

## A Market Economy in the Early Roman Empire

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The economy of the early Roman Empire has been an object of study for at least the last century. The discussion has been marked by continuing debate, known sometimes as the primitivist/modern debate and at other times as the Finley debate, following his famous lectures, *The Ancient Economy*. This paper is a contribution to this debate, written by an economist rather than an ancient historian. My purpose is to define the concept of a “market economy,” and to see if it fits the evidence we have for the early Roman Empire. This analysis is similar in spirit to Hopkins (1980), but concentrates on the processes by which resources were allocated, in contrast to Hopkins’ concern with the allocation itself.

I take an unusual approach to this problem. Before confronting the evidence, I turn aside to consider the various ways in which economic activity can be organized. For example, a market economy is one in which many resources are allocated by prices. Many if not most goods and services have prices, and decisions about production and consumption are affected by these prices. But while this brief description of a market economy is reasonably clear, the alternatives against which a putative market economy is to be compared seldom are spelled out. Finley declared that, “ancient society did not have an economic system which was an enormous conglomeration of interdependent markets (Finley, 1973, pp. 22-23).” He did not explain however how the massive population of Rome was fed in the first few centuries of this era or how other problems of resource management were effected. He therefore stimulated controversy without providing a path to its resolution. He drew implicitly on research by Polanyi (1944,

1977) to oppose the views of Rostovtzeff (1957) within the field of ancient history and those of Fogel and Engerman (1974) in economic history, but he did not explicitly join their conceptual apparatuses. Morris (1999) summarizes the debate fueled by Finley's dramatic lectures and argued that the controversy is still vital today.

Garnsey quotes Finley's statement as fact in a recent book on the meaning of food in ancient societies. He describes market activity and even contrasted markets with Polanyi's alternative organizations. But he concludes, referring to an article from the 1950s, "Finley's dissatisfaction with this kind of economic history, built on an assumption of a world market, and based on the flimsiest of evidence, was justified (Garnsey, 1999, p. 32)." Readers must conclude that Garnsey agrees that "ancient society did not have an economic system which was an enormous conglomeration of interdependent markets."

My purpose is to extend Garnsey's analysis and clarify the concepts involved. I highlight the differences between alternative organizations of economic activity and propose empirical tests to discriminate between them. After describing the implications of the test results, I return to Finley's position and show that detailed observations of Roman society do not fit the generalizations he made about the Roman economy.

There are many sources for the history of Rome, but they are curiously silent on questions of economic organization, as Finley and others have noted. Literary evidence does not suggest a focus on economic affairs in ancient Rome, but then it does not have this focus today. If all we knew about the modern economy came from the files of the *Times Literary Supplement* or the *New York Review of Books*, we would be hard-pressed to understand the economic institutions that enabled the authors represented in these

publications to pursue their literary interests. In addition to being limited, the literary evidence we have also was compiled by medieval monks who were antagonistic to economic activity. This religious filter makes it doubly hard to recover the economic reality underlying the artifacts we now have. Greene (2000) argues that Finley's literary evidence fails to reveal the technological progress in the ancient world that is visible in the archeological record. I argue that there is economic information in the literary sources when used in the proper context.

### Models and Tests

If we seek to characterize the Roman economy as a whole, we need categories in which to classify it. If we say that conditions did not fit one classification, we incur the obligation to say what other class it fits into. To do so, we need to describe the possible classifications that are to be considered, that is, the alternatives among which one chooses. Classification is an act of abstraction, and this description must take place at a level that appears removed from the study of particular classical sources. Abstract does not mean imprecise, however, and we must be very clear about the classification system we use. The logical starting point, as for so much of this literature, is Polanyi.

Polanyi asserted that, "The main forms of integration in the human economy are, as we find them, reciprocity, redistribution, and exchange (Polanyi, 1977, pp. 35-36)." These forms describe different ways to organize the economic functions of any society. Reciprocity, as the term suggests, is a system in which people aim toward a rough balance between the goods and services they receive and that they give to others. The reciprocal obligations are determined by social obligations and tradition, and they change only slowly. This organization can be formalized, as in Malinowski's Trobriand

Islanders, or simply followed with informal or implicit rules. Redistribution is a system in which goods “are collected in one hand and distributed by virtue of custom, law, or ad hoc central decision (Polanyi, 1977, p. 40).” This system is present in units as small as households, where it is known as householding, as well as in the taxation levied by modern states. The essential characteristic is that a central authority collects and distributes goods and services. Exchange is the familiar economic transaction where people voluntarily exchange goods for each other or for money. Polanyi’s categories appear frequently in books about other aspects of classical antiquity, from Garnsey on food to Peacock and Williams (1986, Chap. 5) on amphorae.

