

## CHAPTER 22

# THE EARLY ROMAN EMPIRE: CONSUMPTION

WILLEM M. JONGMAN

### I CONFUSING IMAGES

Mons Claudianus is a desolate quarry site in the mountains of the eastern Egyptian desert.<sup>1</sup> Dry, hot, and inhospitable, it looks like a settlement on Mars. It rains perhaps once a decade, but not in between. No one would ever choose to live there, if it were not for the grey stone (granodiorite) that was used in the grandest of Rome's imperial building projects. From the middle of the first century AD to the middle of the second century groups of workmen cut (mostly large) columns from the mountain face, and shaped them close to their final size – to reduce the travel weight as much as was practical. Then, these columns were moved to the Nile on huge carts, pulled by large numbers of animals, and perhaps also by even larger numbers of humans. From there they were largely or exclusively shipped to Rome. Those who worked on Mons Claudianus and the neighboring site of Mons Porphyrites were treated well, and like oil rig workers enjoyed a comparatively high standard of living, including a bath-house.<sup>2</sup> The last quarrying probably occurred in the reign of the emperor Severus Alexander (AD 222–35), after which the site appears to have been abandoned. When Diocletian wanted to celebrate his restoration of Roman power, it was precisely four reused or stockpiled columns of granodiorite from Mons Claudianus that he included in his baths in Rome and in his palace in Split.

Roman public buildings continue to impress even the modern visitor to Rome and other cities of the empire. Building on such scale and of such grandeur had not been seen before, and would not be seen for a long time. It included the use of exotic stone from all over the empire, often reserved exclusively for such imperial projects. Over a few centuries, Romans quarried more marble than any other civilization.<sup>3</sup> Aqueducts were a remarkable feat of Roman engineering, and supplied important cities with fresh water for drinking, but even more so for baths and fountains. The

<sup>1</sup> Peacock and Maxfield 1997; Maxfield and Peacock 2001.

<sup>2</sup> Van der Veen 1998. <sup>3</sup> Dodge 1991; Fant 1993; Jongste 1995.

expense was great and expressed the victory of Roman rule over an often arid nature.

Roman cities, however, were more than a few grand public buildings and the representation of imperial power. They were also a neatly ordered texture of well-built private houses. Wandering through the paved streets of Pompeii, the modern visitor cannot fail to be impressed by the great town houses.<sup>4</sup> They are significantly larger than almost any modern house. They are often stylish and architectural, with beautiful wall-paintings and mosaic floors adorning visually well-differentiated rooms. Low and high ceilings, the darkness of the more secluded rooms as opposed to the light of the atrium and even more of the peristyle – they added up to what surely were grand residences. All this impressed a young Michael Rostovtzeff so much that he would later write: “that as regards comfort, beauty, and hygiene, the cities of the Roman Empire, worthy successors of their Hellenistic parents, were not inferior to many a modern European and American town.”<sup>5</sup> Outside the towns Roman villas, if well preserved, still impress by their size, construction, and finish, and by their luxurious beauty.<sup>6</sup> They often command a breathtaking view of the landscape so manifestly owned by their masters.

The Pompeian example, however, suggests that there may well be a darker side to the story, because there are precious few other houses apart from these mansions. Did all people live in such style? Were there no poor people? Of course there were: Roman households included many slaves and freedmen, and their presence as domestic and administrative servants was essential to the elite lifestyle. The absence of much separate lower-class housing only implies that there were few *independent* people of low status.

The best testimony to that darker side is provided by recent research on health and life expectancy (a long and healthy life is probably the ultimate scarce good).<sup>7</sup> Roman life expectancy was low. Great variation around the mean is a characteristic of such demographic regimes: some people get old, but many die young. Infectious disease is the big killer. Standards of hygiene were low and little understood.<sup>8</sup> Both geographically and socially Romans lived in quite close contact with each other, thanks to good communications, a high level of urbanization, and large elite households with numerous domestic slaves. Thus, rich Romans did not escape the Grim Reaper either.<sup>9</sup> The household of a senator, with many servants, a multitude of external contacts, and located in a city such as Rome was a dangerous place to live in. With the creation of a huge empire, the Romans had also created the first integrated disease regime of human history.

<sup>4</sup> Wallace-Hadrill 1994. <sup>5</sup> Rostovtzeff 1957: 143.

<sup>6</sup> Percival 1976; Carandini 1985 for the paradigmatic villa of modern historiography.

<sup>7</sup> See above, Chapter 3; Parkin 1992; Scheidel 2001b; 2001c.

<sup>8</sup> Scobie 1986; Scheidel 2003a. <sup>9</sup> Scheidel 1999.

All this serves to remind us that Roman society of the early empire presents a confusing and ambiguous image that we cannot easily situate in unidirectional accounts of European economic history. Clearly, public monuments in marble or other precious stone, military security, the urban food supply, roads, aqueducts and gladiatorial games testify to public consumption on a grand scale, and unsurpassed until modern times.<sup>10</sup> Compared to this, the Middle Ages were undoubtedly a period of decline. Private consumption by rich Romans was similarly exceptional.<sup>11</sup> On the other hand, the signs of poverty, misery, and destitution are no less obvious. Many inhabitants of the Roman empire only eked out a meager living, their skeletons grim testimonies to malnutrition and disease.<sup>12</sup> Health remained a scarce good, even for the rich.<sup>13</sup> How do we make sense of both grandeur and destitution?

## II GROWTH, PAST AND PRESENT: SOME PROPOSITIONS

The purpose of all economic activity is to satisfy as many of our wants as possible.<sup>14</sup> That is not easy, because our wants often exceed the scarce means to satisfy them. The success of an economy, therefore, is measured by the extent to which this scarcity problem is overcome. Modern economies have become quite good at this. They are not only prosperous, but also increasingly prosperous. Thus, over a lifetime, many people have witnessed a tremendous rise in their prosperity. For the first time in history, moreover, prosperity has been shared by large parts of the population. In fact, prosperity increased even more than is suggested by rising incomes: technical advances introduced not only better made goods, but even goods that did not exist a generation before. Finally, national income grew even more than per capita income, because there were also ever more people. Thus, the modern western world not only experiences unprecedented levels of prosperity, but also unprecedented and sustained changes.

Such combined growth of population and per capita incomes has indeed been emblematic of modernity: in many countries it would only begin some time in the nineteenth century, during the Industrial Revolution.<sup>15</sup> From early Greece to the early modern Europe of the *ancien régime*, incomes had never been much more than three times subsistence, and often rather less.<sup>16</sup> If pre-industrial economies grew at all, it was only slowly and spasmodically. Analytically, the story of the successes and failures of the Roman economy to satisfy the needs and wants of the Roman population may be told along two different lines. The first is that of (changes in) per capita incomes. The second is that of income distribution. As a technical measure

<sup>10</sup> Adams and Laurence 2001; Laurence 1999.

<sup>11</sup> Duncan Jones 1982: 343.

<sup>12</sup> See below.

<sup>13</sup> See above, Chapters 2 and 3.

<sup>14</sup> Robbins 1937.

<sup>15</sup> Wrigley 1988.

<sup>16</sup> Goldsmith 1987.

of the economy's performance, per capita income remains unsurpassed. Aggregate income is divided by the number of people in society. What was per capita income, and how much did it exceed the bare minimum of survival at subsistence? It indicates the maximum standard of living that could be enjoyed by many, if the cake was divided into equal parts. In pre-industrial societies that level was pretty low, because life was constrained by the niggardliness of nature and inadequate technologies.

As a measure of the real lives and experiences of the mass of the population per capita income leaves a lot to be desired, however: the cake was divided into very unequal parts. Analytically, that inequality originates from two distinct processes: changes in the functional distribution of income, and changes in entitlements. Let us first look at the functional distribution of income. Incomes are earned (and functionally distributed) because economic subjects contribute factors of production: land, labor, and capital. As for wages, not all labor is equally productive, and therefore wages vary. Socially even more important, however, is that not all people own land or capital. The Roman elite owned vast landed estates, and derived most of its income from those, rather than from working for a living. The functional distribution of income between factors of production may change over time, when the relative scarcity of factors of production and their productivities change. Changes in the land/labor ratio are crucial here.

