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A Puzzling Relationship: Consumptions and Incomes in Early Modern Europe.

Abstract. In this article, consumption in early modern Europe is analysed in terms of prices, incomes and per capita GDP. We focus in particular on England and Italy, and stress both the similarities and differences. We show how the increase in consumption of some items is not at odds with decline or stability in labour incomes and, probably, per capita output. The “social” perspective of improved living conditions can in fact be reconciled with the “economic” perspective of a fall in wages.

Résumé. Une relation intrigante. Consommations et revenus dans l’Europe moderne.

L’article étudie la consommation dans l’Europe Moderne sous l’angle de l’analyse des prix, des revenus et du PIB par habitant. Il s’intéresse plus spécifiquement à l’Angleterre et à l’Italie qui sont envisagées d’un point de vue comparatiste. Il souligne que la croissance de la consommation n’est pas incompatible avec le déclin ou la stabilité des salaires ni, probablement, du revenu par habitant. La perspective « sociale » faisant état d’une amélioration des conditions de vie peut ainsi être réconciliée avec la perspective « économique » mettant en lumière la baisse des salaires réels.

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Since the 1980s, interest in consumptions in early Modern Europe has risen. A new generation of historians has begun to follow the lines of research undertaken by Joan Thirsk, on one hand, and Neil Mc Kendrick, John Brewer and John Harold Plumb, on the other, and to stress the importance of demand in the socio-economic transformation of early modern Europe¹. Research on England, France, Spain, Italy, the Netherlands and the American colonies has revealed the eighteenth century as an epoch of rise in the consumption of durable goods, favoured by the development of trade techniques and distribution. Historians began to speak of a “consumer revolution”, which preceded the industrial revolution and involved the continent as a whole². This revolution did not only concern durables, but also goods such as sugar, tea, coffee, tobacco and new kinds of textiles, all of which began to be consumed not only by the rich, but also the lower strata of society³. Economic historians, however, began to emphasize the contrast between the consumer revolution and the trend of prices and incomes⁴. Both past and more recent research in this field highlighted a decline rather than an increase in wages and labour productivity for Europe as a whole, especially during the eighteenth century. “How could the farmers and artisans afford the luxuries they were buying?”⁵, wondered Robert C. Allen, considering the decline in labour incomes.

There is no doubt that between 1600 and 1800 consumptions in Europe increased in aggregate terms. Since population almost doubled in these two centuries, agricultural, industrial consumptions and trades could not but increase substantially. We might wonder, however, if this rise also concerned *per capita* consumption, taking into account the remarkable decline in real wage-rates. A clear answer to this question is much more problematic.

Jan de Vries tried to solve the contradiction between these diverging perspectives with the proposal of an “industrious revolution”. The phenomenon, in his opinion, implied a reallocation of family labour time aimed at expanding the consumption of durables through a higher involvement of the family members – especially wife and children – in labour

1. J. THIRSK, 1978, N. MCKENDRICK, J. BREWER & J.H. PLUMB, 1982.

2. Among others: J. BREWER, J. & R. PORTER, 1993; P. PERROT, 1995; D. ROCHE, 1997; S. SCHAMA, 1987 and C. SHAMMAS, 1990.

3. For a general overview, see A. CLEMENTE, 2005, on the different branches of research, see the recent studies by P. CAPUZZO, 2006; B.W. HIGMAN, 2000; J. DE VRIES, 2008; B. LEMIRE, 2010; M. BERG & E. EGER, 2003 and M. NORTH, 2008.

4. See, also, the classic works by W. ABEL, 1966 and F. BRAUDEL & F. SPOONER, 1967.

5. R.C. ALLEN, 2001, p. 412.

and a reduction of leisure time. The industrious revolution characterized mainly the North-Western Europe (England, Low Countries, parts of France and Germany) during a “long eighteenth century, roughly 1650-1850”⁶. While some researchers have tried to support the empirical basis of J. de Vries’ thesis⁷, by broadening the boundaries of the phenomenon to the rest of Europe and also Asia⁸, others have questioned the idea of an industrious revolution⁹. Most social historians think, however, that the increase in consumption was a European process.

In the present article, we will follow the example of J. de Vries and try to show how the increase in some consumption items is not at odds with decline or stability in labour incomes and, probably, *per capita* output. The “social” perspective of improvement in living conditions can actually be reconciled with the “economic” perspective of a fall in wages. Our view will be, however, much less optimistic than that proposed by J. de Vries.

The purpose of this paper is to address the topic of consumption in early modern Europe from the perspective of prices, incomes and *per capita* GDP. We will try to summarize the recent results on these topics and discuss them in relation to the European economy. We will focus especially on the seventeenth and eighteenth centuries; although sometimes we will set these two centuries in a longer perspective. Since many more data are available regarding both the prices and wages of England and Italy and since both these regions of Europe represent different paths towards modernity, we will mainly focus on these. After an analysis of prices (§1), we will deal with wages (§2) and *per capita* consumption of agricultural goods (§3). Once examined the trends of average and marginal labour productivity (§4), we will discuss the topic of the consumption of durable goods and the influence on this of the change in working time (§5), prices of agricultural and non-agricultural goods (§6), volatility of pre-modern incomes (§7) and *per capita* GDP (§8). Finally we will suggest in the conclusions (§9) how to solve the puzzling question of incomes and consumptions in early modern Europe reconciling the apparently opposing perspectives of social and economic historians.

6. J. DE VRIES, 1994 and 2008, p. 10.

7. See H.J. VOTH, 2000 and E. VAN NEDERVEEN MEERKERK, 2008.

8. See M. KOYAMA, 2009; S. OGILVIE, 2010; A. STANZIANI, 2010 and M. DRIBE & B. VAN PUTTE, 2012.

9. See G. CLARK, 2010, G. CLARK, & Y. VAN DER WERF, 1998; M. GARCÍA ZÚÑIGA, 2011 and R.C. ALLEN & J.L. WEISDORF, 2011; C. MAITTE & T. DIDIER, 2011.