Pryor (1977) proposed tests that can be used to differentiate Polanyi’s forms of integration in his study of primitive and peasant economies. Pryor distinguished between what he called exchanges and transfers. Exchanges are balanced transactions where goods or services are exchanged for other goods or services of equal value. This of course is the kind of behavior most often observed in markets. Transfers are one-way transactions where goods and services are given without a direct return. Grants, tributes, and taxes are all transfers. Pryor excluded “invisibles” from this accounting, so that taxes are considered to be transfers rather than an exchange of goods or money in order to purchase social order or military success. This exclusion is necessary because one can always hypothesize an invisible gain that makes all transactions balanced. In that case, there is no way to discriminate between different forms of behavior.

Pryor subdivided exchanges into those in which the ratio of goods or services exchanged can vary and those in which it cannot. The former may or may not involve money; the latter do not. He termed the former, market exchange; the latter, reciprocal

exchange. The use of money is a good index of this distinction, as are changes in the exchange ratio over time. In the presence of money, of course, changes in exchange ratios are expressed as changes in prices.

Finally, Pryor divided transfers into centric and non-centric ones. Centric transfers are between individuals in a society and “an institution or an individual carrying out a societal-wide role (Pryor, 1977, p. 34).” In the Roman context, large-scale centric transfers would be those with the Imperial authorities. If the grain to feed Rome was provided by taxes or tribute, this would be a centric transfer. If the grain was obtained by purchasing it with money, then this would be a market exchange.

These categories correspond closely to Polanyi’s forms of economic integration. Polanyi’s first form, reciprocity, is composed of Pryor’s non-centric transfers and reciprocal exchanges. His second form, redistribution, is accomplished by centric transfers. His third form, exchange, is characterized by what Pryor called market exchange. In fact, Pryor’s project can be seen as a way to make Polanyi’s classification empirically testable, not necessarily reaching Polanyi’s conclusion that “price-making markets [are] the exceptional occurrence in history (Neale, 1957, p. 371).”.

This tri-part schema corresponds also to a division of individual behavior. I have argued that people even today rely on a mixture of behavioral modes, choosing which one to use as a result of internal and external forces (Temin, 1980). These forces can be represented on two dimensions. One dimension measures internal forces along a index of personal autonomy. The other dimension indexes the rapidity of change in the external environment. In this scheme, customary behavior is most likely when people are less autonomous and change is slow. Command behavior is most likely when change is rapid

and personal autonomy is neither very high nor very low. Instrumental, that is, the behavior characteristic of markets, is most likely when personal autonomy is high and the pace of change is moderate. These different modes of behavior correspond to the three types of organization used in economic life. Customary behavior generally is used for non-centric transfers and reciprocal exchanges. Command behavior is typical of centric transfers. And instrumental, that is, market, behavior is used in market exchanges.

There consequently are two types of tests we can use to discriminate between the various kinds of organizations. Prices are used in market exchanges, but not in reciprocity. They may be used as well in reciprocal exchanges, although they will not vary in response to economic conditions in that context. In addition, people will behave instrumentally in market exchanges, not customarily or by command. These two modes of behavior in turn are typical of reciprocal and redistributive organizations. Neither prices nor behavior are clearly seen in the historical record, but the formulation of tests allows discrimination between alternative categories.

The link between organizational structures and individual behavior places the former in society. Organizations may grow by accident, but they are sustained only if they facilitate actions that society views as desirable. They are, in Polanyi's terminology, embedded in society. An inquiry into the nature of economic organizations in the early Roman Empire therefore cannot be separated from other inquiries into the nature of Roman society.