Unlike modern economies, pre-industrial economies did not normally achieve both population growth and per capita income growth at the same time (and that is what real economic growth is about). Whenever their populations grew, labor productivity began to decline, and thus the incomes of the mass of the population. On the other hand, rents and elite incomes increased, and thus also social inequality. After a while, an epidemic might reverse this trend, and per capita incomes could recover. For many centuries, pre-industrial Europe oscillated between periods of expansion, with rising populations and deteriorating standards of living, and periods of contraction, with population decline and – sometimes – increasing prosperity.<sup>17</sup> Thus, economic changes were contained within a long-term envelope of stability. Population growth and increases in aggregate production and consumption were only possible at the expense of the standard of living of the mass of the population. Did the Romans escape from this Malthusian trap?

The functional distribution of income is not the sole source of social inequality, however. Inequality may also exist because people do not even receive what their productive contribution entitles them to in terms of market value. Slavery is the principal example here. The so-called second serfdom in eastern Europe is another case:<sup>18</sup> there, social and political

<sup>17</sup> Labor did not always profit from population decline.

<sup>18</sup> Brenner 1976; Aston and Philpin 1985.

conditions allowed the Junker class to deny labor a market rate that was high because labor was relatively scarce. Labor scarcity did not lead to a better standard of living for the mass of the population, but to increased oppression.

Thus social inequality matters for an understanding of the lives of many ordinary Romans. It matters for our understanding of the growth that did occur, because the wealth of the elite (often paraded by ancient historians as a sign of prosperity) may not have been a sign of a prospering economy after all, but instead of effective exploitation of the poor. Such income inequality also changes the pattern of consumption. What the poor bought differed from what the rich bought (the income elasticities of particular goods and services may vary enormously). Moreover, the poor had to spend almost all they earned, whereas the rich could save (what economists call the declining marginal propensity to consume).

### III THE ARGUMENT

The National Income of the early Roman empire (i.e. per capita incomes multiplied by the number of inhabitants of the empire) was indubitably higher than for any pre-industrial European state up to the Industrial Revolution. That was primarily because Rome had such a large population: perhaps 60 to 70 million people in the early empire.<sup>19</sup> At the time, only China had a roughly similar population. Russia and the United States only reached comparable population numbers in the final quarter of the nineteenth century. If we follow the recent trend in scholarship to assume even larger figures for Roman population, the magnitude of Rome's GDP is even more staggering. Rome had such a large population because it had conquered a vast territory, and because it was densely populated. In many parts of the empire, population densities would not be surpassed until relatively recently. Were they higher because people were more prosperous?

Between them, per capita incomes and aggregate incomes reflect the productive success of the economy to satisfy demand. It is my contention that Roman National Income was indeed larger than that of any pre-industrial European state, and was only surpassed much later by then more populous empires such as pre-modern China. I also want to argue that for long periods Roman per capita incomes too were remarkably high for a pre-industrial economy. Rome may well have been what Wrigley has called an advanced organic economy, constrained by the Malthusian ceiling, but hugging it as closely as possible.<sup>20</sup> Roman material culture was far more advanced than anything that came before, and it remained unsurpassed for a long time after. For a while, I want to argue, this high standard

<sup>19</sup> See above, Chapter 3. <sup>20</sup> Wrigley 1988.

of material culture was even enjoyed by relatively large segments of the population. Here we have to add two qualifications, however. The first is that it did not continue to get ever better; on the contrary, it did not even last. Second, the benefits appear to have been increasingly unequally distributed. By the late empire, an ever smaller imperial elite controlled an ever larger share of the economy's surplus above subsistence. However impressive Roman economic achievement may seem it was not an aborted beginning of the modern world. In the late Republic and early empire, citizens were sufficiently empowered to claim their share of the pie. Even many ordinary citizens were moderately prosperous, and there were also many moderately wealthy people in between the masses of modest means and the rich but small political elite. Moreover, together they enjoyed the benefits of public expenditure on such things as roads, harbors, aqueducts, baths, market buildings, public distributions, and much more. In the late empire, all of this seems to change. We enter a bleaker world of greater social inequality, increased oppression, and the evaporation of civic solidarity.<sup>21</sup>

#### IV SUBSISTENCE AND SURPLUS

The first requirement for an economy is to provide enough subsistence for its population to survive. Analytically, therefore, subsistence is a useful baseline for pre-industrial societies that really lived dangerously close to this level. The economic and social achievements of such societies may usefully be measured by the extent to which they succeeded in providing the mass of their populations with a standard of living that exceeded bare subsistence.

The second intellectual advantage of the concept of subsistence is that we do not really need ancient sources to establish it with sufficient accuracy. Subsistence requirements ultimately depend on the biology of human survival.

Finally, precisely because it can be established with some accuracy, subsistence cost may be used as a unit of account for many other known costs: how many times minimum subsistence was the Younger Pliny's income – 10,000 times – or how many times subsistence for a year for one person was the construction cost of, for example, the Baths of Caracalla – about 500,000 times.<sup>22</sup> Roman prices are poorly known, but even harder to make sense of unless we have some fixed point to compare them with. Converting prices into weights of precious metal – a traditional way to compare prices over time and between monetary systems – is theoretical nonsense, as it measures the price of the metal, rather than of actual goods and

<sup>21</sup> Brown 2002 for a mesmerizing evocation of this new and bleaker world.

<sup>22</sup> For Pliny's income of some 10,000 times subsistence, see below. For the construction cost of the Baths of Caracalla (equal to subsistence for a year for about half a million people), see DeLaine 1997 and Jongman 2001b: 1080.

services.<sup>23</sup> Instead, the cost of subsistence food for one year may provide the pre-industrial historian's equivalent to the basket of consumer goods used by modern economists to construct a consumer price index. The best possible estimate of minimum subsistence cost, is, as I shall argue later, 115 sesterces. Comparing that figure to, for example, Pliny the Younger's estimated annual income of perhaps 1.2 million sesterces reveals much about Roman social structure.<sup>24</sup> Pliny's income was indeed well above subsistence. What we really want to know, of course, is to what extent this was also true of ordinary Roman citizens.

(a) *Subsistence as a base line*

In its simplest form subsistence may be equated with the calories necessary for the survival of an average person.<sup>25</sup> Thus, an adult male (age 30+) needs about 2,600 kilocalories per day to survive in decent health.<sup>26</sup> However, not all people are the same. Energy balance is the crucial concept here.<sup>27</sup> Humans use energy depending on who they are and what they do or have to suffer. As long as they do not expend more energy than they eat, all is well. If they do, their health and well-being are impaired. That shows in the incidence of various deficiency diseases and in their stature (badly fed and unhealthy people are notoriously shorter). In extreme cases, they may even die. Particularly important differences for food requirements are gender, age, and workload. Thus, men need more than women, adults need more than children or the elderly, and those who do hard physical labor in a cold climate need more than those who spend their warm days serving at the tables of the rich. Perhaps surprisingly, sick people also need more nutrients. Finally, stature itself is not only a function of nutrition, but in turn also affects how much one needs: tall people need more food. Thus, the question how much Romans needed is first of all a question about who they were.

It is here that high consumption estimates derived from literary sources are deceptive. Ancient sources are not only prescriptive, but they also refer to adult males. Roman life expectancy was low. Thus *average* subsistence needs could be low as well, given that high mortality created an age pyramid with a large base, and a narrow top. Thus, our estimate for subsistence requirements is sensitive to our assumptions about life expectancy and the age structure of the Roman population. Hopkins was the first to appreciate the complexities and subtleties of the problem: in the footsteps of the

<sup>23</sup> Baehrel 1961. <sup>24</sup> Duncan-Jones 1982: 17–32 for Pliny's finances.

<sup>25</sup> Clark and Haswell 1967 was the pioneering work.

<sup>26</sup> I note in passing that the calories of everyday language are in fact kilocalories. A twenty year old man even needs about 2,900 kilocalories.

<sup>27</sup> Fogel 1985.

Table 22.1 *Food requirements in kilocalories per day by age and gender\**

Age	Men	Women
1	757	700
5	1323	1226
10	1984	1762
15	2700	2400
20	2903	2285
25	2683	2083
30	2683	2083
35	2600	2117
40	2600	2117
45	2600	2117
50	2600	2117
55	2600	2117
60	2600	2117
65	2200	1883
70	2200	1883

\* Source: Van Laethem and Jongman forthcoming.

groundbreaking work of Clark and Haswell, he calculated an average subsistence requirement of 250 kg. wheat equivalent.<sup>28</sup> More recent research has failed to improve on this finding.<sup>29</sup>

Obviously, if there are many adults in a population, average food requirement is higher than when there are only few adults, but many children. A model life table with a life expectancy at birth of twenty five years ( $e_0 = 25$ ) provides the most plausible average for Roman society.<sup>30</sup> With it, we can calculate the relative proportion of the various age groups. The result is an estimated average daily requirement of about 2,000 kilocalories.

