

# SOMETHING OLD, SOMETHING NEW: SOCIAL AND ECONOMIC DEVELOPMENTS IN THE COUNTRYSIDE OF ROMAN ITALY BETWEEN REPUBLIC AND EMPIRE

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## I. Introduction

In his classic publication *Hannibal's Legacy*, Toynbee wrote about the economic consequences of the deracination of the Italian peasantry which supposedly had both accompanied and followed the Hannibalic War. In his opinion new economic possibilities had potentially existed in the Italian peninsula since its political unification, though they had never really been exploited: "*If an alternative economic system, or set of systems, were to present itself, and if the introduction of this promised to be profitable to the old Roman aristocracy or to the new commercial and industrial class whose fortunes had been made by the wars that had been the Italian peasantry's ruin, this ruined and uprooted peasantry would no longer have the strength to protect and preserve its ancestral way of life*".<sup>1</sup> Whatever the exact nature of the relationship Toynbee established between the outcome of the Second Punic War, rural free-population dynamics, the attitude of the landed aristocracy, and new productive/trade patterns, the interplay of these factors has kept many scholars occupied over the last fifty years.<sup>2</sup> The aim of this contribution is to offer a critical discussion of more recent developments in our understanding of the social and economic transformations taking place within the countryside of Roman Italy in the period 200 BC to AD 100.

## II. Demographic patterns

Population is one aspect of the debate that has received increasing coverage over the last two decades, and even more so over the last few years.<sup>3</sup> This is hardly surprising, considering the crucial role of population size in relation to the structure and (economic) performance of any civilisation.<sup>4</sup> Whereas Toynbee originally emphasised the material destruction and heavy human losses caused in Italy by Hannibal's invasion, Brunt was more inclined to explain decline as the dire demographic effects of the prolonged military mobilization of the Italian peasantry at the time of Mediterranean conquest.<sup>5</sup> All these claims were held to have found close correspondence in the series of extant Roman census figures: the Italian population was assumed to have declined from ca. 4.5 million in 225 BC to ca. 4 million in 28 BC, in a pattern that extended well into the first century AD.<sup>6</sup> Given that both documentary and archaeological evidence point at increasing levels of urbanization in the course of

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<sup>1</sup> Toynbee (1965, 105).

<sup>2</sup> The relevant bibliography is indeed endless. Seminal work includes: Rostovtzeff (1957, 15-29); Toynbee (1965); Brunt (1971); Hopkins (1978); Garnsey (1980); Rathbone (1981); Giardina and Schiavone (1981); De Neeve (1984); Potter (1987, 94-124). For more recent contributions and the current state of the debate: Marzano (2007); De Ligt and Northwood (2008); Carlsen and Lo Cascio (2009).

<sup>3</sup> Lo Cascio (1994a and b; 1999b); Scheidel (2004; 2005); Launaro (2011b); De Ligt (2012); Hin (2013).

<sup>4</sup> Scheidel (2007). Notions of structure and performance in the economic history of the Greek and Roman World: Morris et al. (2007, 1-2).

<sup>5</sup> Brunt (1971, 131-55 and 269-77).

<sup>6</sup> Hopkins (1978, 68: Table 1.2), based on estimates by Brunt (1971, 121-30).

the same period, if there had indeed been a decline of the Italian free population it would have been the decline of its rural component. However, relevant comparative evidence shows that pre-industrial urban populations (i.e. consumers of agricultural produce) have always required a proportionally larger rural counterpart (i.e. producers of agricultural produce) to support them, usually amounting to at least 80-90% of the total population.<sup>7</sup> And that is precisely why masses of slaves had been brought to Italy – to replace missing peasants.

Recent studies of the population dynamics of Roman Italy have all contributed to a profound revision of this view. Although there is still no agreement about the interpretation of census numbers and actual population levels in early Imperial Italy, the most recent estimates tend to propose slightly to considerably higher figures than before. What is really remarkable, however, is the fact that current reconstructions all seem to agree that the slave population was rather smaller than originally assumed (i.e. well below 2 million individuals in both town and countryside); and that the Italian free population as a whole in fact increased between 225 and 28 BC (Table 1). However, a closer look at De Ligt's reconstruction shows that his lower estimates would still imply a significant decline in terms of the rural free population (from 3.5 million in 225 BC to 3.1 million in 28 BC)<sup>8</sup>. Only mid-range or higher figures can in fact accommodate both urban expansion and some – more or less marked – free rural population growth.<sup>9</sup>

This rural growth finds some striking confirmation in my own analysis of rural settlement patterns – as evidenced by field survey data – from all over Italy between the late Republican (200 to 50 BC) and early Imperial periods (50 BC to AD 100). Indeed, except for the 'usual suspects' (i.e. central/coastal Etruria and the south-east), evidence for the rural free population (in the form of the combined number of farms and villages) points to patterns of a general increase all over the Italian Peninsula (Fig. 1-2).<sup>10</sup> But when did this increase actually take place? The nature of the evidence does not allow us to pinpoint these transformations exactly. In light of the nature of the demographic debate, I still believe that the most economical interpretation of this trend is to assume the relevant transformations to have originated in the late Republic, only to fully develop in the course of the early Empire.<sup>11</sup> This is because traditional narratives of late Republican rural decline imply that the rural population had not recovered to late 3rd-century BC levels even by AD 47, making it very difficult to believe that the entire increase in farms and villages occurred within precisely those fifty years (AD 50-100) which witnessed destruction inflicted upon Italy both by war (AD 69, for the first time after a century of peace) and by dramatic natural events (the eruption of Vesuvius in AD 79, resulting in the obliteration of one of the richest agricultural areas in the Italian peninsula).<sup>12</sup>

Of course, it is certainly possible that even significant transformations in the short term have been lost within each of the above-mentioned 150-year periods.<sup>13</sup> Nonetheless, even assuming that some decline in the rural free population did take place in the course of the late Republican period, there are no indications to suggest that this triggered any serious Italian crisis in the long term (i.e. between 200

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<sup>7</sup> Bairoch (1989, 247).

<sup>8</sup> De Ligt (2012, 190 Table 4.3).

<sup>9</sup> Launaro (2011b, 184-8); Hin (2013, 340).

<sup>10</sup> Launaro (2011b, 149-64).

<sup>11</sup> Launaro (2011b, 166). Given the confusion it has clearly created among some readers (Hin 2013, 335-41; Scheidel 2013, 685-6), it is clear that this claim would benefit from a far more extensive and detailed discussion than would be appropriate here. As far as this contribution is concerned, let it suffice to say that the figures produced by me for each period should not be understood as peaks of maximum occupation in their respective closing years (i.e. 50 BC and AD 100), but rather as indicators of an on average 150-year-long, approximate condition throughout, and as attempts to create a general impression of the relative variation in settlement patterns throughout the two periods.

<sup>12</sup> Launaro (2011b, 47-9 and 163).

<sup>13</sup> E.g. compare the three short-term 'crises' identified in the Tiber Valley: Patterson et al. (2004).

