How unequal were the Latins? The "strange" case of Portugal, 1550-1770

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For help and advice, the authors wish to express their gratitude to Maria Antónia Pires de Almeida, Inês Amorim, Raquel Berredo, Leonor Freire Costa, Rui Esperança, Carlos Faísca, João Ferrão, João Fialho, António Castro Henriques, Bruno Lopes, Filomena Melo, Esteban Niccolini, Susana Pereira, Amélia Polónia, Isabel dos Guimarães Sá and Ana Margarida Silva.

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1. Introduction

Latin countries are perceived by much of the literature nowadays as having always been more unequal economically than others with similar levels of income. In part, this view is accounted for by contemporary economic inequalities, which show that Latin countries both in Europe and in the Americas exhibit comparatively higher degrees of income or wealth disparity (Lopez and Perry, 2008). At the same time, it has been supported by the work of Engerman and others on the different paths of long term development in the New World (Engerman and Sokoloff, 1997, Engerman, Haber and Sokoloff, 2000). Their claim is that differing patterns of inequality go back a very long way and are in fact evident already in the earliest colonial period. Over time they became more firmly entrenched and ultimately were a powerful determinant of macro divergence between, respectively, Latin America, and Canada and the USA. This colonial legacy has thus become a central part of the conventional wisdom which explains the economic differences displayed by post colonial societies (Frankema, 2009).

What is particularly surprising is how little this account has been subjected to the test of empirical verification. As Williamson (2009) has pointed out, there is very little hard fact to substantiate it and in any case the available data actually point in the opposite direction to that of the consensus view[1]. A second problem with the thesis of long run persistence of inequality in the Americas is that it is poorly specified. A clear definition

[1] In the case of the late 18th century USA, only two observations, to my knowledge, are to be had, neither of which is entirely satisfactory. One, from Solow (1971), employs data on housing, which is problematic as a means of assessing income or wealth inequality levels. The other is Lindert (2000), citing Alice Hanson, who resorts to a fairly small number of probate inventories. For the entire territory of Latin America, Milanovic et al. (2007) come up with a single observation for the fullness of the colonial era.

of what precisely should be compared is usually lacking, i.e. whether it should be wealth, income, land ownership or rents. The same is true regarding the geographic terms of the proposed comparisons. Are they supposed to pit the 13 Colonies against Latin America or should it be parts of the New World against the Old? In the case of the latter, which part of "Europe" is the best standard to employ – progressive England and the Netherlands, or the less dynamic parts of the Continent? Finally, little attention is given to the timing of these assessments, despite the likelihood that economic inequality may have displayed differences across time, as well as from place to place.

Clearly there is scope for improvement in all these aspects of the international history of economic inequality and the present paper tries to contribute in several ways. To begin with, it adds to the presently rather small information pool by mobilizing a rich and little studied seam of data concerning Portugal, an important player in colonial history between the sixteenth and the eighteenth centuries. In the second place, it provides a new set of reliable and consistent measures of inequality for this country, which can be used to compare with other countries. In due course, this should allow us to establish the ranking of Latin and non-Latin economies during the pre-industrial epoch on a more solid empirical basis. In the third place, it contributes to a revision of how the relationship between inequality and other macroeconomic variables in these centuries has been modelled. Finally, it shows that the most likely scenario for the non-dynamic economies of the Early Modern era, such as Portugal, was long run declining income inequality and a lessening of social polarization.

it can pave the way for discussing whether the degree of inequality in the mother country explains that in the colonies, an issue raised in the literature on colonialism and development under the so-called *metropolitan institutions approach* (Frankema, 2009).[2]

The paper is structured as follows. The next section sums up the current state of knowledge as regards economic inequality in Early Modern countries, Europe in particular. It also highlights the problems posed when international comparisons or long term appraisals are attempted with the heterogeneous data and methods currently being used by historians. This is followed by a presentation of the various types of new Portuguese data employed in this paper and by an evaluation of their reliability, consistence and representativeness.[3] The fourth section outlines the method, using these data, to generate national indicators of economic inequality at long intervals, starting *circa* 1550. It displays the results obtained by both Theil and Gini methodology and discusses the former in particular in the light of the issues raised by this introduction. It argues that Portuguese was set on a long term inequality decline and for this reason was growing comparatively less unequal than the more advanced economies of Europe. The fifth section uses the Portuguese findings to suggest a possible enlargement of van Zanden's kuznetsian hypothesis concerning the link between macroeconomic performance and economic inequality. The final section concludes.