1. Price indices

The price trend in Europe in the early Modern Age shows a direct relationship with that of population. The European population evolved from 80 million in 1500 to 107 in 1600, 102 in 1650, 122 in 1700, 192 in 1800 and 266 in 1850¹⁰. Prices rose 2.5 times during the sixteenth century, declined in the seventeenth, and increased again in the eighteenth by 60-70%¹¹.

Over the three and half centuries between 1500 and 1850, the increase for Europe as a whole was 3-3.5 fold, or about 0.30% per year. In the sixteenth century, with the rise in population, prices increased; in the seventeenth century, population fell in several regions and was relatively stable in others, increasing again in the eighteenth century, when the demographic transition started. Only during the nineteenth century was the direct relationship between population and prices replaced by an inverse relationship: population grew and prices diminished.

According to the quantity theory of money, only the amount of money, the velocity of circulation and the expenditure for goods determines the price level. However, we can suppose that an increase in population implies both an increase in the amount of money and velocity of its circulation and hence a rise in prices.

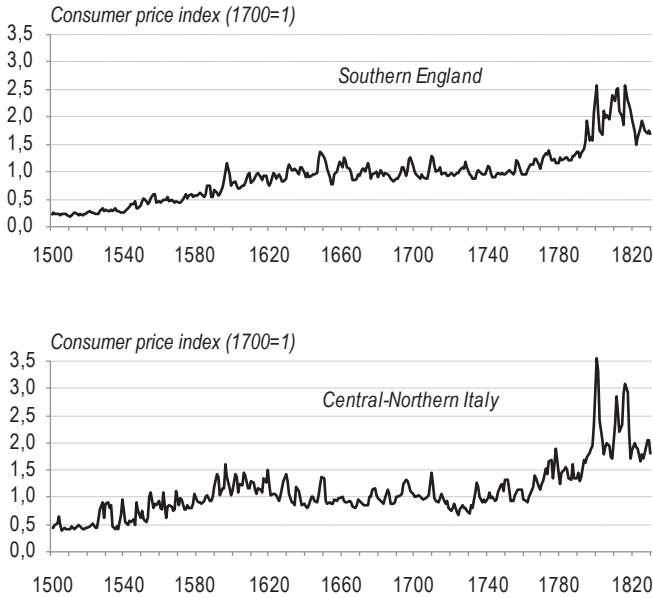
The increase in the quantity of money contributed substantially to the trend of prices in early Modern Europe. The relationship between the size of the population and the evolution of prices is neither so simple nor straightforward.

Consumer price indices for Southern England and Central and Northern Italy, together with some differences in the short term, clearly show the sixteenth century growth, the seventeenth century decline and the new rise in the second half of the eighteenth century. The main phase of the so-called “consumer revolution” occurred during the eighteenth century, a period characterised by rising prices (Figure 1).

10. P. MALANIMA, 2009, Chap. I.

11. R.C. ALLEN, 2001, and P. MALANIMA, 2009, Chap. VI.

Figure 1. *Consumer price indices for Southern England and Central and Northern Italy 1500-1830*



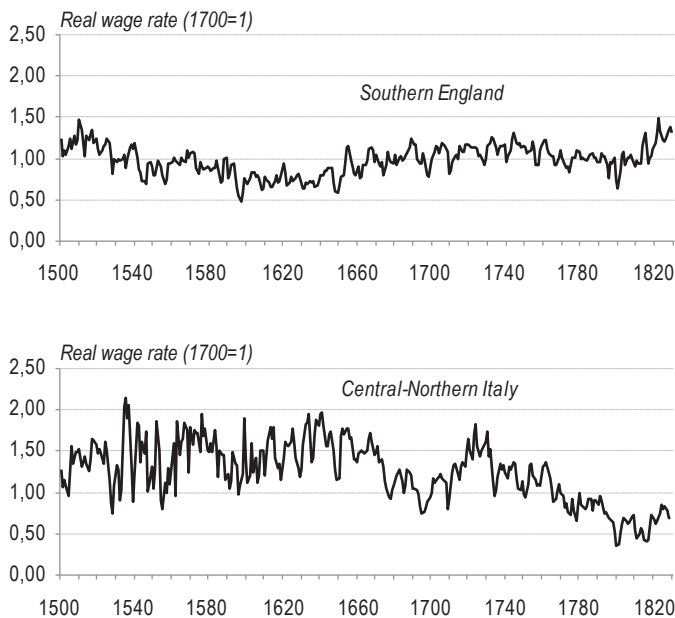
Sources. These CPI are based on baskets with the same utility for Southern England and Central-Northern Italy and are different from the available CPIs. Data on prices for England are from G. Clark, 2004 and from Allen's database in www.nuff.ox.ac.uk/users/allen/studer/london.xls and www.iisg.nl; for Italy www.paolomalanima.it and P. MALANIMA, 2007. The result for Southern England is very similar to the price index by R.C. Allen reported in the previous two files. The correlation is 0.99.

2. Wages

Much more information is available on wage rates (wages per day), than on other kinds of incomes. We do not know how many days workers actually worked and, as a consequence, neither do we know the wages themselves (that is the product of the daily wage by the number of days worked in a year)¹². We can look at the wage rates as proxies of labour incomes as a whole and, consequently, of marginal labour productivity. The best-documented wages are those in the building industry.