In real life, these calories were consumed in many different forms. They were consumed as bread, as wine, as olives and olive oil, as vegetables, or even as (quite expensive) meat. To estimate a base line of the cost of minimum subsistence, however, we need to calculate the cost of the cheapest calories: cereals. Thus, the average Roman's daily requirement of about 2,000 kilocalories is covered by the consumption of 250 kg. of wheat a year. The cost of this wheat varied greatly from time to time, and from place to place. A price of about 3 sesterces per *modius* appears to have been most typical in the early empire.<sup>31</sup> Thus, the minimum annual cost of average

<sup>28</sup> Hopkins 1978b: 66–7. <sup>29</sup> Van Laethem and Jongman forthcoming.

<sup>30</sup> See Chapter 3 for extended discussion. I have used the Model South life tables, as they take into account the impact of malaria, rather than the Model West tables (that do not actually refer to western Europe specifically, but are generalized tables); Sallares 2002 for malaria.

<sup>31</sup> Duncan-Jones 1982: 50–1; Jongman 1988a: 195 n. 2. The *modius* (*modius Italicus*) was a measure of capacity: 8.62 liters by our best reckoning. Specific gravity of wheat varies a bit, but just over 6.5 kg. per *modius* is about right: Duncan Jones 1982: 370–2.



subsistence may be estimated as 115 sesterces. Of course, this estimate of the cost of subsistence is no more than a rough indication – the margin of error is fairly wide. It is wide, however, because wheat prices are badly known and varied quite a bit, and not because we are unable accurately to estimate the underlying physical requirements.

### (b) *Incomes*

Per capita incomes in any pre-industrial society were invariably low. The most authoritative estimate for the Roman empire puts them at about one and a half times subsistence, or at most two times.<sup>32</sup> That is a very pessimistic estimate. An alternative estimate, however, puts per capita incomes significantly higher, at roughly three times subsistence.<sup>33</sup> That higher estimate places Rome at the upper end of what could be achieved in pre-industrial economies, even if it is still very low by modern standards. The distribution of incomes also matters. We know that Roman society was characterized by vast social inequality. It really makes quite a difference if everyone had an income of twice subsistence, or, alternatively, if the mass of the population lived at subsistence while (almost) the entire surplus went to the state and a tiny elite. It makes a difference for the quality of life of the population, but it obviously also makes a difference for what this surplus was spent on.

The fortunes of Roman senators have been studied at some length, and with some success.<sup>34</sup> We have anecdotal evidence for the fortunes of some individual senators, as well as a base line for all senators in the form of the census minimum of 1 million (or more likely 1.2 million) *sestertii*.<sup>35</sup> Similarly knights (*equites*) had to own a minimum of 400,000 sesterces, and at least in some cities the town councilors (*decuriones*) had to reach a minimum of 100,000 sesterces.<sup>36</sup> Since returns on agricultural property were generally held to be about 6 percent, these property qualifications represented annual incomes of at least 72,000 sesterces for senators, 24,000 sesterces for knights and 6,000 sesterces for decurions. Thus, these minimum incomes for members of the political elite equalled 520 times, 208 times, and 52 times the notional minimum subsistence requirement for a year.<sup>37</sup> Clearly, even at these minimum rates, the political elite of the Roman empire was very rich. Many, moreover, owned and earned significantly more, and increasingly so.

<sup>32</sup> Hopkins 2002: 197–203.

<sup>33</sup> Goldsmith 1984. Kehoe (Chapter 20) prefers the lower estimates. Methodologically, Temin 2006 largely sides with Goldsmith, but is skeptical of some of Goldsmith's actual numbers. In particular, he argues that provincial wages and prices seem to have been lower than those from Italy and Rome that dominate in the estimates by Hopkins and Goldsmith. Thus, his nominal estimate for GNP is lower, but not the relative size of the surplus above subsistence, and that is what matters here.

<sup>34</sup> Duncan-Jones 1982: 17–32 for the most precise case study; also 343–4 for a survey.

<sup>35</sup> Talbert 1984: 10–11 for HS 1 million; Duncan-Jones 1982: 4 for HS 1.2 million.

<sup>36</sup> Mouritsen 1998 for nuances. <sup>37</sup> Jongman 1988a: 196.

The Younger Pliny has been said to have been a middling senator of the late first and early second century AD, but his wealth has been estimated at 20 million, or over sixteen times the census minimum.<sup>38</sup> His annual income may thus be estimated at 1.2 million sesterces (i.e., 6 percent of 20 million sesterces), or about 10,000 times minimum subsistence. By all indications, late Roman senators were significantly richer still.<sup>39</sup>

Major public officials such as equestrian procurators earned substantial salaries. They were classified (from the late second century AD) by their incomes of 60,000, 100,000, 200,000, or 300,000 sesterces. Senior army officers (*primipili*) probably earned 60,000 sesterces. Working for a living may not have carried much social prestige, but at this level such prejudices had obviously evaporated.

Ordinary people had far lower incomes, of course. Wages for adult free males seem to have been in the range of 500 to 1,000 sesterces per annum, and base pay for a legionary soldier in Augustus' days was 900 sesterces.<sup>40</sup> Typical legionary pay has been estimated as 1,200–2,000 sesterces.<sup>41</sup> Three municipal scribes in the town of Urso earned salaries of 800–1,200 sesterces. Even if data on Roman wages are very incomplete, what the surviving data have in common is that these wages are obviously not only well above our best estimate of minimum subsistence for an adult male, but also seem to have provided an income that was significantly above subsistence for a family, particularly if a wife or a grown child also contributed.<sup>42</sup>

Further evidence for typical ordinary incomes is provided by the value of subsistence annuities as documented in legal sources.<sup>43</sup> These were small annuities left by will for the benefit of freedmen or foster children. The median of all documented examples (n=13) is 480 sesterces.

A different way to look at income above subsistence is to look at slave prices. It has rightly been argued that the price of a slave represents the income that the slave's owner can expect from not having to pay a market wage, but only minimum subsistence.<sup>44</sup> Slaves command a price precisely because they can be deprived of any surplus beyond subsistence. Thus, their price is a measure of the extent to which normal wages exceeded subsistence. If the price of slaves increased, as it did during the last two centuries of the Republic, this suggests strongly that the standard of living of non-slave labor improved. To judge from the Delphi manumission records, for an adult male slave the price of full freedom rose from about 3,500 kg.

<sup>38</sup> Duncan-Jones 1982: 17–32, and 343–4 for other data on the size of private fortunes.

<sup>39</sup> Hopkins 2002: 205–7 for annual incomes of 1,333–2,000 Roman pounds of gold.

<sup>40</sup> Goldsmith 1984: 269. Goldsmith 1987. I now recognize that my earlier review of his work was unduly skeptical: Jongman 1988c.

<sup>41</sup> Duncan-Jones 1982: 79. Roman soldiers clearly were a privileged group within society.

<sup>42</sup> Prosperity may have varied significantly during the family life-cycle. <sup>43</sup> Frier 1993b.

<sup>44</sup> The classic economic analysis is Domar 1970. For more extended analysis of the Roman case, see Jongman forthcoming, b.

wheat equivalent in the first half of the second century BC to about 7,000 kg. of wheat equivalent in the last half of the first century BC.<sup>45</sup> These are clearly very considerable sums, and they suggest that normal wages were well above subsistence. If combined financing and depreciation charges amounted to something like 10 percent per annum, these numbers suggest that typical adult male workers' wages rose to some 700 kg. wheat equivalent per annum above minimum subsistence. The typical slave prices of one thousand to a few thousand sesterces in Italy under the Principate suggest something similar: 3,000 sesterces bought 6,500 kg. of wheat at the conventional wheat price of 3 sesterces per *modius*.<sup>46</sup> It is hard to imagine that anyone would have wanted to pay this much money for an ordinary slave if a wage laborer could charge little more than bare subsistence. The implied relevant wage is something like 500 sesterces.<sup>47</sup> In late antiquity, the trend seems to have been reversed (but the data are not nearly as good as the Delphi manumission records). In Diocletian's Price Edict the price of an ordinary slave has come down to 3,000 kg. of wheat, and if we believe Jones it came down even further in the subsequent period.<sup>48</sup> Thus, and for a while, slaves were attractive precisely because ordinary citizens were quite prosperous, and powerful enough to extract market prices for their labor. When citizens lost their power to withstand elite pressure, and when they could be exploited more easily, the value of slaves declined. Phrased in this way, this is, of course, Finley's classic model of ancient slavery.<sup>49</sup>

Given the many uncertainties in our evidence, and allowing for the imperfections of many markets, it is remarkable that these three estimations of the extent to which the incomes of ordinary citizens exceeded bare subsistence (documented wages, annuities, and slave prices) return such similar results. They all confirm that for many (though not slaves) standards of living were well above subsistence, at least for a while.