#### Market Exchanges in the Early Roman Empire

The obvious place to start is with the city of Rome and with the problem of obtaining food for its residents. The city's population in the Principate generally is

estimated at about a million inhabitants. Rome in the early Roman Empire therefore needed a lot of supplies—20 to 40 million *modii* of grain a year, about 150-300,000 tons, plus extensive supplies of oil and wine (Rickman, 1980, p. 10; Garnsey, 1988, pp. 191, 231.) It was far cheaper to ship food across the Mediterranean than over land—as it would remain until the advent of the railroad. Grain was shipped over the sea to Rome from Sardinia, Sicily, Africa and Egypt. Oil was exported to Rome from Spain and Africa (Mattingly, 1995). The Mediterranean was “closed” for four months a year from November until March, and dangerous for about two additional months on either side. There must have been a large amount of shipping coming in and out of Ostia during the summer, even though large ships went to Puteoli in the Bay on Naples, where grain was transshipped into smaller vessels for the coastal trip to Ostia.

How was this shipping organized? We know more about the grain trade than about imports of other foods, possibly because there was more government involvement. I discuss in turn the grain being shipped and then the ships in which it was carried. If this grain was offered to Rome as tribute or had been commandeered directly by Roman authorities, then this movement of grain was a centric transfer. If this movement resulted from sales of grain by farmers, it was composed of a series of market exchanges even if the grain was purchased from tax revenues.

Hopkins (1980) began his discussion of the Roman economy with the “unexceptional” proposition that most Roman taxes were paid in money. He noted that there were taxes of grain in kind from Egypt and Africa, used for free distribution in Rome, the *annona*, but only a small part of the grain imported into Rome—perhaps 15 percent—was for free distribution (Sirks, 1991, p. 21). Rickman (1980, pp. 40-42)

argued that the grain for the *annona* was purchased with public funds, but Garnsey (1988, p. 232,) and Sirks (1991, p. 25) stayed with the “prevailing view” that grain for Imperial distribution was collected separately from other taxes and in kind. Some grain must have arrived in Rome as taxes in kind, but the bulk of grain imports were privately owned. This applies in particular to grain from Italy since Italian farms were exempt from taxation; they sold grain to Roman consumers in market exchanges.

Taxes were centric transfers, but grain purchases from tax revenues were market exchanges, which must have generated more market exchanges as privately owned grain was bought and sold. It seems likely that both activities were present in the grain trade. Centric transfers, taxes in kind, have attracted more attention but accounted at most only of grain for the *annona*. Purchased grain therefore accounted for most of the imports.

An inscription from Lete in Macedonia in Hadrian’s time testifies to the existence of grain markets. “The city celebrates Manius Salarius Sabinus, a gymnasiarch and benefactor, who very often in times of shortage sold grain more cheaply than the current price and when the emperor’s army was passing through, provided for the *annona* 400 *medimnoi* of wheat, 100 of barley and 60 of beans, plus 100 *metretae* of wine, much cheaper than the current price (quoted in Garnsey, 1988, pp. 247-48).” The inscription celebrated an intervention in functioning markets when prices rose in response to the added demand when the army was passing through. Grain and other food shortages caused the prices of foodstuffs to rise, and the city’s benefactor sold food at a lower price. In normal times, people could buy food in markets; only in extraordinary circumstances was unusual activity called for and celebrated.

Although Egyptians paid taxes in kind to Rome, they appear to have been free to sell the rest of their surplus through the prefect. Josephus told how Herod the Great melted down the gold and silver objects in his palace to convert them to money in order to buy grain from Egypt and alleviate a Judaeen drought in 24 BCE (quoted in Garnsey, 1988, p. 257). In normal times without drought, Egyptian grain markets must have functioned with less central involvement, like those in Macedonia. Prominent figures intervened in markets in extraordinary times, but their generosity functioned in the context of market exchanges.

Many examples of Italian farmers selling their produce in the early Roman Empire have survived. The farmers sold, not to get money to pay taxes, but to pay rent and buy articles they did not produce themselves. Italian farmers could transport their goods to an urban market and sell them there, hire ships or space on ships to carry their produce to market, or sell their crops to middlemen at the farm gate (Morley, 1996, pp. 159-74). Cato reported sample contracts for the sale of olives, grapes and wine. The question of who bore the risk of wine spoilage was addressed explicitly in the contract of sale (Cato, *Agr.*, 144-48). These transactions were exchanges, not unidirectional transfers, and they look like market exchanges as well. The distinction between market and reciprocal exchange is whether the rate of exchange—the price—can vary. The use of money, endemic in early Imperial Italy, is a marker for market exchanges, as are variable nominal prices.

