the *demos* ends the relationship with the aristocrat, the *demos* will have $I_t = w$ from that period forward (i.e., the *demos* earns a reservation wage w).

- A5 *Output depends on investment.* With no investment, the *demos*' relationship with the aristocrat generates output r per period. By incurring a cost c in the initial period, the *demos* can make an investment that increases output to $r + i$ for future periods.⁷
- A6 *The probability of foreigners conquering the country depends on defense spending.* For the relevant range of spending, the probability in any given period is inversely proportional to defense spending in that period. Let g_t represent defense spending and δ_t represent the probability of being conquered. With $\gamma > 0$: $\delta_t = \gamma g_t^{-1}$ for $\gamma g_t^{-1} \leq 1$; $\delta_t = 1$ for $\gamma g_t^{-1} > 1$. In each period, defense spending equals tax revenue.
- A7 *Exogenous factors.* The following are exogenous, greater than zero, and invariant over time: $m, \mu, \rho, w, r, c, i, \gamma$.
- A8 *Actors are rational.* The aristocrat and *demos* act rationally and have full information about the values of the exogenous variables and about the other actor's objectives.

Solution

As a preliminary step, consider the actors' objective functions. Following Assumption A4, at $t=0$ the *demos* seeks to maximize:

$$EU_D = \sum_{t=0}^{\infty} I_t (1 + \rho)^{-t}$$

Following Assumption A3, at $t=0$ the aristocrat seeks to maximize⁸:

$$EU_A = \sum_{t=0}^{\infty} m (1 - \delta_t)^t (1 + \mu)^{-t}$$

The model can be solved by comparing the expected returns to the actors under alternative sets of strategies. Because the actors are rational, they look forward to determine the consequences of

⁷Note that the *demos*' investment is *specific* to the relationship with the aristocrat because the investment does not affect w .

⁸Note that $(1 - \delta_t)^t$ is the probability that no conquest will occur before or during period t .

their decisions. In this light, it is useful to calculate EU_A and EU_D under four scenarios, classified by whether the aristocrat retains control of tax rates and whether the *demos* makes the investment.

Case i: *demos* does not make investment; aristocrat sets tax rates

To solve for the aristocrat's choice of tax rates, first note that the inter-temporal invariance of the exogenous variables implies that the aristocrat will set tax rates that do not vary over time. With no investment made, the *demos* will remain in the relationship in period t if and only if $w \neq r - g_t$. Hence, to maximize EU_A , the aristocrat sets $g_t = r - w$ in each period. This yields $I_t = w$, leaving the *demos* receiving the reservation wage. Solving for the actors' levels of expected utility:

$$EU_D = 3_1^4 w (1 + \rho)^{-t} = w \rho^{-1}$$

$$EU_A = 3_1^4 m (1 - \gamma(r - w)^{-1})^t (1 + \mu)^{-t} = m (1 - \gamma(r - w)^{-1}) (\mu + \gamma(r - w)^{-1})^{-1}$$

Case ii: *demos* makes investment; aristocrat sets tax rates

With the investment made, the *demos* will remain in the relationship if and only if $w \neq r + i - g_t$. Following logic similar to that in Case i, the aristocrat sets $g_t = r + i - w$ in each period. Hence, after the investment cost c is sunk in the initial period, the aristocrat will set the tax rate to leave the *demos* at the reservation wage. Solving for the actors' levels of expected utility:

$$EU_D = -c + 3_1^4 w (1 + \rho)^{-t} = -c + w \rho^{-1}$$

$$EU_A = 3_1^4 m (1 - \gamma(r + i - w)^{-1})^t (1 + \mu)^{-t} = m (1 - \gamma(r + i - w)^{-1}) (\mu + \gamma(r + i - w)^{-1})^{-1}$$

Case iii: *demos* does not make investment; *demos* sets tax rates

The *demos* will set the tax rate that maximizes EU_D . Due to the inter-temporal invariance in the exogenous variables and, hence, the solution, if $g_{t=j} = g^*$ is the optimal choice for $t=j$, then $g_t = g^*$ is the optimal choice regardless of t . Hence, g^* can be found by solving for the value of g that

maximizes the sum of expected future net income over years before and after conquest¹⁰:

$$EU_D = 3_1^4 [(r - g) (1 - \delta_t)^t (1 + \rho)^{-t} + w (1 - (1 - \delta_t)^t) (1 + \rho)^{-t}]$$

which can be rewritten:

$$EU_D = w \rho^{-1} + (r - g - w) (\rho + \gamma g^{-1})^{-1}$$

The first order condition for g^* is $\mathbb{M}EU_D/\mathbb{M}g = 0$. From the equation above:

$$\mathbb{M}EU_D/\mathbb{M}g = -(\rho + \gamma g^{-1})^{-1} + (r - g - w) (\gamma g^{-2}) (\rho + \gamma g^{-1})^{-2}$$

Solving the first order condition yields:

$$g^* = [-\gamma + (\gamma^2 + \rho\gamma(r - w))^{.5}] \rho^{-1}$$

This yields the actors' levels of expected utility:

$$EU_D = w \rho^{-1} + (r - g^* - w) (\rho + \gamma(g^*)^{-1})^{-1}$$

$$EU_A = 3_1^4 m (1 - \gamma(g^*)^{-1})^t (1 + \mu)^{-t} = m (1 - \gamma(g^*)^{-1}) (\mu + \gamma(g^*)^{-1})^{-1}$$

Case iv: *demos* makes investment; *demos* sets tax rates

Following the same method used for Case iii, g^* can be found by solving for the value of g that maximizes:

$$EU_D = -c + 3_1^4 [(r + i - g) (1 - \delta_t)^t (1 + \rho)^{-t} + w (1 - (1 - \delta_t)^t) (1 + \rho)^{-t}]$$

which can be rewritten:

$$EU_D = -c + w \rho^{-1} + (r + i - g - w) (\rho + \gamma g^{-1})^{-1}$$

The first order condition for g^* is $\mathbb{M}EU_D/\mathbb{M}g = 0$. From the equation above:

$$\mathbb{M}EU_D/\mathbb{M}g = -(\rho + \gamma g^{-1})^{-1} + (r + i - g - w) (\gamma g^{-2}) (\rho + \gamma g^{-1})^{-2}$$

Solving the first order condition yields:

$$g^* = [-\gamma + (\gamma^2 + \rho\gamma(r + i - w))^{.5}] \rho^{-1}$$

¹⁰Note that $1 - (1 - \delta_t)^t$ is the probability that conquest occurs before or during period t , and thus indicates the probability that the *demos* will have ended the relationship with the aristocrat.

This yields the actors' levels of expected utility:

$$EU_D = -c + w \rho^{-1} + (r + i - g^* - w) (\rho + \gamma(g^*)^{-1})^{-1}$$

$$EU_A = 3_1^4 m (1 - \gamma(g^*)^{-1})^t (1 + \mu)^{-t} = m (1 - \gamma(g^*)^{-1}) (\mu + \gamma(g^*)^{-1})^{-1}$$

Possible outcomes

Comparing the four cases shows that Cases ii and iii would never occur.¹¹ The key question thus becomes whether Case i or Case iv will be the outcome. In some circumstances (e.g., if c is sufficiently high relative to i or if γ is sufficiently high), the *demos* would be unwilling to make the investment even if it controlled tax rates; under these conditions, the aristocrat would retain control of tax rates and Case i would be the outcome.¹² The more interesting situation, however, occurs when c is sufficiently low that establishing democratic control of tax rates would induce the *demos* to make the investment. The aristocrat will establish democratic control of tax rates if defense spending under Case iv (democratic control) exceeds defense spending under Case i (aristocratic control):

¹¹First, comparing EU_D between Case i and Case ii shows that the *demos* will not make the investment when the aristocrat sets tax rates; this rules out Case ii. Second, comparing EU_A between Case i and Case iii shows that the aristocrat prefers Case i. Thus, if democratic control of tax rates failed to induce the *demos* to invest, the aristocrat would retain control of tax rates; this rules out Case iii.

It is worth noting that, under the model's assumptions, time-inconsistency problems would preclude Case ii even if side payments could be incorporated. If, in an effort to fund investment in period t , the aristocrat compensated the *demos* before the aristocrat observed the potential output value, the *demos* would still not make the investment, because it would obtain w (from the aristocrat or elsewhere) in the future regardless of whether the investment was made. If the aristocrat promised to compensate the *demos* after the aristocrat observed the potential output, the investment would again not be made, because the *demos* would rationally expect the aristocrat to renege on that promise.

¹²More precisely, to determine whether the *demos* will make the investment, compare EU_D between Case iii and Case iv. This shows that when the *demos* controls tax rates, it will make the investment if and only if c is sufficiently low that:

$$c \# (r + i - g_1^* - w)(\rho + \gamma(g_1^*)^{-1})^{-1} - (r - g_2^* - w)(\rho + \gamma(g_2^*)^{-1})^{-1}$$

where:

$$g_1^* = [-\gamma + (\gamma^2 + \rho\gamma(r + i - w))^{-5}] \rho^{-1}$$

$$g_2^* = [-\gamma + (\gamma^2 + \rho\gamma(r - w))^{-5}] \rho^{-1}$$

$$g_d - g_a > 0$$

equivalently:

$$[-\gamma + (\gamma^2 + \rho\gamma(r + i - w))^{.5}] \rho^{-1} - (r - w) > 0$$

The next question is how the exogenous variables affect $(g_d - g_a)$ for interior solutions.

Differentiating $(g_d - g_a)$ yields four findings (proof available from the authors):

$$M(g_d - g_a)/M < 0$$

$$M(g_d - g_a)/M > 0$$

$$M(g_d - g_a)/M > 0$$

$$M(g_d - g_a)/M > 0$$

The model therefore predicts, *ceteris paribus*:

- P1 A greater likelihood of democratic institutions where, in the absence of difficult-to-monitor specific investments, output is low (low r).
- P2 A greater likelihood of democratic institutions where difficult-to-monitor specific investments yield a large increase in output (high i).
- P3 A greater likelihood of democratic institutions where the *demos* has a high reservation wage (high w).
- P4 A greater likelihood of democratic institutions where, in the absence of substantial spending on national defense, a *demos* that makes specific investments has a substantial probability of losing those investments to foreign conquest (high γ).¹³

Thus, low r , high i , high w , and high γ are *democracy-promoting factors*. Before proceeding to apply the model to ancient Greece, there are two points on which it is important to be clear. First, these factors work not only through their influence on an aristocrat's incentives, but through their influence on the expected duration of a democratic regime relative to that of a non-democratic

¹³However, recall that if γ is *too* high, the *demos* will choose not to make the investment even if it controls tax rates. Hence, an extremely high γ (e.g., imminent invasion) is not democracy-promoting.

regime.¹⁴ Second, the model's predictions differ from the notion of "income causing democracy" or "democracy causing income"—in the context of the model, income may be either positively or negatively related to the adoption democracy.¹⁵

III. Applying the Model to Ancient Greece

Greece is not a flat territory of wide-open expanses, with regular precipitation, plentiful rivers, and ubiquitous lakes. Yet it is not a poor country either. The soil is rocky but rich, the harnessing of water possible but only through ingenuity and toil. The growing season is long, predictable, and dry...Winters are cold, not harsh, and so provide critical dormancy for trees and vines...True, mountains and hills predominate, but slopes are more often gentle than jagged, and can shelter as well as isolate villages. (Hanson 1999, 26)

That the city-states of ancient Greece developed in a manner very different from the rest of the ancient world has always been obvious (for a review of the political institutions of Athens and Sparta, see Appendix B). The explanations offered frequently turn upon the unique attributes of the

¹⁴Although the implications derived in the text pertain to a single aristocrat whose only concern is avoiding conquest, the model can easily be extended to allow for a succession of heterogeneous aristocrats. This extension to a stochastic framework has two key implications for understanding the model's practical application. First, the effects of r , i , w , and γ on aristocrats' incentives (as derived above) all correspond to the effects of those variables on the likelihood of observing a democratic regime in a stochastic framework. Second, regime-survival effects arising from the likelihood of conquest complement the incentive effects: Under the same conditions that create incentives for aristocrats to adopt democracy, democratic regimes will tend to outlast non-democratic regimes. For a formal extension of the model to a stochastic framework, see Appendix A.