### (c) *Diet*

The standard Mediterranean diet of the Roman population is supposed to have consisted mostly of cereals, supplemented by smallish amounts of oil, wine, and perhaps some vegetables, cheese and eggs, and occasionally a bit of meat.<sup>50</sup> Cereals were cheap calories, so their prominence would suggest a fairly low standard of living. Clearly, a diet of little more than cereals was deficient and thus unhealthy. On the other hand, a diet with all the extras

<sup>45</sup> From 405 drachmas to 827 drachmas: Hopkins 1978a: 161; *ibid.* 167 for a wheat price of 100 drachmas for 850 kg. wheat.

<sup>46</sup> Duncan-Jones 1982: 50–1; Jongman 1988a: 195.

<sup>47</sup> Subsistence cost would perhaps be 200 sesterces for a hard working adult male, plus 300 sesterces income above subsistence, here pocketed by the slave owner.

<sup>48</sup> Jones 1964: 448, 852.

<sup>49</sup> Finley 1980.

<sup>50</sup> Foxhall and Forbes 1982.

such as oil, vegetables, cheese, and meat was fine, even when these extras were far less abundant than in the modern diet. The question, therefore, is if the diet of the masses went much beyond cereals, and whether that could be sufficient to secure a basic minimum of quality as well as quantity.

Bread wheat was the most popular kind of cereals.<sup>51</sup> It could be used to bake leavened bread, rather than the porridge and unleavened bread made of barley or harder wheat. Bread wheat is a dangerous crop to grow, however, as of all Mediterranean cereals it is most susceptible to drought, that perennial curse of Mediterranean agriculture.<sup>52</sup> Therefore, leavened bread could only be enjoyed in favorable circumstances: it was not before Rome had consolidated its hold over Sicily that bread rather than porridge could become the staple food of citizens of Rome.<sup>53</sup> It was the taste of empire.

It is quite widely assumed in the scholarly literature that Romans drank a lot of wine.<sup>54</sup> An annual consumption figure of about 100 liters is often mentioned as an average for the population at large.<sup>55</sup> Since children did not drink wine, this works out at something like a modern bottle per day for adults, a serious but possible quantity. It is also of the same order of magnitude as documented consumption in other pre-industrial wine drinking societies. Higher estimates have been proposed, but they are mostly based on consumption by adult males, and do not adjust for the presence of women and children.<sup>56</sup> The caloric contribution of 100 liters of (sweet white) wine would be 165,000 kilocalories, or almost a quarter of annual caloric intake.<sup>57</sup> Since children did not really drink at all, the proportion would be even higher for adults. That may have been enjoyable, but it was certainly not healthy.

The olive is another often mentioned classic part of the Roman diet. Olive oil was used for many purposes, but one of them was in food. There seems to be a consensus that Romans consumed something in the order of magnitude of 20 liters per annum per head of the population.<sup>58</sup> If that is indeed a good estimate, it amounts to 162,000 kilocalories, or again, just under a quarter of energy requirements. The good thing about olive oil, however, is that it contributes more than just energy. It also makes up for some deficiencies of a cereal-dominated diet.<sup>59</sup>

<sup>51</sup> Rickman 1980: 3–7 for a survey. <sup>52</sup> Jongman 1988a; Le Houerou 1977.

<sup>53</sup> Jongman 1988a: 82. <sup>54</sup> Tchernia 1986.

<sup>55</sup> Jongman 1988a for a survey. <sup>56</sup> Purcell 1985.

<sup>57</sup> I have chosen sweet white wine because that is what Romans seem to have preferred. Red and dry white wines contained far fewer calories.

<sup>58</sup> It is worth mentioning, however, that this estimate is pretty insecure, and is not constrained by obvious biological limits.

<sup>59</sup> Apart from olive oil, we must also consider olives that were not pressed but eaten as fruit. They have been curiously neglected in the literature, probably because they are less archaeologically visible, and because they were probably more for local consumption than for trade. They may not have kept

We can see that the common view that the Roman diet largely consisted of cereals is incompatible with prevailing estimates of oil and wine consumption. That is all the more interesting as both wine and oil can be produced in large quantities on small plots. For both of them the calorie yield per hectare was about five times higher than for wheat in a two-field system.<sup>60</sup> Therefore, they were not only attractive (and quite expensive) food, but could also support high population densities when necessary. That is important because it has often been argued that some of the higher estimates for the size of Italy's population are impossible because the land could not have fed so many people. If half the calories in the diet came from wine and oil, and only another half from cereals, Italy could have supported a population of some 15–20 million people (what actually happened is, of course, a different matter).<sup>61</sup>

As with wine and oil, meat contributed to a better diet: it was both tasty and healthy. It was also expensive, however, so its consumption not only presupposes a preference for meat, but also the necessary purchasing power. Meat consumption is, therefore, a useful indicator of what we may call intermediate prosperity. It was too expensive for those living at bare subsistence, but a likely thing to spend money on if one lived somewhat above subsistence. Equally, it was not something one could or would consume ever more of: it is unlikely that the very rich consumed more of it than those who were merely rich. Therefore, changes in meat consumption are a useful indicator of the extent to which significant numbers of quite ordinary people attained standards of living above bare subsistence. Meat was expensive because, unlike wine and oil, its production usually requires the use of large amounts of land, involving as it does the wasteful conversion of plant calories into animals. That applied more to some animals than to others, but by and large in most pre-industrial societies an increased demand for food as a result of population pressure caused a reduction in the meat component of the diet. Rome was densely populated, so were Romans vegetarians?

As I argue in more detail below, Roman meat consumption rose dramatically from the late Republic onward. Meat, and pork in particular, became an acknowledged ingredient of the Roman diet, perhaps particularly in the

as well as olive oil, and they may have been more expensive to transport, but they also retained all their calories and nutrients. Moreover, just eating them as they were saved work and the need for an expensive press. Thus, we may expect peasants to eat their own olives, rather than, or in addition to, oil.

<sup>60</sup> A net yield of 250 kg. of wheat per hectare in a two-field system (i.e., 500 kg. every other year) contained 720,000 kilocalories. A yield of 2,000 liters of sweet wine per hectare contained 3,300,000 kilocalories, while 400 kg./440 liters of olive oil per hectare contained 3,402,000 kilocalories. For yield figures: Jongman 2003a: 112–16. Van Laethem and Jongman forthcoming for caloric content.

<sup>61</sup> Roman Italy had probably about 100,000 km<sup>2</sup> of agriculturally used land: Jongman 1988a: 67.

cities in densely populated western Central Italy.<sup>62</sup> That preference for pork may not be quite so unexpected: compared to cattle or even sheep/goats, pigs compete far less with humans for scarce resources. They could be fed on waste, and kept at urban sites. Pork consumption may have been the prosperous Roman alternative to the largely vegetarian diet of many societies with high population densities. Once pork had obtained this significant position, “Romanization” would facilitate the spread of pork consumption to other parts of the empire and to its cities in particular.<sup>63</sup>

Roman diet varied far beyond mere staples such as cereals. The caloric contributions of wine and oil were significant, and allowed for a more attractive and partly healthier, but also partly unhealthier (i.e., alcohol-rich) diet. The substantial contribution of oil and wine also permitted a far greater production of calories per hectare than was possible with cereals alone. But they were expensive calories, because these were labor- and capital-intensive crops. Meat consumption seems to have reached a level where it made a meaningful contribution to the diet of quite a few people. As we shall see later, it even increased dramatically in the late Republic and early empire. Although meat’s heavy demands on land rendered it expensive, enough people were able to afford it.