We observe isolated prices for many Roman goods, but we lack continuous series of comparable prices for goods and services, as many historians have noted. Markets do not generate a permanent record of changing prices; price series exist only if someone or

some agency had an interest in collecting them. Newspapers reported prices in pre-industrial Europe and America, but we do not have newspapers from ancient Rome. (The most complete ancient price series, ironically, comes from Babylon (Slotsky, 1997).) We do have abundant evidence that many goods and services had prices (Johnson, 1936; Duncan-Jones, 1982; Rathbone, 1997). Renters paid rent on their apartments in Rome, employers paid wages to free workers and rent for slaves, travelers paid for food and drink for themselves and their animals (Shelton, 1998, pp. 84, 168-69, 327). These are the ordinary prices of a market economy, showing that many of the goods and services used in the course of ordinary life were valued by price and paid for by money. The Diocletian price control of 301 attempted to fix a wide variety of prices. It was not as extensive as, say, the Preisstop Decree issued by the Nazis in the 20<sup>th</sup> century (Reichskommissar, 1937-38). It reveals both that there were market prices that the authorities wished to control and that the market economy of ancient Rome was not as complex as that of modern Germany.

Rathbone showed that market activity existed in rural areas as well as urban, at least in Egypt. The records he found for estates in Egypt were replete with prices for myriad goods and services. Not only were there prices for grain and for donkeys, but also prices for services offered by various craftsmen and workmen. Rathbone (1991, pp. 396-401) argued that the Appianus estate was composed of many parts whose activities were coordinated to exploit economies of scale. This effort was aided by a sophisticated accounting system that was in the spirit of double-entry bookkeeping. Rathbone even compared the Roman managers' attempts to contain costs with those of Andrew

Carnegie—the paragon of market exchange. The estates whose records have survived were connected to and part of a market economy.

Turning to the ships used to transport grain, we find that the ships were not the property of the Imperial state. They were not, like the army, operated directly by the state. The operation was far too complex for the small bureaucracy at the head of the Empire. The ships must have been owned by others. There could have been some sort of communal ownership, but that flies in the face of our knowledge about the ownership of other things. Land was privately owned, and we have many comments about the profitability of agriculture. Urban houses appear to have been privately owned as well, and we have notices about rents. Ships also were privately owned. Rickman (1980, pp. 27-28) stated baldly that “private enterprise was the backbone of the whole business” of shipping grain to Rome.

How did one engage a ship in the early Roman Empire? “The Romans had the habit of inviting tenders from the highest bidder to farm out much or all of what the State needed, by way of a contract, a *redemptura*.” Shipping contracts with *navicularii*, people making commercial use of ships, were used to obtain grain for the imperial distributions, the *annona*, in Rome. A *navicularius* could appoint a *magister navis* to accompany the ship in his place, and he could form a *societas* which could survive the death or bankruptcy of one of its members. Contracts usually were for five years (Sirks, 1991, pp. 25-33). Only a small portion of the grain imported to Rome was used for imperial distributions, and the other imports appear to have been privately owned, shipped and sold. The shipping arrangements likely were similar to those used for the Imperial imports, perhaps with shorter contracts.

These arrangements do not sound like command behavior or centric transfers; bidders are not following orders, and contracts are not commands. The arrangements also do not appear to be reciprocal exchanges or non-centric transfers, that is, Polanyi's reciprocity. Other information also makes this identification unlikely. The sheer scale of the shipping required to feed Rome would have made it hard to maintain a set of informal rules or fixed exchanges that would accomplish the needed task. In addition, ancillary records are consistent with market exchange, not reciprocity. For example, there were maritime loans to finance shipping with insurance provisions. The loans had an interest rate at which they were to be repaid, but there was no obligation to repay if the ship was lost. In other words, the lender shared the risk of shipping with the ship owner and the owner of the ship's contents. The interest rate was high in order to compensate the lender for bearing this risk (Andreau, 1999, p. 54). This is a sophisticated economic transaction.

Just as the economy is embedded in society, a complex transaction like maritime insurance is embedded in other economic exchanges. If we make a simple ad-hoc hierarchy of exchanges, a contemporaneous exchange of goods for money or other goods is the first level. A credit transaction where goods or money are given in exchange for a return after a period of time is the second level, since it involves some mechanism to ensure repayment at the later date. Insurance is a third level because it involves payments over time and under uncertainty; there needs to be some way to agree if insurance must be paid. Maritime insurance is a straightforward example of this third-level transaction because ships are large and hard to hide. It would have been hard for a ship owner to claim falsely that his ship had been lost and continue in business. Marine insurance was not only market exchange, but quite sophisticated market exchange.