The model yields some other implications that, while testable in principle, would be difficult to test in practice. First, a lower value of ρ (the *demos*' discount rate) is democracy-promoting. Second, in the stochastic framework developed in Appendix A, a lower value of m_a (the aristocrat's benefit, other than tax revenue effects, from retaining control of tax rates) is democracy-promoting. In principle, a proxy for m_a might be found in the nature of aristocratic perks lost under democracy and/or other dimensions of policy changed by democracy (e.g., redistribution away from the aristocracy).

¹⁵In the model, countries will tend to adopt democracy when doing so will increase their income. Yet it is easy to show that higher income may be positively or negatively related to the adoption of democracy. For example, increases in r and i both increase potential income, yet an increase in r decreases the likelihood of democracy while an increase in i increases the likelihood of democracy. Similarly, increasing r and w by equal amounts increases the wealth of *demos* but has no effect on likelihood of democracy, while increasing both r and w , with a greater increase in r , yields a wealthier aristocrat and a wealthier *demos*, yet reduces likelihood of democracy. Finally, increasing both r and w , with a smaller increase in r , yields a wealthier *demos* and an increased likelihood of democracy.

Greek terrain: The mountainous and isolating landscape promoted independence, the scattered and rocky agricultural land rewarded ingenuity, and the independent and ingenious Greeks forged a new, democratic system of government.¹⁶ Even Plato linked Greek government to landscape, suggesting that hilly countryside provided the ideal conditions for the *polis* to develop (*Leg.* 4.704E-705B).

The analysis that follows also emphasizes the importance of the Greek terrain, but it takes the old argument much further by using terrain to explain variations in democratic development *within* Greece.¹⁷ The historical details presented in what follows are widely accepted by classical scholars; what is novel is this paper's interpretation of them.¹⁸ The first part of the analysis compares highly democratic Athens to less democratic Sparta during the Classical period, explaining the difference as the result of exogenous variations in the nature of agricultural land, which led to corresponding variations in r and i . The second part examines Athenian history and describes how the value of i changed over time in Athens, leading to concomitant changes in political participation. The third applies the model to other parts of ancient Greece. The fourth discusses the ability of the aristocracy to commit to the expansion of political rights.¹⁹

¹⁶See Michell (1957, 2-9) for a typical account.

¹⁷There is no generally accepted explanation, nor even much theory offered, as to why some Greek city-states became more democratic than others. Most classical scholars have instead focused on identifying, documenting, and interpreting the historical and institutional details behind the emergence of political systems in particular city-states, especially Athens (e.g., Manville 1990; Hansen 1991; Ober 1989, 1996).

¹⁸The reader will note that for evidence this paper relies principally on historical discussion (citing both ancient and modern scholarship) rather than on statistical analysis. The simple reason is that very few statistics are available for ancient Greece (though see table 1). The Greek city-states kept few records of quantities or prices of agricultural (and other) produce, and even fewer survived.

¹⁹Although explaining why ancient Greece as a whole was anomalously democratic is beyond the scope of this paper, it is worth noting that the reservation wage (w) may have been a democracy-promoting factor throughout Greece. Because of Tiebout (1956) competition, the typical member of the Greek *demos* would have had a higher reservation wage than would most subject peoples elsewhere of the time. There were many independent Greek city-states (in large part due to the "isolating" terrain) to which an unhappy Greek could emigrate. All of the city-states shared a common language and culture and were in close

The Classical Period: Why Athens was More Democratic than Sparta²⁰

In Classical Athens, enfranchised farmers worked the fields and made up the majority of the citizenry, while in Classical Sparta, those who worked the fields were disenfranchised serfs. Athens thus had a far larger proportion of its population participating in public decisions—in Athens, the *demos* set policy, while in Sparta, the aristocracy did. The following discussion explains Athenian democracy as the response to the low r and high i resulting from the nature of Athenian terrain.

Different terrain: In Spartan plains, high r and low i ; on Athenian hillsides, low r and high i

In the model, r is the output that results when the *demos* does not undertake the unobservable investment. In Sparta, the nature of agricultural terrain was such that high levels of output could be achieved without difficult-to-monitor specific investments. The crucial difference between Sparta and most Greek city-states is that Sparta controlled the rich plains of Laconia and Messenia, which supported large-scale grain production.²¹ Grain was a staple in Classical Greece (Pomeroy, et al. 1999, 3-4), and grain-producing land was a key productive asset. Unlike many of the

geographic proximity, which reduced the cost of relocation, hence raising the reservation wage. Greeks did indeed migrate. The larger city-states (Athens for example) had substantial populations of foreign residents (*metics*), many of whom were from other Greek city-states (Aristotle was a *metic*). Furthermore, the establishment of colonies increased the number of potential destinations. New colonies even recruited immigrants from other city-states. For example, Freeman (1950, 25) reports that the Athenian colony of Thourioi issued a proclamation “to the cities of the Peloponnese, offering a place to anyone who wished to join. Many accepted.” This fits Barzel’s (2000) argument that rulers may, as a mechanism to commit credibly to refrain from confiscating wealth, allow their subjects to live near borders where escape is easier.

²⁰Scholars typically divide the history of ancient Greece into four periods: the Mycenaean period (1600-1150 B.C.), the Dark Ages (1150-800 B.C.), the Archaic period (800-480 B.C.), and the Classical period (480-323 B.C.). The Classical period, as traditionally defined, ends with the death of Alexander the Great, but the institutions of the Greek city-state were fundamentally and permanently changed by the earlier invasion of his father, Philip of Macedon.

²¹Forrest (1968, 13) writes of the region where Sparta was located, “Thus there are two main areas of cultivation; one . . . was Messenia, the rich, utterly flat, alluvial plain of the Paimos and its tributaries; the other . . . Laconia’s central plain, some twenty miles long, some seven miles wide, well-watered and fertile but more broken than its Messenian counterpart by small hills and ridges.”

contemporaneous civilizations of the Near East (such as Egypt and Persia), most parts of Greece were hilly and rocky; however, Sparta was an exception (Hanson 1999). Growing wheat in the Spartan-controlled valleys required little in the way of specific investments (in irrigation or anything else): Plowing was simple, the growing cycle was short, and the land was homogeneous. In the context of the model, the nature of the Spartan terrain ensured that r , the level of output in the absence of unobservable specific investment, was large, and i , the additional output that would have been generated by costly-to-observe specific investment, was small.²²

By contrast, Athens lacked large, homogeneous tracts of land suitable for grain production.²³ The terrain of Attica, the site of Athens, consisted of small valleys, hills, and coastline, and was generally dry and rocky. Much of this heterogeneous landscape could be cultivated only if terraced, and was correspondingly difficult to plow. Thus, in the context of the model, r was much smaller in Athens than in Sparta. In the model, the response to a low r is democracy if i (the additional output generated by the *demos*' investment) is sufficiently high. In Athens, i was indeed high, because the same physical attributes that made the land unsuitable for large-scale grain cultivation rendered it attractive for investment in olive trees (more detail on the nature of that investment below). In his discussion of Greek agriculture, Hanson (1999, 76) emphasizes that olives can “grow on barren soil where little else is viable”—this describes much of the Athenian terrain. Although most Athenians

²²The homogeneity of Spartan lands is indicated by the state's ideological goal (seldom followed in practice) of supplying citizens with equal-sized estates, each of which was supposed to produce an equal amount of output. See Plutarch (*Lyc.* 8.7) and Jameson (1992, 136). The fact that each Spartan estate was supposed to (but did not often in fact) revert to the state for reassignment after the owner's death also indicates relatively little concern with incentives for long-term investment. See Murray (1993, 175), Hodkinson (2000), and Jameson (1992).

²³What fertile plains Athens had were much smaller than those controlled by Sparta. Consistently, recent estimates suggest that as much as half of the grain consumed by Athens during the Classical period was imported, primarily from the region of the Black Sea (Whitby 1998). For alternative estimates, see Garnsey (1988). The grain that Athens did grow was primarily barley, considered less tasty, but hardier and able to

grew cereals as well, the land of Attica was simply better suited to olives. Indeed, Athens' founding myth has the city pledging its allegiance to Athena, the Greek goddess of wisdom, because Athenians preferred her gift of an olive tree to the competing gift (a salty spring) from Poseidon. With low r and high i , Athens had more to gain from granting residual claims to agricultural workers

Typically, establishing secure title to an asset is necessary to induce users of the asset to make efficient decisions with respect to long-term investments. Two very different agricultural regimes existed in ancient Greece: (i) large estates farmed by serfs and engaged nearly exclusively in the large-scale production of cereals and (ii) smaller properties worked by the owners of the land (with their families and retainers), usually producing the famous Greek triad of olives, vines, and cereals (Jameson 1992). Sparta was representative of the former, and Athens of the latter.

The food consumed by Spartans was produced by serfs, known as helots, on distant estates owned by Spartans (Hodkinson 2000, Forrest 1969).²⁴ Helots were required to provide half the production of the estates to the absent Spartan masters, who devoted themselves to full-time military training. Helots differed from chattel slaves in that they possessed the right to live on the land they farmed, to maintain a family, and to own some personal items.²⁵ However, they had no land ownership rights, and no freedom of movement.

By contrast, Athenians in the Classical period typically owned the land they worked. Athenian

survive in drier, less fertile soil (Freeman 1999, 40).

²⁴Most estates were indeed distant. Sparta was located about 50 miles from its Messenian plains, with Mount Taygetos between them. Forrest (1969, 14) writes, "Two distinct units, then, Laconia and Messenia, and communications between them were far from easy."