12. We come back to this topic in §5.

Figure 2. *Real wage rates of masons in Southern England and Central-Northern Italy 1500-1830*



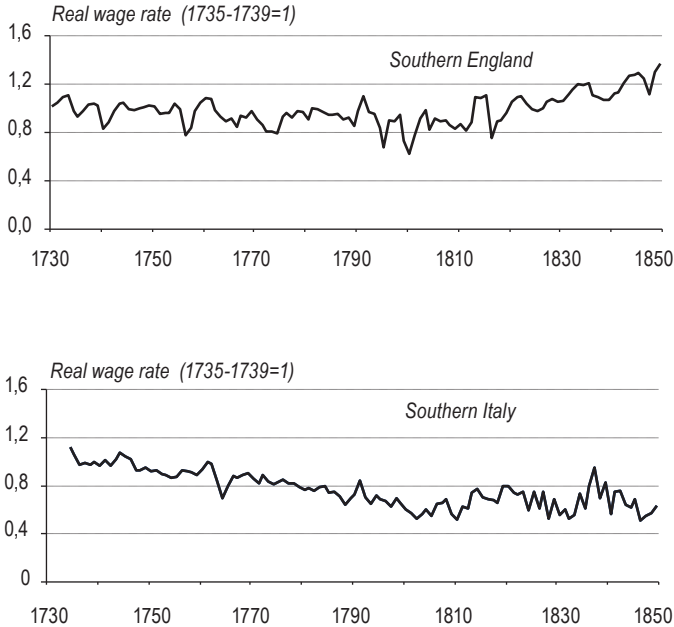
Sources. As for Figure 1.

The diagrams relating to Central-Northern Italy and England cover the long period between 1500 and 1830 (Figure 2). The Italian trend declines in the second half of the sixteenth century and, after a recovery due to the fall in population with the 1629-1630 plague, declines again and reaches a very low level at the end of the eighteenth century. The wage curve for Southern England is lower than that for Italy around 1500 and falls during the sixteenth century¹³. From the following century, the trend is upward, although in the second half of the eighteenth century real wages also diminish in England, if only for a relatively brief period¹⁴. We see, in fact, that wages rise again in the 1820s. Although different, both curves witness a decline in the eighteenth century, the epoch in which we are interested.

13. Although this is not apparent in indices of wages such as those in Figure 2.

14. The topic has been the subject of long debates. See in particular the contrasting views of P.H. LINDERT & J.G. WILLIAMSON, 1983 and C.H. FEINSTEIN, 1998.

Figure 3. Real wage rates of agricultural labourers in Southern England and Southern Italy 1730-1850



Sources. Data for England are from G. CLARK, 2004, and, for Southern Italy, from P. MALANIMA, *Prezzi e salari nel Regno di Napoli* (forthcoming). Data for England has been deflated using the index of prices in Figure 1. Nominal wages for Southern Italy are deflated using an index of prices published in the same forthcoming paper and based on Southern Italian prices.

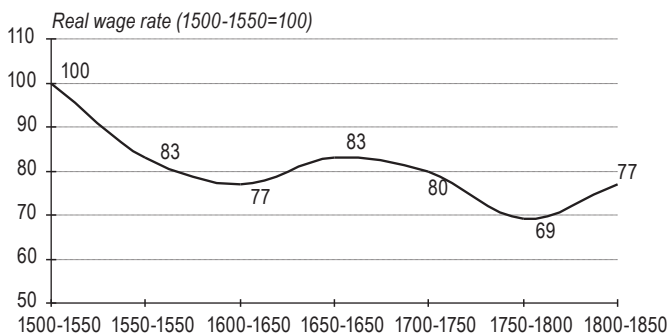
Much less is known about agricultural wage rates than those of industry. Often paid labour was rare in the countryside – in Central and Northern Italy, for example. In many regions of Europe, peasant income was not a wage, but that share of the agricultural product that the peasant family held after payment to the landowner of a rent, in either money or products. Focusing on agricultural wages in the period in which we are interested and looking again at Southern England and Italy (in this case Southern Italy)¹⁵, the different development is particularly clear (Figure 3). Agricultural wages in England were slowly diminishing in the eighteenth century (about 10% from the start of the series until the end of the century). The modest decline was followed by a remarkable rise from 1820 onwards.

15. Where waged labour was much more frequent than in Central and Northern Italy.

The increase between 1700 and 1850 was 50%, whereas in Southern Italy the loss was about 40% between 1700 and 1850.

Although for England we can avail of rich literature on wages in the early Modern Age, what we know seems to confirm that England was the exception. Average European wages were much nearer the Italian trend than that of England. As may be seen in Figure 4, the wage rates of masons diminished by about 40% from the start of the sixteenth century until the end of the eighteenth¹⁶. A recovery occurred later on, as from the 1820s. Although data on wages outside the building industry are much scantier, we know that the wages of workers in other sectors shared the same trend. Our interpretation of this trend is that, while population increased, resources per worker diminished, with the consequence that prices were rising and productivity (and hence wages) falling¹⁷. If in Europe wages were declining and the rise in consumption at the same time is a European process, the problem is how to reconcile the opposing trends.

Figure 4. *Real wage rates in the building industry in Europe 1500-1850*



Sources. R. C. ALLEN, 2001 with the changes in P. MALANIMA, 2009, Chap. VI.

16. We will see further on that the decline in wages was perhaps less steep than the available curves show, since it was at least in part compensated by changes in the basket of goods the families consumed and increases in working time.

17. The problem is discussed in §4.

3. Consumption of agricultural goods

In pre-modern economies the consumption of agricultural goods, including food and heating but excluding textile fibres, represented 70-80% of the aggregate consumption of the lower strata of society. Consumption of agricultural goods by the upper social classes was a negligible share of the total¹⁸.

We have already examined the trends of prices and real wages. The rising trend of agricultural goods and the declining trend of real wages suggest a fall in the level of *per capita* consumption of agricultural goods. An estimate of agricultural consumption per head can be calculated through the following equation:

$$c_a = y^\alpha \cdot P_a^\beta \cdot P_o^\delta$$

where consumption of agricultural goods (c_a) is a function of real¹⁹ *per capita* income (y)²⁰, the real price of the agricultural goods (P_a) and the real price of non agricultural goods (P_o); and where α , β , δ are the elasticities respective to income, to the price of the product i and to the prices of the other goods. While the coefficients α and δ are positive (an increase in income or the prices of the other goods is positively related to the increase in consumptions of the product i), the coefficient β is negative (an increase in the price of the product i is inversely correlated with the consumption of the same product).