Cato had another way of dealing with the risk of maritime loans. According to Plutarch, he “used to lend money in what is surely the most disreputable form of speculation, that is the underwriting of ships. Those who wished to borrow money from him were obligated to form a large association, and when this reached the number of fifty, representing as many ships, he would take one share in the company (Plutarch, *Cato the Elder*, XXI.5-6; quoted in Meijer and Nijf, 1992, p. 69).” Cato’s activities, even if not reported completely accurately by Plutarch, presuppose a variety of market conditions. Maritime loans were a matter of routine. There were ship owners who needed credit to finance trade, and there were lenders who had capital to invest. The risk in maritime loans was well known, and Cato understood that diversification reduces risk. Ship owners formed companies, as noted above, and these associations apparently could be responsible for several ships, even if not quite 50. There were multiple investors in such companies, for Cato was only one among an unknown number of other investors. The organization of Mediterranean trade in the early Roman Empire appears to resemble the organization of trade in the New England colonies around 1700. There too ship owners combined in a series of companies with shares held by multiple investors. In New England, the companies typically lasted for a single voyage, and the investors varied among voyages (Bailyn and Bailyn, 1959). We do not know if Roman companies had longer lives than their colonial New England counterparts, but conscious diversification to reduce risk can only be instrumental behavior designed for market exchanges.

There is further evidence that these transactions were not reciprocal exchange, that is, ones made at traditional prices that did not change and that did not signify instrumental behavior. There are not enough surviving records of maritime loans to

observe the interest rates charged and identify this behavior directly, but we have evidence of other types of loans. As noted already, these are sophisticated exchanges by themselves. If the interest rate was higher for maritime loans than for other loans, this interest rate can be seen as the sum of a simple interest rate and a charge for insurance—something that would be hard to have in a traditional system. And if the rates charged for loans varied, that is powerful evidence of market exchanges in its own right as well as confirming the market context of maritime loans.

We have many examples of loans, made by individuals and by loan companies.

One example, from a Dacian gold-mining village in 162 CE, shows a common form:

Julius Alexander, the lender, required a promise in good faith that the loan of 60 denarii of genuine and sound coin would be duly settled on the day he requested it. Alexander, son of Cariccious, the borrower, promised in good faith that it would be so settled, and declared that he had received the sixty denarii mentioned above, in cash, as a loan, and that he owed them. Julius Alexander required a promise in good faith that the interest on this principal from this day would be one percent per thirty days and would be paid to Julius Alexander or to whomever it might in the future concern. Alexander, son of Cariccus, promised in good faith that it would be so paid. Titius Primitius stood surety for the due and proper payment of the principal mentioned above and of the interest. Transacted at Alburnus Maior, October 20, in the consulship of Rusticus (his second consulship) and Aquilinus (quoted in Sheldon, 1998, pp. 136-37).

We have many other records of loans, not always so complete. The rate of interest varied, showing that this was not a traditional level, but not all rates are found. The interest rate almost always was in the range of four percent to twelve percent, seldom higher than the rate in this provincial loan. When the interest rate was higher, it was not 15 or 16 percent, but rather 24 or 48 percent (Andreau, 1999, p. 94). This variation shows that these loans were not a reciprocal exchange at a fixed rate; they were market exchanges. The apparent absence of intermediary rates suggests that the Romans had difficulty calculating rates. They quoted them on a monthly basis, as in the loan

described here, and the rates were multiples of twelve. Monthly rates tended to range from simple fractions to three or four percent, perhaps because lenders used Roman numerals. Roman markets could not operate with the precision of modern markets, but that does not mean they did not operate at all.

Other aspects of this loan transaction testify to its market nature. It is a loan of money, showing that money was used commonly in the early Roman Empire. Prices, in other words, were not simply accounting units; they were used in economic exchanges. The loan was guaranteed by a third person, showing that it was not a social act between the two principals. It even was assignable to an unspecified person, as revealed by the statement that interest might be paid to someone other than the lender. This loan was not negotiable in our modern sense, but it had some sophisticated financial attributes. The loan was written down to provide a written record in case the lender defaulted. The effort of recording the loan only was worthwhile if there was recourse to a court in that eventuality. The loan was a binding contract, not a social obligation mediated by social pressure. This loan was made north of the Danube River, far away from Rome, showing that market activity was not restricted to the city of Rome alone.