²⁵Helots also differed from slaves (which both Spartans and Athenian citizens owned) in that slaves were invariably foreigners (there was a strong taboo against owning fellow Greeks), while the helots were native to the land they worked. In addition, chattel slaves typically became slaves after being captured in battle, rather than being born into slavery. See Hodkinson (2000, chapter 4).

farmers, known as *georgoi*, had formal title to their land (which could be sold or leased within the citizen community) and full claim to its produce. The plots owned by the *georgoi* were usually small, less than half the size of the average Spartan estate.²⁶ Most of these plots were located some distance from the major towns, on terraced hillsides, where the farmers grew olives, vines, and barley. Yet the *georgoi* were not subsistence peasants; many owned one or two slaves, whom the landowners worked alongside and closely supervised.²⁷

What explains this difference in ownership regimes? In other words, why did the Athenian aristocracy not retain control of the land and simply order peasants on rocky hillsides to grow crops, as the Spartan aristocracy did with its wheat-growing serfs?²⁸ The answer has to do with efficiency considerations. Economic theory shows that losses from principal-agent problems are greatest when the agent's level of effort is only weakly correlated with observable signals, such as output. In such cases, efficiency is enhanced by assigning ownership to the agent. This was the case with olives in Athens.

Olive production differs from the production of annual crops, such as wheat, in that olive trees bear fruit only after a large, difficult-to-monitor investment of time and effort. High yields require years of labor from workers skilled in grafting, irrigating, pruning, and suckering. A newly planted tree requires 20-60 years to mature (although it can begin to produce fruit after ten years), and even

²⁶Athenian farms were typically 10-20 acres large. Not until the Hellenistic period following Philip of Macedon's conquest of Greece did plots larger than 100 acres become common (Hanson 1999, 192).

²⁷Hired agricultural labor was rare. Although there was no social disdain associated with working one's own land, employing oneself to work another's land was despised. In *The Odyssey*, when one of Penelope's suitors offers Odysseus, disguised as a beggar, a job on his estate, he is actually proffering a deadly insult. Odysseus reacts angrily, challenging the man to a threshing contest (which itself indicates that working one's own land was perfectly acceptable).

²⁸All of ancient Greece, including pre-Classical Athens, once employed agricultural serfs. The paper discusses below why Athens abandoned the use of serfs.

new shoots grafted to mature trees (the common practice) take six or seven years to bear fruit (Hanson 1983, 55). Whether these investments are being correctly made is very difficult to monitor. The output of a given olive tree depends largely upon the characteristics of the particular plot (degree of slope, soil quality, intensity of sun, access to water). Because of the heterogeneity of the land, plots differed in these respects across peasants (the peasants were scattered across hillsides, where cultivable and non-cultivable areas were interspersed). Thus, in contrast to his Spartan counterpart, who oversaw simple activities involving homogenous land that generated a consistent level of output, a distant Athenian landlord (if one existed) could not simply have compared levels of olive production (or production of other crops, for that matter) across peasants for evidence of shirking (e.g., Barzel 1989; Allen and Lueck 1998).²⁹ This problem was exacerbated by the long gestation period of olive trees—even if shirking could be discerned from observing output, output itself required 10-20 years of investment to reach a stable level. By contrast, the growing cycle in the Spartan wheat fields was a single season.

Because of the difficulty in monitoring investment, and the consequent larger losses associated with a principal-agent setting, the assignment of residual claims to the peasant actually working the land was the more efficient solution for olive production. Even today, farmers of orchards, vineyards, and other perennial crops are much more likely to own the land they farm than are farmers of annual crops, such as wheat.³⁰ And consistent with the predictions of economic theory,

²⁹For simplicity, the theoretical model assumes that the aristocrat cannot directly observe whether the *demos* makes the investment. However, for the model to apply to ancient Greece, monitoring need not have been impossible, but merely sufficiently costly that the aristocracy preferred to grant property rights.

³⁰Milgrom and Roberts (1992, 308-10) discuss this in their section titled, "Predicting Asset Ownership." They write, "[An] example is the use of farm land for annual crops such as wheat. The investments made by the farmer in any one particular growing season, such as preparing the soil, planting, fertilizing, and so on are highly specific, but the transaction itself is simple. . . . Therefore, a relatively simple contract that transfers the rights to use the land for farming to a renter for a particular season is a good

Jameson (1992, 137) observes of the ancient world, “the serf system worked well only on large estates of the best land”—i.e., the land on which cereals were grown.

Thus, the differences in landownership between Sparta and Athens corresponded to differences in the nature of the terrain. Sparta’s homogeneous, fertile valleys, with high r and low i , were suited to the easily-monitored cultivation of cereals by serfs, who provided the distant Spartan landowners with a share of the output.³¹ The heterogeneous, hilly, and rocky terrain of Attica, with low r and high i , was more suitable for the cultivation of olive trees, a long-term, specific, and difficult-to-monitor investment, which made it instead optimal to assign ownership of the land, and thus residual claims to income from the land, to those who worked it.³²

Because the efficient assignment of residual claims differed, so did political rights

An aristocracy in ancient Athens could not establish secure property rights merely by promising to respect peasants’ claims to the land and to the olives they grew on it. In order to give agricultural peasants the incentive to work for 10-20 years in a manner largely unobservable to the aristocracy on

substitute for having the farmer own the land . . . The situation with fruit orchards, vineyards, and other perennial crops is very different. There, the farmer’s investment is expected to last for a long period of time, during which complicated decisions about crops, soil, and other uses of the land may have to be made. Spelling out all these contingencies in a long-term contract would be impossible. . . . We expect to find that farmers of these kinds of crops are much more likely to own the land they farm than are farmers of annual crops. Evidence from the state of California is consistent with this distinction.” Also see Bottomley (1963), who describes how Libyans planted almond trees only on private land, while using common land for cereal cultivation and nomadic grazing, and Anderson (1995), who examines the relationship between investment and property rights among Native American tribes.

³¹This is not to say that i was necessarily small in all parts of Sparta. Not all the land under Spartan control consisted of fertile plains; as in most of Greece, Sparta had rocky hillsides where i might have been high. This other land may have been cultivated, and some olives grown, but probably for subsistence use by serfs or other dwellers, none of whom possessed a defensible claim to land ownership (Jameson 1992).

³²Today the territory surrounding Athens is no longer known for growing olives; however, even as recently as the 18th century, it was the heartland of olive production. Beaujour (1800, 178-9), Napoleon’s envoy to Greece, described Attica’s olive production as part of his survey of the Greek economy, concluding that “in the gentle climate of Attica, olive trees grow most majestically” (“*dans la doux climat de l’Attique, l’olivier s’élève avec plus de majeste*”).

an investment that would generate an essentially perpetual stream of income, the aristocracy had to commit credibly to refrain from subsequent expropriation.³³ Because there were no independent third-party enforcers (independent courts, for example), the aristocracy could commit itself only by constraining its *own* power, so as to reduce its ability to reallocate (to itself) the residual claims to future income from these investments. In other words, credible commitment to property rights for agricultural peasants required transferring to those peasants influence over policy decisions that would subsequently affect their residual claims. In short, secure ownership of land (and of the rents from it) required that landowners be able to influence policy. Indeed, throughout the ancient world, the link between political rights and secure claims to land was ubiquitous; one typically did not exist without the other.³⁴

Thus, for Athenian farmers to hold secure property rights, they had to be able to influence policy. And, consistent with the model's predictions, farmers had much greater influence over policy in Athens (where they grew olives on heterogeneous land) than in Sparta (where they grew wheat on homogeneous land). Each of the two city-states had a popular assembly that passed laws and a council that prepared motions for the assembly (see Appendix B for details). But while Athenian farmers had the right to sit on the popular assembly and council and to hold all public offices, Sparta restricted membership in the assembly to the warrior class and council membership and other public

³³Once established (i.e., after the large investment), olive trees can produce olives for centuries (Forbes and Foxhall 1978).

³⁴As a general rule, of course, democracy is neither necessary nor sufficient for secure property rights; for example, slaves have sometimes had rights to property (Barzel 1989), and democracy may allow the majority to expropriate wealth from a minority. However, as Weber (1976, 174) notes, in most ancient civilizations, "Ownership of land alone determined a man's political status." Control of land was the route to political power, and political power secured the control of land. As Gernet (1981, 314) writes of the ancient world, "It should always be remembered that, in principle, laws governing land ownership exist only for citizens."

offices further still.³⁵ In effect, Sparta's political structure never evolved much beyond the warrior's assembly that had been common throughout Greece during the Dark Ages, so that a population of no more than 10,000 enfranchised full-time warriors governed a native-born male population of roughly 100,000 disenfranchised agricultural serfs.³⁶ By contrast, Athenian men who worked the land had the same political rights as other male citizens.

In sum, because of differences in i and r (the result of differences in terrain), Athens had the economic incentive to provide secure property rights to a larger group of people than did Sparta. This required enfranchising a broader segment of Athenian society than of Spartan society. Athens was more democratic than Sparta as a result.

The Rise and Fall of Democracy in Athens

In the model, a sufficient exogenous increase in the return to specific investment, i , will convert a non-democratic, non-investing regime to a democratic, investing regime. What follows will

³⁵Solon, who became Athenian *archon* (leader) in 594 B.C., is credited with altering the Athenian political system from one based primarily on status at birth to one based on wealth, thus enfranchising much of the agrarian sector (Ober 1989, 64). Because of Solon's reforms, "An elite of wealth, which would be larger and more permeable to new members, replaced the nobility of birth as the exclusive governing elite" (Ober 1989, 61). Over the following centuries, further reforms expanded democratic rights, eventually enfranchising the landless as well (see Appendix B). This fits the change in the key productive assets in Athens. By the time the link between land and political rights was eliminated, the creation of wealth in Athens depended on a variety of industries, including manufacturing, mining, and trade. Granting political rights to those engaged in those industries, regardless of whether they owned land, helped secure the rights to the returns from investment in those industries. See Ober (1989), Hansen (1991).

The major Spartan political institutions consisted of (i) a dual kingship (perhaps a legacy of the uniting of independent villages); (ii) a council known as the *Gerousia*, whose members had to be over the age of 60 and served for life (no bill could be brought to the assembly until it had first been discussed and approved by the *Gerousia*, and the *Gerousia* had, as did the kings, the power to overrule assembly decisions); and (iii) a popular assembly, possessed of the power to pass laws. Although the *Gerousia*'s members were elected by the popular assembly, in which all Spartan citizens could participate, they were probably chosen only from certain aristocratic families. Appendix B discusses Spartan political institutions in more detail; see also Forrest (1968), Hodkinson (2000).

³⁶Cartledge (1987, 174-5). The population of non-citizens also included a now-unknown number of native-born, non-serf residents, the *perioikoi* ("those who live around").

demonstrate that democracy, property rights to smallholdings of land, and investment in olive production rose and fell together in Athens. From a relatively undemocratic starting point at the end of the Dark Ages, when the use of serfs was common across *all* of Greece, Athenian political institutions became increasingly democratic, property rights to smallholdings increasingly well-defined, and investment in olive production increasingly important.³⁷ This occurred because two factors caused *i* to increase: the settlement of vacant land driven by population growth, and a change in olive production technology. Athenian political institutions remained democratic until invasion by a foreign empire in the 4th century B.C. ended democracy, which led to the abandonment of marginal lands, substantial concentration in landholdings, and the collapse of olive production.

