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Economic Development in Antiquity: The Greek World, 800-300 BCE

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Economic development in antiquity: The Greek world, 800-300 BCE.

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Abstract. The ancient Greek world experienced long-term economic growth that was substantial, by premodern standards. Growth was correlated with and plausibly promoted by institutional development. Institutions in turn were developed in the context of a cultural understanding of individual human motivation as rational (although not necessarily individual) self-interest and the strategic behavior of agents as aimed at expected utility maximization. This paper sums up and expands upon my published and in-progress work on ancient Greek economics, institutions, and political and ethical philosophy. It builds on earlier and ongoing research by my Stanford colleagues, especially Ian Morris, Walter Scheidel, and Barry Weingast, and by former and current PhD students.

1. Why bother?

I begin with the obvious question: Why bother to study economic growth in antiquity?

Given the well-known "hockey stick" of long-run historical economic development, economic growth in antiquity was paltry (Saller 2005; Morris 2013). Compared to growth in modernity (say, since 1750 or 1800), positive changes in premodernity, that is, changes that improved on the norm of near-subsistence consumption for most people, were small. Periods of limited growth were followed by a regression to a low premodern mean. For those interested in long term economic development, premodern growth may, therefore, appear to be irrelevant. This paper seeks to belie that appearance, by showing that the study of premodern growth allows for progress on the question of the role of political institutions and culture in economic development. It develops, for the case of Greece, the framework pf Jack Goldstone (2002), who introduced the term "efflorescence" for those times and places in premodernity that saw measurable economic growth and related cultural flowering. Goldstone pointed out that there are many historical examples of efflorescence. Acknowledging that there were indeed fundamental differences between efflorescence and modern economic growth, he suggested that efflorescence was a phenomenon of interest.

Greece from about 800 to 300 BCE is an early, comparatively long-lasting, and well-documented example of efflorescence. Ancient Greece has long been considered worth studying because Greek high culture was and is influential: ancient Greek art, literature, philosophy, and science had profound impacts on the development of the civilizations of (for example) Rome, medieval Islam, the Italian and Northern Renaissances, the European Enlightenment, and Europe in the

19th and 20th centuries. As we now know, Greek cultural products were produced in the context of a substantial and sustained period of premodern economic growth. It was, however, only quite recently that historians of the ancient Greek world began to make concerted efforts to measure and to explain change over time in the Greek economy (Morris 2004: a landmark study; Scheidel 2004; Callataÿ 2012; Bresson 2015; Ober 2010, 2015; Harris, Lewis and Woolmer 2015).

Greek efflorescence is worth the attention of scholars interested in long term prosperity because it illuminates the relationship between institutions, cultural norms, and economic growth. There remains a good deal of debate among serious economic historians about the cause (or causes) of the dramatic and (until now) persistent increase in economic growth in modernity, first in western Europe and the New World, and then in much of the rest of the world. Very schematically, the proposed causes can be lumped into the categories of geography and climate, science and technology, and institutions and culture. Prominent within the geography domain is the discovery and subsequent exploitation of the New World. Technology includes the efficient production of energy through fossil fuels, as well as metallurgy, chemistry, and electricity. Institutions include innovations in governance and new forms of organization (universities, corporations, and so on).

The problem is, of course, identification: It seems undeniable that geography, technology, and institutions are interconnected in various ways – but the interconnections are highly complex and very difficult (although not necessarily impossible) to disentangle. The Greek world is useful for thinking about economic change because of a relative paucity of confounders. The factor of technology appears to play a relatively minor role in Greek growth. While there were advances in some areas, there was nothing in antiquity analogous to the explosive pace and level technological change in modernity (Humphrey and Oleson 1998; Wikander 2000; Wright 2000; Schneider 2007; Oleson 2008).

The geography of the Greek world constrained what kinds of development were *possible* (Haber in progress): An overall mountainous terrain, highly indented seacoast, "Mediterranean" climate with adequate if sparse rainfall suited to the production of storable grains and liquids (olive oil and wine) in dryland farming, few rivers suited to navigation or large-scale irrigation, and valuable but dispersed natural resources (iron, copper, precious metals, clay, timber). But geography did not *determine* the pace of economic development. The geography of the Greek world in the efflorescence period and the centuries preceding and following it was relatively stable (no major volcanoes or discovery of a New World) – whereas there were substantial changes in both total population and rates of per capita consumption over time. The Mediterranean climate did indeed change over time, but in the period of interest there is little

reason to suppose that temperature and rainfall changed in ways that can be plausibly correlated with the relevant changes in the economy. The era of the "Roman Warm" comes towards the end of the period of measurable Greek efflorescence (Finné et al. 2011; McCormick et al. 2012; Morris 2013: 71; Bresson 2014: 51-52; Ober 215: 105-10).

The Greek efflorescence may, therefore, be of value in answering the question of whether the form and development of institutions is an independent driver of economic change. The Greek case lends support to those who suppose the answer is yes.

When compared to other well documented ancient examples of efflorescence (e.g. imperial Rome, Song China) the Greek world of ca. 800 -300 BCE is highly distinctive in two ways. First, while it was a single, integrated, culture zone, with a shared language, religious traditions, foodways, warfare, etc., it was never organized as a centralized nation or empire. Rather, the Greek world was an extensive, long-lived, decentralized ecology of many (ca. 1000) small, independent, city-states (poleis: Hansen and Nielsen 2004). Next, many (although certainly not all) Greek city-states were "citizen states." Political authority was not monopolized by a monarch or tiny elite coalition. Government was, instead, by extensive bodies of citizens, who jealously guarded both property rights and political rights (Hansen 2006; Ma in progress). Related phenomena of interest, discussed below, include relatively low levels of economic inequality (at least in late classical Athens); self-conscious recognition of self-interested behavior, understood as expected utility maximization and exemplified in cultural assumptions about individual behavior and in state institutions; and philosophically sophisticated theorization and critique of self-interested behavior. Each of these phenomena, readily observable in the ancient Greek world, is in some ways, and at a high enough level of generality, characteristic of highly developed societies in the modern era of rapid and persistent economic growth.