#### (d) *Public support*

The later inclusion of oil, pork, and cheap wine in the public distributions to citizens in Rome likewise suggests that variety was not exceptional in the popular diet.<sup>64</sup> It is unlikely that emperors would have provided these goods if they had not constituted a common element of the diet of a significant proportion of the urban population. This largesse may have ensured a steady supply of what was otherwise less reliably available to most metropolitan consumers.

Public subsistence support was indeed one of the salient features of Roman life. The distribution of *frumentum publicum*, “public wheat,” to the populace of the city of Rome was a remarkable achievement, and so were other forms of support such as occasional cash donations in the city of Rome (*congiaria*), *alimenta* (cash benefits to children) in Italy, and to

<sup>62</sup> MacKinnon 2004 for a very recent survey.

<sup>63</sup> King 1999. Roman meat consumption differed significantly between, roughly, the eastern and southern parts of the Mediterranean on the one hand, and the western and northern parts on the other. In the east and south, mutton and goat meat prevailed. In the north and west it was beef. Even in Italy, the difference between north and south is remarkable. By and large, people ate what their land could produce best. Interestingly, however, it was neither cattle nor sheep and goats that dominated western Central Italy, but pigs. The same was true of other highly “Romanized” and urbanized parts of the empire. King explains this by the Roman preference for pork, and the spread of this taste as part of acculturation. The provincial taste for pork may indeed be culturally determined, but its popularity in western Central Italy is likely to have been a function of high population density.

<sup>64</sup> Pavis D’Escurac 1976: 188–201.

a probably lesser extent elsewhere in the empire.<sup>65</sup> The *frumentationes* in Rome were generous indeed: from the late Republic they provided for the free distribution of about 33kg. of wheat per month to each of 200,000 adult male citizens.<sup>66</sup> Such rations were well in excess of the needs of a single recipient.<sup>67</sup> Giving too much to adult male citizens, and nothing to the others, was both administratively easier, and underscored the adult male's central position in Roman society and culture. *Frumentationes* and *alimenta* thus provided vital subsistence support for the whole family, meanwhile underwriting the urban population's power to purchase quality food such as wine, oil, vegetables, poultry, and meat.<sup>68</sup> They also provided powerful rituals of social and political inclusion. Each month, on their assigned day, men in Rome had to collect their ration at one of the forty-five *ostia* at the so-called *Porticus Minucia*, a building specially constructed for the purpose. They had to wait in line to receive their wheat, after their names had been checked from the lists of all those who were entitled to receive their ration on that particular day, and at that particular *ostium*. Once, when elections were still being held, citizens had queued up to vote; now they queued up to receive their free grain, grateful to their emperor. Each day, moreover, almost 7,000 men could be seen walking through the city, lugging home their 33kg. of *frumentum publicum*.

#### (e) *Variability and famine*

This brings us to the issue of the stability and predictability of the food supply. It is no good to be well fed nine years out of ten, but to starve to death in the tenth. Mediterranean harvests are notoriously variable and unpredictable.<sup>69</sup> Drought could ruin a harvest, and two successive years of drought could mean a famine. City-dwellers were particularly vulnerable. They had less access to alternative emergency food, and they suffered most from price fluctuations. The low price elasticities of both supply and demand for staple food mean that even small reductions in output created dramatic price rises.<sup>70</sup> Peasants were buffered from this because they were not only consumers (of their own crops), but also producers. What they lost, so to speak, as consumers, they gained as producers. As for the food supply of the (larger) cities, public intervention was necessary for both political and economic reasons. Emperors and local magistrates did not shy away

<sup>65</sup> Jongman 2000a; Jongman and Dekker 1989; Jongman 2002.

<sup>66</sup> This number was not quite fixed, and varied under the opposing pressures of popular demand and public resistance. Jongman 1997 for a recent survey.

<sup>67</sup> The *frumentationes* thus provided 80,000 tons of wheat. At a mean subsistence level of 250 kg. wheat, this represented bare subsistence for 360,000 people, or 50 percent of requirements for a free population of 720,000 people. Hopkins 1978a: 96–8 and Jongman 2001a for a discussion of the population of the city of Rome.

<sup>68</sup> Jongman 2001c for other food.

<sup>69</sup> Garnsey 1988; Hopkins 1983a.

<sup>70</sup> Jongman 2000a.



from their responsibilities, and when they did, they were in trouble.<sup>71</sup> The exceptional level of Roman urbanization was underwritten by systematic public intervention in the urban food supply.<sup>72</sup>

(f) *Biological standard of living*

Stature is no doubt the best generalized indicator of nutritional status. When children are better fed, they also grow better. Comparative evidence shows that stature is an excellent proxy variable for per capita income.<sup>73</sup> Interestingly, this not only applies at levels of per capita income near subsistence, but also at the levels of prosperity which prevail in the modern developed world: new generations are still getting taller all the time. Research has shown that the quantity and quality of the food intake of young people are of great importance, as is the nutritional status of the mother during pregnancy. Pregnancy increases the demands on the mother's nutritional status. Moreover, unhealthy dietary habits such as alcohol abuse during pregnancy can easily negate the benefits even of ample nutrition. Misconceived feeding habits may also endanger the health and thus the stature of children. An example would be the Roman habit of weaning children from a dangerously early age.<sup>74</sup> Thus, even the children of historic elites may have been short by modern standards. They also suffered the same exposure to infectious diseases, a major contributor to malnutrition and stunted growth.

Unlike modern historians who have been interested in stature for decades and collected a substantial body of evidence, Roman historians and archaeologists have only just begun to show an interest in this supreme indicator of welfare.<sup>75</sup> Clearly, many Romans were short by modern standards – that is not surprising. They may have been more prosperous than some of their ancestors or descendants, but they did not escape the constraints of life in a pre-industrial society, with a low standard of living by modern standards, periodic shortages of food, a dangerous disease regime, medical ignorance, and great social inequality. Yet it would also seem that they were at least sometimes at the upper end of what was current in pre-industrial European history.<sup>76</sup> Koepke notes, for example, that Roman stature in parts of Germany (169.4 cm. for men and 158.5 cm. for women) was higher than in the nineteenth century. Current research by Klein Goldewijk and Jongman suggests that the Romans of the early empire were very tall indeed, but also that average heights dropped from the late second century AD onwards.<sup>77</sup> Similarly, of the skeletons discovered on the

<sup>71</sup> Virlouvét 1985. <sup>72</sup> Jongman and Dekker 1989.

<sup>73</sup> Komlos 1996; Steckel and Rose 2002; Fogel 2004; Komlos and Baten 2004.

<sup>74</sup> Garnsey 1999: 106–7. <sup>75</sup> Garnsey 1999: 57–60 and Kron 2005 for recent surveys.

<sup>76</sup> Kron 2005. <sup>77</sup> Koepke 2002; Klein Goldewijk and Jongman forthcoming.



shoreline of Herculaneum, males measured on average 169 cm., and females 155 cm., a figure only achieved in England in the eighteenth century.<sup>78</sup> By the standards of modern well-fed and healthy populations, these people were short, but they were not in comparison to other pre-industrial populations. Even the people of Naples in the 1960s were shorter.

The discovery in 1982 of numerous skeletons on the shoreline at Herculaneum was a gruesome reminder of the horrors and suffering inflicted by the eruption of Mt. Vesuvius. Sheltering on the beach and in the arched chambers in the city wall along the waterfront, many inhabitants of the town had discovered that they could not escape the horrors of the eruption. So they huddled together, their backs to the lethal heat of the pyroclastic surge. We can learn a lot from their remains: Bisel studied the first 139 of these Herculaneans, and many more will probably be found.<sup>79</sup> Precisely because of the gruesome circumstances of their death, they also represent a unique cross section of a living ancient population.

Bone mineral analysis provides some interesting results. Zinc levels were low, and site-corrected strontium calcium levels were on the high side compared to modern Americans. Between them, these figures suggest that ancient Herculaneans ate more seafood and consumed more vegetable protein than modern Americans, but considerably less red meat.<sup>80</sup> That may have made them (the women especially) vulnerable to anaemia, and thus to various infectious diseases. That, or endemic malaria, may also have been responsible for the high levels of hypoplastic lines in dental enamel.<sup>81</sup> Skeletal development showed not only comparatively tall people, but also only limited signs of bone flattening and other signs of malnutrition.<sup>82</sup>

What these skeletons also show, however, is the great variety of health experiences which hides behind the various statistical averages. Compare, for example, the tall (172.4 cm.) and relatively well-nourished man in his forties known as Erc 86, with the wretched man of similar age Erc 27, but considerably smaller stature (163.5 cm.). The former had a well-trained and athletic body, but showed no signs of over-exertion or stress. He probably used his hands only moderately, and was likely to have had somebody else to do his writing for him.<sup>83</sup> The latter had flattish bones and pelvis, indicating prolonged periods of malnutrition. He also had large deltoid crests suggesting hard labor. Finally, he suffered from bad teeth and from what Bisel has diagnosed as Forestier's disease, an ankylosing hyperostosis of the spine.<sup>84</sup> Finally, there is the moving story of what appears to be a

<sup>78</sup> Bisel and Bisel 2002. See also Sigurdsson and Carey 2002 for a reconstruction of the eruption of Vesuvius and the circumstances of the deaths of these unfortunate people.