The settlement of vacant land and the change in land tenure

The transition from a serf-type system to citizen-farmers in Athens accompanied a transformation of agricultural production that began during the massive settlement of previously vacant land at the start of the Archaic period in the 9th and 8th centuries B.C. This settlement was driven by rapid population growth, which may have reached rates of two to three percent per year.³⁸

The expanding population spread from the high *r* fertile valleys to terrain called *eschatia* (marginal land). The typical *eschatia* had been vacant hillsides, perhaps used sporadically for grazing.

The mere fact that this land had been vacant suggests that investment was required to render it productive. Indeed, *eschatia* was the heterogeneous and hilly terrain that supported olive

³⁷On serfs in pre-Classical Greece, see Jameson (1992) and Finley (1982).

³⁸See Pomeroy, et al. (1999, 43). Throughout Greece, precipitous declines in population had followed the collapse of Mycenaean civilization circa 1150 B.C. (estimated at 60 to 90 percent, depending on the region), leaving much land vacant. Then, at the end of the 9th century (the end of the Dark Ages), the population began to grow again, reaching rates of two to three percent per year by the early 8th century. See Hanson (1999, 36) and the citations therein.

production, and therefore required the specific investments described earlier.³⁹ As explained above, creating proper incentives for such investment required those who worked the land to have secure claims to the output. Thus, with the settlement of the *eschatia* came a fundamental change in Athenian land tenure: the rise to dominance of the *kleros*, the family owned and operated farm (Hanson 1999). The *kleros* was not a strictly private holding in the sense we understand it today—it was attached to the *oikos* (“family”) rather than to the individual.⁴⁰ Nonetheless, it represented a claim to the land in perpetuity. Previously, the Mycenaean overlords and the Dark-Age chieftains had “owned” tracts of land and controlled the produce of that land, but in the Archaic Period there first appeared a group of Greek farmers who were neither serfs, wealthy aristocrats, nor subsistence peasants (e.g., Hanson 1999, 87).⁴¹ These farmers eventually became the majority of the Athenian citizenry.⁴²

Investment in olive cultivation

The rise to dominance of enfranchised citizen-farmers in Athens occurred jointly with an

³⁹Although *eschatia* literally means “marginal land,” Hanson (1999, 79) suggests that it connotes “acreage on more difficult terrain, open for any with capital and a desire for difficult labor.” Hanson (1999, 80) continues, “By the 5th century we should imagine that in almost every area of Greece terraces and land reclamation were ongoing. This involved an enormous investment of time, capital, and effort in order to cultivate hillsides that were formerly only marginally valuable as pasture.” In Sparta, relative abundance of open plains meant that there was less pressure to settle the *eschatia*. As Hanson (1999, 85) explains, “It was one of the great ironies of Greek history that the rich substantial plains of Thessaly, Macedonia, Messenia [the home of Sparta’s Messenian helots], and Crete probably fostered agricultural stagnation...due to the absence of large tracts of unwanted, unowned, *eschatia*.”

⁴⁰An *oikos* sometimes included slaves, or even an entire clan (Donlan 1989, 134-6).

⁴¹Morris (2001) suggests that population growth increased the monitoring costs of a sharecropping system, thereby providing the incentive to assign residual claims to agricultural workers in the valleys as well on the hillsides.

⁴²Indeed, Plato envisioned Greek states initially forming after individual farmers “turned to farming hillsides, making fences of rubble and walls to find protection from wild animals and building a single large and common house” (*Leg.* 3.680E). Aristotle proposed that rule by small landowners was a stage in the development of democracy (*Eth. Nic.* 8.II60bI8-22).

increase in output from specific investments in olive production. This has two important links to the theoretical model. First, a change in olive production technology increased i , the additional output obtained from investment in olive trees. Until relatively recently, the prevalent view among Classical scholars had been that olives, vines, and fruit trees were always important parts of Greek agricultural production. A new consensus has emerged: Until the 8th century B.C., the varieties of olives, grapes, and even cereals cultivated in Greece were mostly feral (Hanson 1999, 33-5). Consistently, there is no evidence that Greeks had the skills necessary for grafting and budding before the 8th century (Hanson 1999, 78). Pollen studies date the importation of improved varieties of olives and grapes from Asia Minor to the early Archaic period (Boardman 1977). These improved trees and vines greatly increased the potential output of the newly-cultivated *kleros* located on *eschatia*: They grew well on rocky hillsides, where plowing and grain production were extremely difficult, and they could thrive with less moisture and less nitrogen. Hence, the new technology increased i , which the model predicts will increase the likelihood of democracy.

Second, there is evidence that democracy increased investment in olive production. For example, scholars have suggested that Solon's famous democratic reforms of the early 6th century (see Appendix B) led to a boom in Athens' export of olive oil (Freeman 1999, 106). This fits the model's characterization of democracy as a mechanism to address time-inconsistency problems. As explained earlier, because highly productive olive trees required difficult-to-monitor care and many years to mature, one would expect olive production to flourish when organized such that the trees were cared for by individuals who had secure rights to the trees' future output. This type of organization appears to have arisen with the establishment of family-operated farms owned by

enfranchised citizens.⁴³

After the invasion: Loss of political rights and abandonment of land and olives

The political institutions that characterized the Classical period were put to an end by the conquests of Philip of Macedon and his son, Alexander the Great. Although Athens and other Greek cities continued to exist, their nature changed fundamentally. As Runciman (1990, 348) explains, “The *poleis* that survived and indeed flourished in the Hellenistic and even the Roman periods were *poleis* in name only: they were urban communities with a life of their own, but not citizen-states in the sociological sense.”

Consistent with the model, the decline of democracy (forced by a foreign invasion) caused a striking reversal of the economic changes that had accompanied the rise of democracy. Deprived of political rights, Athenian farmers abandoned land, leaving much of the surrounding countryside vacant, especially the hilly *eschatia* that had successfully supported olive production (Hanson 1999, 390).⁴⁴ Much of the land that continued to be cultivated coalesced into large blocks under the control of single individuals.⁴⁵ Monoculture, with a focus on cereals, replaced the diverse mixture of

⁴³Thucydides associated the pre-*polis* Greeks' inability to settle in one place with their reluctance to plant olive trees (1.2.2.). Interestingly, Athenian rulers quite probably considered underinvestment in olive trees an important policy issue. For example, the 6th century Athenian tyrant Peisistratus provided loans for the planting of trees and vines (Aristotle *Ath. Pol.* 16.3). In addition, tradition has it that, under Athens' early kings, the government paid a bonus to those planting olive trees. During the Classical period, cutting down someone else's tree was forbidden under grave penalty, and cutting down one's own trees was restricted to two per year, unless for a usage authorized by the gods (Beaujour 1800, 174).

⁴⁴Although olive trees are nearly indestructible, they quickly return to the feral state if not well-tended. The difference is significant: one olive from a domesticated tree may produce as much oil as ten olives from a feral tree. See, e.g., Beaujour (1800, 176) and Forbes and Foxhall (1978, 38).

⁴⁵During the 4th and 5th centuries, Greek farms of more than 100 acres were highly unusual, but during the 3rd and 2nd centuries, large estates became the norm. Disparities in landholding had been small during the Classical period, when the wealthiest of the Athenian landowners might have had 4-5 times the land of the average farmer. During the Hellenistic period, some estates were a thousand times larger than the average small farms. See the examples cited in Hanson (1999, 389).

cereals, olives, and vines. Freeman (1999, 119) writes, “The disruptions of the early Hellenistic period...led to the collapse of the olive industry...and a retreat by farmers to the more fertile grain-bearing areas.” And, as Hanson (1999, 386) explains, “The manorial nature of the Greek Dark Ages gradually reasserted itself in Hellenistic and Roman times—in the exact areas where the old agrarian *polis* had once held sway.”⁴⁶

Other Parts of Ancient Greece

Although ancient Greece had more than 1000 city-states, few left records sufficiently detailed to test the predictions of the model. This section will discuss several that did: Argos, Corinth, and Thebes, which were three of the most important city-states after Athens and Sparta. It will also consider Thessaly, the region of Greece that had the largest and most fertile plains.

Argos

Argos provides an interesting test of the model because while it, like Sparta, was settled by Dorian invaders in the 10th century, its terrain is much more like that of Athens.⁴⁷ The Argive plain was substantially smaller than those controlled by Sparta (see table 1), and, although fertile, was one of the most drought-ridden in mainland Greece.⁴⁸ Hence, compared to Sparta, Argos had a smaller r . The model would therefore predict a broader distribution of democratic rights than in Sparta, and

⁴⁶It is interesting to speculate on why Alexander the Great and the subsequent Roman conquerors did not maintain democracy. The pattern of events is consistent with model’s basic predictions. First, both empires, if viewed as a whole, had relatively high values of r because they held vast areas of fertile plains. Second, once under imperial control, the likelihood of a foreign conquest that threatened residents’ wealth (in the sense of the model) would have been small, especially for Greek cities. This suggests a low value of γ . As the model predicts, a high value of r and a low value of γ yield weak incentives for leaders to establish widespread democracy.

⁴⁷Kelly (1976, 3) writes of Argos, “Like most of Greece this area is made up largely of barren limestone hills and mountains.”

⁴⁸Homer, for example, referred to “thirsty Argos.”

that is exactly what one sees. Robinson (1997, 82) writes that “By the second half of the 5th century, and likely by 463, Argos had established a remarkable *demokratia*, relatively stable and arguably as progressive in its institutions as its contemporary at Athens.”⁴⁹

Classical scholars do not know precisely how the Argive constitution developed. A monarchy was replaced in the late 7th/early 6th century by nine *damiorgoi*, who are presumed to have been elected magistrates of some sort, probably drawn from the aristocracy. Then, following a cataclysmic defeat by Sparta, Argos established a new constitution, which enfranchised local-dwellers (who may have been serfs).⁵⁰ While the aristocracy’s motives for establishing the new constitution are not known, Argos’ military defeat may have provided the incentive to expand political rights in order to promote wealth creation for defense against further attack (consistent with the defeat by Sparta signaling an increased value of γ). In any case, by the Classical period, Argos had citizen-farmers working the land, as in Athens and in contrast to Sparta.

Strikingly, in Argos the evolution of population growth, settlement of *eschatia*, and specific investment in olive production match what happened in Athens very closely. Freeman (1999, 188) writes:

[T]he southern Argoloid became virtually deserted in the Dark Age and it was not until the 8th century that there was renewed settlement along the valleys. At first only grain was produced but population growth in the following centuries went hand and hand with the exploitation of more marginal land, often steep and stony, and less able to retain moisture. Here olives were grown, with possibly some grain among their roots. This was a significant step. Olives take years to mature and require capital, equipment, oil presses and jars, with

⁴⁹While it failed to follow Athens’ in extending political rights to the landless, Argos distributed rights quite broadly by the standards of the time. Tomlinson (1972, 193) writes, “the Argive constitution was that of a moderate rather than an extreme democracy, of the sort that existed in Athens before the reform of 462 B.C.”

⁵⁰Herodotus describes the Argives enfranchising the *douloi*, or serfs, while Aristotle and Socrates refer to the disenfranchised peoples as *perioikoi*, or dwellers-around (typically lacking citizen rights but not burdened by serf-like obligations). See the discussion in Robinson (1997, 82-88).

which to process and store.