Were the interest rates for loans connected to other interest rates? Duncan-Jones (1982, pp. 132-38) discussed the outstanding evidence on the profitability—his word—of Roman agriculture. He employed the records of over 100 perpetual foundations set up to fund government child-support grants (the *alimenta*) in many Italian towns in the second century to calculate interest rates. They ranged, with only very few exceptions, from five percent to twelve percent; Duncan-Jones could not detect trends by the size of foundations nor the dates from the limited data. The concepts of profitability and interest

rates makes sense within market economies; Clark (1996) used exactly this kind of evidence to argue about interest rates in 17<sup>th</sup> and 18<sup>th</sup> century England. It is hard to know how to interpret this evidence in a reciprocal or redistributive organization of economic activity. The similarity between the rate of interest on the Roman agricultural foundations and the rate for monetary loans suggests strongly that there was a capital market, that is, that someone looking to either lend or borrow could look either to urban loan companies and to agricultural foundations, at least in Italy.

This does not mean that Rome had a capital market that resembled a modern banking system, only that there were market transactions organized in a way that allowed people to choose the kind of economic activity in which they wanted to participate. The financial system in the early Roman Empire however did have some of the attributes of a modern monetary system. There even was a liquidity crisis in 33 CE in which interest rates rose, loans were called in, and land prices collapsed. Tiberius loaned a substantial sum of money to landowners without interest for three years to restore liquidity (Tacitus, *Annals* 6, 16-17; Cassius Dio, 58.21.1-5; Suetonius, *Tiberius* 48.1; as quoted in Rodewald, 1976, pp. 1-3, and cited in Duncan-Jones, 1994, pp. 23-25). This crisis exposed several aspects of the Roman economy. Members of the aristocracy were borrowing freely. Loans were not restricted to specific activities, but pervaded all ranks of Roman life. The price of land was not fixed. It was a market price that could fall when putative sellers outnumbered buyers. People with land could sell as they wished, and people could buy if they had the money.

#### Market Exchanges and a Market Economy

The presence of many market exchanges in the early Roman Empire should by now be abundantly clear. But how many market exchanges are needed to make a market economy? It is necessary to compare Rome with other economies to see the nature and extent of market exchanges in market economies. England and Holland in the 17<sup>th</sup> and 18<sup>th</sup> century, shortly before the Industrial Revolution, had economies that everyone agrees were market economies. The Roman economy clearly was unlike that of pre-industrial Britain and Holland, but these examples show the limited nature of the market in even clearly market economies.

Taxes in Britain were over 10 percent of national income. Holland too had extensive taxes, over 40 percent of the income of unskilled laborers, of which about half came from excise taxes on goods consumed by workers. Almost all the revenue raised by both governments went to support the military and to pay interest on the debt from past wars. Even in these market economies, a substantial part of marketed output was allocated by centric transfers rather than by market exchanges. Both economies had landed aristocracies that derived their income from extensive land ownership. Large public works in both countries, primarily to drain land and (in Holland) contain the sea, were paid for by wealthy men, mostly but not exclusively large landowners. And some market exchanges had characteristics of reciprocal exchange, that is, of customary behavior. Nominal wages stayed constant for many years at a time in the market economy of early modern England, even though the price of grain fluctuated widely (Phelps Brown and Hopkins, 1981; O'Brien, 1988; Floud and McCloskey, 1994; Vries and Woude, 1997).

Nevertheless, many if not most goods and services in a market economy have a variable market price. The surveys of Roman prices and life by Duncan-Jones (1982) and Shelton (1998) are full of prices for all sorts of objects and activities. While many prices come from the surviving papyri from Egypt, others come from Pompeii and other records north of the Mediterranean. Prices, and prices that could vary, seem to have been pervasive during the early Roman Empire.

Rathbone provided a careful analysis and discussion of Egyptian prices for wheat, wine and donkeys. He noted that the paucity of extant prices made any conclusion about them tentative, but he concluded nonetheless, "As far as we can judge, the prices for wheat, wine and donkeys were basically formed by the operation of free-market forces, that is the fundamentals of supply and demand in a monetised economy....The prices in private sales seem, on the whole, to be 'real' prices arrived at individually by market bargaining rather than being standardised, customary or notional prices (Rathbone, 1997, p. 211)." In terms of the model used here, the prices represent extensive market exchanges typical of a market economy, not reciprocal exchanges typical of an economy based on reciprocity.