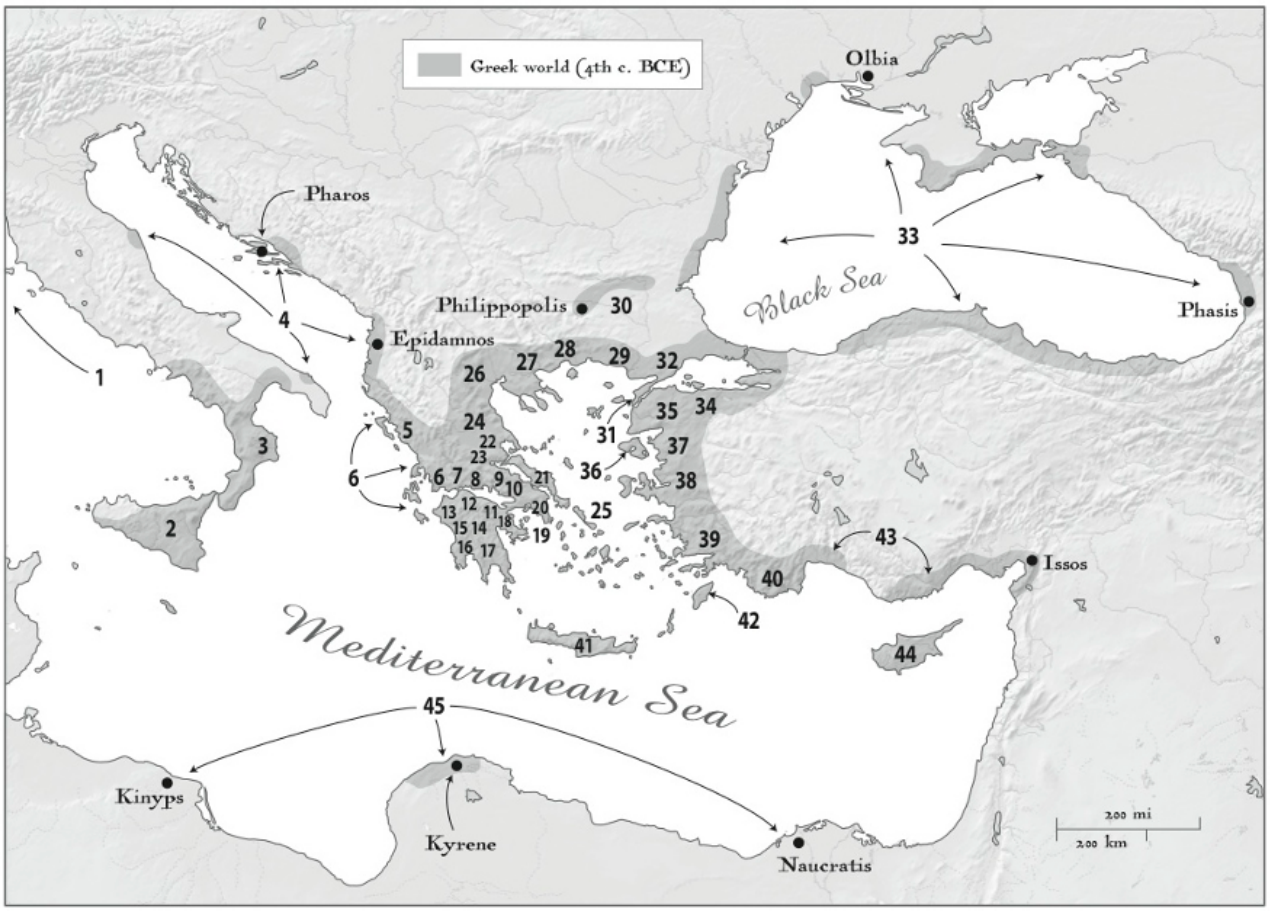
This paper proceeds as follows: Section 2 sums up the last 20 years of work by historians on proxy data for economic change in the Greek world. Section 3 compares the level of peak development in the late classical Greek world with other well-known examples of premodern efflorescence. Meanwhile, economic inequality, at least in late classical Athens, was comparatively low. Section 4 argues for a causal relationship between institutional and economic development in the Greek world. Section 5 sums up my recent work on Greek cultural beliefs concerning human motivation and behavior. Greek intellectuals, in common with contemporary choice theorists, posited a "microfoundation" of self-interested behavior, aimed at expected utility maximization. The design of Greek institutions took that microfoundation into account. Section 6 answers the question of why Greek economic growth

was long ignored by specialists in ancient history. Section 7 addresses the eventual regression of the Greek world to a low premodern mean of economic performance.

2. Measuring economic change

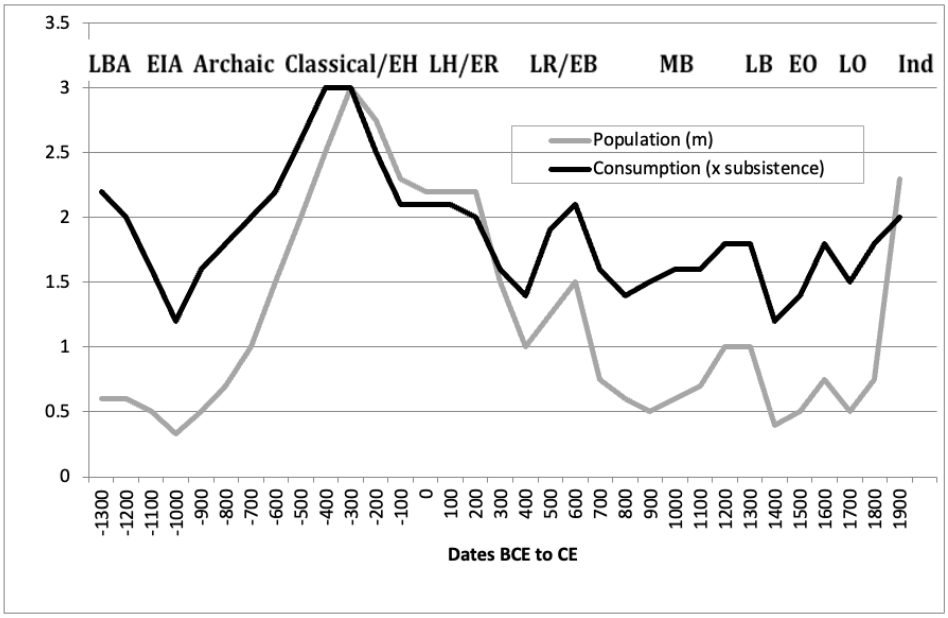
By the standards of modern economic history the proxy data for measuring economic change in the Greek world is radically incomplete and very lumpy (some eras and regions are much better documented than others. So, causation cannot be demonstrated in any definitive way. But the evidence, such as it is, supports the hypothesis that institutional change drove unexpectedly robust economic growth over time, and that institutions are at least implicated in the failure of growth be sustained indefinitely. The proxy data sketched in this section is detailed in Ober 2015, chapter 3.

Map: The ancient Greek world.



Notes: “Core Greece” is roughly regions 7-25.