And by the Classical Period, Argos was close to Athens in its level of democracy.

Thebes

In contrast to Athens and Argos, Thebes had fertile cereal-producing plains, though not as large as Sparta's (see table 1).⁵¹ This made r higher in Thebes than in Athens or Argos, yet lower than in Sparta. Consequently, the model would predict a distribution of political rights narrower than in Athens and Argos, yet broader than in Sparta. And indeed, this was so. Ancient scholars classified Thebes as an oligarchy.⁵² Modern scholars have only a sketchy knowledge of the Theban constitution, but it appears that the most important governing duties were handled by four overlapping councils, each of which had to approve an action before it could be taken. Scholars believe that Thebes probably had a popular assembly, too, but with limited powers and most likely property qualifications (Demand 1982, 26). Membership on the councils was even more restricted. But consistent with the model's predictions, these restrictions were nowhere near as severe as in Sparta, where the entire agricultural workforce was excluded from participation.

Corinth

Because Corinth had a proverbially fertile, though small, central plain, r was higher than in Athens or Argos, but not as high as in Sparta (which had much larger plains; see table 1).⁵³ The

⁵¹Thebes was located in the center of an agriculturally-rich part of Greece called Boeotia. Theban farmers produced primarily cereals, rather than olives, and Thebes is believed to have been self-sufficient in food production. Boeotian agricultural production was so successful, and the peoples of Boeotia so widely-known for being well fed, that the insult "Boeotian pig" became common (Demand 1982, 10).

⁵²See *Hellenica Oxyrhynchia*, 16.ii and Aristotle, *Pol.*, III.1278A21-6.

⁵³Salmon (1984, 1) writes, "the fertility of the central region of Corinthia can only be appreciated after closer inspection. The rich land between Corinth and Sicyon was proverbial; and Corinth was 'wealthy' to the epic poets before her wealth could have depended to a significant degree on commerce." Although Corinth did not receive much rain (on the mainland, only Athens received less), an abundance of natural springs more

model therefore predicts a distribution of political rights less broad than in Athens or Argos, but more broad than in Sparta.⁵⁴ And this was the case. The ancient authors classified Corinth among the oligarchies.⁵⁵ Modern scholars do not know whether Corinth imposed property (or other) requirements for officeholding, or how Corinth divided responsibilities and power among political offices.⁵⁶ It is clear, however, that Corinth distributed its political rights more broadly than Sparta: Corinth had no serfs, and the citizens who worked the land could at least sit in the assembly.⁵⁷

Thessaly

Thessaly is an interesting case because it possessed both a terrain and a government markedly different from the rest of Greece. Thessaly consists mostly of flat, fertile plains, totaling 2400 square miles and ideal for cereal production (Westlake 1969, 2). Thus, to an even greater degree than Sparta, Thessaly had a high r and low i . During the Classical period, Thessaly exported grain, and grew very few olives (Westlake 1969, 5). Consistent with the model's predictions, Thessaly was

than made up for it (Salmon 1984, 8; Engels 1990, 12). Because of the plain's small size, Corinth also depended on less desirable, hilly agricultural land, and the evidence suggests that Corinthian farmers cultivated olive and fruit trees on this land (Salmon 1984).

⁵⁴Corinth, like Sparta and Argos, was settled by Dorians.

⁵⁵For example, Plutarch wrote, "Corinth was more oligarchically governed and dealt with little public business in the assembly" (*Dion* 53.2-4). In addition to the council and assembly typical of democracies, Corinth had a third body characteristic of oligarchies, the *probouloi*, or preliminary council, which set the agenda for the assembly. Aristotle wrote of oligarchies, "It is right either to co-opt some men from the people (to the deliberative body) or to institute an office like that which some states call *nomophylaces* and others *probouloi* [preliminary council], and to allow discussion (by the people in general) only on those matters which these men have considered in advance. For in these ways the *demos* will participate in deliberation, but will not be able to subvert any part of the constitution" (*Pol.* 1298).

⁵⁶Salmon (1984, 238) reviews the evidence and concludes that there were probably no property requirements for serving in the assembly, but that the assembly most likely played only a minor role in establishing policy, serving primarily in a consultative capacity.

⁵⁷Although Corinth distributed political rights less broadly than democratic Athens and Argos and more broadly than Sparta, there is insufficient evidence to determine whether Corinth was more or less democratic than Thebes. Thebes's assembly most likely exercised greater power than did Corinth's, but probably had stricter property requirements.

not democratic. Indeed, Thessaly lacked even rudimentary democratic institutions—the *polis*, as the Greeks understood it, never developed in Thessaly (Hanson 1999, 108, 384; Westlake 1969, 20). Through the Classical period, Thessalian rulers remained a collection of barons in the Dark-Age style, with serfs farming the land (Westlake 1969, 27-29). In sum, Thessaly was less democratic than anywhere else in ancient Greece, consistent with its extremely high value of r and low value of i .⁵⁸

Summary

Table 1 summarizes the relevant facts for the six states discussed in this paper. The states are listed in order of how democratic ancient scholars considered them to be (column 2), a ranking consistent with the conclusions of modern scholars (column 4). Columns 5 and 6 list the size and characteristics of each state's principal agricultural plains. The parts of Greece with the largest plains, Thessaly and Sparta, did not develop highly democratic systems, while Athens and Argos, the most democratic, had much smaller, drier plains. Thebes and Corinth, with small but relatively rich plains, rank in the middle in terms of democracy. The reader should remember, however, that although these are the city-states about which classical scholars know the most, only scant information is available about some of their political systems. The population figures are also uncertain.

Finally, it is interesting to note that the preceding evidence clearly demonstrates that wealth per se did not lead to democracy. Thebes, with its rich agricultural land in the heart of fertile Boeotia,

⁵⁸Wood (1988, 83) writes, "There were those Greek states which never saw the full development of either the peasant-citizen or large-scale chattel slavery, notably Sparta, Thessaly, and the city-states of Crete. In all these cases, agriculture and production in general were dominated by people who were politically subject to or juridically dependent upon privileged classes or a central authority to whom they were obliged to render tribute and/or labor services in one form or another." Hanson (1999, 385-6) writes, "In Thessaly . . . the old Dark-Age regime of aristocratic horse owners and dependent serfs was never quite dethroned."

was an oligarchy. And although widely referred to as “Wealthy Corinth” (Salmon 1984), Corinth was an oligarchy, too.

Commitment to Political Rights: Defense Spending and Warfare

Scholars have long seen a link between the ancient Greek style of warfare, which was based on the hoplite phalanx, and the expansion of political rights.⁵⁹ The nature of Greek warfare has important implications for the application of this paper’s model. For the model to explain the adoption of democracy, two things must hold: (i) the aristocrat’s decision to enfranchise the *demos* must be irrevocable, and (ii) the enfranchised *demos* must find it in its own interest to devote substantial resources to defense (otherwise the aristocrat will not let the *demos* set policy). In the case of ancient Greece, both were true, in large part because of hoplite warfare.

First, consider the aristocracy’s ability to grant irrevocable political rights to the *demos*. In ancient Greece, members of the hoplite phalanx owned their own arms and differed little with respect to their skills in using them.⁶⁰ Scholars have noted in other contexts the importance of broadly distributed arms to the securing of rights (Umbeck 1981, Barzel 2000). Throughout the Greek city-states, the distribution of arms and the distribution of political rights were closely linked; for example, one of the early requirements for citizenship in Athens was sufficient wealth to

⁵⁹For example, Aristotle (*Pol.* 4.1297b16-24, 28) viewed the advent of hoplite warfare as an important factor in the development of Greek democracy.

⁶⁰Hoplite infantrymen were arranged in a tightly grouped phalanx, with each holding a short thrusting spear in his right hand and a shield on his left shoulder (the word “hoplite” comes from *hoplon*, another name for shield); the enormous shield sheltered both his own left side and his companion’s right. Opposing phalanxes assembled on open plains and charged each other. Xenophon says of the crowded and chaotic hoplite clashes, “There is little chance of missing a blow” (*Cyr.* 2.1.16-18). Accordingly, the citizen-soldiers required little training or skill, and the officers’ roles were correspondingly simple. See Hanson (1983). Xenophon wrote that battle strategy “consists primarily of the correct way to march out in formation, the proper manner of posting sentries, and the best approach to crossing a pass” (*Oec.* 20.6-11). Only the Spartans engaged in formal military training, and even among them, success in battle appears to have depended less on tactics and ability with weapons than on discipline in maintaining the phalanx; once on the battlefield, Spartans fought like other Greeks (Hanson 1999, 272).

purchase hoplite arms.⁶¹ As a result, citizens had the means (weapons and skill) to protect their rights. In practice, political rights in Athens remained quite secure (until, of course, a massive foreign invasion from Macedon).

Second, consider the real-life counterpart to the *demos*' choice of defense spending (g in the model). In practice, defense requires capital, labor, and risk of death, and Greek citizens bore the cost of providing each of these in a manner that corresponded to a remarkably uniform value of g per citizen.⁶² With citizen-soldiers paying for and participating in hoplite warfare, and holding substantial wealth that could be lost in foreign attack, the electorate had incentives to choose collectively to provide substantial resources for defense (g^*)—a necessary condition in the model for the aristocracy to support expanding the franchise.⁶³

IV. Potential Extensions

The experience of the ancient Greek city-states has parallels in Western Europe. First, frequent

⁶¹This was the wealth that defined Solon's third census class, the *zeugitai*—see Appendix B. The basic components of Classical Greek infantry armor were 1) a double-grip, concave round shield; 2) a "Corinthian" helmet that covered the entire face and head; 3) a "bell" corselet of solid bronze; 4) pliable, laceless greaves for knees and shin; 5) a spear with an iron head and a sharp bronze spike on its butt; 6) a short, secondary sword (Hanson 1999, 222). It is estimated that the hoplite equipment cost about 100 drachma, roughly the price of an agricultural slave (Hanson 1999, 242).

⁶²The citizen soldiers in the hoplite armies of most city-states supplied their own equipment. Sparta was the exception, with the government providing the military equipment, paid for by what were essentially tax contributions from citizens. Only in the late 5th and 4th centuries did other city-states begin to contribute to the cost of weapons, and even then, only under unusual circumstances—the repair of weapons while on the march, gifts to orphaned offspring, training arms for new recruits (Hanson 1999, 290).

⁶³Warfare among Greek city-states was frequent, and agricultural investments were susceptible to conquest or destruction. For example, Hanson (1983, 3-4) writes, "For nearly 300 years war in Greece was shaped by a struggle to destroy, or to protect, grain, vines, and olive trees. Most armies of invasion uniformly entered the level ground of their enemy, and either threatened, or began, to ravage their cropland. To save their farms, defenders felt they were obliged either to capitulate and thereby submit to terms, or to engage in pitched battle and thereby drive the invader away." In the context of the model, this implies a substantial value of γ , which (unless so high as to prevent investment) is a democracy-promoting factor.

warfare among European countries from the Middle Ages onward gave monarchs the incentive to relinquish power to their subjects in order to encourage the creation of wealth, generating a number of interesting commitment devices (North and Weingast 1989; Kiser and Barzel 1991; Weingast 1997; Barzel 2000). Second, Acemoglu, Johnson, and Robinson (forthcoming) show that in regions where Europeans established colonies or otherwise intervened, physical geography had a strong effect on the institutions established and, consequently, on subsequent economic growth. The authors conclude that institutions that better protected private property rights were established in colonies with few easily exploited natural resources and, thus, few opportunities for simple wealth transfers to Europe. This corresponds, in the context to the model, to low values of r .