<sup>79</sup> Pagano 1999; Mastrolorenzo et al. 2001.

<sup>80</sup> Bisel and Bisel 2002: 458.

<sup>81</sup> Sallares 2002 for extended discussion of malaria.

<sup>82</sup> Bisel and Bisel 2002: 455–6.

<sup>83</sup> Bisel and Bisel 2002: 460–1.

<sup>84</sup> Bisel and Bisel 2002: 468–9.

slave girl with her master's baby in her arms.<sup>85</sup> The baby had some pieces of jewelry, but the body of the fourteen year old girl tells a different story. There are deep grooves of hypoplasia in the enamel of her teeth, from when she had been roughly eleven months old. She must have been starved, or perhaps more likely, extremely ill at that age.

Late antique stature seems to have declined (but is still poorly known). Valentinian decreed in AD 367 that army recruits in Italy should be at least 165 cm. tall.<sup>86</sup> As Garnsey rightly argues, that must have represented the top of the range. Most men were probably shorter. For Germany, Koepke's data show a distinct reduction in stature in the later empire.<sup>87</sup>

(g) *Other goods and services*

Man does not live by food alone, even if life is impossible without it. Indeed, the consumption of other goods and services above and beyond food is one of the best indicators of a standard of living above subsistence (their income elasticity is relatively high). Transactions were facilitated by a high level of monetization of the economy, and the ample availability of coinage. Indeed, it would appear that the money stock was larger, relative to GDP, than in any other period of European pre-industrial history.<sup>88</sup> Roman coins were also well made. Such use of metal is also clearly documented elsewhere. Iron locks, hinges, and many other kinds of metal fittings were common in Roman building practice. Building a Roman legionary fortress involved a huge quantity of iron nails: at the briefly used Roman fortress of Inchtuthil in Scotland a stock of 12 tonnes of iron nails was left behind when the fortress was abandoned.<sup>89</sup> Its construction had involved at least 1.5 million iron nails of an approximate weight of 6.5 tonnes. These are massive quantities. The abundance of iron implements on farms is similarly striking, and so is the presence of metal vessels and knives in the kitchen. Roman surgeons had refined instruments, and Roman women employed metal utensils for cosmetic use. No Roman site is complete without large numbers of *fibulae*.

That brings us to dress. In most pre-industrial economies, the production and consumption of clothing is the most important non-agrarian economic activity after building. Archaeologically, however, textiles do not survive as well as pottery, metals, or buildings. Therefore, actual consumption levels remain elusive. It is striking, however, that textiles appear to have been manufactured in just about every town or village for which we have decent written or material data.<sup>90</sup> Agricultural slaves and peasants may well have

<sup>85</sup> Bisel and Bisel 2002: 464–5. <sup>86</sup> Garnsey 1999: 59.

<sup>87</sup> Koepke 2002. <sup>88</sup> Jongman 2003b.

<sup>89</sup> Shirley 2000: 169 for the hoard, 83 and 85 for requirements in construction of the fortress.

<sup>90</sup> Jongman 2000b.

worn rags (apart from coarse clothes), but domestic slaves and modest but not impoverished citizens seem to have owned new garments of some quality. The rich had access to a wide variety of exquisite clothing.

Finally, services. These represent an increasing part of modern economic activity, but it is often forgotten that they were also prominent in pre-industrial society. Without dishwashers, vacuum cleaners, or washing machines, domestic work is a heavy chore, and avoided as much as possible by anyone of any wealth. In modern western society, live-in domestic staff have almost disappeared, but until a century ago they were a common sight in middle class families, and accounted for a significant proportion of the working population.

With the growth of their empire, Romans of the later Republic had adopted a grand lifestyle that required many domestics. They were necessary to guard the door, clean the house, serve at the table, help with getting dressed, or write or read aloud the correspondence or the poetry that had become such a defining part of elite life style. When in a late antique exercise book, a little boy goes to school accompanied by his personal slave, it is only pretty late in the story that the presence of yet another slave is revealed: the slave who carries the writing kit.<sup>91</sup> Slaves were everywhere in elite households, but also in the households of those who were just well-to-do, but not quite as rich, respectable or prominent as to be a member of one of the *ordines*. These slaves were there to help with menial tasks, or just to add to their owners' prestige by their number. When the urban prefect Pedanius Secundus was murdered in his house, the Senate discussed whether custom had indeed to be followed, and all slaves in his house killed. Said to number 400, they were indeed all killed (Tac. *Ann.* 14.42–5). Roman cities were not only home to the Roman elite, but also to many slaves and freedmen and freedwomen.<sup>92</sup>

Consumption was not limited to private individuals. The state and local authorities generated significant demand. For the state, military services were probably the largest budget item: the cost of the army has been estimated at 450 (+/– 50) million sesterces in the early Principate.<sup>93</sup> The quantity and quality of public services and facilities was perhaps the biggest benefit for large sections of the population. We have already noted the distributions of food and money in Rome, but also in other cities. Roman public architecture remains one of Rome's lasting contributions to western civilization; much of it still stands as testimony to the quality of its construction. Paved roads do make life more comfortable than muddy tracks. Good harbors and roads facilitate transport of soldiers, but also of civilians. Public building was of practical importance, but (or therefore?) also an important part of the political dialogue between emperors, local elites, and

<sup>91</sup> Dionisotti 1982.

<sup>92</sup> Jongman 2003a.

<sup>93</sup> Hopkins 2002: 199; and below, Chapter 23.

ordinary citizens, or between Roman and indigenous culture. Roman levels of provision would not be matched for many centuries (and construction was sometimes a good way to put soldiers to work). The *aqua Marcia*, the first large aqueduct for the city of Rome, built around 144 BC, had already cost a reported 180 million sesterces; later aqueducts were even more expensive.<sup>94</sup> In many towns the Roman aqueducts remained the only means of water supply for another thousand years or more. They provided drinking water, but also water for fountains and baths, and were thus symbols of imperial victory over an often arid nature. Roman baths may have been pools of infections, but they were obviously much in demand. Their construction was expensive: it has recently been calculated that the Baths of Caracalla cost the equivalent of 120,000–140,000 tonnes of wheat to build; enough, therefore, to feed about half a million people at subsistence for a year.<sup>95</sup> Running them was also expensive. We only need to think of all the firewood, and the labor that was required to keep the fires burning. Similarly, Roman games may not be to our taste, but it cannot be denied that they were very popular. Finally, Rome guaranteed a measure of public order and safety that was probably more appreciated than hated. The aggregate expenditure of the Roman state allowed for unprecedented public facilities that would not be matched for a long time.

Unlike the cost of military expenditure (400–500 million sesterces), the aggregate size of other public expenditure is not really known, even if the best estimates seem to converge at a total for early imperial public expenditure (military and other) of some 700–900 million sesterces.<sup>96</sup> That is a low proportion of GDP, and all the lower if GDP was higher.<sup>97</sup> That is about the same as our best estimate of minimum elite income (800 million sesterces) if no member of the elite owned more than the census minimum.<sup>98</sup> In reality, therefore, elite income and expenditure were probably several times higher than state income and expenditure – and increasingly so with the growth of private fortunes in the later empire.

#### (h) *Change*

Much recent ancient economic history describes static structures, by focusing on the nature of “the” ancient economy. The narrative of change is left to historians of politics, and when economic changes occur, they are

<sup>94</sup> Aqueducts have drawn a lot of scholarly attention in recent years: Hodge 1992 is the modern standard work. See also De Kleijn 2001.

<sup>95</sup> Delaine 1997. <sup>96</sup> Hopkins 2002: 201. Cf. below, Chapter 23.

<sup>97</sup> For Hopkins 2002 this speaks against high estimates for per capita incomes. However, civilian public expenditure might have been larger than Hopkins estimated – the Roman state did rather more than many states in later pre-industrial Europe.