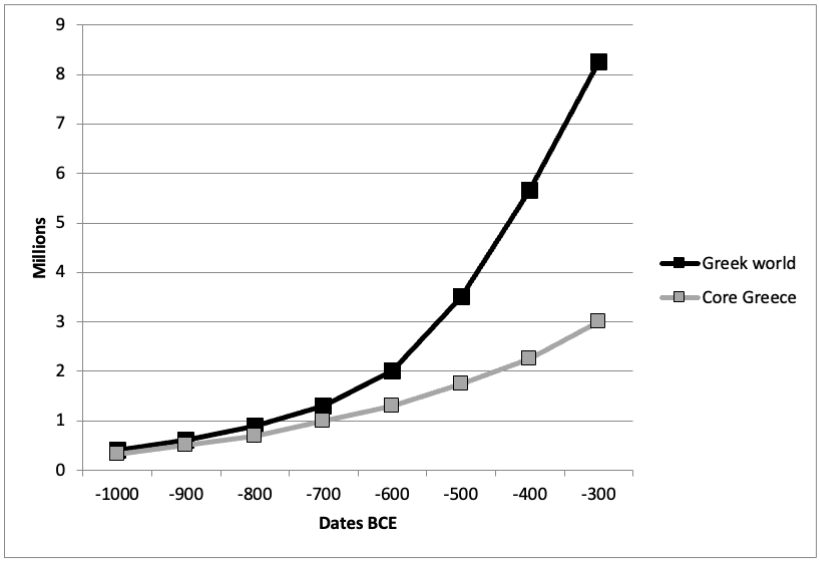
Figure 1. Core Greece. Population and consumption estimates, 1300 BCE to 1900 CE.



Notes. Population estimated in millions. Consumption estimated in multiples of subsistence minimum. LBA = Late Bronze Age. EIA = Early Iron Age. EH = Early Hellenistic. LH = late Hellenistic. ER = Early Roman. LR = Late Roman. EB = Early Byzantine. MB = Middle Byzantine. EO = Early Ottoman. LO = Late Ottoman. Ind = Independent Greek State. Core Greece = Territory controlled by the Greek state in 1890.

Figure 1 sums up my conclusions about change over time in the territory of "core Greece" – that is, roughly the territory controlled by the modern Greek state in 1890 (i.e. excluding Crete and Macedonia – See Map). Note that "the greater Greek world" from about the efflorescence period of ca 800 to 300 BCE – that is the extended ecology of city-states that were linguistically and culturally Greek – was much larger than core Greece, encompassing much of Sicily, southern Italy, coastal Anatolia, coastal Black Sea, and parts of northern Africa. Western Anatolia was settled by Greek speakers during the Early Iron Age (see below); the other regions in a series of waves, beginning around 750 BCE. By 300 BCE core Greece counted for about a third of the total population of the Greek city-state ecology: See Figure 2. So, even if one were to suppose that my estimates of population change over time, as illustrated in figure 1 are too high for core Greece, they are certainly too low for the larger Greek city-state ecology.

Figure 2. Core Greece and wider Greek world, estimated populations, 1000 -3000 BCE.

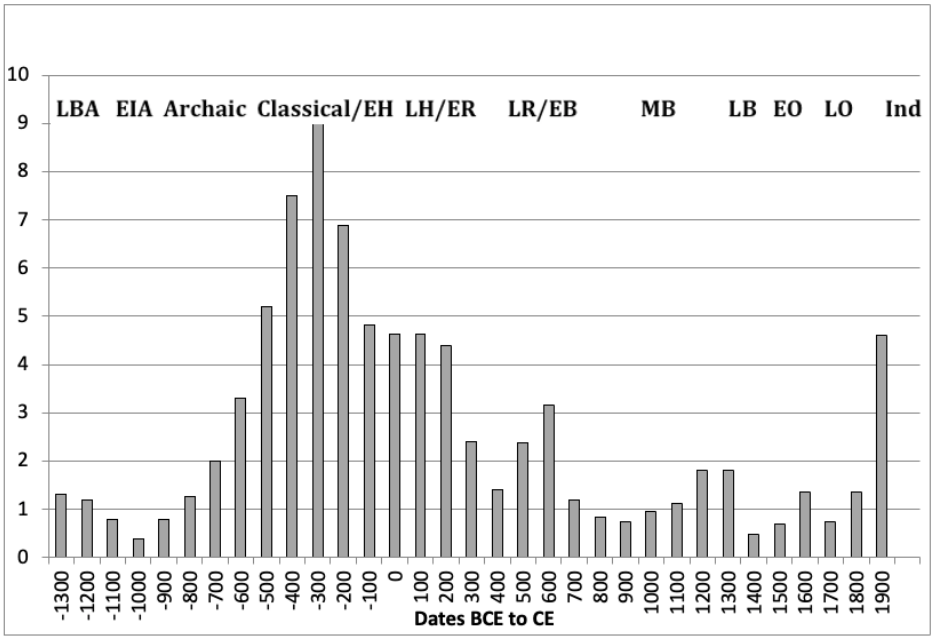


Notes. The figures at the far left (1000 BCE) and far right (300 BCE) of the charts are based on data discussed in Chapters 2, 4, and 6. Figures in between (900-300 BCE are interpolated. Core Greece = the territory controlled by the Greek state in 1881-1912 (mainland from Thessaly south, Ionian islands, Cycladic islands). Core Greece figures after 800 BCE are reduced by migration from core Greece to other parts of the Greek (and non-Greek) world. Greek world figures include Hellenized populations, per discussion in Chapter 4.

Average per capita consumption can be measured, very roughly, as a multiple of subsistence (with 1 being enough for bare survival – and anything below ca. 1.5 meaning that survival is precarious), on the basis of archaeological and documentary evidence (see discussion below). While precise figures are lacking, reasonable estimates are possible: see Figure 3. It appears certain that both population and consumption fell precipitously after the collapse of the Late Bronze Age (Mycenaean) civilization around 1200 BCE and was very low in the first part of the Early Iron Age (EIA, aka the Greek Dark Age). Both population and consumption had recovered from the EIA collapse by about 800 BCE, and then continued to rise for the next ca. 500 years – that is, the era of efflorescence. The late classical peak, around 350-300 BCE, saw a core Greek population of about 3 million and per capita consumption estimated at about 3 times subsistence. Core Greece suffered a decline in population and consumption levels beginning in the post-classical Hellenistic and Roman periods, although other regions within the city-state ecology, notably in western Anatolia, continued to flourish. (Ma in progress). Consumption and population in core Greece dropped to a level comparable to that of the EIA in the medieval nadir around 900 and again around 1400.

After about 400 CE, the population of core Greece seldom exceeded about 1 million, and consumption hovered around 1.5 times subsistence. In terms of the development index of Figure 3, the "premodern normal" for Core Greece is between 0.5 and 2 whereas in the high efflorescence era, between ca. 450 and 250 BCE, the index is between 5 and 9.

