Peter Temin, *The Roman Market Economy*, Princeton, NJ: Princeton University Press, 2013.

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PEter Temin's *The Roman Market Economy* is the most recent attempt of an economist to make sense of the allocation mechanisms present in the Roman Empire. Methodologically, the book attempts to persuade readers to use basic economic tools such as supply and demand analysis and the theory of comparative advantage to formulate questions in historical inquiries; the book also reminds historians to constantly revise existing characterizations of ancient economies with all kinds of newly unearthed evidence, specially archaeological, and interpret the evidence with economics and the social sciences.

Temin's ambitious intervention states that a market economy integrated the Roman Empire. By the effects of the *pax Romana* and Mediterranean trade, regions specialized in the production of the goods in which they had comparative advantage, increasing production and income in the Empire. Rising output transmuted into better standards of living for the inhabitants of the early Roman Empire. Temin's book develops in four parts: first, he deals with the relationship between economics and ancient history; then, he revises the available data and methods which can serve to test his working hypotheses; later, he studies individual markets, the microeconomic foundations of the Roman Empire; and he concludes with an examination of the performance of the Roman economy in terms of gross product, growth patterns, and standards of living.

In the opening chapter, "Economics and Ancient History", Temin explores what the virtues and the vices of models for ancient economic history can be. Temin asserts that "no model is good in the abstract; it is better or worse than an alternative" (p. 6). Accepting that Karl Polanyi set the terms of the debate on allocation mechanisms long ago, Temin reconsiders Polanyi's socioeconomic

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principles of reciprocity, redistribution, householding and exchange, criticizing their lack of conceptual precision. He substantiates the Polanyian framework with a typology of resource flows developed by the comparative economist Frederick L. Pryor in 1977 and his own taxonomy of behavioral modes formulated in the 1980's (see Table 1).

Table 1: Temin's Modification of the Polanyian Conceptual Framework

Polanyi's socioeconomic principles	**Pryor's typology of resource flows**	**Temin's taxonomy of behavioral modes**
Reciprocity	Reciprocal exchanges with non-responsive, *administered* prices, and non-centric transfers	Customary behavior
Redistribution	Absence of exchanges with centric transfers	Command behavior
Householding	Absence of exchanges with non-centric transfers	Customary behavior
(Market) Exchange	Market exchanges with responsive, market prices, without transfers	Instrumental behavior

Source: Author's own elaboration based on Temin, pp. 6-8, 72.

Henceforth, Temin's hypothesis of a functioning market economy during the early Roman Empire requires proof of the existence of market exchanges with variable prices, evidencing instrumental (economizing) behavior. How many market exchanges are necessary to prove the existence of a market economy? Temin proposes to move out step-by-step, by means of finding prices, and variable prices, as the latter are the most distinctive element of a market economy. Temin distinguishes between the common meaning of the market as a place of commerce and how economists understand it:for them, the market is a collection of buyers (demand) and sellers (supply) which are equilibrated by variations in prices, or "factors that provide incentives to supply or consume" (p. 14). Thence, a market economy is defined loosely in terms "of the importance and prevalence of market activity" (p. 11).

Temin grounds his research on the new institutional economics (here forth NIE), as the NIE "focuses our attention on the lack of information and [the ways in which] people try to deal with it" (p. 13). The NIE emphasizes the interplay between institutions (the formal and informal rules constraining individual and collective actions) and organizations (which coalesce the will of individuals and can transform institutions, henceforth affecting the performance of the economy as a whole). The NIE has reinstated the importance of state action and laws in defining and enforcing property rights, the influence of culture on reciprocity and market exchanges, and the way in which costly, incomplete and asymmetric information affects the behavior of participants in the market. Temin also provides a basic introduction to the theory of comparative advantage and international economics that, operating either by market forces or imperial redistribution flows, offer an explanation for the gains of interregional trade and the partial or complete productive specialization of regions across the Mediterranean.