BC and AD 100). It is for these reasons that one has to appreciate De Ligt's recent efforts to further revise his own original low figures in order to accommodate overall population growth and to reduce the scale of rural decline. However, although such revised figures would make it possible to interpret growth as a phenomenon belonging exclusively to the first century AD, it is the interpretation of the textual evidence which appears unwarranted and – ultimately – unconvincing (especially with respect to the Polybian figures for the late third century BC).<sup>14</sup>

Whatever the case may be, it is clear that the idea of a long-term decline of the Italian peasantry does not hold up against current views. More to the point, Rosenstein has since convincingly drawn attention to the rather striking relationship between the structure of the Roman family and military mobilization patterns. Within a fundamentally agrarian society plagued by seasonal under-employment and partible inheritance, the prospects of military service were in all likelihood rather welcome, since war provided a significant share of the population – Roman citizens as well as Italian allies – with concrete opportunities for personal advancement.<sup>15</sup>

### III. *Villas and the free rural population*

If military mobilization did not create the conditions for the decline of the free peasantry and its replacement by slaves, what should we make of the increase in larger estates which ancient authors have placed so much emphasis on and for which there seems to be concrete archaeological evidence in the form of the spread of villas? Was not the aristocracy doing its best to acquire land from smallholders, thus eventually driving them out of the countryside while at the same time adopting a 'slave mode of production'? Throughout my original dataset of Italian surveys, the number of villas and the free rural population seem to have increased together in the vast majority of cases. Elsewhere I have therefore argued for their being closely linked as part of the same process of (moderate) economic growth, with tenancy providing a much preferred and widespread solution among the landowning elite.<sup>16</sup>

Nonetheless, there remains an important issue to be addressed. My original analysis was tailored to a broadly demographic question and therefore aimed at quantifying the relevant trends of farms, villages and villas across each individual survey project taken as a whole. As such, it did not need to account for the actual location and relative position of the different categories of sites, since this level of information – though valuable in itself – had only limited relevance to aggregate trends. However, more is needed if one wishes to argue for the close relationship between villas and the rural free population. Indeed, what appears to be a close relationship of mutual growth at the aggregate level, may actually have concealed radically different local situations in which the number of villas increased in areas where the rural population was either absent or declining (e.g. villas supplanting farms in core areas and pushing a growing peasantry towards more marginal lands).

In order better to understand the above relationship due attention must be given to underlying spatial patterns. This leads to the following question: within each survey area, what is the difference (if any) in terms of rural free-population trends (i.e. farms and villages) measured a) in the immediate neighbourhood of villas and b) in the rest of the landscape? Similar patterns in both zones may indicate that villas had no sensible impact, whereas a marked difference would point in a different direction.

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<sup>14</sup> Launaro (2011b, 41-3; 2013, 526); Hin (2008, 191-201).

<sup>15</sup> Rosenstein (2004, 63-106).

<sup>16</sup> Launaro (2011a, 20-6; 2011b, 166-77; 2015). In contrast with villas, farms and villages have traditionally been associated with free residents.

### *The spatial dataset*

The first step towards answering this question is defining the spatial dataset. For the sake of compatibility with my earlier research the same chronological framework (late Republic/LR: 200 to 50 BC and early Empire/EE: 50 BC to AD 100) as well as the same quantification and calibration procedures were followed (the latter explaining the decimal values).<sup>17</sup> Although an attempt was made to include all the original twenty-seven survey projects, not all of them contained suitable spatial information, and the current dataset is therefore limited to nineteen cases (Appendix I).<sup>18</sup>

Before proceeding it is important to address a concern recently voiced by Hin, i.e. that this type of analysis is only reliable if it is limited to survey projects which cover an area sufficiently large to account for internal environmental variation. This concern was prompted by the apparent correlation Hin observed within most projects and across the entire dataset between the number of identified late Republican farms and their increase into the early Imperial period: the lower the former, the higher the latter. This pattern was assumed to cast serious doubt on the statistical validity of derived trends, and it was therefore suggested that only six (out of twenty-seven) projects ought to have been included, incidentally rendering overall growth patterns significantly less pronounced.<sup>19</sup> There is certainly some merit in these observations, but upon closer scrutiny a fallacy or at least a serious misunderstanding is revealed in Hin's claims. While fully agreeing with her overall argument, Scheidel observed: "*the problem with this approach is that it cannot account for the fact that the presumed error in small samples is unidirectional instead of random.*" In other words: why do initially low numbers of late Republican farms never decline but instead always increase substantially?<sup>20</sup>

In a scenario of significant rural population growth (as outlined above), it seems reasonable to assume that the same areas that had experienced more limited settlement in the late Republican period would witness more intensive growth into the following period, as they could absorb a more sustained demographic increase. The above-mentioned interpretive fallacy is then to have equalled the number of republican farms with the overall size of the survey (a confusion which appears most evident in Scheidel).<sup>21</sup> But even if a correlation existed between survey area and observed increase, one would have to explain not only why such trends are so unidirectional, but also why we should discount the possibility that such generalised growth had actually happened (i.e. besides the fact that this would defy expectations among supporters of low or middling demographic scenarios). As always, the value of statistics is that it allows us to see patterns, but the subsequent interpretation – in this case archaeological – of those patterns rests with us. Besides, a reduction in the number of case-studies

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<sup>17</sup> Launaro (2011b, 93-97).

<sup>18</sup> The following were not included (north to south): the Polcevera valley (no villas attested), Ager Lunensis (only one villa attested, unsuitable map), Cecina Valley (unsuitable map), Tuscania (still unpublished, no maps or gazetteer available), Marina di Montalto (unsuitable map), Fregellae (only one villa attested, unsuitable map), Oria (no villa attested) and Roccagloriosa (unsuitable coordinate format). Some overall figures in Appendix I are different from those originally presented in Launaro (2011b, 150: Table 6.1). Some of the totals appear to be lower, due to the fact that in some cases – including some otherwise impeccable publications – it was not possible to locate all sites. On the other hand, higher totals are associated with the *Carta Archeologica della Provincia di Siena* and the *Carta Archeologica della Campania*, where later issues were included: Botarelli (2004); Felici (2004); Cenni (2007); Paolucci (2007); Quilici and Quilici Gigli (2010).

<sup>19</sup> Hin (2013, 308-17, especially Figure 8.3, Tables 8.4-5).

<sup>20</sup> Scheidel (2013, 683).

<sup>21</sup> Scheidel (2013, 683): "Launaro's assumptions [...] are challenged by her [i.e. Hin's] observation of a strong and statistically highly significant correlation between *sample size* (i.e., the number of sites reported in a given survey) and growth rates between LR and EE: the smaller the *samples*, the greater the increase tends to be." (my italics).

will lead to a less representative view of environmental variation across Italy as a whole.<sup>22</sup> Real progress can only be expected by including more (new) survey projects and their data as generated by new waves of landscape archaeology.