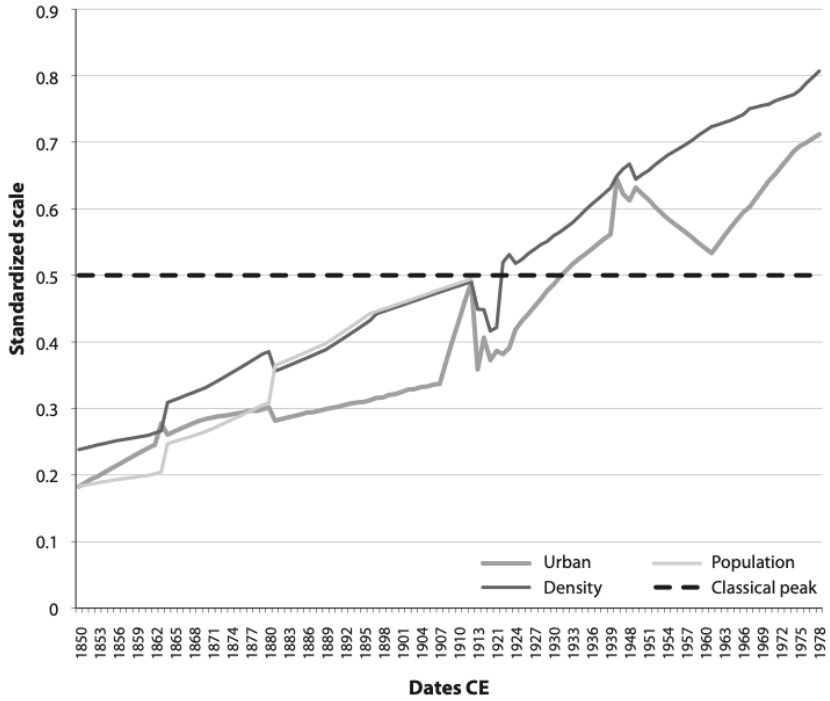
Figure 3. Core Greece. Development index (Population x consumption estimates),1300 BCE to 1900 CE.



Notes: Development index multiplies population estimate x consumption estimate. LBA = Late Bronze Age. EIA = Early Iron Age. EH = Early Hellenistic. LH = late Hellenistic. ER = Early Roman. LR = Late Roman. EB = Early Byzantine. MB = Middle Byzantine. EO = Early Ottoman. LO = Late Ottoman. Ind = Independent Greek State. Core Greece = The territory controlled by the Greek state in 1890. Data discussed in chapters 2 and 4. Population and consumption are broken out in Figure 1.

Core Greece failed to regain levels of population or urbanization comparable to the late classical peak before the early 20th century: see Figure 4. Once again, I emphasize that the numbers are very rough – but the general trends of change over time and the stark difference between the economic development of the high efflorescence era with pre- and post-efflorescence "premodern Greek normal" are the important points. This picture is consistent with recent work on Greek diets based on skeletal analysis: average protein consumption by individuals reaches a peak in the Classical era and declines thereafter (Lagia 2015).

Figure 4. Comparative Greek demographics, ancient and modern



Notes: Modern data adapted from Country National Time Series (CNTS) Greece data (Banks and Wilson 2013: http://www.databanksinternational.com). Normalized 0-1.0 scale. 1.0 = twice the classical peak.
Urbanization: Classical peak is for Greek world = 32% of total population in towns of >5000. CNTS data for percentage of population living in cities over 10,000 available for 1919 to 1978; over 20,000 from 1850. The "over 5,000" number is estimated for the 1919-1978 series by adding the delta between the 10,000 and 20,000 figures (median 4.7%) to the 10k figure. The "over 5k" estimate for 1850-1913 is by doubling the median *delta* (i.e. 9.4%) and adding to the over-20k figure. Density: Classical peak = Greek world average of 44 per km^2. Modern density derived from total CNTS population divided by total CNTS total area in km^2. Population: Classical peak is for core Greece only, estimated at 2.75 million (Ober baseline estimate, n.b. Hansen 2006b, 2008 is substantially higher). Modern population from CNTS. Modern series truncated at 1912. Some of discontinuity of modern data is due to the expansion of the Greek state, especially in 1913, when the area and population of the Greek state roughly doubled. CNTS does not include data from 1914-1918.

Substantial growth in the Greek economy from the 9th to the 4th century BCE is indicated by a wide range of independent proxies, see Table 1. For example, increased state investment in major infrastructure (including stone temples, civic buildings, public water supply, sewage and storm drainage) is proxied by the sharp rise in the number of Greek states whose central urban area was protected by a substantial fortification wall; see Figure 5. Likewise, increased private investment in domestic architecture is proxied by the greatly increased size and architectural sophistication of the median Greek house: Morris 2004. Overall, I estimate that per capita consumption roughly doubled in the period 800-300 BCE; the average annual growth rate over the 500 year period was therefore ca. 0.15%. That is certainly low by modern standards, but it is

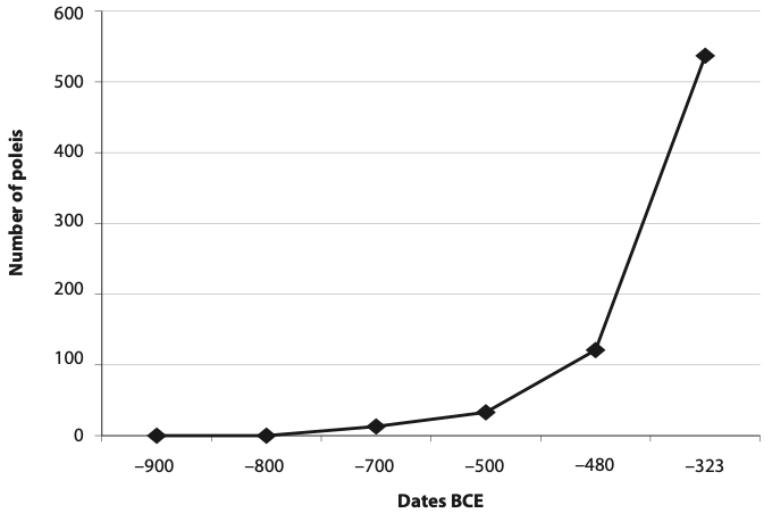
about twice the estimated growth rate of the high Roman Empire. (Ober 2015: 82, 98). In the same period the population of the Greek city-state ecology increased by at least one order of magnitude.