The first part of the book, "Prices" is perhaps the most controversial, yet the most innovative for the study of ancient societies. Although the Romans left textual evidence of the prices of several goods and services, no consistent data has been found that can be used to test hypotheses in a robust statistical analysis. By data, Temin means "a set of uniform prices that can be compared with each other" (p. 27). Scholars have documented the existence of local markets across the Roman Empire. However, as Temin is interested in *interdependent* markets, he approaches the problem by considering the case of wheat, the subsistence good of the time. Wheat is a nearly perfect example to demonstrate the functioning of comparative advantage and regional specialization across the empire, as the consumption demand of Rome and the Italian peninsula exercised a centripetal force over the provinces, and the Mediterranean enabled the creation of interregional networks of *private* merchants, who sent, carried and received "at least half of the wheat imported to Rome at the time of Augustus" (p. 27).

Temin asserts that state intervention in this market was only intermittent: the imperial hand might have discouraged anticompetitive actions such as private hoarding. The wheat trade must have created price convergence across the Mediterranean, with the price in Rome becoming the "international" price of reference across the Empire. The result of "a unified wheat market [is that] the price of wheat would have decreased as one moved farther and farther from Rome" (p. 38). Temin proceeds to test this hypothesis with prices discovered by Geoffrey Rickman. The prices are temporally and spatially arranged, from the oldest to the newest, from the nearest to the farthest of Rome. Temin calculates the distance between the capital and each location in kilometers. He traces a plot graph, which shows *what looks like* an inverse relationship between distance and price discount. As this inverse relationship might be random, Temin produces regression analyses, which confirm what economic theory suggests, implying that distance from Rome can help explain more than 75% of the variance in price differentials. Temin recognizes that there is no way to know if the prices he used in his regressions analyses were the result of the interaction of supply and demand.

In this regard, a useful distinction between market prices and administered prices is worth mentioning here: "[m]arket prices are the results of purchases and sales in markets. They are free to vary over time [...] Administered prices, by contrast, change only infrequently. [...They] only changed when market prices had changed enough to render the administrative prices dysfunctional" (p. 72).

To explore if prices in antiquity behaved like market prices in more recent eras, and given the lack of Roman evidence, the author studies what happened with price data from pre-Hellenistic and Hellenistic Babylon. Temin analyses price behavior for agricultural commodities (barley, dates, mustard, cress, sesame and wool) from 464 to 72 bCE, registered in cuneiform tablets and astronomical diaries in Babylon, obtained by Alice Slotsky. Scholars have not really questioned whether these are market prices. If the Slotsky dataset contained managed prices, the prices would follow a predictable pattern. Temin considers the efficient-market hypothesis, advanced among others by Eugene Fama, a co-recipient of the 2013 Nobel Prize in Economics. This hypothesis ascertains that prices are not predictable in the short-run. Regression analysis allows Temin to say that "these prices describe a random walk very much like that of modern prices" (p. 59). Babylon prices are also comparable to the well-documented prices of wheat in medieval and early modern England. This is not to say, however, that Babylon had an integrated market economy: at most, "there was a functioning free market in agricultural commodities" (p. 63). The prices of all the commodities rose after 200 bCE. Temin asserts that this was caused by an increase in the *supply* of money after the death of Alexander the Great in 323 bCE. It took a long time for prices to return to their median levels. From then on, prices diverge in their behavior, only to rise rapidly all together after 150 bCE, as a result of the constant outflow of silver from Babylon to satisfy Rome's demand of money.

Temin then examines Roman money and inflation. Temin constructs a binary index for inflation with wheat prices and wages of Roman soldiers. For the most part, the Roman Empire had price stability until the end of the second century A. D.: inflation in the third century A. D. was higher than ever before, and it seems to have increased during the 400's. Afterwards, Temin constructs four indices of political instability to correlate with his inflation index. The similarity in the behavior of the indices leads Temin to assert that price stability was a direct function of the money demand in the center of Empire. With political stability, the center's money demand was not inflationary, as the excess could be accommodated in an expansionary economy. However, when political instability and economic recession occurred, the center's money demand would be excessive, and the level of prices rose. Taken together, the inflation and the political instability indexes "suggest an explanation for the change from the early to the late Roman Empire" (p. 90). The question is then, "why [did] the economy and price behavior shifted from a stable to an inflationary regime[?]" (p. 82). The answer might lay in the combination of effects of an exogenous event, the Antonine Plague (165-169 and 178-180 A. D.), with an endogenous variable, that is, the debasement of the currency. However, there is no way to test this with the available data. We cannot know from the indices the dynamics of the inflationary regime in the late Roman Empire, nor whether inflation occurred all the time or whether it happened in bursts.