We can compute two series for consumption of agricultural goods in England and Italy by using the series of prices and wages already examined in sections 2 and 3²¹. In both cases, the assumed elasticities are: $\alpha=0.4$, $\beta=-0.5$, $\delta=0.1$ ²².

18. The inclusion of rent in our calculations, on which information is much scantier, would not modify our trends, since consumption of agricultural goods by the big landowners represented a tiny share of total consumption.

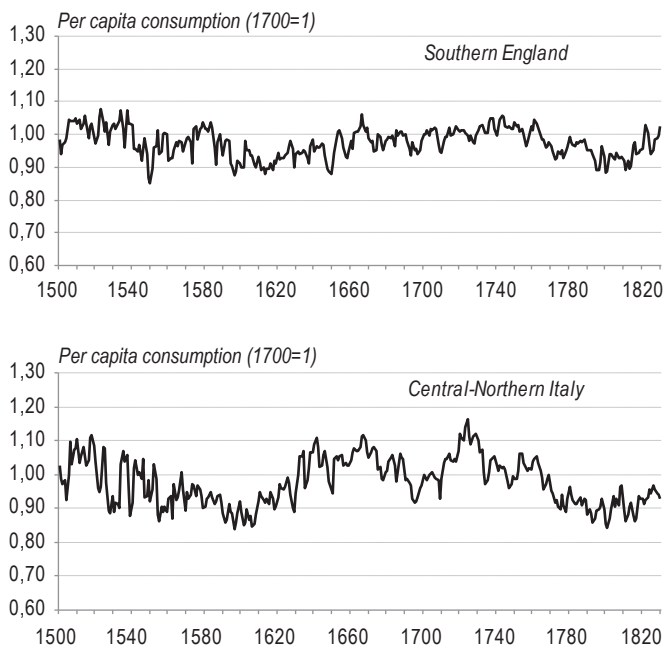
19. The series of wages (representative of income), agricultural prices, and non-agricultural prices are divided by the consumer price index, and thus are real.

20. Income is represented by real wage.

21. We also need a series of non-agricultural prices to calculate consumption of primary goods. This series will be discussed later (§6).

22. Other plausible coefficients of elasticity do not modify our results, as shown in P. MALANIMA, 2011.

Figure 5. Per capita consumption of agricultural goods in Southern England and Central-Northern Italy 1500-1830



Sources. Our elaboration of series quoted in Figure 1.

For those two regions the results are different but not opposite (Figure 5). A remarkable decline occurred in the sixteenth century both in Central and Northern Italy and in England. The recovery from 1600 until about 1750 was followed by a new fall: remarkable in Italy, more modest in England. The second half of the eighteenth century was not a prosperous period. Despite the rise in labour productivity in the seventeenth century²³, in England too, “the total available food energy *per capita* dropped after 1780 as population grew”²⁴. Calories *per capita* from food diminished by 25% between 1770 and 1800, after a period of rise lasted until about 1750²⁵.

Was Europe, as a whole, more similar to Italy or England? If we take the calculations by R.C. Allen (with some slight change for Italy and England) for France and Germany, elaborated through a method similar to

23. E.A.WRIGLEY, 2006, p. 453-457.

24. C. MULDREW, 2010, p. 322.

25. C. MULDREW, 2010, p. 143.

Table 1. Per capita consumption of agricultural goods in England, France, Germany, Spain and Italy, 1300-1800 (intern. \$ 1990 PPP)

	<i>England</i>	<i>France</i>	<i>Germany</i>	<i>Spain</i>	<i>Italy</i>
1300	700				850
1400	950	740	850	820	1,000
1500	1,030	850	740	820	850
1600	950	670	570	670	740
1700	1,050	650	500	770	820
1750	1,090	670	500	670	820
1800	920	670	570	620	700

Sources. R.C. ALLEN, 2000 (for France, Germany and Spain); P. MALANIMA, 2011 (for Italy). For England, the estimate is more recent (the same presented in Figure 5).

that we have just used for Southern England and Central-Northern Italy, we see that the decline happened in both countries, whenever the comparison is done between 1300 and 1800 (Table 1).

This gloomy perspective is confirmed by the information we have on changes in stature. The average height of Europeans diminished by a few centimetres during the eighteenth century and reached the lowest levels between 1790 and 1820²⁶. From direct information on the consumption of carbohydrates, we know that a decline occurred in both quantity and quality. The consumption of bread, wine, beer, and meat diminished. The spread of potato cultivation in Central and Northern Europe and of maize in the South compensated, at least in terms of calories, for the lower bread consumption. Potato and maize are, however, poorer in nutrients than bread. We know that in Italy, and especially in the Po Valley, the increase in the cultivation of maize was followed by the spread of pellagra, an illness determined by the lower vitamin content of maize, compared to that of bread. The spread of these new products curbed, but only in part, the fall in consumption as revealed by our previous Table 1, which refers to consumption in money value. Being these goods much less expensive than wheat, in terms of calories if not taste, the fall in consumption was mitigated, but certainly not reversed.

26. See, in particular, J. KOMLOS, 1998 and 1989, and for Italy B. A'HEARN, 2003.

We know that in the late seventeenth and eighteenth centuries new agricultural goods such as coffee, tea, chocolate and sugar began to spread among the high and middle social classes. The trade in these goods was the origin of commercial wealth. However, these products could not counteract the sharp drop in the consumption of many primary goods. Differently from Northern Europe, sugar, coffee and tea did not transform the diet of the Italians²⁷! While in England, at the end of the eighteenth century, sugar became a mass-market commodity with a *per capita* consumption of 1.5kg, in the Kingdom of Naples, at the same time, consumption was lower than 0.5kg²⁸. In Italy, in early Modern times, the consumers' basket did not change; with the exception of the increase of maize²⁹.