Table 1. Summary of population and proxy-indicators indicators of economic growth

	Start date (TI)	End date (T2)	Multiplier (T2/T1)
Population	9th	4th	10-20
House floorplan	9th	4th	3.5
Household goods	9th	4th	5-10
Per capita consumption	9th	4th	1.5-2
Aggregate growth	9th	4th	15-20
Names (Attica)	6th	4th	14
Hoard size, median	6th	4th	2
Hoard size, average	6th	4th	4
Coins in hoards	5th	4th	3
Hoards, number	5th	4th	2

Dates are centuries BCE. See discussion in Ober 2015. Chapter 4.

Figure 5. Walled poleis, 900 – 323 BCE



Notes: Numbers are of poleis believed to be walled, on the basis of literary or archaeological evidence. Source data = Frederiksen 2011, except for -323 = *Inventory*, Index 23.

3. How high was the peak?

In the peak efflorescence era of the later classical period (ca. 350-300 BCE) the Greek world was, by premodern standards, quite densely populated (ca. 44 persons per km^2) and highly urbanized. An estimated 32% of the Greek population lived in towns of 5000 or more (Results

are similar at the 10,000 level: Ober 2015: 86-88 with n. 84.). In premodern Europe this level of urbanization is equaled or exceeded only by Holland in the 17th century; England and Wales reached that level of urbanization only at the turn of the 19th century (Table 2).

Table 2. Comparative urbanization levels and populations

	Urban %	Urban total (millions)
Greek world 350- 300 BCE	32	2.5 -3 m
Rome 100-200 CE	10-12	7 - 8.5 m
Holland 1651	45	0.44 m
England and Wales 1688	13	0.74 m
France 1788	12	2.8 m
England and Wales 1801-3	30	2.78 m

Notes: Urban = town of greater than 5000 persons. Figures for Rome: Wilson 2011. Figures for Holland, England and Wales, and France: Milanovic, Lindert, and Williamson 2011: Table 1.

The peak level of per capita consumption by non-elite working people in the later classical period can be estimated for Athens, the largest and best documented of the Greek states. Notably this is well after the end of the Athenian empire, at a time when Athenian wealth was predicated on local production and exchange and was no longer augmented by coercively extracting resources from many other Greek states. Based on evidence of wages for unskilled, semi-skilled, and skilled laborers, Athenian wages translate to a "wheat wage" of 13-16 liters per diem – so 3.7-4.6 times bare subsistence (Scheidel 2010; see Table 3). This is closely comparable to the wages of laborers in Holland in the 16th to 18th centuries BCE, another notable and well-documented era of premodern efflorescence. Based once again on analysis of skeletons from Athenian cemeteries, the average Athenian diet was rich in protein. Although we do not have good data for median or average life expectancy at birth, it appears that Athenians who achieved adulthood were generally well fed and quite healthy (Lagia 2015).

Table 3. Athens and Holland, wheat wages

Athens	Pay (dr/day)	Wheat price (dr/medimnos)	Wheat wage (liters/day)	Multiplier x survival
Athens 5th BC	1	6	9	2.6
Athens 4th BC	1.5-2.5	5-6	13-16	3.7-4.6
Holland 16th-18th CE			10-17	2.9-4.9

Note: Based on Scheidel 2010.

Likewise, the distribution of income across the population can be estimated – albeit on the basis of "best guess" modeling – for late classical Athens. According to the model (Ober 2017; Ober and Scheidel 2022), the Athenian income Gini is estimated to be a comparatively low 0.38

(see Figure 6). Income inequality figures for premodern societies are, however, of limited value given the proximity to bare subsistence of substantial parts of most ancient populations (i.e. there are strict limits on inequality given the high percentage of total income devoted to bare survival). Milanovic, Lindert, and Williamson (2011) have developed a useful measure that takes this into account: their "Inequality Extraction Ratio" measures the percentage of feasible extraction of income by an elite, based on the subsistence constraint: By this measure late classical Athens was substantially less unequal than imperial Rome, or premodern Holland, France, or England (Table 4).

Figure 6. Athenian inequality (based on the model in Ober (2016)).
Lorenz curve; Gini = 0.38.

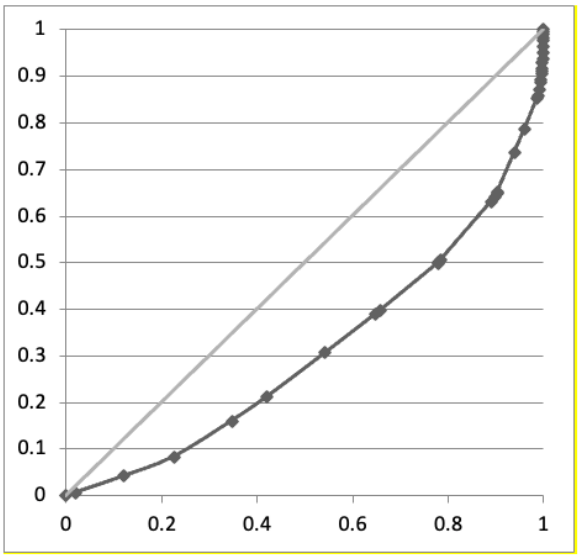


Table 4. Inequality extraction ratio (% of maximum feasible inequality)

Preindustrial average	77
Athens late 4th BCE	49
Roman Empire 14 CE	75
Holland 1561	76
France 1788	76
England & Wales 1688	57

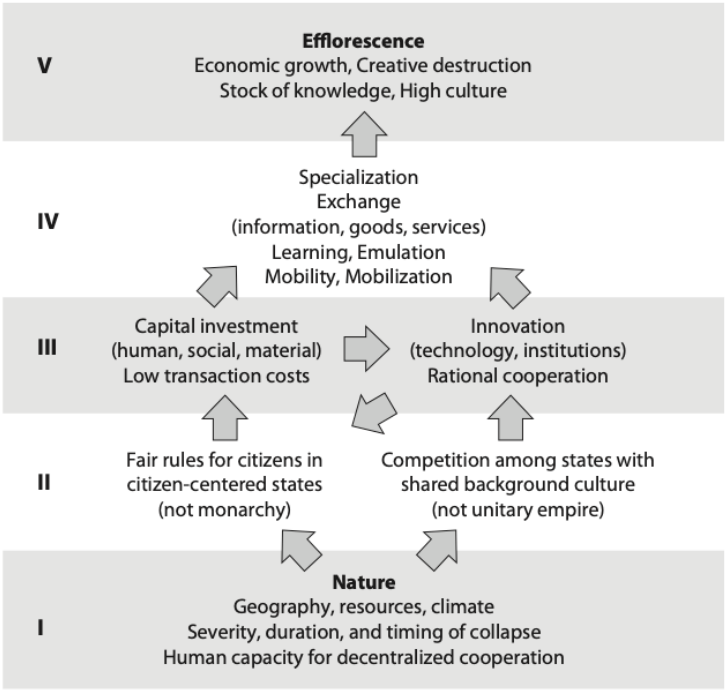
Notes: Source for all but Athens: Milanovic, Lindert, Williamson 2011.