Beginning the "Markets in the Roman Empire" section of his book, Temin makes a NIE reading of existing historiography to delve deeper into the functioning of the Roman wheat market, as a nearly perfect representative for other goods markets. To supply grain to the capital of the empire, Roman merchants had to solve innumerable problems, ranging from limited, slow, incomplete and asymmetric information, to principal-agent problems such as adverse selection and moral hazard. Temin does not hesitate to assert that "the Roman [wheat] market rivaled early modern European and colonial American markets in terms of institutional complexity and perhaps efficiency" (p. 113). The most important grain traders were the senators, the social group with the most landholdings in the empire. Roman equestrians (*equites*) followed in number and in wealth. Together, senators and *equites* formed a tightly knit community of interest. Then came the freedmen (former slaves) who participated in the wheat market as small and medium-sized participants. The market and "the economy of friends" were complements, rather than substitutes (p. 111). Merchant principals employed friends and contacts as their agents to buy, sell, ship and transport the grain. To enforce compliance and honesty, merchants counted with "a sophisticated legal framework" (p. 104). The imperial office of the *annona* in the port of Ostia acted both as a merchant and an "information-clearing house", as official contracts functioned as signals informing the wheat traders about actual and expected price patterns (p. 105). To spread risk, most wheat merchants opted to carry business collectively, forming *societas* (companies) recognized by law as having an independent existence (*corpora*). Merchants ameliorated risks by borrowing funds at variable interest rates: maritime loans were only repaid if the ship made it to its destination. The amount of maritime loans peaked between the first and second centuries A. D., as Keith Hopkins had argued elsewhere.

Acknowledging Polanyi's argument about the non-existence of labor as a commodity before the coming of the English Poor Laws, Moses Finley's authoritative dismissal of the conceptualization of labor as a commodity in the ancient world, and Hopkins's characterization of Rome as a slave society, Temin asserts, on the contrary, that there was a labor market in the Roman empire, slavery notwithstanding. Roman slavery was very different from slavery in classical Greece, the English and French Caribbean, the American South, Cuba and Brazil. For most preindustrial societies in human history there was not "a sharp distinction between free and unfree labor, only a continuum along which various economies, or even activities within an economy, can be placed [...] a continuum of flexibility and restraint" (p. 113). Roman slavery conformed to what some anthropologists call open slavery, "a system in which slaves can be freed and accepted fully into general society" as attested by the many freedmen able to marry free-born people and earn citizenship (p. 113). Wages in the Roman Empire behaved in the way economic theory anticipates for a functioning labor market.Wage differentials between urban and rural areas were substantial, as peasants did not have the minimum human capital necessary to find an occupation in the cities. But wages for the same occupations converged across the empire. There is evidence of lasting employment relations, of reactive wages accommodating the scarcity of workers and of higher compensations for more complex or difficult jobs, such as mining. To accumulate experience and earn reputations as skilled workers, young men participated in apprenticeships that were more flexible than their counterparts in medieval and early modern Europe. In times of peace, Roman armies attracted soldiers-to-be with higher compensations; during warfare, men were recruited resorting to conscription. When soldiers were not fighting, they would participate as workers in the construction of roads and public monuments.

Slaves can be considered part of the labor supply of the Roman society, as the socioeconomic structure did not prevent them from responding to market and non-market incentives. While accepting the inherent cruelty of slavery in all societies, Temin asks us to reconsider "how hopeless [the Roman slaves] position was. Slaves were unfortunate people, but they were still people" (p. 122). Imperial Rome was different from other slave societies given the high frequency of manumissions in urban nuclei and the education slaves could accumulate throughout their lives. The explanatory cause or "independent event was the Roman conquest of the Mediterranean, which led to both educated slaves and frequent manumission. The uniqueness of Roman history generated a unique form of slavery" (p. 131). Slavery itself was not racialized. The enslavement of populations from geographically diverse origins inadvertently enriched the socioeconomic structure of the Empire. Whereas punishment and negative incentives pervaded slavery in the Americas, the Roman elites' disdain for hard work translated in opportunities for hardworking slaves in urban areas, who were able to gain their masters' appreciation and, eventually, the resources to purchase their own freedom. In yet another striking contrast with slaves in the United States, Roman slaves were legally authorized to accumulate and maintain assets in their *peculium*. Temin's characterization of Roman slavery leads him to caution ancient historians against easy "comparisons between American and Roman slavery [which] may be an inevitable result of the scarcity of Roman data, but they should be used only to pose questions, not to imply similarity" (p. 125). Otherwise, the mere philosophical and moral prejudice against business among the elites cannot explain "the frequent references to literate, skilled slave agents in the surviving sources", nor the documented existence of slaves working as managers of estates and households, as trade agents, even as preceptors (p. 130). The author finds it necessary to revise the decline of slavery in the Roman empire, as the traditional narrative focuses on what happened mostly in its Western side. As an institution, Roman slavery survived until the fifth century, meaning "there was no gradual transition from slavery to serfdom in late antiquity [...because of] organized manumission and the open nature of slavery" (p. 137).