2. Early Modern economic inequality in the world: Data and problems

[2] This approach emphasizes "the role of colonial policies and the overseas transmission of varying metropolitan institutions to explain the evolution of land inequality in Latin America as opposed to British North America". See Frankema (2009: 45).

[3] This is a direct response to Williamson's (2009: 4) appeal to collect "new pre-industrial inequality evidence and thus perhaps overthrow once and for all the historical persistence view that pervades modern debate about Latin American inequality".

2.1 Social tables and fiscal data

Historians of pre-industrial economic inequality have relied mainly on two types of source: social tables and fiscal data. Each one has advantages and weaknesses but these have not prevented the emergence of a consensual preliminary picture of some of the principal features of Early Modern inequality.

Social tables are "highly educated guesses", made by well-informed contemporaries, who report average income and the number of its recipients by social class for a given country (Milanovic, Lindert and Williamson, 2007 and 2011; Williamson, 2009). One of their strengths is that they were originally organized to provide full coverage of the population of a country or of a very large region of a country. They are thus not marred by troublesome missing observations biases such as occur when there are significant gaps in the distribution of incomes. Given that historically their aim was usually to assist in formulating tax policies, they tend to be focused on income rather than wealth or other indicators. The advantage of this is that it makes them an excellent source for calculating national indices of earnings inequality, as opposed to having to employ proxies. Finally, they are particularly suitable for the study of societies, such as those of the Early Modern period, in which mean income differences between classes are large, intra-class divergence are small and class demarcation lines are easy to detect. As Williamson (2009) has explained, estimating inequality on this basis becomes a comparatively simple undertaking, essentially because it only has to concern itself with between-class income differences.

Social tables are not free from defects, however. A doubt inevitably hangs over the reliability of these "educated guesses", which depends on the extent of the guesswork and on the aptness of its author for the exercise. In addition, the fact that the majority

was carried out in the service of a ruler and intended to maximize fiscal revenue raises questions concerning the systematic distortions of the results.

Recently, a concern has been raised about the assumed lack of variance within income classes. Modalsli (2011) has argued that Gini coefficients obtained from social tables are prone to significant biases because they involve two unrealistic assumptions. One is that in each class the entire group is concentrated at its mean income point. The other is that there is no substantial overlap between the income ranges of adjacent classes. If there were, in reality, a certain degree of within-group inequality, this could imply upward corrections in the "raw" Gini coefficients of inequality of an order of between 30 and 100 per cent. Thus not only is there a persistent downward bias in these estimates, but also a degree of uncertainty as to how large this might be in each case.

Finally, a strategic aspect has to be stressed regarding the future of historical inequality studies. Not only is the pool of available social tables small, but its present supply is highly inelastic.[4] Given their nature, it does not seem likely that future research will uncover a great many more of as yet unknown ones of reasonable quality. Thus, unless abundant new data of some other kind is discovered, this is bound to become a field in which more and more papers are going to be written always based on the same small and static pool of information. It seems important therefore to consider the alternative offered by fiscal data.

Taxation rolls have been employed to good effect in a number of studies before 1800. Apart from being widely disseminated and often well kept in archives, they exist in

[4] Symptomatically, Williamson (2009) has been obliged to calculate Latin American Gini coefficients for the pre-colonial, colonial and 19th century periods by means of regression analysis, used in lieu of concrete information, given the absence of social tables from which to construct them for this region. The title of the paper is suggestively "History without Evidence".

large quantities and contain a massive amount of detailed information gathered at regular intervals on all the households or householders of a given territory. Usually they include at least identity, residence, occupation, gender but also, and of particular interest here, the value of taxes assessed on income or assets. The presumption of those who resort to them is that they reflect, with reasonable accuracy, the personal income or wealth of all who were listed in them at that particular time (Soltow, 1987; van Zanden, 1995; Morrison and Snyder, 2000). Tax rolls had two characteristics which made them especially helpful for research on inequality. They were normally applied universally and they followed a simple and consistent methodology based on a flat rate charge, which was less prone to error and obfuscation. Often, a strong concern was present in these systems regarding the proportionality between the fiscal burden and the taxable assets or earnings of each individual and this reinforced their representativeness.