Going back to our dataset, as one would expect, the degree of accuracy by which the individual sites were georeferenced varied across the different projects, but on average it seems to have been in the order of 50 m – sometimes even less. All such sites have been entered into a GIS and the following proximity analysis has taken place within each survey area:

- 1) A buffer zone around each villa was created with a notional distance-radius of 1,000 m, labelled  $N_{1000}$  (N for nearer). The area outside this buffer was labelled  $F_{1000}$  (F for further), such that  $S = N_{1000} + F_{1000}$ , where S refers to the complete survey area.<sup>23</sup>
- 2) Within each zone ( $N_{1000}$ ,  $F_{1000}$ ), the number of farms and villages in the *LR* and *EE* periods was established, thereby establishing the trend (expressed as a percentage).
- 3) Within each zone ( $N_{1000}$ ,  $F_{1000}$ ), farm and village trends were combined (Table 2) to obtain an impression of the underlying rural free-population pattern (i.e. 'RFP Trend'), expressed as + (increase), = (stable), or – (decline).<sup>24</sup> The processed data were plotted on a map of Roman Italy (Fig. 3).

### *Unity through diversity*

Before commenting on the dataset it should be emphasised that only two of the nineteen projects that were considered did not reveal a growth in the number of villas between *LR* and *EE*.<sup>25</sup> Having said this, an inventory of all cases of decline, stability and growth within  $N_{1000}$  and  $F_{1000}$  reveals that in about 84% (33/38) of the study areas the rural free population did not decline in either of these zones.<sup>26</sup> This does not mean that each individual survey showed the same trend in its *nearer* and *further* zones. Indeed, some interesting patterns in rural population trends become visible. With the exception of two cases where the survey area fell completely within the  $N_{1000}$  zone,<sup>27</sup> most areas (11)

<sup>22</sup> Launaro (2011b, 103). Many more projects were omitted from the original study because they did not meet the criteria for inclusion (i.e. shared chronological framework, comparable site classification, and adoption of the *site* as the basic unit of analysis): Launaro (2011b, 85-8, 143-5).

<sup>23</sup> Of course, the exercise assumes a simplified isotropic space and does not take into account topography or other important natural or human features (e.g. rivers, roads) that may have affected actual travel distances. In fact, the adopted distance radius is meant to convey a global impression of 'immediate' neighbourhood.  $N_{1000}$  would in fact amount to ca. 314 ha (or ca. 1250 *iugera*), a fairly sizable estate, which would have exceeded twice the limit (500 *iugera*) which Tiberius Gracchus had tried to impose on individual land ownership (App. *BC* 1.11).

<sup>24</sup> Launaro (2011b, 98-100). Farms and villages could be combined in three ways: a) If both groups had declined (< -10%), remained stable (> -10% and < +10%) or increased (> +10%), it was assumed that the underlying rural free population had also respectively declined, remained stable or increased; b) If one group had remained stable while the other had declined or increased, it was assumed that the underlying rural free population had also respectively declined or increased; c) If one group had declined while the other increased, it was assumed that the underlying rural free population had remained more or less stable.

<sup>25</sup> Both the *Carta Archeologica della Campania* and the *Carta Archeologica della Valle del Sinni* suggest that the number of villas remained stable.

<sup>26</sup> In view of the rather uneven distribution of sites between  $N_{1000}$  and  $F_{1000}$  in the Valli Grandi Veronesi, Ager Foronovanus, Corese Survey and Northern Campania, caution is required when interpreting the resulting patterns. Having said that, it is rather interesting that they so closely match the more general trends observed throughout the dataset.

<sup>27</sup> i.e. the Corese Survey and Collatia, both showing overall growth in the rural free population.

experienced the same overall trends in both  $N_{1000}$  and  $F_{1000}$ .<sup>28</sup> Prominent among these is the Albegna Valley: although the presence of villas there had a distinctly negative impact on nearby farms (-20%), this was clearly not the case further away (-2%). The opposite is true for villages, as they proved much more resilient when near villas (+9%) than at a greater distance (-19%). Such contrasting patterns are unlikely to have cancelled each other out towards preserving population levels in the Albegna Valley, but this appears to have in fact being the case in the Biferno Valley: not only did the growth of the villages probably offset an associated decline in farms, but the former is highest (+150%) where the latter is most pronounced (-31%). The presence of villas may therefore have triggered a more general transformation of the landscape, specifically a trend away from a dispersed towards a nucleated settlement pattern, with no actual fluctuations in the number of people involved.<sup>29</sup> With respect to the latter phenomenon, the case of the *Carta Archeologica della Provincia di Siena* is especially intriguing. If the decline in farms seems unrelated to the presence of nearby villas (i.e. -17% in  $N_{1000}$  and -21% in  $F_{1000}$ ), the decrease in villages is far more significant (i.e. -53% and -28% respectively). To put this data into perspective they should be viewed in the context of other important local developments. Particularly relevant, in addition to the more general proscriptions/expropriations enforced by Sulla in Etruria, is the foundation of the colony of *Saena Iulia* sometime in the second part of the 1st century BC.<sup>30</sup> This event involved the creation of an urban settlement in an area until then mostly untouched by urbanisation. It seems likely that the declining number of farms and (especially) villages was a direct effect of the establishment of this new centre of gravity. The very few villas, rather than being a cause, were themselves a result of the very same process of landscape transformation.

As for the remaining six survey projects, they reveal some interesting differences between the *nearer* and *further* zones. In three cases the rural free population remained stable near villas but increased further away while, remarkably, the opposite seems to have happened in the other three areas.<sup>31</sup> Here the village distribution pattern seems to point to much more nuanced transformations than mere fluctuations in numbers; the ratios *nearer to/further from* villas varies considerably between survey areas.<sup>32</sup> In summary, this short overview can only emphasise the diversity of the situations encountered in different areas of Italy during a period when many of them experienced the maximum presence of villas in their own landscapes.<sup>33</sup> Although this presence took many different forms and generated many different outcomes, the disparate evidence needs to be combined into a consistent picture so that specific patterns can be identified and explained in relation to each other. What is needed is an 'open model' for the villa economy of Roman Italy.

#### IV. Profit and (land-)ownership patterns

One obvious general trend in the original dataset of twenty-seven surveys is the growing presence of villas across Italy, a trend which is likely to have originated in the late Republic and reached its maximum in the early Empire (see above). Although the diversity of the individual situations does not warrant a straightforward and uniform explanation, it is nonetheless a fact that villas tend to be

<sup>28</sup> Decline: *Carta Archeologica della Provincia di Siena*, Albegna valley and Ager Venusinus. Stability: Scarlino and Biferno valley. Growth: *Carta Archeologica del Comune di Poviglio*, *Carta Archeologica del Comune di Modena*, Potenza valley, Ager Foronovanus, Torrimpietra and Ager Caeretanus.

<sup>29</sup> Launaro (2011b, 130 and 155).

<sup>30</sup> Harris (1971, 251-67: initiatives carried out by Sulla in Etruria; 303 and 310: *Saena Iulia*).