4. The average and marginal product of labour

If the expense for agricultural goods rises as a share of the family income, little room exists for the growth of other expenses, such as secondary goods and services. Since food expense is inelastic, when its price increases and real income diminishes, the purchase of secondary items and services must fall. This negative view seems, however, to be at odds with the more positive view of the consumption of secondary goods put forward by social historians.

Before addressing this topic, we will summarize in Figure 6 what has just been described. On the vertical axis are represented: average labour productivity (*ALP*), marginal labour productivity (*MLP*) and the level of subsistence (*S*), which is the value of the basket of goods able to support the survival of a worker. This level is always the same and does not increase or diminish with the number of workers. While marginal labour productivity can be equalised to the wage rate, average labour productivity includes, in addition to labour income, incomes from capital (interest) and land (rent). These last forms of income are represented by the difference between *ALP* and *MLP*. On the horizontal axis, we find the number of workers (*N*).

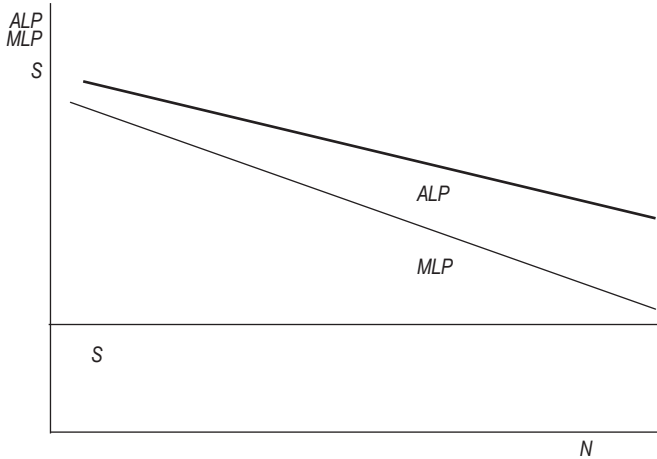
In a pre-modern economy, as long as the number of workers (*N*) increases and resources per worker diminish, marginal labour productivity (*MLP*) decreases and approaches the level of subsistence (*S*). Living standards of the majority of the population deteriorate and consumption

27. A.E.C. McCANTS, 2009, p. 172.

28. See C. SHAMMAS, 1990, p. 76 and D. CICCOLELLA, 2010, p. 276-277.

29. See the observations by J. HERSCH & H.J. VOTH, 2009, p. 31-33.

Figure 6. Relationship between marginal labour productivity (*MLP*), average labour productivity (*ALP*) and labour force (*N*)



diminishes. The rising population implies a decline in the *ALP* as well. However, it may also be seen in the graph that the difference between *ALP* and *MLP* increases relatively; as a share, that is, of the distance of *ALP* from the horizontal axis. This means that, as soon as *MLP* diminishes, a redistribution of income takes place and forms of income such as interest and rent rise in both absolute and relative terms.

The classical economists shared a similar opinion: as soon as the number of workers increases and their standard of living deteriorates, income from land and capital rises. What we know about the dynamics of rent in the late Middle Ages seems to confirm the trend presented in Figure 6. During periods of rising prices and falling wages, landowners could enjoy rising incomes because both the wages they paid diminished and the prices of their products increased. When their rents were in money, contracts were renewed in relation to the movement of prices; when leases were in kind, their level was automatically increased by the rise of prices³⁰.

With the fall in agricultural consumptions, that is in the consumption of inelastic goods, it is now hard to explain the increase in elastic consumption

30. The topic has been discussed for the whole of Europe (with particular attention to England) in Ph.T. HOFFMAN, D.S. JACKS, P.A. LEVIN & P.H. LINDERT, 2002. Actually interest rate diminished in Europe since the late Middle Ages. We do not know if interest, as a share of GDP, diminished. Here we only refer to theory.

goods. In the previous diagram, if we look at the decline of average productivity contemporary to that of marginal productivity, the conclusion is a decline in consumptions on the whole and not certainly an increase. Nevertheless, we cannot ignore the evidence collected by researchers and especially social researchers indicating the rising consumption of secondary goods in all of Europe. Their research is supported by strong evidence on the rise of industrial goods owned by modest families as well, especially in the eighteenth century. Three counteracting forces were working, however, against this downward trend. These counteracting forces concerned: working time (§5), prices of non-agricultural goods (§6) and volatility of wages (§7).

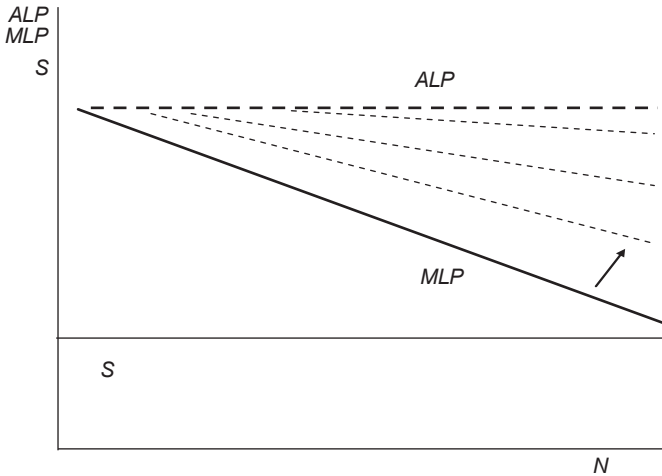
5. Working time

We have already noted (§2) that the series of wages are actually series of wage rates that is wages per day. If, because of the increase in the number of workers and the reduction of resources and capital per worker, both labour productivity and wage per day diminish, families will devote more hours to work increasing both the number of working days per worker and the number of working family members. This is what actually happens in today's underdeveloped peasant economies. As soon as wage per day falls, women and children begin to work.