Athens was distinctive in the Greek world in various ways and may have had somewhat higher than average per capita consumption and lower inequality than other city-states. But given the high degree of mobility within the classical Greek world, and the relative ease with which Greeks could take up residents in a foreign Greek city-state (Bresson 2015, Whitehead 1984; Adak 2003), it appears unlikely that Athens was an extreme outlier in terms of per capita consumption or inequality. Most of the proxy indicators of growth in Table 1 include many other Greek states; scattered data on land-holding and comparative house sizes in other Greek states supports the assumption that relatively low economic inequality was not limited to Athens (Patriquin 2015; Gallego 2016; Ober and Scheidel 2022; Kron forthcoming).

4. Explaining the Greek efflorescence: Institutions

I have previously (Ober 2015: chapter 5, quote from p.103), suggested an institutional hypothesis to explain the Greek efflorescence: "Fair rules and competition within a marketlike ecology of states promoted capital investment, innovation, and rational cooperation in a context of low transaction costs." As noted above, while geography and climate provided the framework that made efflorescence possible, the relatively low level of development (population x consumption: Figure 3) characteristic of core Greece throughout most of pre-modern history suggests that geography cannot have been a sufficient condition. Likewise, although there certainly was technological innovation in the Greek world, it was minor compared to the technological changes characteristic of modernity. By contrast, individual Greek city-states and the city-state ecology overall were famously hotbeds of institutional innovation, experimentation, adaptation, and emulation. This section sketches some of what I regard as central institutions that might plausibly be understood as promoting economic growth. The conclusions are illustrated in the flow chart of Figure 7.

Figure 7. Origins of efflorescence in a market-like ecology of citizen-centered states



Notes: The two hypotheses developed in chapter 5 are intended to explain how, after nature has set the framework at level I, the political inputs of level II and behavioral choices of levels III-IV lead to the outcomes of level V. At levels II and III, Hypothesis 1 is on the left side, and Hypothesis 2 on the right side. The two hypotheses are integrated at level IV. The early emergence of the basic polis framework during the Early Iron Age and archaic period, in response to the accidents of "nature" (level I) are discussed in Chapter 6. The economic outcomes (level V) are detailed in chapter 4.

Stateness and decentralization. Greek poleis were states, capable of exerting authority and maintaining social order within established borders (Hansen 2002; Ma in progress). Greek states featured institutions for making, interpreting, and enforcing rules. They levied taxes and raised armed forces for defensive and offensive wars with Greek and non-Greek rivals. There was no overarching "ecology-wide" central authority. Athens' mid-to-late fifth-century empire consisted of perhaps a third of the Greek poleis in the wider ecology. But it lasted only for two generations and was gone before the late classical economic peak (Meiggs 1972; Morris 2009). The self-governing Greek states engaged in active competition for power, resources, and prestige. Competition sometimes led to state death: A number of poleis went out of existence during the period of efflorescence (Ober 2008: 81-82). Greek states also developed sophisticated forms of interstate cooperation, notably including federal leagues (Mackil 2013), but poleis were by and large self-governing. Emulation of what were taken as institutional "best

practices" was a constant: while each state had its own institutions, many key institutions are recognizably similar across a number of states in the ecology. Movement of individuals and communication between states was facilitated by a shared language and customs.

A key aspect of Greek state institutions was resistance to both external domination and to dominating executive authority. The origins of this widely-held norm, presumably dating back to the "dark" Early Iron Age, remain obscure, but its prevalence in the era of efflorescence is beyond doubt. While some Greek poleis experienced periods of "tyranny" (autocratic rule by a single family), tyrannies seldom survived more than two generations; outside the Greek areas of Sicily and south Italy, tyranny was relatively rare after the 6th century BCE. The political norm by the later 6th century was collective rule by an extensive part of the state's free, native-born, adult, male (FNAM) population – that is, by citizens – in the form either of oligarchy or a democracy. In oligarchies, a minority of FNAM's were active citizens, with rights to participate in making, interpreting, and enforcing rules; in a democracy most or all FNAM's were active citizens. By the mid-7th century some Greek states had established legal constraints on the scope and tenure of executive authority (Gagarin and Perlman 2016). Formal constraints, with enforced sanctions for violations, were common across the ecology by the 5th century (Gagarin 2005). To effect policy in the competitive ecology, the active citizens of each polis were constrained to find institutional solutions to collective action and commitment problems. These problems were particularly acute in large, democratic states – like Athens – which had to find ways to forestall elite capture. But in face of the attractive (to those FNAM's denied active citizenship) democratic alternative, ruling oligarchs were likewise forced to innovate institutionally (Teegarden 2014; Simonton 2017).

Athens and its influence. Athens is by far the best-documented Greek city-state and was the most influential of the classical-era democratic states. Athenian institutions were, over time, widely adopted elsewhere in the city-state ecology (Ma 2018). Athens developed rules that protected private property from the endemic threat of majoritarian exploitation, while allowing for taxation based on income and wealth (Mackil 2015; 2018; Fawcett 2016). Officials were chosen by lotteries or, in the case of military officers and state engineers, by election. All magistrates were subject to strict accountability procedures – including an audit at the end of each year's service. State policy was made in an open citizen assembly, in which several thousand citizens attended to speeches in favor of policy options; the choice among options was made by a majority vote. The agenda for the meeting and initial proposals on options were set by a deliberative citizen council: 500 citizens, chosen by lottery in "demes" - local villages and neighborhoods for a single year's service: Each deme annually sent a certain number of representatives to the council based on its population (Rhodes 1985; Hansen 1999).

As recent research has shown (Canevaro 2018, 2020), the procedural rules in Greek democratic assemblies tended to push towards consensus (or near-consensus) on what was regarded as the best-available option. At Athens, this was achieved through a sequence of choices among option pairs: The team (drawn by lot from the year's council) running the meeting announced he Council's proposal and then took written alternatives from "the floor" – discarding sequentially options that did not receive vocal support from the audience. Unlike the information-poor "bubble" in which autocrats often make decisions, the open nature of the Athenian process at the level of Council and assembly allowed information and expertise useful for policymaking to "flow upwards" from a large and diverse population. This, at least in principle, allowed "the polis to know what its citizens knew, (Ober 2008). Athenian legal processes protected ordinary citizens from expropriation by the corrupt officials or powerful individuals. By the peak efflorescence era, the procedural rules of Athenian courts that judged commercial cases sought to ensure impartiality of judgment and gave non-citizens legal standing. Meanwhile, constitutional rules governing legal challenges ensured that policy decisions made by the citizen assembly accorded with established law, while enabling institutional innovation (Carugati 2019, 2021).