<sup>31</sup>  $N_{1000}$  stability/ $F_{1000}$  growth: Valli Grandi Veronesi, Rieti basin and *Carta Archeologica della Campania*;  $N_{1000}$  growth/ $F_{1000}$  stability: Liri Valley, Northern Campania and *Carta Archeologica della Valle del Sinni*.

<sup>32</sup> E.g. contrast patterns from Northern Campania and the *Carta Archeologica della Campania*.

<sup>33</sup> A diversity already acknowledged (for Etruria) by Witcher (2006).

predominantly – if implicitly – associated with commercial agriculture (i.e. surplus, market-oriented production of wine, oil and wheat) and slave labour. These two aspects are closely linked, as they are both associated with what is widely considered to be the basis of the villa economy: its profitability. In recent years, however, Rosenstein has come to question this latter assumption on the basis of guesstimates of the probable total annual consumption of wine, oil and wheat these enterprises supposedly had to cater to.<sup>34</sup> Rosenstein obtained these estimates by combining the number of potential consumers with average per capita consumption levels. Having arrived at this grand total he then took into account the agricultural area required to produce it and the total gross profit (in sesterces/HS) that it could have raised on the market. Although the resulting figures are in themselves impressive, once they are apportioned among the likely number of producers involved, the average share in the profit appears unexpectedly modest. It seems unlikely that the prospect of such limited profits could “*have led many aristocrats to pour money into land, displacing legions of smallholders*”, especially given that “*money-lending and urban enterprises offered more enticing business opportunities*”.<sup>35</sup>

Much of Rosenstein’s argument rests on a series of heuristic assumptions, the value of which is rather questionable.<sup>36</sup> Particularly troubling in the argument, however, is the handling of prices. Leaving aside for the moment the question of the reliability or representativeness of the available data, the figures used by Rosenstein are low or very low when contrasted with evidence derived from urban contexts (Pompeii, Herculaneum and Rome).<sup>37</sup> This observation seems all the more compelling when one considers that – as Rosenstein himself states – demand was basically limited to the urban population of Roman Italy, including Rome itself.<sup>38</sup> In addition, an ability to sell when prices are right is a quintessential mark of ‘commercial’ agriculture.<sup>39</sup> Wealthier landlords could have also claimed a larger – and wealthier? – segment of the market than that arbitrarily selected by Rosenstein, at the same time deriving a higher gross income per unit of produce than their less affluent competitors.

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<sup>34</sup> Rosenstein (2008 and 2009).

<sup>35</sup> Rosenstein (2008, 24).

<sup>36</sup> I feel reluctant to generalise the figures mentioned by Cicero in his *Paradox of the Stoics* (49) to gain an impression of the likely income a ‘rich’ or ‘very rich’ Roman derived from his landed properties. Cicero’s point about the nature of true wealth was a philosophical one, not a precise assessment of his or anyone else’s income. Even if Cicero’s assessment was realistic, he may be assumed to refer rather to *gross* income, in line with a practice later attested in Columella (3.3.8-10); see Duncan Jones (1982, 33-59).

<sup>37</sup> Rosenstein (2008, 14): wine at 8.5-15 HS per amphora; wheat at 2-4 HS per modius. However, only one of the wine prices (per amphora) known from Pompeii (12, 24 and 48 HS), Herculaneum (24, 36, 48 and 54 HS) and Rome (61-88 HS) is less than 15 HS. Lower figures (8 HS) are attested in Nomentum and Aesernia, but the former refers to the sale of grapes still on the plant (i.e. not processed wine) whilst the latter may be apocryphal (Duncan-Jones (1982, 46-47 and 364-365). Far higher prices could have been obtained overseas, as Diodorus’ anecdotal reference to wine sale in Gaul seems to suggest (Diod. Sic. 5.26.3). The same can be argued for wheat. Duncan-Jones estimated retail prices in Rome to be ca. 6 HS per modius, that is 50% higher than the maximum Rosenstein allowed for. Note also that “*a controlled price of HS 4 per modius [...] may be representative of normal conditions in Italy*”. Far higher prices of 12-20 HS per modius could be obtained by selling processed flour: Duncan Jones (1982, 346: Rome, 50: normal conditions in Italy).

<sup>38</sup> Rosenstein (2008, 3 and 11).

<sup>39</sup> E.g. Cato Agr. 2.7.; Var. R. 1.22.4. In practice, this was made possible by suitable storage facilities (situated in the *pars fructuria* of a villa) where the produce could be kept for a while, a feature particularly important in connection with the aging of wine (Tchernia 1986, 114-5). Wealthier landlords could certainly afford the additional costs involved in selling not only *when*, but also *where* the price was higher (e.g. Rome and the other Italian towns, overseas markets). Rosenstein (2008, 16; with reference to Morley 1996, 160-6; 2000, 231-21; Paterson 1998, 158-63) states that “*producers preferred either to sell their crops ‘at the farm gate’ or at least to transport them to middlemen in the cities rather than market their crops themselves*”, implying considerably lower returns (i.e. wholesale prices). But this specific assumption – however attractive – is unsuitable for a parametric model which tests the potential profitability of commercial agriculture. Indeed, if profit maximisation was the goal, wealthier landlords were in a position to afford the risks involved in direct marketing (perhaps through *institores*: see Aubert, 1994) in order to sell at higher retail prices.

Since prices moreover varied considerably (in fact, little is known about them), the question of how the market was apportioned among producers becomes even more difficult to answer (if relevant at all), especially in view of the real possibility that high profits were a result of precisely such variability.

In short, nothing in Rosenstein's parametric model precludes the possibility that senators may have raised considerable profits from commercial farming in the late Republic.<sup>40</sup> However, one set of implications deriving from his overall argument is particularly compelling, as well as greatly indebted to an earlier analysis by Jongman.<sup>41</sup> Leaving aside the profitability of commercial agriculture, it is in fact possible to estimate how much land would be required to meet the maximum levels of demand for wine, oil and wheat. What follows is a slightly adapted version of some of Rosenstein's calculations for the first century BC (Table 2).

First, let us assume 2.7 million to have been the size of the urban free population of Italy excluding Rome, the highest figure proposed so far. The city of Rome itself (800,000 inhabitants) only shared in the wine and olive oil consumption, since "*most if not all of Rome's needs were met by grain from Sicilian, North African, and other overseas producers*".<sup>42</sup> Also to be included are the Roman military forces (100,000), whose grain, however, "*came principally from tributum paid by the Republic's provinces as well as contributions from allies, and not from purchase from Italy's farmers*".<sup>43</sup> For the sake of argument, let us assume that average consumption levels among those 3.6 million free people were high, resulting in an overall demand figure of ca. 576 million litres of wine, 108 million litres of oil and 718.2 million kg of wheat.<sup>44</sup> These figures, however, do not account for the overseas export of wine. Tentative estimates available for Gaul are based on the number of known shipwrecks from southern France that were carrying late Republican Dressel-1 amphorae as reckoned by Tchernia. The scale of Italian exports across the rest of the Mediterranean should not be underestimated, so that it is paramount to account for all known shipwrecks with a cargo of Italian late Republican amphorae (Dressel-1 and Lamboglia-2 types). Extrapolating from shipwreck numbers is difficult, but if Tchernia's own parameters are used the number of relevant shipwrecks suggests the volume of exported wine to have been ca. 75.15 million litres.<sup>45</sup>

However, the urban population also included slaves. Scheidel's inductive calculations arrived at a maximum of 440,000 slaves in Rome and 560,000 in the other Italian cities, resulting in a total of 1 million urban slaves.<sup>46</sup> Although some urban slaves enjoyed higher living standards than many of the free inhabitants, average consumption levels among slaves may safely be assumed to have been below

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<sup>40</sup> Pace Rosenstein (2008, 23-24).