Temin emphasizes the unique nature of land as an immobile factor of production, the many regulations affecting it historically, and the high level of transaction costs associated to the transfer of land ownership. Land in the Roman Empire was an investment option and a real asset that could be used as collateral for financial transactions. Temin defines three minimum conditions for the existence of a market for land: "a price for land that can change freely, [...the possibility for] people [to] buy and sell land at this price without reference to many outside authorities, [... and] few restrictions on or obligations for most landholdings and land transfers other than the payment of taxes" (p. 140). Myrto Malouta has systematically compiled an extensive database on land transactions in the Roman Empire that can adequately suffice as proof for the two latter conditions necessary for a land market: the problem of scattered evidence remains for testing whether land prices reacted to changing market conditions. Several Roman texts provide anecdotal evidence for what could be read as adjusting prices, recommendations to purchase land where location increased its desirability, and even real estate speculation. Temin sees in the depreciation of land following credit crises a functional land market that reacted to changing conditions and subsequent corrections in the price of both financial and real assets. Even more so, Temin reconsiders the economic consequences of Roman expansion in the second and first centuries BCE: as members of the Army returned to the Italian peninsula with booty money, they sought to invest in land. Without a functioning land market, we would be at a loss in attempting to explain the substantial increase of land prices in the late republican era, the pauperization of tenants and the political instability that preceded the collapse of the Roman Republic. The question of land values can be further explored revisiting the Roman Empire's taxation model, originally based on "a poll tax to mark personal subjection to Rome and a land tax to indicate Roman control of land" collected by *publicani*, or tax farmers (p. 144). Emperor Augustus transformed this state of affairs distinguishing between imperial and provincial taxes. Thereafter, the Empire would rely on land taxes to fund bureaucracy and armies, and for that matter the imperial administration conducted periodical censuses and surveys that translated into maps and lists with the value of land holdings. With regards to land ownership regimes, Temin says that "land was private or public, owned either by individuals or the emperor" (p. 148). Land tenure had two layers: ownership (*dominium*) and possession (*possessio*). *Dominium* granted the owner the right to receive reparations for damages and the ability to initiate a legal process (*vindicatio*) to recover land from whoever exercised *possessio* over the land. Most available land was leased to agricultural tenants. There is evidence supporting the existence of a market for leases. Most lease arrangements adopted the form of sharecropping, wherein a share of the harvest was paid in money or in kind to the original landowner. Land tenants, not landowners, bore most of the tax burden.

Ancient historians have misjudged the role of financial intermediation in the Roman Empire as they have contrasted it with nineteenth-century financial systems. A comparative, historicized approach would evaluate Roman finance and allocation of capital relative to the financial institutions and practices developed in other *preindustrial* societies. As "most economic organizations in history operated somewhere between the conditions of modern life and [a] purely agrarian case" where a landowner uses most of his income to finance consumption, Temin articulates a typology of "financial sophistication that can be used to evaluate any specific society" (p. 159). Following Eric Sirri and Peter Tufano, Temin offers a hierarchy of the sources to fund private consumption and investment, distinguishing between debt capital (the issuing of a loan with a known rate of return for the creditor) and equity capital (the financier sharing the risk and ownership of the venture, without certainty over profit or loss). In contemporary societies, we could expect to see the coexistence of all these types of capital. Historically, however, the typology closely follows the evolution of finance throughout Western Europe's history, as can be observed in Table 2.