Shared culture, institutions, and expertise. The shared background culture, and the tendency of states to emulate successful (in terms of augmenting state capacity) institutional practices tended to drive down transaction costs across the ecology and to promote the thriving interstate trade that was an essential component of Greek efflorescence (Bresson 2015): State-issued coinage, first innovated by a handful of Greek states in the late 7th/early 6th century was quickly and widely adopted; it was augmented by the 4th century with fiduciary "small change' bronze coinages. Weights and measures and monetary standards were never fully homogenized but converged to a few popular standards. Harbor dues, as taxes on imports and exports were largely standardized (at 2% of the value of the goods. Leading naval and commercial states (notably Athens) suppressed piracy. This in turn encouraged local specialization and a tendency to production based on comparative advantage: One result was that at relatively arid Greek states imported large quantities of wheat from peripheral regions (Ukraine, Egypt) while exporting wine, olive oil, and manufactured goods. Commerce was facilitated by the development of private banks and credit instruments (Cohen 1982; Bresson 2015).

High mobility across the Greek world (Purcell 1990; Bintliff 2014) facilitated the spread of expertise in a wide range of fields: Experts in military technology and strategy and state finance moved easily across the Greek world, and into emerging states on its periphery, meaning that innovations that enhanced state capacity moved quickly beyond their point of origin. The result

was an ongoing "Red Queen" competition (Barnett 2008) that pushed ongoing institutional change (Pyzyk 2015).

5. Cultural assumptions about motivation and behavior

The mobile experts of the classical period included specialists in "wisdom": the so-called Sophists and Socratic philosophers. Sophists and philosophers competed for well-heeled students and founded schools (Plato's Academy, Aristotle's Lyceum); this produced a floruit of abstract thought on (among many other areas) epistemology, metaphysics, logic, morality, and ethics. Among the major results of classical era thought was a "folk theory" of instrumental rationality – that is a theoretical explanation for human motivation and action that was widely shared among Greek intellectuals (including historians, dramatists, public orators). The folk theory was summed up in a line attributed to Socrates: "all persons deliberately choose, out of what is available to them, what they think is most advantageous to themselves, and they do this." (Xenophon, *Memorabilia* 7.6 with discussion in Ober 2022: 6-9). Socrates' succinct, quasi-algorithmic account of human agency is predicated on the assumption that all people make choices among available options based on subjective preferences and beliefs about what is most advantageous to themselves.

As elaborated in the works of (among many others) Herodotus, Thucydides, Plato, and Aristotle, the folk theory explained rational choice-making with reference to expected utility maximization (Ober 2022). Utility was not necessarily cashed out for any given agent, as material wealth, but material welfare was typically at least a part of the utility function of ordinary Greeks. At least some Greeks, notably those engaged in the production and exchange of goods, were known to make wealth aggregation their primary goal. The folk theory formalized a background assumption of Greek culture that can be traced to the earliest texts of the efflorescence era (Homer and Hesiod). As in contemporary theories of rational choice, human behavior was held to have its "microfoundations" in the rational decisions made by self-interested (although not necessary narrowly self interested) individuals, each making choices in a context of other similarly self-interested persons. States were likewise understood as rational collective agents. Greek institutions were developed and refined within the framework of that widely shared set of assumptions. To perform successfully, self-enforcing institutions must be incentive compatible (Weingast 1995; Greif 2004; Fearon 2011). Classical-era legislators, as participants in the intellectual culture that shared the folk theory of instrumental rationality were self-consciously aware of the compatibility constraint and designed institutions accordingly (Carugati, Weingast and Ober 2016; Ober 2022: chapter 6)

In sum, while still paltry by modern standards, economic growth in the Greek world 800-300 was substantial, indeed remarkable, by premodern standards BCE. It is correlated with, and

partially explained by the development of historically distinctive Greek institutions and by widely-shared cultural assumptions about individual motivation. Rules were established by rational bargaining among self-interested citizens under high stakes conditions rather than by a self-interested third-party ruler. As such they were designed to ensure collective security and conditions regarded as fair by citizens. Greek states competed for power and prestige while also cooperating in ways that promoted mutually beneficial exchanges of specialized goods and services. Capital investment was promoted by property rights and regulations that regularized interstate exchange; transaction costs were lowered, and mobility facilitated by a shared culture, language, and by shared assumptions about motivation and behavior.

Two questions remain: First, why was the Greek efflorescence not more fully appreciated by historians before the 21st century? And, next, why was growth not sustained indefinitely: why did Core Greece and the wider Greek ecology of states ultimately return to the premodern normal of low population and near-subsistence consumption?

6. Why was Greek economic growth ignored by historians?

A full answer to the question of why Greek economic growth was not adequately appreciated by historians would require a deeper dive into 20th century historiography than I have room for here. But at least part of the answer is the tendency of historians to take the arguments of prominent moral philosophers, notably Plato and Aristotle, as stand-ins for the values and cultural assumptions of Greek society. In fact, the works of Plato and Aristotle demonstrate a deep understanding of the relationship between what I am calling the "folk theory" and the behavior of wealth-maximizing Greek producers and traders (Ober 2022: chapter 7). But, in sharp contrast to quotidian assumptions (ancient or modern) about value the Greek philosophers rejected the assumption that "true utility" was subjective – i.e. that preferences are exogenous to the situation of choice, in that sense that a rational individual seeks to gain that thing (or that package of things) that he or she just happens to value most highly. Subjective valuation means that the end of expected utility maximization could be wealth, honor, fame, pleasure, or combination of these, or something else.

Plato and Aristotle were objectivists about value: they were convinced that "the human good" was not a matter of personal preference, but an objective moral fact, discoverable through philosophical inquiry. The philosophers believed that human flourishing required the *right* preferences over outcomes and *true* beliefs about value and the state of the world. For Plato, the goal was a harmonious soul in which desire and moral emotion are strictly subordinated to reason; for Aristotle: the goal was consistent activity of the virtuous part of the soul in conformity with complete virtue. In each case, having the right preferences required having the right knowledge about value and acting accordingly. They regarded the goal of maximizing

wealth (or honor, fame, or pleasure gained from the use of wealth) as an objectively incorrect, because based on false belief, goal for a human life. Objective well-being or flourishing (*eudaimonia*) indeed required a baseline of material welfare but was precluded by an excessive focus on wealth. That is to say, the wealth-maximizing agent harmed himself (or in the case of a collective agent, themselves) by failing to identify and subsequently pursue a well-lived life.