<sup>41</sup> Jongman (2003, 112-6).

<sup>42</sup> Rosenstein (2009, 251).

<sup>43</sup> Rosenstein (2008, 17).

<sup>44</sup> Annual per capita consumption levels: 160 litres of wine (x 3.6 million), 30 litres of oil (x 3.6 million) and 266 kg of wheat (x 2.7 million). See Rosenstein (2008, 4-5).

<sup>45</sup> Tchernia (1986, 85-87). The total number of shipwrecks whose cargo included Italian Dressel 1 and/or Lamboglia 2 amphorae as reckoned here (167) is derived from Parker (1992). Tchernia's procedure is the following: the number of shipwrecks (167) is multiplied by three (to account for unknown shipwrecks:  $167 \times 3 = 501$ ), then by two (to account for the second half of the route from Italy:  $501 \times 2 = 1,002$ ); moving from comparative evidence (i.e. eighteenth-century ships sailing between Europe and Americas), this number is held to represent 2% of actual ships ( $1,002 / 2 \times 100 = 50,100$ ); the period covered by this class of amphorae covered approximately 100 years, therefore one could derive an average of ships per year ( $50,100 / 100 = 501$ ); by assuming an average cargo of amphorae per ship (2,000) and average wine content per amphora (20-25 litres), it is possible to estimate the annual export of wine ( $501 \times 2,000 \times 25 = 25,050,000$  litres); this is further multiplied by a coefficient of two or three ( $25,050,000 \times 3 = 75,150,000$  litres). Note that this figure does not take into account the fact that at least some of these shipwrecks were re-distributing wine within Italy and as such they are already included as part of Italian consumption levels. Other estimates: Hesnard et al. (1989, 59); Olmer (2008, 216-8).

<sup>46</sup> Scheidel (2005, 66-7).



those of free people, resulting in an overall demand figure of ca.100 million litres of wine, 20 million litres of oil and 200 million kilograms of wheat.<sup>47</sup> If all the above figures for the demand of wine, oil and wheat of the urban population as a whole (including overseas exports and army supplies) are added up, we arrive at 676 million litres of wine, 128 million litres of oil and 918.2 million kilograms of wheat. Using widely accepted estimates of yields per hectare, such an output would have required 3,756, 2,909 and 22,955 km<sup>2</sup> respectively.<sup>48</sup> Allowances should be made for the fact that wheat can also be cultivated between olive trees, in which case the total agricultural area required to meet such demands would amount to 26,711 km<sup>2</sup>.<sup>49</sup> Additional land was needed to support the agricultural labour force, which for the sake of this exercise will be assumed to have consisted entirely of slaves.<sup>50</sup> It seems that 850,000 rural slaves (including 100,000 involved in ancillary activities) could have produced enough wine, oil and wheat to satisfy both their own needs and overall urban demand. The additional land required to feed them would have amounted to 5,061 km<sup>2</sup>, bringing the total to 31,386 km<sup>2</sup>.

The traditionally accepted size of Roman Italy is 250,000 km<sup>2</sup>. Brunt originally asserted that only 100,000 (or 40%) would have been under cultivation, a figure he obtained by estimating the amount of agricultural land needed to feed the Italian population, which in his own (low) count was 7 million, excluding Rome and some coastal towns). Lo Cascio and Witcher, however, based their calculations on higher percentages and comparatively larger areas (55%/137,500 km<sup>2</sup> and 50%/125,000 km<sup>2</sup>, respectively).<sup>51</sup> It should be pointed out that the high estimated figure (3.5 million) for the free urban population employed throughout this exercise is only compatible with a 'high count' for the free population of all of Italy, as originally advanced by Lo Cascio (13.8 million). It would therefore be logical to adopt Lo Cascio's higher estimate for the agricultural area of Roman Italy.<sup>52</sup> But even if Brunt's view were to be accepted instead (which is doubtful), the fact remains that the total demand for wine, oil and wheat would have required less than a third of the total agricultural area of Italy and no more than 850,000 rural slaves.<sup>53</sup>

Do I believe all these figures to provide an approximate but fair assessment of the situation in Roman Italy during the first century BC? Not in the slightest – and I should also warn anyone against 'exporting' them without a clear understanding of what they are supposed to mean. These results are merely an exercise in parametric modelling for the purpose of demonstrating that, even when allowing for a) the highest levels of demand so far proposed and b) an agricultural system entirely and exclusively based on the exploitation of rural slave labour, the rural free population could still have inhabited between 69 and 77% of the Italian lands suitable to agriculture. While assumption (a) might require some downward adjustment (depending on which view of the scale of the Italian population and average consumption levels is adopted), assumption (b) is clearly untenable. Even more relevant is the fact that it does not really matter how profitable the whole enterprise was – and I intentionally

<sup>47</sup> Annual per capita consumption levels: 100 litres of wine (x 1 million), 20 litres of oil (x 1 million) and 200 kg of wheat (x 1 million); based on Rosenstein (2008, 4-5). Slaves in Rome have been assumed not to have been fed with wheat imported from the provinces.

<sup>48</sup> Annual yields per hectare: 2,000 litres (wine), 440 litres (oil) and 400 kg (wheat – net) based on Rosenstein (2008, 9: n. i-iii).

<sup>49</sup> See also Van Limbergen et al. (this volume).

<sup>50</sup> Following Scheidel (2005, 67-71), who also includes ratios of (slave) workers per *iugerum* (= 2,518 m<sup>2</sup> = 0.2518 ha) based on information provided by the agronomists: wine (Colum. 3.3.8): 7 iugera/1 slave = 1.7626 ha/1 slave = 0.57 slaves/ha; oil (Cato, *Agr.* 10.1): 100 ha/21.7 slaves = 0.217 slaves/ha; wheat (Colum. 2.12): 200 iugera/8 slaves = 50.36 ha/8 slaves = 6.295 ha/1 slave = 0.16 slaves/ha.

<sup>51</sup> Estimated area of Italy: Beloch (1886, 306-443). Estimates of the agricultural area of Italy: Brunt (1971, 126); Lo Cascio (1999a, 238-9); Witcher (2005, 130).

<sup>52</sup> Following Rosenstein (2009, 250).