<sup>98</sup> Jongman in press.

often linked to the *histoire événementielle* of political life.<sup>99</sup> What we need, however, is a proper economic history of economic change. Such histories are usually constructed on two levels. The first of those is the narrative of victory over the Malthusian ceiling, and the emergence of the modern economy. Some histories of economic change in antiquity indeed try to connect to that grand theme. The problem is, of course, that modern economic historians increasingly emphasize the essentially discontinuous nature of the growth of the modern economy.<sup>100</sup> The second level is that of the narrative of the seesaw between population and prosperity below that Malthusian ceiling (see above): trends in population and standard of living usually moved in opposite directions. The problem for ancient historians is that the history of late Republican and imperial Rome does not fit this standard mediaeval and early-modern model.

It has become increasingly obvious in recent years that the Roman economy did indeed experience major periods of expansion and contraction. The expansion of Roman rule had increased the population in many parts of the empire. Even in Italy, population probably continued to grow for some time. That trend was reversed sometime in the second or third century, probably as a result of the Antonine Plague (from about AD 165).<sup>101</sup> In the early Principate, many parts of the empire reached unprecedented population densities. Did Roman standard of living decline during the late Republic and early empire, to improve again in the later empire?

The construction of time series of the archaeological traces of economic activity has permitted real advances (literary sources abound in litanies of decline, and are rather useless<sup>102</sup>). Thus, Hopkins' famed graph of dated shipwrecks from the Mediterranean suggested that "in the period of Roman imperial expansion and in the High Empire (200 BC–AD 200), there was more sea-borne trade in the Mediterranean than ever before, and more than there was for the next thousand years."<sup>103</sup> Similarly, deposits of lead and other metals in the Greenland ice-core indicate unprecedented levels of metal extraction that came to an abrupt end in the late second century AD, to be surpassed again only in the nineteenth century.<sup>104</sup> These series trace broad trends in trade and manufacturing that far exceeded the likely magnitude of changes in population: for a while, the per capita volume of maritime trade and metal extraction was greater than it had been and would be for many centuries.

Regarding the direct measurement of trends in consumption, what we really want to see is evidence of improvements in the consumption of goods and services above and beyond bare subsistence by significant numbers of

<sup>99</sup> Jongman 2003a. <sup>100</sup> Wrigley 1988; Jongman 2003c: 318–21.

<sup>101</sup> Duncan-Jones 1996; Jongman 2006. <sup>102</sup> Jongman 2003a: 120–1 for some comments.

<sup>103</sup> Hopkins 1980: 105–6. See above, Chapter 21. <sup>104</sup> Wilson 2002; Jongman 2006.

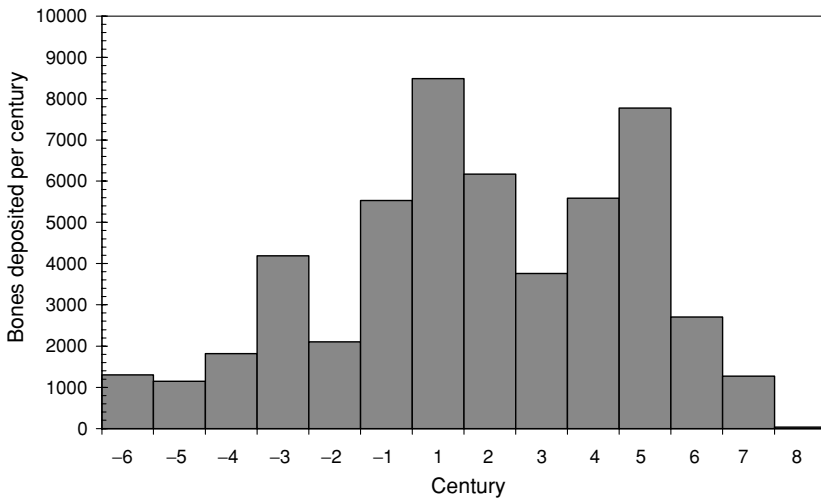


Figure 22.1 Mammal bones per century in Italy

ordinary people. A good example is the improvement in the diet offered by the introduction and increasing consumption of a wide range of new fruits and vegetables in north-western Europe in the wake of the Roman conquest.<sup>105</sup> Therefore, cereals are not a good indicator, since a decline in grain consumption might imply an increased standard of living (in that people ate less basic food instead).<sup>106</sup> Similarly, an increase in the consumption of expensive luxuries might indicate either a broad increase in prosperity or an intensification of social inequality. Therefore, we need to look at goods that are too expensive for the very poor, attractive and potentially affordable for those who lived somewhat above subsistence, but not something the very rich could consume in huge quantities. Meat is a suitable indicator of intermediate prosperity.

Interestingly, the trend in meat consumption resembles those in the distribution of dated shipwrecks and metal pollution. Over the past few decades, animal bones from Roman sites have been studied with increasing care, and site reports include them in far greater detail than before. Synthetic studies have also begun to appear.<sup>107</sup> This allows me to present graphs of Roman mammal bone deposition over many centuries of Roman history, based on a database constructed and published by King (Figs. 22.1–22.2).<sup>108</sup> While these deposits do not represent actual meat consumption,

<sup>105</sup> Bakels and Jacomet 2003. Much (though certainly not all) of this improvement in the diet disappeared again with the evaporation of Roman power in late antiquity.

<sup>106</sup> In economic theory goods with such negative income elasticities are called inferior goods.

<sup>107</sup> King 1999; MacKinnon 2004; Jongman forthcoming, a.

<sup>108</sup> King 1999, plus the earlier datasets quoted in the same article.

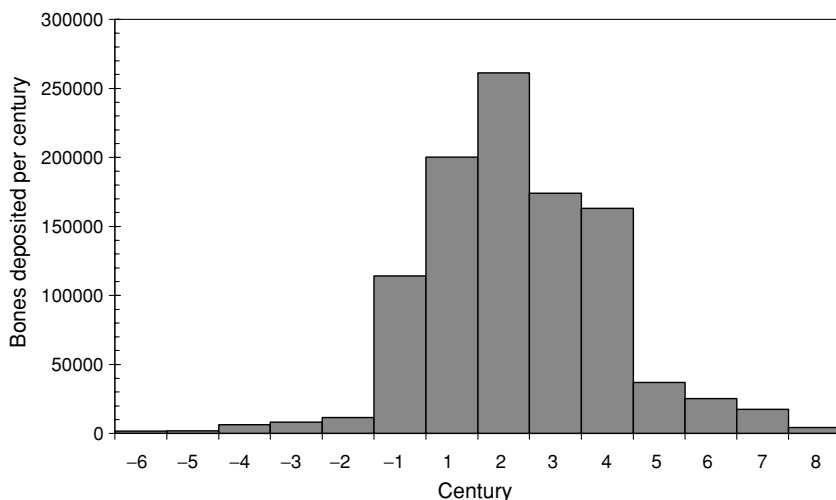


Figure 22.2 Mammal bones per century in the provinces of the Roman empire

these pigs, sheep, goats, and oxen were animals that regularly provided Romans with meat. Pigs in particular were kept for that purpose alone. Many animals seem to have been slaughtered at quite an early age, which indicates that they were primarily bred and kept for their meat.<sup>109</sup> The bone evidence suggests that meat consumption rose dramatically during the late Republic, to reach a peak in the early empire. That trend is even stronger when we superimpose changes in the size of Roman livestock.<sup>110</sup> Romanization resulted in the introduction of significantly larger livestock, with perhaps twice as much meat per animal. When Roman rule collapsed, these large animals rapidly disappeared again. Even Roman chickens were significantly larger than what came before or after. The observed rise in meat consumption seems to coincide with the growth of empire. It first occurred in Italy, especially for pork that was consumed in towns. In the provinces, meat consumption grew later, roughly coinciding with the beginnings of Roman rule. Almost everywhere, decline set in in the second century AD, and seems most pronounced in Italy and more generally in urban contexts. Subsequent recovery remained unimpressive. Italy is an exception: it recovered remarkably well, and maintained high levels of meat consumption well into and even after late antiquity. Was that a coincidence?

Finally, we may look at trends in state and elite spending for the benefit of larger sections of the population. Roman cities were the recipients of aqueducts, roads, buildings, statues, public banquets, alimentary

<sup>109</sup> Kron 2002: 60–1.