Temin's typology provides a reasonable point of departure to understand the level and development of Roman financial intermediation. To begin with internal sources of finance, we know that wealthy Romans lent to their peers in cash. These loans were registered in waxed tablets or papyri; already in the Republican period, Romans recognized that loans could be made by exchanging the written records, as a "paper transaction, through the simple writing of a transfer entry" in a precedent of bookkeeping credit (p. 169).

Table 2: Temin's Typology of Financial Sophistication

Type	**Debt Capital**	**Equity Capital**	**Representative Economic Units**	**Financial Development**
Internal sources	Loans from owners	Retained earnings	Autarkic farms or businesses	Lack of financial system
Informal external sources	Loans from family and friends; trade credit, brokers	Investments by informed participants in companies	Autarkic farms or businesses; reputable merchants	Limited financial system
Financial intermediaries	Lending by financial institutions (banks)	Some joint-stock companies, venture capitalists	Small to medium-sized businesses in preindustrial economies	Very good financial system
Public financial (impersonal) markets	Bond issues	Stock issues, mutual funds	Modern and contemporary corporations in industrial economies	Modern financial system

Source: Author's own elaboration based on Temin, pp. 159-163.

With regards to informal external sources on the debt capital side, Roman gentlemen resorted to kin and social networks when in need of resources. When things went well, wealthy Romans made their cash available for lending through trusted slaves or freedmen who either became their legal agents or partners in lending *societas*. Textual references to market interest rates are abundant: loans had either fixed or variable interest rates, and creditors and debtors often evaded the official maximum rate of 12 percent per year by "transferring the loans to foreigners who were not subject to rate restrictions" (p. 171). Credit lubricated trade circuits of small and large scale across the Empire. The inadequate supply of small-denomination coins made retailers to keep clients' accounts open. Financial deadlines were almost never fixed on a short-term basis. Companies were the corresponding organization in the equity capital front of informal external sources. *Societas* helped individual investors to "pool resources for a particular venture and share the resulting profits or losses" (p. 172). *Societates* helped Roman investors to bid for state concessions to construct infrastructure, supply the army or farm taxes, as well as participate in shipping and moneylending. Legally, only the *socii* (members of the *societas*) could contract or extend loans on individual terms; in practice, however, Roman courts extended liability to all *socii*, facilitating financial transactions for all *societas*.

Against the position strongly denying the existence of a Roman banking system, and drawing from his joint study with Dominic Rathbone, Temin unearths the presence of banks in the early imperial Roman economy. Operating in the Roman forum since the late third century BCE, banks (*argentariae*) helped mobilize capital for investments in agriculture, cities and roads. Financial brokers and businessmen (*negotiatores*), money changers (*nummularii*) and moneylenders (*faeneratores*) also operated in the forum, near the arch of Janus, the god of change and time. Operating in closed shops (*tabernae*), bankers (*argentarii*) "ran deposit and withdrawal accounts, made paper transfers between these accounts, accepted mandates to make multiple payments, lent to third parties, acted as investment brokers, provided finance for auctions, put up court bonds and so on" (p. 182). As collectors (*coactores*), bankers provided credit for buyers in the public auctions of "landed property and slaves, valuable goods, including luxury foods or foodstuffs in large quantities, contracts for agricultural operations, state and civic contracts for revenue-collection, building works, supplies and services" in exchange of *merces*, ad valorem fees (p. 180). Banking was under the domain of private law, as attested by Justinian's *Digest*. Roman banks facilitated the transfer of resources across the empire through branches or correspondent banks, rendering an indispensable service for wealthy senators and equestrians who had investments through the Mediterranean basin. Clearing operations between banks took place "without any movement of coin, by using rent payments, transfers of tax revenues, and so on" (p. 186). The surviving documentary collections of the first-century Italian bankers Lucius Caecilius Iucundus and Gaius Sulpicius Cinnamus contain evidence of credit-creation activity on behalf of clients who did not have sufficient metallic money in their accounts, refuting claims that the Roman world did not know how to create liabilities without specie backing. Most of the loans were allocated in economically productive activities such as trade and property purchases. Henceforth, we can see how "these social institutions, slavery, *societas*, and *praepositio* [the legal act of placing in charge] as defined and regulated by Roman law in ways particular to Rome, enabled banks, as other enterprises at Rome, to develop organic and highly flexible operating structures" (p. 185).