<sup>53</sup> Those 31,386 km<sup>2</sup> represent 31% of Brunt's estimate of the agricultural surface of Italy, 25% of Witcher's, and 23% of Lo Cascio's. They also correspond to 13% of the entire area of Italy as established by Beloch.

leave the issue open. Rosenstein is fundamentally correct when he states that the size of the demand was limited, but it was limited not so much in terms of apportioned shares of profit among producers as in terms of how much good agricultural land would have remained outside the main commercial circuit.

### V. Villas (almost) everywhere

Indeed, although the number of villas was growing across Italy between the late Republic and the early Empire, they were not to be found everywhere in great numbers; prominent exceptions are, for example, the Polcevera Valley and the area around Oria. Still, in many areas there was an increasing tendency towards establishing larger and higher-status estates at the top of the rural settlement hierarchy.<sup>54</sup> In the course of the preceding discussion we have located consumption within the boundaries of towns. If profits from the sale of agricultural produce were paramount in this type of settlement pattern, villas could be expected to cluster around urban sites. Keeping this in mind, let us repeat the spatial analysis applied earlier to farms and villages (see above), but this time with the buffer zones centred on towns at a notional distance of 5,000 m. This results in two main zones:  $N_{5000}$  and  $F_{5000}$  (where  $S = N_{5000} + F_{5000}$ ).<sup>55</sup> The same quantification procedure has been followed, and villa number trends between *LR* and *EE* have been extrapolated (Appendix II).

Once again, although not all survey projects proved suitable, the overall picture (based on twelve cases) is still reasonably representative.<sup>56</sup> With the exception of the *Carta Archeologica della Campania* (stable pattern throughout) and the data from the Rieti basin (decline in  $N_{5000}$ ), all zones show a significant to very high increase in the number of villas.

Three observations are particularly interesting:

- a) In seven areas (58%) growth was more marked at a greater distance from towns;
- b) Only three areas (25%) experienced a steeper growth in the *nearer* zone;
- c) No significant difference between  $N_{5000}$  and  $F_{5000}$  was observed in remaining two regions (17%) (Fig. 4).

Although this overall pattern can be variously interpreted, the simplest conclusion would be that there was more room for new villas in peripheral areas than in central ones. This appears logical when considering that central areas were by definition more limited in extent than peripheral ones, so that the former were much sought after and therefore probably occupied by villas relatively early on. In other words, individuals who were willing to invest their wealth in land increasingly had to resort to establishing their villas in more marginal lands.

Although fairly effective and reliable communication networks were often available (e.g. roads and inland waterways), these ‘peripheral’ villas did not occupy prime locations with respect to demand. Since the amount of land required to satisfy demand was relatively limited (see above), one would expect ‘central’ villas to have monopolised it by adopting an intensive slave-based production framework, thus acting out the scenario advocated by Carandini almost two decades ago.<sup>57</sup> It is therefore all the more interesting that the rural free population in the  $N_{5000}$  zones appears to have

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<sup>54</sup> Launaro (2011b, 151-8).

<sup>55</sup> This value was chosen because it corresponds roughly to a 1-hour walking distance, which would conveniently allow a town resident to oversee his villas, and a villa resident to participate in the political-social life of his town.

<sup>56</sup> The following projects could not be included as their survey areas were located entirely outside  $N_{5000}$ : Grandi Valli Veronesi, *Carta Archeologica della Provincia di Siena*, Scarlino, Corese Survey, Torrimpietra, Collatia and *Carta Archeologica della Valle del Sinni*.

<sup>57</sup> Carandini (1994).

declined in only two areas: the Biferno Valley and the Ager Venusinus, the former probably as a result of a process of settlement nucleation hinging on both towns and villages (see above). The overall pattern, however, seems to suggest that even ‘central’ villas did not possess a monopoly on the most favourably located agricultural land, not even in the Albegna Valley. Needless to say, this conclusion contradicts the traditional notion of a greedy aristocracy evicting a defenceless free peasantry.

## VI. *Something old, something new*

The development of a (new) villa economy in Roman Italy has traditionally been linked to the demise of the (old) peasantry. This opposition has often been questioned in the past, and the evidence just discussed renders such an interpretation even more implausible.<sup>58</sup> Not only did the free rural population not decline, but more often than not, villas did not replace farms and villages. Profit-seeking, market-oriented landowners had little incentive to do so, because even the acquisition of the amount of land necessary to satisfy the highest possible levels of (urban) demand would not necessitate the eviction of peasants, which even in cases where it could be expected (i.e. near towns) seems not to have taken place, at least not systematically. On the contrary, the number of villas increased according to a pattern that was largely independent of the location of (urban) demand, and which was spatially closely linked to other forms of settlement (i.e. farms and villages).

It is obvious that a new economic system emerged in Italy in the course of the 2<sup>nd</sup> century BC: villas are generally too sizeable in their processing and storage facilities not to be linked with increasingly larger estates and a general tendency towards higher levels of land-investment and surplus production. But these features, which in my opinion represent the core of what is termed a ‘villa economy’, did not emerge at the expense of the free peasantry. Indeed, a larger agricultural surplus could have been achieved by increasing the intensity of labour-input per unit of land and/or by extending the aggregate exploited area. The former was achieved either by increasing the number of hands (albeit at the risk of diminishing returns) or by improving the effectiveness of the existing labour force (e.g. better coordination of individual efforts, access to otherwise unavailable useful assets). The latter solution, increasing the exploited area, was carried out by simply acquiring more land and its relevant yield, however small this may have been.

But neither of these solutions made it necessary for the landowning elite to rely preferentially on slave labour and to expel former (free) owners. The latter could choose, and be allowed, to remain as tenants.<sup>59</sup> As Finley originally remarked, the choice between free and slave labour is better appreciated when placed in context, i.e. by accounting for local factors, ranging from the availability of manpower to customs and family traditions.<sup>60</sup> Besides, due to Italy’s generally fragmented topography only specific regions would have been suitable to a systematic exploitation of extensive and continuous ‘slave-plantation’ estates.<sup>61</sup> In short, the rise of the villa economy can be expected to have contributed to the emergence of a wide range of local situations in terms of social and economic rural patterns, as illustrated by our own survey dataset.<sup>62</sup>

In a timocratic society burdened by partible inheritance, profit was far less a concern than ownership, and more to the point, land-ownership was a quintessential sign of status. It made therefore perfect sense to both strengthen and express one’s own claims to social status by investing in landed property

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<sup>58</sup> e.g. Rathbone (1981) already argued for the complementarity of villas and the free peasantry.

<sup>59</sup> Launaro (2011a, 23-6; 2011b, 170-6; 2015).

<sup>60</sup> Finley (1976, 117-8).

<sup>61</sup> Capogrossi Colognesi (1992-93, 225-8).