<sup>110</sup> Kron 2002; Durand and Leveau 2004: 216–17.

schemes, games, and much else, donated by emperors, city authorities, and, most often, members of the elite of municipal office-holders. The expense involved was considerable, and undoubtedly reflects a measure of economic success. It also reflects a political preference, as it underscores and celebrates both state and elite power, and acknowledges the importance of Roman citizenship. The chronology of these outlays may thus reflect both the vicissitudes of the economy, and the value of citizenship, urbanity, and civic life.

Public building has been studied in great detail for Roman Italy and North Africa.<sup>111</sup> The chronology is striking. In Italy, the later republican and particularly the early imperial periods show a dramatic peak, followed by a sharp reduction in the reign of Marcus Aurelius, in the wake of the Antonine Plague.<sup>112</sup> Particularly striking is the apparent hiatus of some three decades in any imperially funded public construction in the period from AD 160 to 190. This was followed by some recovery in the Severan period, and mostly further decline thereafter. In North Africa, the peak in public building occurred later, and Severan efforts were particularly notable in scale. In that region, too, public building stagnated thereafter.<sup>113</sup> Similar patterns may be found in elite munificence in Roman Asia Minor.<sup>114</sup> In a large dataset of elite benefactions from that province compiled by Arjan Zuiderhoek, almost two thirds of all cases are dated to the second century AD.

#### (i) *Inequality and entitlement*

The better standard of living of at least part of the Roman population reminds us that standards of living do not simply depend on the performance of the economy at large, but also on the rules of entitlement to its benefits. If per capita incomes were, for example, twice subsistence, it obviously makes a big difference if this surplus was more or less equally shared, or if it was monopolized by a tiny minority. In the latter scenario, the vast majority of the Roman population may still have lived at or near minimum subsistence, even if average incomes were well above subsistence. However, many ordinary people were apparently able to afford new clothes, nice oil lamps, some tableware, glass, or personal apparel. Roman domestic material culture was impressive and was enjoyed in bulk, as a visit to any local archaeological museum will testify. Moreover, there were many people of intermediate means: early imperial Pompeii offers a good example, where those who occupied the grand urban residences of the town outnumbered

<sup>111</sup> Jouffroy 1986.

<sup>112</sup> Duncan-Jones 1996: 127, based on data from Jouffroy 1986. <sup>113</sup> Jouffroy 1986: 461.

<sup>114</sup> I owe these data to the generosity of Arjan Zuiderhoek, whose forthcoming book on elite munificence in Roman Asia Minor will discuss them at greater length.



the political elite of (100?) members of the town council by a factor of four or five.<sup>115</sup>

The late Republic and early empire were a period of increasing population, but as we have seen, there are strong indications that the standard of living of the mass of the population was nevertheless improving at the same time. The only one explanation for this is that per capita incomes were increasing (since it is unlikely that popular standard of living improved because the rich became poorer).<sup>116</sup> Moreover, this implies that the mass of the population succeeded in securing its share of that increased prosperity. The tide seems to have turned in the late second century AD, possibly as a result of the Antonine Plague.<sup>117</sup> Population declined, but contrary to expectations and unlike after the Black Death of the fourteenth century, this did not provide ordinary people with the bargaining power to improve their incomes at the expense of the rich. For all we know, later antiquity was a world of increased poverty for the masses, and ever larger fortunes for the rich.<sup>118</sup> Ordinary citizens had lost the power to obtain the market value to which they were entitled, and entered a world of oppression and submission. The rich on the other hand grew increasingly wealthy. Late-antique villas may have been fewer in number, but they were enormous.

Collectively, a shrinking elite appropriated a growing share of GDP, to the extent that their incomes included an ever increasing proportion of GDP above subsistence. We can establish this relatively easily if we estimate aggregate elite wealth (and hence income). That is not as difficult as it may seem, since we have at least a base-line in the census minimum expected of members of the political elite. Senators had to own at least HS 1 million or 1.2 million, knights HS 400,000 and decurions HS 100,000.<sup>119</sup> By multiplying this by the number of senators, knights, and decurions, we obtain a minimum estimate for the aggregate wealth of the Roman political elite: 13 billion sesterces.<sup>120</sup> If they derived an annual return of 6 percent

<sup>115</sup> Jongman 1988a and Wallace-Hadrill 1994 for the numbers. Tacoma 2006 for elites of Roman Egypt. Haley 2003 for Roman Baetica.

<sup>116</sup> As was argued recently in a study on Roman Baetica: Haley 2003. Unfortunately its author fails to appreciate the conceptual significance of the decline from the fourth quarter of the second century AD.

<sup>117</sup> Jongman 2006. In Roman Baetica, this was just the period when social inequality seems to have increased: Haley 2003: 184, 190.

<sup>118</sup> This at least is my reading of Brown 2002 – even if he locates the transition in a slightly later period.

<sup>119</sup> See above.

<sup>120</sup> Jongman 1988a: 193, for elite numbers in Italy. The crucial estimate was that of the number of decurions. I assumed that the 100 largest cities in Italy had 100 decurions each for a total of 10,000, and that the other 331 cities of Italy had 30 each, for a total of 10,000 decurions in smaller cities, and a total of 20,000 in all Italian cities (cf. now Mouritsen 1998). Here, I assume 100,000 decurions, rather than 20,000, since there were something like five times as many cities in the whole of the empire. Aggregate wealth of decurions thus amounted to a minimum of HS 10,000 million, aggregate wealth

(an often quoted conventional figure), their joint income amounted to 800 million sesterces, about a quarter of the entire surplus of National Income above bare subsistence if per capita incomes were 1.5 times subsistence, an eighth if per capita incomes were two times subsistence, and a sixteenth if per capita incomes were three times subsistence.<sup>121</sup> However, many members of the elite far exceeded this minimum. As we have seen, the wealth of a possibly quite middling senator such as Pliny the Younger has plausibly been estimated at about HS 20 million. If he was in fact an average senator, and if all members of the elite, from decurions to senators, had indeed held average fortunes of sixteen times the census minimum, they would collectively have controlled the entire surplus of the imperial economy, even if per capita incomes reached a high three times subsistence. For the early empire, that was probably not true: too many others seem to have enjoyed incomes above subsistence. Most decurions (who together made up most of elite wealth for the simple reason that there were many of them) probably owned fortunes much closer to the census minimum. What this calculation shows, however, is that collective elite wealth was seriously constrained by the size of surplus GDP.<sup>122</sup> When we hear of late antique senatorial fortunes that were typically five times as large as that of the Younger Pliny, then clearly the elite, and the senatorial elite in particular, must have owned much of what there was to own, and come to enjoy almost the entire surplus of the economy.<sup>123</sup> Such senatorial fortunes and incomes not only crowded out the state, as Hopkins argued, but even more so municipal elites – and ordinary citizens.<sup>124</sup>

## V CONCLUSION

Roman per capita incomes may well have been fairly high for a pre-industrial economy. Otherwise, it is hard to explain the grand scale of public expenditure or the lifestyle of the elite. Consumption beyond bare subsistence probably reached levels that would not be matched for quite some time. In the early empire, ordinary Roman citizens seem to have benefited from this achievement, in their private consumption of food and material culture, but also as consumers of public goods and services. The rich, needless to say,

of 5,000 knights to a minimum of HS 2,000 million and aggregate senatorial wealth to a minimum of HS 720 million. With these very conservative estimates, therefore, most elite wealth was owned by decurions. Senators, though rich, were too few in number to have much impact. Duncan-Jones 1982: 33 for yields on investment in agricultural property; and Jongman 1988a: 187–99 for elite income and wealth in Italy.

<sup>121</sup> See above for competing estimates of GDP.

<sup>122</sup> This may well be a decisive argument against very low estimates for GDP, the more so when we take later demographic decline into account. Low per capita incomes and demographic decline together squeeze aggregate surplus.

<sup>123</sup> Jongman 2006. <sup>124</sup> Hopkins 2002: 204–8, for competition between rents and taxes.

profited even more. With time, and during the demographic decline of the transition to late antiquity, ordinary Romans failed further to improve their standard of living, although labor had become scarcer. Instead, oppression and inequality increased, to the extent that an increasingly small imperial elite controlled a growing share of the aggregate surplus above bare subsistence. Property, and income from property, became ever more important. This changed the nature of consumption. The very rich had different demands from the less wealthy. They consumed a smaller proportion of their incomes. With the rest, they could only acquire more land.