Another extension would be an empirical analysis of modern day relationships between income and democracy. The model predicts that exogenous income-raising factors may increase or decrease the incentives for rulers to adopt democracy, depending on the source of the income. For example, an increase in r will increase national income, yet *decrease* the ruler's incentive to adopt democracy. This suggests that wealthy non-democratic countries will typically have high values of r , which may explain, for example, the persistence of oil-rich Middle Eastern monarchies, where specific investment in oil production is easily monitored.

Finally, the model has application to the question of what foreign policies encourage democracy. For example, Harry Wu, one of the most prominent proponents of democracy in China, argues that foreign investment and freer trade have increased living standards for many Chinese (as most economists would expect), but nevertheless have delayed the adoption of democracy.⁶⁴ Wu's

⁶⁴Wu (2000, 1) writes, "It is true that living conditions for many Chinese have improved thanks to millions of dollars of foreign investment. But it is the Chinese government that benefits most from foreign trade and investment. The government needs foreign money and technology to maintain and increase its power and to modernize their system of tyranny." Wu goes on to discuss how the Chinese government is using these funds to purchase weaponry, which is also consistent with the model.

argument, which obviously contradicts the simple “wealth causes democracy” hypothesis, fits the theoretical framework of this paper. By increasing the reservation wage w , foreign investment and freer trade will increase workers’ living standards.⁶⁵ That alone would promote democracy. However, foreign investment and freer trade may also increase r and, hence, the returns to the rulers in the absence of granting political rights. If the effect of the increase in r dominates the effect of the increase in w , then the adoption of democracy will be retarded.⁶⁶ This fits Wu’s (2000, 2) observation that “We have seen the ‘dollars to democracy’ theory fail over the past twenty years.”

V. Conclusion

By developing a model and applying it to the rise and fall of democracy in ancient Greece, this paper contributes to a literature that dates back to the scholarly work of the ancient Greeks themselves. The theory and evidence suggest that democratic institutions tend to expand when they can mitigate important time-inconsistency problems and, therefore, encourage investment. Consequently, exogenous factors, most notably the potential returns to costly-to-monitor specific investments, can influence both the adoption of democracy and economic performance. The paper thus illuminates an interesting and important issue for the emerging literature on the links between democracy and economic growth.

At the end of the Dark Ages, when the first Greek city-states appeared, aristocratic governments ruled throughout Greece. Over the centuries that followed, city-states varied with respect to how far

⁶⁵The increase in w may occur because foreign investment or trade increases the demand for labor and/or because contact between workers and foreigners reduces the cost of emigration or defection (often of notorious concern to communist governments). As noted earlier, a high reservation wage in ancient Greece may have helped promote democracy.

⁶⁶Note that foreign trade has an ambiguous effect on r and on i because the relevant output prices may, because of comparative advantage, increase or decrease. Consequently, freer trade has an uncertain effect on the adoption of democracy.

they extended democratic political rights. Athens is well-known as the most democratic of the city-states. Why did Athens become so democratic? By granting voting rights to those who actually worked the land, democracy improved farmers' incentives to make long-term specific investments, because it reduced the likelihood that the fruits of that investment would be expropriated. And because these investments were so important in Athens, democracy contributed sufficiently to wealth-generation that the aristocracy found the expansion of democratic rights to be in its interest.

In contrast to Athens, Sparta is famous for a militarily-focused, aristocratic government that lasted through the Classical period. Why did Sparta *not* follow Athens in becoming democratic? The reason is that providing those who worked the land with secure rights to residual claims mattered less in Sparta, because the aristocracy could more easily observe the level of investment and effort by those who worked the fields. Consequently, the Spartan elite had little incentive to grant voting rights to the agricultural sector, which in turn kept the franchise limited. Thus, in contrast to Athens, where landowning farmers became the majority of the citizenry, those who worked the land in Sparta remained serfs, as they had been centuries earlier throughout Greece.

The same mechanism explains the rise and fall of democracy in Athens over time. From a relatively undemocratic starting point at the end of the Dark Ages, Athenian political institutions became increasingly democratic as two factors—the settlement of vacant land and a change in olive production technology—raised the returns to specific investments. The rise of democracy was accompanied by the establishment of family farms, worked by enfranchised citizen-farmers who made large specific investments in olive production. Athenian democracy ended with the invasions of Philip of Macedon and Alexander the Great, after which the small family farms disappeared and olive production collapsed.

Investigating other parts of ancient Greece provides additional evidence consistent with the

model's predictions. Governments in areas with large fertile plains (e.g., Thessaly, Sparta, and, to a lesser extent, Corinth and Thebes), where the additional output generated by costly-to-observe specific investment would have been low, tended to be more aristocratic. Governments in heterogeneous hilly areas (e.g., Athens and Argos), where the additional output generated by costly-to-observe specific investment was high, tended to be more democratic.

This paper thus concludes that democracy among the city-states of ancient Greece arose and endured, at least in part, because it promoted specific investment. The same mechanism should apply in a variety of other settings. The general prediction is that countries with wealth based on assets requiring little in the way of costly-to-monitor specific investment have weaker incentives to establish democracy. In other words, yesterday's grain fields of Sparta may be today's oil wells of the Middle East.

Appendix A: A Simple Extension of the Model

A useful extension of the model is to allow a succession of aristocrats, with heterogeneity among aristocrats' objective functions. Consider adding the following assumption:

A3' *Aristocratic preferences.* The aristocrat's per period value of avoiding conquest is $m + m_a$ when the aristocrat controls tax rates, and m when the *demos* controls tax rates. The aristocrat is drawn from two types, so that $m_a = m_a^{high}$ with probability q , and $m_a = m_a^{low}$ with probability $1-q$, where $m_a^{low} < m_a^{high}$. If conquered, the country returns to the initial state of the model with a new randomly drawn aristocrat.

The value of m_a may reflect personal tastes for aristocratic control and/or the additional value of perks attached to being an aristocrat when the aristocrat controls tax rates. In the case where policy has more than one dimension, m_a can represent the effect that the choice of government type has on other aspects of policy (e.g., redistribution away from the aristocracy).

The key question is how the probability of a regime type in a given period depends on the exogenous variables. Case i now has the following value to the aristocrat:

$$EU_A = (m + m_a) (1 - \gamma(r - w)^{-1}) (\mu + \gamma(r - w)^{-1})^{-1}$$

Naturally, for any given aristocrat, a high value of m_a will increase the aristocrat's expected value of retaining control of tax rates. Thus, given the two potential types of aristocrats, three possible cases exist: both types choose democracy (m_a^{high} sufficiently low); neither type chooses democracy (m_a^{low} sufficiently high); the type with m_a^{low} chooses democracy and the type with m_a^{high} does not choose democracy. The following discussion considers the last case (the interesting one).

Now the choice of government type is a Markov chain with stationary transition probabilities between democratic and aristocratic control of tax rates:

$$\delta_{da} = q\gamma g_d^{-1} \quad \text{and} \quad \delta_{ad} = (1-q)\gamma g_a^{-1}$$

Therefore, the steady state probability of democratic control of tax rates is:

$$\pi = \delta_{ad} (\delta_{ad} + \delta_{da})^{-1} = (1-q)\gamma g_a^{-1} [(1-q)\gamma g_a^{-1} + q\gamma g_d^{-1}]^{-1}$$

For interior solutions, differentiating π with respect to the exogenous variables yields (proof available from the authors):

$$\begin{aligned} \frac{\partial \pi}{\partial m} &< 0 \\ \frac{\partial \pi}{\partial m_a} &> 0 \\ \frac{\partial \pi}{\partial q} &> 0 \\ \frac{\partial \pi}{\partial \gamma} &> 0 \end{aligned}$$

These results yield predictions P1-P4 (see section II of this paper).

Appendix B: The Political Institutions of Athens and Sparta

During the Dark Ages (circa 12th through 9th centuries B.C.), the major political institutions differed little between Athens and Sparta.⁶⁷ Indeed, *all* late Dark-Age Greek communities employed a ruling structure consisting of a king, an aristocratic council with advisory powers, and a warriors' assembly intended largely for ratification. However, throughout Greece during the Archaic period (circa 8th and 7th centuries B.C.), the aristocratic councils assumed powers that had previously belonged to kings, with the office of king disappearing completely in many city-states. Then, over the next century, these councils gradually became less aristocratic and lost influence to the popular assembly. The key difference between Athens and Sparta was that membership in the Spartan assembly never proceeded much beyond the warrior class, while Athens extended political rights initially to those who worked the land and, eventually, to the landless as well. The following discussion describes in more detail these developments.

Sparta

As Murray (1983, 155) notes, the early Spartans "seem originally to have differed little from other early Greek communities."⁶⁸ Sparta's major political transformation took place in the early 7th century B.C., with the Lycourgan reforms (called the Great *Rhetra*, or statement).⁶⁹ Finley (1975, 175-6) notes that these reforms contain features found in the constitutions of many other Greek states (that of Athens, for example), but combined in Sparta to produce a unique system: "a state ruled by an elite of Spartiates whose prime concern was military preparedness." Although Sparta's two kings continued to exercise military and religious influence, they were required to share judicial powers with a council known as the *Gerousia*.⁷⁰ Members of the *Gerousia* had to be over the age of 60, and served for life. No bill could be brought to the assembly until it had first been discussed and approved by the *Gerousia*, and the *Gerousia* had, as did the kings, the power to overrule "crooked"

⁶⁷The Dark Ages represent a clear break with the political and economic structures of the earlier Mycenaean period (1600-1150 B.C.). Mycenae had highly centralized, highly bureaucratic palace economies, more like those seen in Crete at Knossos (and in Egypt and other near Eastern civilizations) than like the later Greek city-states. The reasons for the collapse of Mycenaean civilization remain unclear, but by 1100 B.C. most Mycenaean sites had been abandoned and Mycenaean political and social institutions had largely disappeared. See, e.g., Murray (1983, 16), Pomeroy et al. (1999, 39), and Manville (1990, 35).

⁶⁸The military constitution that would so profoundly mark Sparta was not established until the 7th century.

⁶⁹The dating is somewhat imprecise; see, e.g., Forrest (1968, 55-8), Dillon and Garland (1996, 147), and Murray (1993, 165-73).

⁷⁰Sparta was unusual in its dual kingship, the most widely-accepted explanation for which is that it was intended to ease the tensions that arose when separate villages were united as Sparta (Murray 1993, 161-2; Forrest 1968). One king served as commander-in-chief of the armed forces, while the other supervised domestic affairs and took over the army if the first king was killed. The two also functioned jointly as chief priests, performing sacrifices and interpreting omens. Aristotle called the Spartan kingship "hereditary generalship for life" (*Pol.* 3.1285b).