<sup>62</sup> A diversity already emphasised by Lo Cascio (2002, 281-5).

and by engaging in agriculture, animal husbandry and any other related activity. Such activities had always been perceived to be generally safer and more reliable than any other form of investment, which certainly contributed towards their great popularity among the establishment.<sup>63</sup> But such 'old' attitudes acquired a completely 'new' dimension due to several new, interconnected processes for which the political unification of Italy in the early 3<sup>rd</sup> century BC provided a fertile substratum.<sup>64</sup> First, conquest represented a golden opportunity which benefited both Romans and Italian allies in different ways but at all levels: the aristocratic elite, the emerging group of merchants (*mercatores*) and businessmen (*negotiatores*), and even the common peasantry/soldiery itself.<sup>65</sup> This process involved a redistribution of wealth from across the Mediterranean to Italy due the latter's dominant position. A large portion of it ended up in the hands of a growing Italian elite who knew exactly the most appropriate ways to support and express its own high social standing. Closely linked to such attitudes were the benefactions (*munera*) those same individuals bestowed on their local communities, by paying for the costs involved in lending their towns the urban character they now fully deserved (*urbanitas*).<sup>66</sup> On the model of Rome, these centres attracted people by providing services and employment opportunities. This triggered a much wider urbanisation process than Italy had ever known before while at the same time creating an unprecedented urban market, especially for agricultural products (i.e. food).<sup>67</sup> Last but not least, Roman expansion created more favourable market conditions for Italian merchants to exploit, which went hand in hand with military conquest in making enterprising wealthy individuals even more so.<sup>68</sup> A combination of an established aristocratic ideology, an increase in available wealth among a growing elite and expanding markets in Italy and abroad created the conditions for widespread investments in agriculture and prompted those who had the means to acquire more land. The old Italian peasantry could not oppose this process, but this did not result in its demise; it became widely involved in these great transformations and turned into one of the driving forces behind the new Italian agriculture. The villa economy had indeed sprung up at the intersection of something old and something new.<sup>69</sup>

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<sup>63</sup> Hopkins (1978, 7); Launaro (2015).

<sup>64</sup> Morel (2007, 487-510).

<sup>65</sup> Patterson (2006, 610-2); Rosenstein (2004, 80-81, 158-64).

<sup>66</sup> Gros and Torelli (1992, 147-64).

<sup>67</sup> Morley (2007, 578-80; 2008).

<sup>68</sup> This is evidenced by the increasing spread of Italian amphorae throughout the Mediterranean, a process discernible already in the 3<sup>rd</sup> century BC (Greco-Italian types), apparently peaking in the late 2<sup>nd</sup> and 1<sup>st</sup> centuries BC (Dressel-1 and Lamboglia-2 types) and lasting well into the Early Empire (Dressel-2-4 and -6 types): Panella (2001, 193-6; 2010, 15-25); Empereur and Hesnard (1987, 30-4).

<sup>69</sup> Launaro (2015).

## Bibliography

- Aubert, J.-J. (1994). *Business Managers in Ancient Rome* (Leiden).
- Bairoch, P. (1989). "Urbanization and the economy in pre-industrial societies: the findings of two decades of research", *The Journal of European Economic History* 18.2, 239-90.
- Beloch, K.J. (1886). *Die Bevölkerung der Griechisch-Römischen Welt* (Leipzig).
- Botarelli, L. (ed.). (2004). *Carta Archeologica della Provincia di Siena. VII Radicofani* (Siena).
- Brunt, P.A. (1971). *Italian Manpower* (Oxford).
- Capogrossi Colognesi, L. (1992-3). "Il regime degli affitti agrari", *SdA* 6-7, 163-253.
- Carandini, A. (1994). "I paesaggi agrari dell'Italia romana visti a partire dall'Etruria", in: *L'Italie d'Auguste à Dioclétien* (Rome), 167-74.
- Carlsen, J., Lo Cascio, E. (2009). *Agricoltura e scambi nell'Italia tardo-repubblicana* (Bari).
- Cenni, F. (2007). *Carta Archeologica della Provincia di Siena. VIII Buonconvento* (Siena).
- De Ligt, L. (2012). *Peasants, Citizens and Soldiers* (Cambridge).
- De Ligt, L., Northwood, S. (eds.) (2008). *People, Land and Politics* (Leiden).
- De Neeve, P.W. (1984). *Colonus* (Amsterdam).
- Duncan Jones, R. (1982). *The Economy of the Roman Empire*, 2nd ed. (Cambridge).
- Empereur, J.-Y., Hesnard, A. (1987). "Les amphores hellénistiques", in: Lévêque, P., Morel, J.-P. (eds.), *Céramiques hellénistiques et romaines II* (Besançon), 9-71.
- Felici, C. (2004). *Carta Archeologica della Provincia di Siena. VI Pienza* (Siena).
- Finley, M.I. (1976). "Private farm tenancy in Italy before Dicoletian", in: Finley, M.I. (ed.), *Studies in Roman Property* (Cambridge), 103-21.
- Garnsey, P. (ed.) (1980). *Non-slave Labour in the Greco-Roman World* (Cambridge).
- Giardina, A., Schiavone, A. (eds.) (1981). *Società romana e produzione schiavistica* (Rome).
- Gros, P., Torelli, M. (1992). *Storia dell'urbanistica. Il mondo romano* (Rome).
- Harris, W.V. (1971). *Rome in Etruria and Umbria* (Oxford).
- Hesnard, A., Rick, M., Arthur, P., Picon, M., Tchernia, A. (1989). "Aires de production des gréco-italiques et des Dr. 1", in: Lenoir, M., Manacorda, D., Panella, C. (eds.), *Amphores romaines et histoire économique* (Rome), 21-65.
- Hin, S. (2008). "Counting Romans", in: De Ligt, L., Northwood, S. (eds.), *People, Land and Politics* (Leiden), 187-238.
- Hin, S. (2013). *The Demography of Roman Italy* (Cambridge).
- Hopkins, K. (1978). *Conquerors and Slaves* (Cambridge).
- Jongman, W. (2003). "Slavery and the growth of Rome. The transformation of Italy in the second and first centuries BCE", in: Edwards, C., Woolf, G. (eds.), *Rome the Cosmopolis* (Cambridge), 100-22.
- Launaro, A. (2011a). "Investing in the countryside: villas and farms, landowners and tenants (200 BC to 100 AD)", *FACTA* 5, 129-43.
- Launaro, A. (2011b). *Peasants and Slaves* (Cambridge).
- Launaro, A. (2013). "Review of *Peasants, Citizens and Soldiers*" (L. de Ligt), *CR* 63.2, 527-529.
- Launaro, A. (2015). "The nature of the villa economy", in: Erdkamp, P., Verboven, K., Zuiderhoek, A. (eds.), *Ownership and Exploitation of Land and Natural Resources in the Roman World* (Oxford), 173-86.
- Lo Cascio, E. (1994a). "La dinamica della popolazione in Italia da Augusto al III secolo", in: *L'Italie d'Auguste à Dioclétien* (Rome), 91-125.
- Lo Cascio, E. (1994b). "The size of the Roman population: Beloch and the meaning of the Augustan census figures", *JRS* 84, 23-40.
- Lo Cascio, E. (1999a). "Popolazione e risorse agricole nell'Italia del II secolo a.C.", in: Vera, D. (ed.),