It seems likely that almost all farmers were aware of these prices. We do not have records from the most humble of farms, but even they do not seem to have been isolated householding cocoons. They were not fully autarchic, whatever their aims may have been. They paid taxes, they sold produce and bought items even though most of their consumption was of home-grown food. As always, records from Egypt are more abundant; they show that market activity extended all the way down the economic ladder. "Other incidental evidence from the Heroninos and related archives shows that the rural

poor often functioned economically as family units whose members simultaneously engaged in a wide range of activities, including farming small plots of owned or leased land, leasing animals and utilities such as presses and bathhouses, fixed-term and casual labouring, petty retailing, fishing, domestic crafts and so on (Rathbone, 1991, p. 393)."

Wherever information on production and consumption has survived, so has evidence of market exchanges. It would be strange indeed if farmers and craftsmen operating in this context did not take these prices into account when planning their activities. Roman prices, in other words, contained information about the availability of goods and even about the advantage to be gained from selling farmers' own produce. This is the role of prices in a market economy.

The responsiveness to prices can be demonstrated from the actions of upper-class Romans as well. We do not learn about their petty purchases, as we would not hear of the Rothschilds laundry bills. But we do see them buying and selling land, as illustrated by the liquidity crisis of 33. These transactions clearly were market exchanges. The price of land changed, and senators were sensitive to changes in the price. They were not engaged in informal transfers or fixed, repetitive reciprocal exchanges when they purchased land. Nor did they seem to be following orders from a central authority that would be typical of command behavior and centric transfers.

A detailed land register from Italy, the Trajanic inscription from Veleia, shows that much Italian land was privately held and could be valued in monetary terms. Estates typically were composed of discrete holdings that had been acquired through inheritance, marriage and purchase. These parcels could be aggregated by summing their values to get an overall valuation. But the average value of different parcels in this area varied

“remarkably little,” even though the number of parcels owned varied a lot (Duncan-Jones, 1990, p. 127).

A roughly uniform price of land in a given region does not seem odd to us. We live in a market economy where arbitrage and other market activities tend to bring prices for similar goods and services into a narrow range. Some prices approach uniformity more completely than others, but markets tend to bring all prices together. Remarkably small local variation in Roman land prices could have come about by accident, but the uniformity does not appear to have been the result of chance. Far more likely, it was the result of market exchanges, that is, of purchasers rushing to buy land that was offered cheaply and thinking long about buying expensive land.

Senators’ land-holdings routinely were valued in monetary terms. Pliny bought land adjacent to his main estate at Tifurnum to consolidate the scattered parcels he had acquired from inheritance and marriage. (*Ep.* 3.19.2-3, quoted in Duncan-Jones, 1990, p. 126). As before, Pliny’s purchases show that land ownership was neither traditional and bound by inalienability rules nor centrally directed. The primary productive asset of ancient Rome was allocated by the market. Pliny either did not have Cato’s appreciation of the risk reduction from diversification or he had other motives in consolidating his estate. But the point is not what were his motives, but rather how he acquired land. Landed estates in pre-industrial Britain were subject to more rules than those of ancient Rome.

### Limits to a Market Economy

It is a common view that prices should be equal in a market. But the law of one price may not hold in any real market. Even in modern markets, costly transportation

keeps prices not only apart, but uncoordinated. For example, residual oil is heavy and costly to transport even today. As a result, “The various regions may be in a common market over long periods but that is not the case in periods of one to three years (Stigler and Sherwin, 1985, p. 576).” Most traded goods in the early Roman Empire were similar. Transport, even when cheap, was slow. Information traveled at the same slow speed as goods in transit. There was no way for arbitrage to bring prices together in short periods, perhaps even in one to three years. If there was a market, the levels in different regions should not have differed from each other very much on average, but they need not have moved together in any given month or even year.

These conditions were fulfilled in the early Roman Empire. The rate of interest, as noted above, was similar across the whole Empire. The price of land was similar in a local region. But there is no reason to expect prices of all goods to be uniform across the extensive Roman Empire. The speed at which news traveled from Rome to Egypt was highly variable, judging by the delays in changing dates to correspond to a new emperor. The delay could be as short as a few weeks, but it averaged over a month. In the winter, the news could take far longer to cross the sea, but there is not enough surviving evidence to confirm the expected seasonal pattern, even though the scattered evidence is consistent with such a seasonal pattern (Duncan-Jones, 1990, pp. 9-11). Arbitrage could not have equalized prices in Rome and Egypt in any short period.