(i.e., not in the general interest) assembly decisions by simply declaring the assembly adjourned.⁷¹ Although the *Gerousia*'s members were probably chosen only from certain important families, they were elected by the popular assembly, in which all Spartan citizens could participate.⁷² The assembly also possessed the power to pass laws, as well as the right to elect the five *ephors* (overseers), citizens over the age of 30 who were responsible for supervising the kings and presiding over the assembly.⁷³

Spartan political institutions then changed very little over the next three hundred years.⁷⁴ Thus, when compared with most other Greek city-states, the Dark-Age roots of Classical Sparta remained remarkably clear: a warriors' assembly overseen by a council, with military and religious duties performed by a king.

Athens

The political institutions of 8th century Athens, like those of 8th century Sparta, consisted of king, aristocratic council, and warriors' assembly. According to tradition, the last Athenian king was replaced around 700 B.C. by a hereditary elite, the *Eupatridai* ("those born of noble fathers"), who selected *archons* ("leaders") from among their ranks to fill various administrative and judicial posts. Only members of the *Eupatridai* could hold public office. Classical scholars believe that Athens also had an assembly, probably, as in Sparta of the time, consisting of the heavily-armed warriors.⁷⁵

The first major democratic reforms in Athens were brought about in the early 6th century by the famous archon Solon.⁷⁶ Solon changed the Athenian political system from one based primarily on

⁷¹See Forrest (1968, 46, 49-50) for a discussion the *Gerousia* and of the clause which granted this right. It is unclear under exactly what circumstances the power would be invoked. The *Gerousia* also served as a criminal trial court for charges of murder, treason, and other serious crimes.

⁷²Candidates would appear before the assembly in an order determined by lot, with the assembly's choice made by acclamation (the winning candidate receiving the loudest shouts).

⁷³Sparta most likely established the office of *ephor* circa 700 B.C. (Forrest 1968, 77). *Ephors*, who took a monthly oath to support a king as long as the king behaved lawfully, had the power to impeach and depose kings judged derelict in their duties (an *ephor* once even ordered a king to divorce his queen so as to beget male heirs; see Freeman 1999, 96). Two *ephors* always accompanied a king on military campaigns. The *ephors* also performed judicial functions in civic matters, dealt with foreign embassies, and directed the education of the young. Several procedures limited the accumulation of power by a sitting *ephor*: *ephors* served for a single year, could not be re-elected, and could be audited and punished by successors in office.

⁷⁴Forrest (1968, 64) writes, "while other [Greek] states acquired new interests, developed new internal tensions, made more political progress, Sparta remained static, as static as any human society can."

⁷⁵Ober (1989, 57) writes of the Athens of this period, "It appears that *Eupatridai* effectively dominated the major magistracies and hence that the government was largely or entirely controlled by the nobility." Athens ultimately established a system of nine *archons*: a head official ("the *archon*") from whose name the name of the year would be taken, a war leader (the *polemarchos*), a "king" (the *basileus*) who performed religious ceremonies requiring royal participation, and six officials (the *thesmothetai*) with legal responsibilities.

⁷⁶Scholars know little about Solon beyond the fact that he became *archon* in 594. Some of the acts

status at birth to one based on wealth, thus enfranchising much of the agrarian sector. He did this by creating four new census classes defined by agricultural output (as a measure of property holdings): the *pentekosiomedionnoi* (500 measure men), the *hippeis* (300 measure men), the *zeugitai* (200 measure men), and the *thetes* (less than 200 measures).⁷⁷ All four classes had the right to sit on the popular assembly (which remained largely for ratifying the decisions of the *archons*); the *thetes* lacked the right to speak in the assembly (Ober 1989, 64). Also newly created was the “Council of 400,” in which only members of the three highest census classes could serve. The Council’s main task was to prepare motions for the assembly (O’Neil 1995, 18). Members of the two highest census classes could become *archons*, the major administrative and judicial decision makers, through election by the assembly (Ober 1989, 61). After serving their terms, former *archons* became members of the *Areopagus*, a body given general oversight of the laws of the state.⁷⁸ Because of these reforms, “An elite of wealth, which would be larger and more permeable to new members, replaced the nobility of birth as the exclusive governing elite” (Ober 1989, 61).⁷⁹

The second major expansion of democracy occurred in 508 B.C., when Cleisthenes reorganized the system of representation. The new system required all Athenians to register at a local *deme*.⁸⁰ Each of the 139 *demes* then sent representatives (the number of which depended on the population of the *deme*) to serve on the newly-formed Council of 500, which replaced Solon’s Council of 400. As with the old council, the Council of 500’s primary responsibility was to prepare the agenda for the assembly. However, unlike the Council of 400, eligibility criteria for serving on the council of 500 did not include property requirements.

Over the following decades, a series of reforms further weakened the links between property holding and public office. In 487, a lottery replaced election as the means for choosing the still very powerful *archons*. Athenians considered lots more democratic than elections—as Aristotle pointed out, elections favored those with wealth (Ober 1989, 7).⁸¹ In 462, an Athenian named Ephialtes led a movement that eliminated the power of the *Areopagus* to review and set aside decisions of the assembly; the reform left the more broadly representative Council of 500 as the only major advisory body to the assembly. Several years later, the right of all to speak on state matters at the popular

traditionally credited to Solon may not have been his.

⁷⁷Modern estimates suggest that members of the *pentekosiomedionnoi* needed thirty or more acres of land, the *hippeis* needed 18 or more, and the *zeugitai* needed 12 or more. See Murray (1983, 194).

⁷⁸Scholars know little about the origins of the *Areopagus*. Manville (1990, 74) writes, “As the preeminent conciliar authority during the Archaic age, it may have developed out of the informal advisory bodies of nobles who served the early kings.”

⁷⁹Solon also eliminated debt bondage in a reform known as the *seisachtheia*, or shaking off of burdens, and established a process for citizens to appeal the rulings of magistrates, perhaps through a special court or the assembly. This appeals process furthered the transfer of rights to the non-nobility.

⁸⁰A *deme* was typically a township or community. The assignment of individuals to a *deme* was not strictly geographical, as a citizen remained a member of the same *deme* even if he moved.

⁸¹By the Classical period, the only elective post remaining in Athens was that of military general (Freeman 1999, 230).

assembly became law. Previously, propertyless *thetes* could only listen and ratify. In 457/6 all offices, including archonships, were opened to the third census class, the *zeugitai*, and by the 4th century they were open to the landless *thetes* as well. Ober (1989, 81-2) concludes, "By the 440s, if not before, *demokratia* became the standard term to describe the Athenian form of government, and the *demos* indeed possessed the political power in the state." Remarkably, any male born of a citizen father and Athenian mother had the same political rights as any other male citizen.

References

- Acemoglu, Daron, Simon Johnson, and James A. Robinson. 2001. "The Colonial Origins of Comparative Development: An Empirical Investigation," 91 *American Economic Review* 1369-1401.
- Acemoglu, Daron, Simon Johnson, and James A. Robinson. Forthcoming. "Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution," *Quarterly Journal of Economics*.
- Acemoglu, Daron, and James A. Robinson. 2000. "Why Did the West Extend the Franchise? Democracy, Inequality and Growth in Historical Perspective," 115 *Quarterly Journal of Economics* 1167-1199.
- Acemoglu, Daron, and James A. Robinson. 2001. "A Theory of Political Transitions," 91 *American Economic Review* 938-963.
- Alesina, Alberto, and Allan Drazen. 1991. "Why are Stabilizations Delayed?" 81 *American Economic Review* 1170-1188.
- Alesina, Alberto, and Dani Rodrik. 1994. "Distributive Politics and Economic Growth," 109 *Quarterly Journal of Economics* 465-490.
- Allen, Douglas W., and Dean Lueck. 1998. "The Nature of the Farm." 41 *Journal of Law and Economics* 343-386.
- Alston, Lee J., Gary D. Libecap, and Robert Schneider. 1996. "The Determinants and Impact of Property Rights: Land Titles on the Brazilian Frontier," 12 *Journal of Law, Economics, & Organization* 25-61.
- Anderson, Terry L. 1995. *Sovereign Nations or Reservations*. San Francisco: Pacific Research Institute for Public Policy.
- Baedeker, Karl. 1894. *Greece*, Leipzig: Karl Baedeker, Publisher.
- Barro, Robert J. 1997. *Determinants of Economic Growth*. Cambridge: The MIT Press.
- Barro, Robert J. 1999. "Determinants of Democracy," 107 *Journal of Political Economy* S158-183.
- Barzel, Yoram. 1989. *Economic Analysis of Property Rights*. Cambridge: Cambridge University Press.
- Barzel, Yoram. 1992. "Confiscation by the Ruler: The Rise and Fall of Jewish Lending in the Middle Ages," 35 *Journal of Law and Economics* 1-13.

- Barzel, Yoram. 2000. "Property Rights and the Evolution of the State." 1 *Economics of Governance* 25-51.
- Beaujour, Felix. 1800. *Tableau du Commerce de la Grece: Forme d'apres une annee moyenne, depuis 1787 jusqu'en 1797*, Chez Ant.-Aug. St. Andre-des-Arcs: Renourad. Vol. 1
- Boardman, J.M.. 1977. "The Olive in the Mediterranean: Its Culture and Use" in Hutchinson, Joseph, ed., *The Early History of Agriculture*, Oxford University Press: Oxford, pp. 187-96.
- Bottomley, Anthony. 1963. "The Effect of the Common Ownership of Land upon Resource Allocation in Tripolitania." 39 *Land Economics* 91-95.
- Buck, Robert J. 1979. *A History of Boeotia*, The University of Alberta Press: Alberta.
- Buckler, John. 1980. *The Theban Hegemony, 371-362 B.C.*, Cambridge: Harvard University Press.
- Cartledge, Paul. 1987. *Agasilaos and the Crisis of Sparta*, Duckworth Press: London.
- Demand, Nancy H. 1982. *Thebes in the Fifth Century*, Routledge and Kegan Paul: Boston.
- Dillon, Matthew, and Lynda Garland. 1996. *Ancient Greece: Social and Historical Documents from Archaic Times to the Death of Socrates*, Routledge: New York.
- Donlan, Walter. 1989. "Homeric Temenos and the Land Economy of the Dark Age," *Museum Helveticum*, 46: 130-45.
- Engels, Donald. 1990. *Roman Corinth*, University of Chicago Press: Chicago.
- Fernandez, Raquel and Dani Rodrik. 1991. "Resistance to Reform: Status Quo Bias in the Presence of Individual-Specific Uncertainty," 81 *American Economic Review* 1146-1155.
- Finley, Moses I. 1985. "Sparta," in Finley, M.I., ed., *The Use and Abuse of History*, Viking Press: New York.
- Finley, Moses I. 1981. *Early Greece: The Bronze and Archaic Ages*, Norton: New York.
- Finley, Moses I. 1982. "Debt Bondage and the Problem of Slavery," in Shaw, B.D., and R.P. Saller, eds., *Economy and Society in Ancient Greece*, Viking Press: New York.
- Fleck, Robert K. 2000. "When Should Market-Supporting Institutions Be Established?" 16 *Journal of Law, Economics, & Organization* 129-154.
- Forbes, Hamish A., and Lin Foxhall. 1978. "The Queen of All Trees: Preliminary Notes on the Archaeology of the Olive," *Expedition*, 21: 37-47.