- Demografia, sistemi agrari, regimi alimentari nel mondo antico* (Bari), 217-45.
- Lo Cascio E. (1999b). "Population of Roman Italy in town and country", in: Bintliff, J., Sbonias, K. (eds.), *Reconstructing Past Population Trends in Mediterranean Europe* (Oxford), 161-71.
- Lo Cascio, E. (2002). "La proprietà della terra, i percettori dei prodotti e della rendita", in: Forni, G., Marcone, A. (eds.), *Storia dell'agricoltura italiana I. L'Età Antica 2. Italia Romana* (Florence), 259-313.
- Marzano, A. (2007). *Roman Villas in Central Italy* (Leiden).
- Morel, J.-P. (2007). "Early Rome and Italy", in: Scheidel, W., Morris, I., Saller, R. (eds.), *The Cambridge Economic History of the Greco-Roman World* (Cambridge), 497-503.
- Morley, N. (1996). *Metropolis and Hinterland* (Cambridge).
- Morley, N. (2000). "Markets, marketing, and the Roman elite", in: Lo Cascio, E. (ed.), *Mercati permanenti e mercati periodici nel mondo romano* (Bari), 211-21.
- Morley, N. (2007). "The early Roman empire: distribution", in: Scheidel, W., Morris, I., Saller, R. (eds.), *The Cambridge Economic History of the Greco-Roman World* (Cambridge), 570-91.
- Morley, N. (2008). "Urbanisation and development in Italy in the late Republic", in: De Ligt, L., Northwood, S. (eds.), *People, Land and Politics* (Leiden), 121-37.
- Morris, I., Saller, R., Scheidel, W. (2007). "Introduction", in: Scheidel, W., Morris, I., Saller, R. (eds.), *The Cambridge Economic History of the Greco-Roman World* (Cambridge), 1-12.
- Olmer, F. (2008). "L'aristocratie romaine, le vin et le marché gaulois", in: Roman, Y., Dalaison, J. (eds.), *L'économie antique, une économie de marché?* (Paris), 215-32.
- Panella, C. (2001). "Le anfore di età imperiale del Mediterraneo Occidentale", in: Geny, È. (ed.), *Céramiques hellénistiques et romaines III*, (Besançon), 177-275.
- Panella, C. (2010). "Roma, il suburbio e l'Italia in età medio- e tardo-repubblicana: cultura materiale, territori, economie", *FACTA* 4, 15-127.
- Paolucci, G. (2007). *Carta Archeologica della Provincia di Siena. IX. Chianciano Terme* (Siena).
- Parker, A.J. (1992). *Ancient Shipwrecks of the Mediterranean and the Roman Provinces* (Oxford).
- Paterson, J. (1998). "Trade and traders in the Roman world: scale, structure, and organization", in: Parkins, H., Smith, C. (eds.), *Trade, Traders and the Ancient City* (London), 158-63.
- Patterson, J.R. (2006). "Rome and Italy", in: Rosenstein, N., Morstein-Marx, R. (eds.), *A Companion to the Roman Republic* (Oxford), 606-24.
- Patterson, H., Di Giuseppe, H., Witcher, R. (2004). "Three South Etrurian 'crises': first results of the Tiber Valley Project", *PBSR* 72, 1-36.
- Potter, T. (1987). *Roman Italy* (London).
- Quilici, L., Quilici Gigli, S. (eds.) (2010). *Carta archeologica e ricerche in Campania* (Rome).
- Rathbone, D. 1981. "The development of Agriculture in the «Ager Cosanus» during the Roman Republic: problems of evidence and interpretation", *JRS*, 71, 10-23.
- Rosenstein, N. (2004). *Rome at War* (Chapel Hill).
- Rosenstein, N. (2008). "Aristocrats and agriculture in the Middle and Late Republic", *JRS* 98, 1-26.
- Rosenstein, N. (2009). "Aristocrats and agriculture in the Late Republic: the 'high count'", in: Carlsen, J., Lo Cascio, E. (eds.), *Agricoltura e scambi nell'Italia tardo-repubblicana* (Bari), 243-57.
- Rostovtzeff, M.I. (1957). *The Social and Economic History of the Roman Empire*, 2nd ed. (Oxford).
- Scheidel, W. (2004). "Human mobility in Roman Italy, I: the free population", *JRS* 94, 1-26.
- Scheidel, W. (2005). "Human mobility in Roman Italy, II: the slave population", *JRS* 95, 64-79.
- Scheidel, W. (2007). "Demography", in: Scheidel, W., Morris, I., Saller, R. P. (eds.), *The Cambridge Economic History of the Greco-Roman World* (Cambridge), 38-86.
- Scheidel, W. (2013). "Italian manpower", *JRA* 26, 678-87.
- Tchernia, A. (1986). *Le vin de l'Italie romaine* (Rome).

- Toynbee, A.J. (1965). *Hannibal's Legacy* (Oxford).
- Witcher, R. (2005). "The extended metropolis: Urbs, suburbium and population", *JRA* 18, 120-38.
- Witcher, R. (2006). "Settlement and society in Early Imperial Etruria", *JRS* 96, 88-123.

### Figure captions

Fig. 1. Location and list of survey projects (reproduced from Launaro 2011b, 104 Fig. 5.1). 1: Valli Grandi Veronesi; 2: *Carta Archeologica del Comune di Poviglio*; 3: *Carta Archeologica del Comune di Modena*; 4: Polcevera Valley; 5: Ager Lunensis; 6: Cecina Valley; 7: Potenza Valley; 8: *Carta Archeologica della Provincia di Siena*; 9: Scarlino; 10: Albegna Valley; 11: Tuscania; 12: Rieti Basin; 13: Marina di Montalto; 14: Ager Foronovanus; 15: Corese Survey; 16: Torrimpietra; 17: Ager Caeretanus; 18: Collatia; 19: Biferno Valley; 20: Fregellae; 21: Liri Valley; 22: Northern Campania; 23: *Carta Archaeologica della Campania*; 24: Ager Venusinus; 25: Oria; 26: *Carta Archeologica della Valle del Sinni*; 27: Roccagloriosa.

Fig. 2. Overall trends for the rural free population of Roman Italy (200 BC to AD 100) (after Launaro 2011b, 161 Fig. 6.4)

Fig. 3. Overall trends for the rural free population of Roman Italy for  $N_{1000}$  (left) and  $F_{1000}$  (right) as centred on villas

Fig. 4. Increase in the number of villas across  $N_{5000}$  and  $F_{5000}$  as centred on towns

### Table Captions

Table 1. Some of the more recent demographic estimates for Roman Italy (in millions)

Table 2. An extreme (and unrealistic) scenario: the relationship between the highest levels of demand proposed so far and an agricultural system entirely and exclusively based on the exploitation of rural slave labour (\* the area required for olive cultivation is not included in the total figure: see main text).