There is little to be said about financial intermediation via equity capital. However, the importance of the *societates* during the late Republic and early empire should not be tossed aside, as they were recognized entities with *corpora* (legal personhood), which meant that they could keep operating even if a shareholder died. These *societates* were organized in strategic sectors of the Roman economy, such as tax farming, grain trading and shipping.

The financial evolution of the Roman Empire did not result, however, in the emergence of public securities markets. On the government side, "the central Roman state of the Principate, as that of the republic, almost never lent or borrowed money" (p. 173). The early Roman Empire did not raise loans either: Tiberius was the only emperor who actually lent money to senatorial families through banks in Rome during the credit crisis of 33 CE. Local governments borrowed money to erect public works or temples. Some Greek cities under Roman control were active moneylenders. Donations of wealthy residents funded temples and cults in the smaller cities: to maintain and increase their endowments, temples usually lent in favorable conditions to reputable community members. Some temples had annex banks themselves. As Roman banking "was big business in first-century CE Rome and Italy", Temin finds sufficient elements to prove that "[the first] three out of four rows [of Table 2] were active in Rome" (pp. 187-188). However, whatever degree of financial sophistication the Roman Empire achieved was erased when inflation accelerated. Lacking price-indexed loan contracts, Roman banks accumulated losses and disappeared by the third century CE.

In the final section of his book, "The Roman Economy", Temin problematizes the many variables ancient historians have advanced as proxies for economic growth, and warns scholars of the need to orient their inquiries with a previous knowledge of "the methods used to measure economic growth in other times and places, and the theories that underlie these estimates" (p. 197). Economists approach economic growth through the study of human welfare, structural changes in the form of industrial revolutions, and the domestic product. For the Roman case, the data is insufficient to compose an index on human welfare; the economy never entered a process of industrialization; therefore, we are only left with the option to estimate the domestic product of the empire.

Temin enumerates the many problems economic historians face in their estimation of macroeconomic aggregates with the national accounts methodology. The road to explain and measure economic growth has been bumpy. Temin highlights human capital and institutions as key variables to explain economic growth through time. Temin admits that perhaps the most suitable theory of economic growth for studying the performance of a preindustrial society can be found in the insights of the nineteenth-century English political economist Thomas Malthus. Malthus emphasized the interaction between population growth and economic growth on the long run. In the long haul, the size of the population cannot expand beyond the productive capacities of the economy given a stagnant rate of productivity and slow technological change. In an agrarian economy with stagnation, consumption demand becomes inelastic: therein lies the explanation for the lack of economic growth at a rapid, sustained pace. Yet, Malthusian pressures did not preclude temporary waves of economic growth with accompanying rises in the standards of living.

The Malthusian model can help conciliate our knowledge on the epidemiological and political history of the Roman Empire and the new evidence unearthed by archaeologists specialized in the Roman world, within a united, consistent framework. The rise in Mediterranean trade, regional economic specialization across the Roman Empire, the construction of roads, all led to the surge of a distinctively urban civilization, one with an economy "efficient enough to release substantial numbers of people from the tasks of growing food", and thus can be modeled as positive shocks in a Malthusian model. (p. 223). Whereas plagues and political instability can be considered negative shocks, the new archaeological findings suggesting that Roman technological change and the diffusion of knowledge were not as slow as once supposed and can be incorporated as positive shocks in the Malthusian model.

The problem remains that the Roman Empire did not experience structural change in the form of an industrial revolution, which condemned the Roman economy to being a Malthusian empire. It is then that the author asks the question of how big the Roman economy truly was, and what was the level of per capita income, a crude indicator of human welfare. Temin states that by the beginning of the Common Era, the Italian peninsula was as rich as the Netherlands in the 1600, and that the citizens of the Roman Empire were on average as prosperous as Western Europeans in 1700. He ends his reflection on his estimate (and his whole book), by asking in a challenging tone: "Is it circular? Only if you have not been convinced by the preceding chapters about the microeconomics of Rome –or have not read them– should this short derivation seem worse than its competitors"

(p. 261). One cannot help but conclude that Temin's book is a *tour de force* for students of ancient societies, and hope that readers will take his insights on how to tackle the study of the Roman economy in terms of sources and methods seriously, as they unshackle the potential to revitalize our understanding of how past civilizations thrived –and decayed.