- Forrest, W.G. 1969. *A History of Sparta 950-192 B.C.*, Norton: New York.
- Freeman, Charles. 1999. *The Greek Achievement*, New York: Allen Lane Penguin Press.
- Freeman, Kathleen. 1950. *Greek City-States*, Macdonald: London.
- Gallant, Thomas, W. 1991. *Risk and Survival in Ancient Greece*, Polity Press: Cambridge, UK.
- Garnsey, Peter. 1988. *Famine and Food Supply in the Graeco-Roman World*, Cambridge University Press: New York.
- Gernet, Louis. 1981. *The Anthropology of Ancient Greece*, Hamilton, J.D.B., and B. Nagy, trans., Johns Hopkins University Press: Baltimore.
- Greif, Avner. 1993. "Contract Enforceability and Economic Institutions in Early Trade: the Maghribi Traders' Coalition," 83 *American Economic Review* 525-548.
- Greif, Avner. 1994. "On the Political Foundations of the Late Medieval Commercial Revolution: Genoa during the Twelfth and Thirteenth Centuries," 54 *Journal of Economic History* 271-287.
- Greif, Avner, Paul Milgrom, and Barry R. Weingast. 1994. "Coordination, Commitment, and Enforcement: The Case of the Merchant Guild," 102 *Journal of Political Economy* 745-776.
- Hansen, Mogens H. 1991. *The Athenian Democracy in the Age of Demosthenes*, Blackwell: Cambridge, MA.
- Hanson, Victor D. 1999. *The Other Greeks: The Family Farm and the Agrarian Roots of Western Civilization*, University of California Press: Berkeley.
- Hanson, Victor D. 1983. *Warfare and Agriculture in Classical Greece*, Giardini Editori e Stampatori: Pisa.
- Hanssen, F. Andrew. 2002. "Is There a Politically Optimal Level of Judicial Independence?" manuscript, Montana State University.
- Hodkinson, Stephen. 2000. *Property and Wealth in Ancient Sparta*, Gerald Duckworth and Co: London.
- Isager, Signe, and Jens E. Skydsgaard. 1992. *Ancient Greek Agriculture*, Routledge: New York.
- Jameson, Michael H. 1992. "Agricultural Labor in Ancient Greece," 135-46 in Wells, Berit (ed.), *Agriculture in Ancient Greece*, Proceedings of the 7th International Symposium at the Swedish Institute at Athens: Stockholm.
- Kelly, Thomas. 1976. *A History of Argos to 500 B.C.*, University of Minnesota Press: Minneapolis.

- Kiser, Edgar, and Yoram Barzel. 1991. "The Origins of Democracy in England." 3 *Rationality and Society* 396-422.
- Knack, Stephen, and Philip Keefer. 1997a. "Does Social Capital Have an Economic Payoff? A Cross-Country Investigation," 112 *Quarterly Journal of Economics* 1251-1288.
- Knack, Stephen, and Philip Keefer. 1997b. "Why Don't Poor Countries Catch Up? A Cross-National Test of Institutional Explanation," 35 *Economic Inquiry* 590-602.
- Kydland, Finn E. and Edward C. Prescott. 1977. "Rules Rather than Discretion: The Inconsistency of Optimal Plans," 85 *Journal of Political Economy* 473-491.
- Kydland, Finn E. and Edward C. Prescott. 1980. "Dynamic Optimal Taxation, Rational Expectations and Optimal Control," 2 *Journal of Economic Dynamics and Control* 79-91.
- Levy, Brian, and Pablo T. Spiller. 1994. "The Institutional Foundations of Regulatory Commitment: A Comparative Analysis of Telecommunications Regulation," 10 *Journal of Law, Economics, & Organization* 201-246.
- Lipset, Seymour Martin. 1959. "Some Social Requisites of Democracy: Economic Development and Political Legitimacy," 53 *American Journal of Political Science* 69-105.
- Londregan, John B., and Keith T. Poole. 1996. "Does High Income Promote Democracy?" 49 *World Politics* 1-30.
- Manville, Philip Brook. 1990. *The Origins of Citizenship in Ancient Athens*, Princeton University Press: Princeton, NJ.
- McGuire, Martin C., and Mancur Olson. 1996. "The Economics of Autocracy and Majority Rule: The Invisible Hand and the Use of Force," 34 *Journal of Economic Literature* 72-96.
- Michell, H. 1957. *The Economics of Ancient Greece*. Barnes and Noble: New York.
- Milgrom, Paul, and John Roberts. 1992. *Economics, Organization, and Management*. Prentice Hall: Englewood Cliffs, NJ.
- Minier, Jenny A. 2001. "Is Democracy a Normal Good? Evidence from Democratic Movements." 67 *Southern Economic Journal* 996-1009.
- Morris, Ian. 2001. "Hard Surfaces," in Cartledge, Paul, Edward E. Cohen, and Lin Foxhall, *Money, Labour, and Land: Approaches to the Economies of Ancient Greece*. Routledge: London.
- Mueller, Dennis C., and Thomas Stratmann. 2001. "The Economic Effects of Democratic Participation," manuscript, George Mason University.

- Murray, Oswyn. 1993. *Early Greece*, Harvard University Press: Cambridge, MA.
- North, Douglass C. 1990. *Institutions, Institutional Change and Economic Performance*. Cambridge University Press: Cambridge.
- North, Douglass C. 1993. "Institutions and Credible Commitment," 149 *Journal of Institutional and Theoretical Economics* 11-23.
- North, Douglass C. and Barry R. Weingast. 1989. "Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth Century England," 49 *Journal of Economic History* 803-832.
- Ober, Josiah. 1989. *Mass and Elite in Ancient Athens*. Princeton University Press: Princeton, NJ.
- Ober, Josiah. 1996. *The Athenian Revolution: Essays on Ancient Greek Democracy and Political Theory*. Princeton University Press: Princeton, NJ
- Olson, Mancur. 1993. "Dictatorship, Democracy, and Development." 87 *The American Political Science Review* 567-576.
- O'Neil, James. 1995. *The Origins and Development of Ancient Greek Democracy*, Rowan and Littlefield: Lanham, MD.
- Pomeroy, Sarah B., Stanley M. Burstein, Walter Donlan, and Jennifer Tolbert Roberts. 1999. *Ancient Greece: A Political, Social, and Cultural History*, Oxford University Press: New York.
- Robinson, Eric. 1997. *The First Democracies: Early Popular Government Outside Athens*, Franz Steiner Verlag: Stuttgart.
- Rodrik, Dani. 1999. "Democracies Pay Higher Wages." 114 *Quarterly Journal of Economics* 707-738.
- Runciman, Walter G. 1990. "Doomed to Extinction: The *Polis* as an Evolutionary Dead-End," in Murray, O. and S. Price, *The Greek City: From Homer to Alexander*, Clarendon Press: Oxford, pp 348-67.
- Salmon, J.B. 1984. *Wealthy Corinth: A History of the City to 338 B.C.*, Clarendon Press: Oxford.
- Tiebout, Charles. 1956. "A Pure Theory of Local Expenditures," 64 *Journal of Political Economy* 416-24.
- Tomlinson, R.A. 1972. *Argos and the Argolid*, Cornell University Press: Ithaca, NY.
- Umbeck, John. 1981. "Might Makes Rights: A Theory of the Foundation and Initial Distribution of

Property Rights." 19 *Economic Inquiry* 38-59.

Weber, Max. 1976. *The Agrarian Sociology of Ancient Civilizations*, Frank, R.I., trans., Humanities Press: London.

Weingast, Barry R. 1993. "Constitutions as Governance Structures: The Political Foundations of Secure Markets," 149 *Journal of Institutional and Theoretical Economics* 286-311.

Weingast, Barry R. 1995. "The Economic Role of Political Institutions: Market Preserving Federalism and Economic Development," 11 *The Journal of Law, Economics and Organization* 1-31.

Weingast, Barry R. 1997. "The Political Foundations of Democracy and the Rule of Law," 91 *American Political Science Review* 245-263.

Wells, Berit (ed.). 1992. *Agriculture in Ancient Greece*, Proceedings of the 7th International Symposium at the Swedish Institute at Athens: Stockholm.

Westlake, H.D. 1969. *Thessaly in the Fourth Century B.C.*, Bouma's Boekhuis N.V. Publishers: Groningen.

Whitby, Michael. 1998. "The Grain Trade of Athens in the Fourth Century BC." In Parkins, Helen, and Christopher Smith, *Trade, Traders, and the Ancient City*, Routledge: New York, pp. 102-128.

Wittman, Donald. 2000. "The Wealth and Size of Nations." 44 *Journal of Conflict Resolution* 868-884

Wood, Ellen M. 1988. *Peasant-Citizen and Slave: The Foundations of Athenian Democracy*, Verso: London.

Wu, Harry. 2000. "Testimony of Harry Wu, Executive Director, Laogai Research Foundation Before the Committee on Commerce, Science and Transportation Of the United States Senate: China, PNTR and WTO." April 11, 2000. (<http://www.laogai.org/news/pntr2.htm>)

TABLE 1: POLITICAL PARTICIPATION IN ANCIENT GREECE

	Classification in ancient sources ^a	Full population ^b	Proportion of native born males eligible for all elected offices ^c	Sq. miles principal agr. plains ^d	Character of plains ^d
Athens	extreme democracy	200,000-250,000	all	39	dry calcerous
Argos	moderate democracy	40,000-50,000	majority	66	dry
Thebes	broad-based oligarchy	50,000-60,000	minority	100	rich
Corinth	broad-based oligarchy	50,000-70,000	minority	34	rich alluvial
Sparta	narrow oligarchy	200,000-230,000	small minority	300	rich alluvial
Thessaly	not a city-state	unknown	(no elected offices)	2400	rich

^aArgos: Thucydides V,47,9; Thebes: *Hellenica Oxyrhynchia*, 16.ii; Aristotle, *Pol.*, III.1278A21-6.; Corinth: Plutarch, *Dion* 53.2-4; Aristotle, *Pol.* 1298; Thessaly: Westlake (1969).

^bAthens: Hanson (1999, 360); Argos: Tomlinson (1972, 18); Thebes: Buck (1979, 160); Corinth: Salmon (1984, 165); Sparta: Cartledge (1987, 37, 40, 174).

^cPlausible estimates might be 3/4 for Argos, 1/3 for Thebes, 1/4 for Corinth, and 1/12 for Sparta. Thessaly was ruled by a small hereditary elite. See Tomlinson (1972) and Kelly (1976) for Argos; Buck (1979), Buckler (1980), and Demand (1982) for Thebes; Salmon (1984) and Engels (1990) for Corinth; Westlake (1969) for Thessaly.

^dAthens: Baedeker (1894, 107); Argos: Tomlinson (1972, 8); Thebes: Buckler (1980, 4); Corinth: Salmon (1984, 20); Sparta: Forrest (1969, 13); Thessaly: Westlake (1969, 2).