In Figure 7, we see what simple economic reasoning would suggest. As soon as N rises and both marginal labour productivity and average labour productivity diminish, the economic system reacts, moving in the direction of the arrow in the attempt to keep income far from the line of subsistence. The result can be stability of *per capita* GDP, despite diminishing labour productivity. The increase in the number of working hours engenders a shift of the lines *MLP* and *ALP* instead of a movement along the lines.

For pre-modern European economies, an indirect estimation of labour time can be made by measuring the value of a subsistence basket. When daily wages approach the price of subsistence, people must work more hours and more people must work. A true *intensification of labour* occurs. However, any estimate of this intensification is far from precise. The number of working days was lower in Italy during the Renaissance than in the nineteenth century. An indirect calculation suggests a rise from an average of about 150 days in the fifteenth century, to 200-250 in the nineteenth

Figure 7. Relationship between marginal labour productivity (MLP), average labour productivity (ALP) and labour force (N)



century³¹. We can also hypothesize an increase in the participation rate, that is, the ratio of the working population to total population. The number of working days for a farm worker in England has been computed as approximately 150 days in the fifteenth century and more than 250 days in the eighteenth century. For a mason the number was less than 200 days in the fifteenth century and more than 200 in the sixteenth century, followed by a decline in the eighteenth century and a new increase to 200 days at the start of the nineteenth century³². Other estimates suggest about 260 days of work in 1600-1650 and almost 300 at the end of the eighteenth century³³, and 258 in 1760 and 330 at the start of the nineteenth century³⁴.

An “industrious revolution” occurred, to use the expression of Akira Hayami³⁵ and Jan de Vries³⁶. However, this revolution depended much more on the need for the family members to cope with a decline in wage rates and living standards than on a reallocation of the “productive resources” by the

31. P. MALANIMA, 2007.

32. R.C. ALLEN & J.L. WEISDORF, 2011.

33. G. CLARK & Y. VAN DER WERF, 1998.

34. H.J. VOTH, 2000.

35. A. HAYAMI, 1990.

36. J. DE VRIES, 1994 and 2008.

family “in ways that increased both the supply of market-oriented, money-earning activities and the demand for goods offered in the marketplace”³⁷. The reality seems to have been much less optimistic than supposed. In our view, people were forced to be “industrious”. The “industrious revolution” can be seen as the necessary reaction to the decline in living standards³⁸. Adam Smith also seemed to share this pessimistic view when he wrote that “in cheap years, it is pretended, workmen are generally more idle, and in dear ones more industrious than ordinarily”³⁹. Following Smith, since dear years increased from 1750 on, people became more industrious than ordinarily. The concept of industriousness in pre-modern economies was already clear to the founder of modern economics.

6. Non-agricultural goods

In the absence of exogenous change and in the context of the inelastic demand for food, the consumption of durables such as textiles, furniture, etc., must diminish if the prices of agricultural goods rise and nominal wages are stable or raise slightly, as it was the case for many decades after 1750. The relative decline of industrial prices is one of these changes. We have seen that all prices grew, in the early Modern Age, but they did not share the same rate of growth. In particular, we know that while agricultural prices grew more than the consumer price indices, industrial prices grew less.

Data on industrial prices are harder to collect and analyse than data on agricultural goods⁴⁰. However, for both Southern England, and Central and Northern Italy, we can avail of the prices of textile goods as proxies of industrial goods. In Figure 8, we present the diagrams of the real price of textiles, that is, the current price of textiles divided by the consumer price index. We see that, during the three centuries under examination, the real price of textile goods diminished (with some recovery only in the seventeenth century, when agricultural prices fell). The fall was meaningful, particularly during the eighteenth and nineteenth centuries. In England, while the price index increased by 0.83% per year between 1500 and 1800, the price of nails rose by 0.12%, that of linen-cloth 0.37%, wool cloth 0.37%

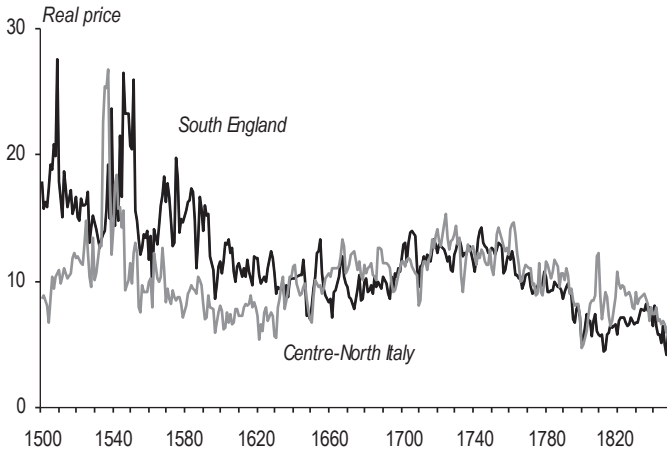
37. J. DE VRIES, 2008, p. 10.

38. R.C. ALLEN & J.L. WEISDORF, 2011, p. 722-723.

39. A. SMITH, 1952, p. 35.

40. It is, in fact, hard to find data always referring to the same product, with the same qualitative features over several centuries.

Figure 8. *Real prices of textiles in Southern England and Central-Northern Italy 1500-1850*



Sources. As of Figure 1 ; the current price of textiles has been divided by the CPI for Southern England and Central and Northern Italy presented in Figure 1.

and bricks by 0.65%⁴¹. Information on Belgium and Poland confirms the same trend for non-agricultural goods⁴². In France, the price of clothing in 1800 was 20 % of what it was in 1500 and in The Netherlands 40% of what it had been in 1450⁴³.