Surviving prices also are for places that were accessible by water. Ships could carry goods across the Mediterranean and up rivers, but it was hard and very expensive to carry them over land. Roman roads were not primarily for the transport of goods, and they did not go everywhere. Wagons off the roads moved with far greater effort and

diminished speed (Bulliet, 1975). The result is that inland locations were less firmly connected to the general market. To a first approximation, the Roman market extended only slightly beyond where ships could go. In Vinolanda, an army camp at Hadrian's Wall, it is not surprising that there was little market activity (Bowman, 1998).

In addition to geographical limitations, a market is limited in its internal extent. Even in a market economy, all transactions need not be market exchanges. In fact, it is hard to conceive of an economy composed entirely of market exchanges. A market economy is one in which market exchanges are the modal economic interaction, but even full-blown modern market economies do not channel all transactions through markets. Eisner (1989, p. 26) calculated that one-third of economic activity in the United States today takes place within households, that is, in householding or reciprocal activity. Taxes also are large in modern societies, typically reaching one-third of marketed output in advanced industrial societies. Yet these clearly are market economies. They acquire this attribute, not by the universality of market exchanges, but by the prominence of market exchanges in transactions between unrelated private people and enterprises and by the importance of these transactions in the economy as a whole. These are the dimensions along which comparison with ancient Rome must be made.

In modern, industrial economies, almost no one produces the food that he or she eats nor the clothes that he or she wears. In an agricultural economy, far more than one-third of economic activity would be carried on within households. If about 90 percent of the population of Rome were engaged in farming, then it is not unreasonable to suppose that three-quarters or more of production was carried on by householding, rather than by market exchanges. This does not mean that almost all farmers were autarchic and

isolated from market forces, while the surplus to feed urban dwellers was produced by a minority of farms. It means that most of each farm's activities were devoted to maintaining its workforce. The historical question is how many of these farms were engaged in buying and selling produce, even if these exchanges provided only a small part of the farm's income.

This is an exceedingly difficult question to answer, particularly since our sources are biased. We are much more likely to have records of farms that were engaged in economic exchanges than those that were not, if only because the autarchic farm had no need to record its activities. The farms whose records have survived, however, tell a uniform story. These farms all were engaged in market exchanges, as described earlier.

This point about the bias of our records can be turned on its head. Although market activity was only a minority of all productive activity, it was the dominant mode of activity of "literate Rome." People who had some wealth and education and left records were all operating in market contexts. It is not unfair to say that market exchange was the dominant mode of interaction in "literate Rome," even though it may have been less apparent in the daily lives of more humble Romans. It would be a mistake to ignore these less fortunate Romans, but even more unfortunate to throw the baby out with the bath-water. Roman history is written almost exclusively from literate records of various sorts. For the people who left these records, market exchange was a way of life.

Finally, markets are not outside society. They are, as Polanyi stated, embedded in society, determined by society. Not all market economies are the same even today, as even a casual comparison of Japan and the United States suggests (Temin, 1997). Economic exchanges did not dominate the intellectual life of Rome, and there were no

academic analyses of these exchanges akin to modern economics. But economic exchanges were an omnipresent aspect of urban life, and they seem also to have been part of life in the countryside as well. They were an integral part of the arrangements that enabled Rome to grow to a million inhabitants and that knit the many parts of the early Empire together.

### Conclusion

I have compared the economy of the early Roman Empire with the three forms of economic integration described by Polanyi and made explicit by Pryor. The modal form of economic integration was market exchange. This observation does not appear controversial in the literature on ancient Rome, but the generalization from specific examples is problematical. Confrontation of economic exchange with other forms of integration shows however that it was the only form that could have allowed the early Roman Empire to function.

I have argued further that the economy of the early Roman Empire was a market economy. Market exchange was ubiquitous, and market prices moved together in ways typical of markets, albeit imperfectly coordinated ones. The early Roman Empire did not have the market economy of elementary economics textbooks, but it did have the type of market economy seen in other advanced, agricultural economies. There was not a single empire-wide market for all goods, but local markets were connected together around the Mediterranean. Finley was exactly wrong; ancient Rome had an economic system that was an enormous conglomeration of interdependent markets.

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