The most influential 20th historian of classical antiquity, M.I. Finely, had a strongly Weberian sociological bent and, as a former Marxist, was attracted to the idea that the values and practices of market capitalism were a unique (and therefore potentially dispensable) feature of modernity (Finley 1999 [1973]; Whittaker 1997; Greene 2000; Nafissi 2005; Saller 2013). Finley opposed any suggestion that ancient peoples understood even the most basic economic principles or were motivated by economic goals. Taking on board the Greek philosophers' *moral* rejection of wealth maximization, Finley and his many followers concluded that the ordinary Greek could not *descriptively* have behaved in a way that resembled an instrumentally rational *homo economicus*. Recognizing, however, that ordinary Greeks were not philosophers seeking philosophical *eudaimonia*, Finley and his followers concluded that Greeks (and Romans) were primarily concerned with social status (free vs slave, citizen vs foreigner, ruler vs ruled). As such, they supposed that Greeks must have rejected (as inherently low status) the systematic pursuit of the wealth-creating activities (production and exchange of goods and services for profit, capital investments, credit instruments) that might have led to overall economic growth. And so, in the absence of economic motivation, there *could be* no growth. That being the case, as they supposed, it was a waste of time for historians to seek proxy data that might point to economic change over time. These ideas were extremely influential among historians in the last third of the 20th century. The development of the alternative set of hypotheses, discussed above faced substantial opposition. Even today, some historians of antiquity continue to reject any attempt at quantification of evidence relevant to economic activity, regarding it as antithetical to the proper goals of premodern history (Boldizzoni 2011; Anderson 2018).

7. Why the regression to a low premodern mean?

In Goldstone's (2002) definition, an efflorescence is a geographically and chronologically delimited period of economic growth and cultural achievement: that is a rise, followed by a fall. I have focused on the ecology of Greek city-states in the half-millennium 800-300 BCE. The period of Greek "rise" clear enough. There is less clarity about the chronology of the "fall." Archaeologists have argued on the basis of material evidence for a decline in the "core Greece" economy as early as the 3rd century BCE (Alcock 1993, 2007). Other parts of the Greek ecology, especially the city-states of western Anatolia, appear to have continued to flourish economically through the 2nd century BCE, well into the era of the Roman conquest. The 1st century BCE was, however, characterized by very high levels of large-scale violence and

expropriation across most of the Greek ecology. While the 1st and 2nd centuries CE may have seen at least a partial recovery, the Greek city-states lost autonomy and were heavily taxed by the Roman imperial state. By the 3rd and especially 4th centuries CE, the former city-state ecology was clearly in a deep economic decline (Ma in progress). While some areas saw improvement in the 5th and 6th century, after the capital of the Roman empire moved to Constantinople, the decline was pronounced by the 7th century CE.

How to account for the economic decline and ultimate fall to a very low level of population and consumption? There is little reason to believe that the Greek of the later 4th century BCE had hit a Malthusian ceiling in which population had outgrown productive capacity, leading to famine, disease, and demographic collapse. Indeed, the evidence of the late fourth century BCE suggests that short-term shortages of grain in core Greece, caused by regional crop failures, were compensated for by imports from the major grain producing center of Cyrene, in north Africa (Bresson 2011). The extension of Greek influence and control into Egypt and western Asia in the 3rd century BCE, following the conquests of Alexander the Great, increased demand for Greek services (e.g. as soldiers, administrators, and colonists). While changes in climate and the spread of disease are indeed implicated in the ultimate collapse of the Roman Empire (Harper 2017), these factors do not adequately account for the historical trajectory of post-classical Greek decline and fall.

In line with the institutional/cultural explanation I have offered for the rise of Greek efflorescence, I suggest that the decline and fall may also be explained, at least in part, by institutional changes. The classical-era Greek world was, as I have emphasized above, a decentralized ecology of autonomous city-states. The ecology was characterized by robust competition among states and by extensive cooperative networks of exchange and emulation. That situation began to change with the imposition of Macedonian rule after the conquests of Philip II and Alexander III (The Great). The rulers of the several Macedonian successor-kingdoms that arose after Alexander's death in 323 BCE sought, with varied success, to control the city-states within their proclaimed domains. Yet, as John Ma (1999, 2000, 2003, cf. Ober and Weingast 2020) has shown, many city-states retained local autonomy and were able to negotiate agreements with Macedonian warlords to sustain their relative independence and citizen-centered constitutions.

The situation was different, however, once the Roman Empire was reorganized under Augustus and his successor emperors in the 1st and 2nd century BCE: The Greek city-states increasingly were treated as subordinate administrative nodes in a centralized imperial system: Government (especially in the form of taxes and mandated services) intensified. It continued to intensify as the administration of empire evolved into ever more direct and harsher forms of dominion in

the 3rd and 4th centuries. The economy was increasingly subject to commands from a distant central state; decreasingly driven by consumer demand and local competition to provide goods and services for local consumption. Local citizen-centered government was replaced by administration that was directed at serving the interests of the emperor (Ma in progress). The long-term change in the institutional circumstances was, in blunt terms, from a dynamic networked market-based economy among independent self-governing states, to a centralized economy driven by heavy hand of an imperial state. The Roman Empire increasingly drew resources from relatively prosperous regions to sustain the imperial capital at Rome and to build the infrastructure necessary for fighting wars on Rome's frontiers. The economic costs of imperial control to the Greek city-states, I posit, ultimately outweighed any advantages that may have accrued from the Roman peace and participation in a larger, more fully integrated Mediterranean market. In brief, the highly favorable institutions characteristic of the period of efflorescence were degraded over time. They were eventually eliminated – with them went sustainable economic growth.

Walter Scheidel (2019) has argued that the fall of the Roman empire, and thus the end of imperial centralization, was the enabling condition of the long-term growth of the economies of new states in western Europe. But neither core Greece, nor most other parts of the wider classical era ecology of Greek city-states (western Asia, Sicily, southern Italy), were immediate beneficiaries of Rome's demise. The institutional forms and cultural norms of the city-state ecology, predicated on local state autonomy and rule by citizens, were defunct by the 4th century BCE. After the fall of Rome in the 5th century, most inhabitants of core Greece were subject to coercive control of external powers (including imperial Byzantium, Franks, Venetians, and ultimately the Ottoman Turks). External rulers sought to extract from the former city-state ecology all they could in the form of taxes and services. Greece did not gain the status of an independent nation until the 19th century. The long prior history of domination weighed heavily. As noted above, the population and level of urbanization of core Greece reached and exceeded the classical era peak only in the early 20th century. Greece remained severely undeveloped, relative to the states of western Europe, for decades thereafter.

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