At the start of the nineteenth century, D. Ricardo had already identified the reason for the different trends of the prices of agricultural and industrial goods: the decline in industrial prices depends on the rise in productivity, always remarkable in the secondary sector, while hard, when not impossible, in agriculture⁴⁴. We also know that in the primary sector notable changes in productivity occurred in the nineteenth century. In pre-modern economies, it was different. Since productivity stagnated, the consequence was the relative rise in the prices of agricultural goods in epochs of rising population and, in contrast, the relative decline in the prices of industrial goods. In Italy, for instance, productivity growth in the silk sector resulted in a remarkable

41. Prices of these manufactured items are taken from the series worked out by G. CLARK and available at www.issg.nl.

42. See the concise work on Poland by W. KULA, 1967.

43. Ph.T. HOFFMAN, D.S. JACKS, P.A. LEVIN & P.H. LINDERT, 2000, p. 332-333 and 344.

44. D. RICARDO, 1821, Chap. 5.

decrease in the prices of silk products. While in the late Middle Ages only kings, popes and the aristocracy could afford silk goods, in the eighteenth century these were affordable even to families of lower social classes in both rural and urban areas. In this sector, rise in productivity derived from improvements in the cultivation of mulberry trees and their widening, from increased productivity in the various phases of the productive process and from changes in the kind of textiles produced⁴⁵.

This trend favoured above all the high and medium strata of society, especially in the cities. Rich families could take advantage of rising rents and diminishing prices of secondary goods and expand their luxury consumptions⁴⁶. The rising magnificence of the aristocratic consumption of durables characterizes European civilisation during the seventeenth and eighteenth centuries⁴⁷. Thanks to the research on probate inventories, we know that modest families in both the cities and countryside also began to own some “luxury” items: glass at the windows became frequent in the seventeenth and eighteenth centuries, textile goods more numerous and fine, tableware and kitchenware more plentiful⁴⁸. Pieces of furniture in the homes in both towns and rural villages increased in number.

Assuming that some 10% of the average income was devoted to the purchase of secondary goods, the decline in their prices might imply an increase of real consumption even though in value a fall seems more plausible than a rise.

7. Volatility of prices and wages

Volatility of prices and, as a consequence, wages, characterized past agricultural economies. Since price indices are widely influenced by the conjuncture of agricultural prices and since agricultural harvests were heavily struck by short-term climatic changes, significant variations characterized the incomes of the population. The limited market integration might have contributed to the volatility. The coefficient of variation of our price indices in the three centuries 1500-1800 is between 14 and 30%, for both Italy and England⁴⁹.

45. F. BATTISTINI, 2003 and 2007.

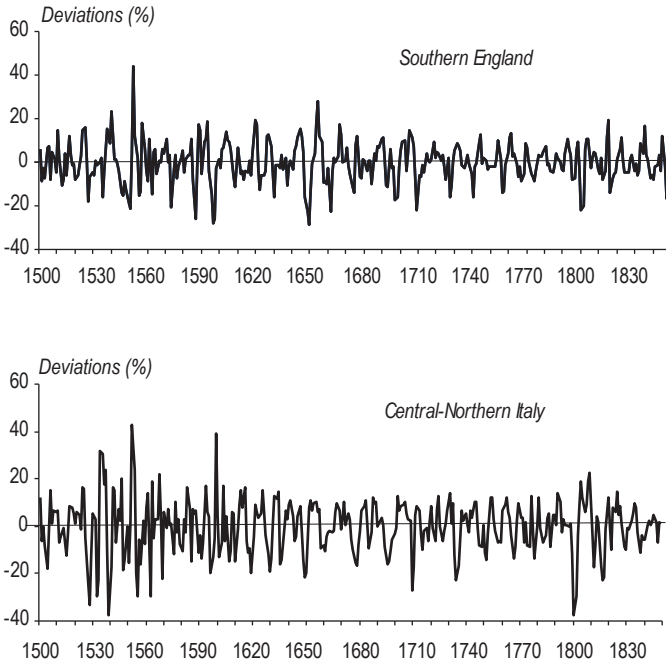
46. Ph.T. HOFFMAN, D.S. JACKS, P.A. LEVIN & P.H. LINDERT, 2000 and 2002.

47. M. GIROUARD, 1978; V. PINCHERA, 1999 and L. STONE, 1965.

48. R. AGO, 2006; M. BERG & H. EGER, 2003; P. MALANIMA, 1990; C. MULDREW, 2010; S. NENADIC, 1994; D. ROCHE, 1997 and L. WEATHERILL, 1988.

49. For sixteenth century England it is, however, 72%.

Figure 9. *Deviations of wage rates from the trend in Southern England and Central-Northern Italy 1500-1850*



Sources. As Figure 2.

Note. The trend of wages is calculated by the Hodrick-Prescott filter.

If we look at the diagram of the percentage deviations of wage rates to the trend of the indices of real wages for Southern England and Central-Northern Italy, we see how discontinuous the profile appears (Figure 9). In several years, during the seventeenth and eighteenth centuries, wages were much higher and lower than the trend. The purchase of durables did not determine a daily expenditure like the purchase of agricultural goods. Years of plenty and high wages could provide the opportunity of purchasing some durables such as pieces of furniture, textile products, even paintings... Once purchased, these products, remained in the same homes for several years and sometimes generations. To the scholars of probate inventories this slow accumulation of goods can suggest an increase in the level of wealth. Often,

however, these goods resulted from small purchases over long periods. People in the past had not only to be laborious, but also thrifty. Probate inventories actually witness the stock of goods owned by a family and not the flow of purchases.

8. *Per capita* GDP

Consumption is primarily a function of income. So far we have dealt with a part of the aggregate income: wages. We will now look at GDP as a whole.

Although attempts have been made in recent years at quantifying *per capita* GDP for several European pre-modern states, much is still to be done. No consensus presently exists in this field of research, neither on methods nor on results. The data in Table 2 has been calculated using diverse methods.

Table 2. *Four series (and indices) of per capita GDP in Europe from 1500 to 1800 (intern. \$ 1990 PPP).*

	<i>1</i>	<i>Index</i>	<i>2</i>	<i>Index</i>	<i>3</i>	<i>Index</i>	<i>4</i>	<i>Index</i>
1500	798	100	1,105	100	1,223	100	1,347	100
1600	908	114	1,103	100	1,204	98	1,246	93
1700	1,033	129	1,177	107	1,242	102	1,387	103
1800-1820	1,245	156	1,175	106	1,323	107	1,346	100

Sources. 1, A. MADDISON, 2003, p. 59 (data refers to twelve Western European countries); 2, J.L. VAN ZANDEN, 2005, p. 27 (the conversion into intern. dollars 1990 PPP has been done on the basis of A. MADDISON, 2003, relating to 1820); 3, C. ALVAREZ NÓGAL & L. PRADOS DE LA ESCOSURA, 2007 and 2007a ; 4, P. MALANIMA, 2009.

We have already seen that, according to the indirect method proposed in the previous pages, *per capita* consumption of agricultural goods diminished from 1500 to 1800. Is it possible that the growth of the non-agricultural sectors was able to offset this decline? The rise of urbanisation in Europe between 1500 and 1800 from 5.6 to 9% (considering as cities the centres with more than 10,000 inhabitants) would suggest a modest change in favour of the non-agricultural sectors⁵⁰. The spread of proto-industrial

50. Urbanisation data are from P. MALANIMA, 2010.

activities in the countryside provides further support to this hypothesis. The rate of growth of workers employed in non-agricultural sectors was higher than that of population.

As may be noted, these series on *per capita* GDP present a relatively wide range of values for 1500, from 800 to 1,350 international 1990 dollars PPP (with a difference of 70% between the minimum and the maximum). If we exclude, however, the relatively low estimate in column 1, proposed by Angus Maddison, we see that the range among the other estimates diminishes to about 10% (always for 1500). We see also that, again with the exception of the series in column 1, the other estimates seem to suggest a stability of *per capita* GDP in early Modern Europe rather than a rise. There was certainly some change in the balance between agriculture and secondary and tertiary sectors. However, according to recent research, the early Modern European economy appears more stable than we assumed two decades ago; at least from the point of view of *per capita* GDP. We know that social historians of consumption would be more comfortable with slow growth in early Modern Europe than with stability and that this view is supported by micro-historical research on the purchase of goods, particularly durables, by the nobility, middle classes and modest families. Nevertheless, we have to remember that series of GDP always refer to values in money, although deflated through price indices and that, yesterday, as today, industry is the sector where increases in productivity and decline in prices are higher than in the primary and tertiary sectors. Data concerning GDP hides the increase in consumption due to this change in prices. Today industrial production as a share of GDP is declining in Western Europe and other developed economies. At least in part, this is the consequence of increases in productivity and the diminishing price of many industrial goods. The relative weight of the industrial product on GDP is shrinking for this reason as well. It was the same in the past.

Not only was a slow structural change in progress in the composition of GDP, but there was also a change in the balance of economic areas, with a decline of Southern and some rise in Northern Europe and especially England⁵¹. Needless to say, in this case our data are only tentative (Table 3).

51. See the forthcoming article by A. NUVOLARI & M. RICCI; C. MULDREW, 2010, p. 323 stresses that “the English labourers were even better off than those in Southern Europe, India and China than already suggested by Allen”.

Table 3. *Indices of per capita product in England, The Netherlands, Germany, France, Spain, Italy between 1500 and 1800 and estimates of per capita GDP (1500=1 and \$ Intern. 1990 PPA)*

	<i>England</i>	<i>Netherlands</i>	<i>Germany</i>	<i>France</i>	<i>Spain</i>	<i>Italy</i>
1500	1.00	1.00	1.00	1.00	1.00	1.00
1600	0.95	1.16	0.94	0.98	0.99	0.81
1700	1.33	1.34	0.99	1.08	0.99	0.88
1750	1.51	1.41	1.02	1.13	0.90	0.94
1800	1.42	1.28	1.02	1.05	0.90	0.81
	<i>England</i>	<i>Netherlands</i>	<i>Germany</i>	<i>France</i>	<i>Spain</i>	<i>Italy</i>
1500	1,420	1,600	1,220	1,330	1,450	1,600
1600	1,350	1,850	1,150	1,300	1,440	1,300
1700	1,890	2,150	1,210	1,440	1,430	1,400
1750	2,150	2,260	1,250	1,500	1,300	1,500
1800	2,010	2,040	1,250	1,400	1,300	1,300

Sources. P. MALANIMA, 2009, Chap. VI.

We see from these series that from 1500 to 1800, while the English and Dutch economies were growing relatively, and while the Central countries of Europe such as Germany and France were relatively stable, the Southern-Mediterranean economies of Spain and Italy were declining. We think that this view more or less coincides with what we know about the levels and trends in consumption. In countries such as England and the Netherlands consumption seems to have progressed more than in Central and Southern countries. If there was some industriousness, in the sense of a “reallocation of family labour time aimed at expanding the consumption of durables”, in early Modern Europe, it can be found in these small countries of Northern Europe which was home to 6% of the European population in 1800. For the remaining European population forced industriousness seems much more plausible.

*

Following the example of J. de Vries, we tried to reconcile the view of a growth in consumption in early Modern Europe, as put forward by social historians, with the negative trend of prices and incomes outlined by economic historians especially for the eighteenth century. The analysis

reveals that *per capita* consumption of agricultural goods was declining while consumption of durables was increasing in real terms. Overall, we could speak of a stability of consumptions *per capita* (food plus durables) or modest increase in Europe from the early sixteenth century to the late eighteenth. This stability or modest increase resulted on the hand from the intensification of labour (a “forced industrious revolution” was in progress) and the functional redistribution of income to the advantage of landowners and especially big landowners (the nobility), and on the other from the relative decline in prices of industrial goods that contributed to the spread of consumption of durables among the medium and lower social strata in years of plenty. At the best the “industrious revolution”, as defined by J. de Vries, turned out to interest only some regions of North-Western Europe. For the most part of the European population the reallocation of family labour time was not an opportunity, but a necessary choice to maintain levels of consumption and standards of living.

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