Generally speaking, the quality of these data appears reasonable. The emerging modern states of Europe armed themselves with elaborate mechanisms for assessing worth and collecting revenue. These were implemented by a carefully balanced combination of crown officials, priests, magistrates and local "wise men", and conducted on a house-by-house basis, to prevent evasion. Often more than one level of burocratic control was used to dissuade favouritism or corruption, and a good deal of publicity accompanied the assessment and helped to deter prevaricators.[5]

To achieve a national estimate for a single year from a source of this type is a highly laborious endeavour, however, requiring the processing of hundreds of thousands of dispersed observations. Moreover, in most of Europe the administration of such taxes

[5] The taxes we are talking about here were not farmed but administered directly by the state. They presuppose a strong development of state machinery, which corresponds to historical reality in Europe by the 17th century, if not earlier.

was carried out by local authorities and the results were then kept there, where they often still remain to this day. To arrive at a satisfactory national or even just a regional picture involves a heavy additional burden of locating and pulling together a tremendous quantity of source material.[6]

Other problems are statistical rather than practical. Despite all the precautions taken by the authorities to ensure the homogeneity of the procedures, it was never easy to achieve this goal. Ancien Regime France is a good example of attempts to implement universal direct taxes which were repeatedly defeated in this aim. Given the pressure of local interests and the irresistible tendency over time to reinterpret rules of fiscal assessment, these became increasingly idiosyncratic and the country was gradually converted into a mosaic of fiscal localism (Morrison and Snyder, 2000).

The exceptional treatment often given under the tax law to individuals, groups of individuals or occupational and other social classes presents even more formidable difficulties. Not only might this involve very large numbers of taxpayers but, being integral to the social and economic fabric of pre-industrial nations, it was also impossible to avoid. In cases such as the clergy, the nobility, religious corporations, military officers and servants of the Crown in general, fiscal exemptions were conceded having in view the importance of their roles in society and in the power structure, or as a recompense for services which, once rendered, then became fossilized in time (Santiago-Caballero, 2011). Given the substantial incomes and assets associated with these groups, a downward bias in inequality estimates seems probable. This is reinforced in situations where, for the sake of simplicity (or of politics), a ceiling was

[6] Morrison and Snyder (2000) took a "small" sample of about 300,000 householders to study the income distribution of 28 million Frenchmen in 1788. In all, they perused 189 rolls covering 56 departments.

placed on high income valuations. At the same time, it might be countered whenever the state struck the poor and the humble off the tax rolls altogether, given their very low fiscal yield and the difficulty in pursuing such a numerous revenue target. Some "universal" taxes, on either wealth or income, may have failed to reach as much as 70 per cent or more of the subjects which formed the potential universe. (McCant, 2007; Soltow, 1980, 1985).[7]

2.2 Results and problems

The informational possibilities housing which arise when social tables and fiscal data are pooled ought to ensure a rich empirical harvest on which to base the study of economic inequality before 1800. Table 1 presents the majority of estimates available from the literature on Early Modern Europe and the Americas. It reveals a substantial set of thirty six observations covering a wide range of situations and points in time. These come from eleven countries, cover the years from 1534 to 1808 and, besides income (usually per household), and reflect also individual economic achievement in various forms of wealth accumulation or expenditure on housing. Altogether, it evinces a remarkable scholarly interest in the history of economic inequality and a considerable research effort of research that permits so much information to be compiled. On the other hand, it is far from satisfying the requirements of a comparative analysis of the long run evolution of distributional disparities between nations, as we shall see.

[Table 1 about here]

[7] Morrison and Snyder (2000) correct for another bias which was widespread in Early Modern economies. Assessments were frequently made only with regard to monetized income, when in fact a large part of the population lived off agriculture and was self-sufficient, with the result that a significant share of earnings was ignored.

Apart from the deficiencies, vagaries and imperfections already noted above in the sources, there are three major shortcomings to this collection. The first is that only part of these country-year pairs can be used for our purpose. Roughly a third only (11) of them has been collected from research materials which have a truly "national" scope (see col. 5). None of the information on Spain, Germany satisfies this condition and parts of that respecting the Netherlands, France and the United States are the same. Some of the estimates dubbed as "national" are, in fact, extrapolated from regional or local data, sometimes in a manner which casts doubts on their representativeness. The Dutch indicators of inequality are a case in point.[8] One aspect of this is the poor coverage of the population given by the data employed. In two instances, they are drawn from income tax findings (1742 and 1808) while in two others, from a tax roll relating to a levy on the value of dwellings (1561 and 1732). All four of them, however, are heavily biased towards the richer segments of the population and therefore invite scepticism (McCants, 2007). A second problem arises because so-called "national" indices of inequality are estimated by averaging population-weighted "local" Gini coefficients in order to obtain the national figure. This procedure is incorrect, however, since the Gini metric is not "decomposable" and consequently does not allow us "to write down a formula giving total inequality as a function of inequality within the constituent subgroups, and inequality between the subgroups" (Cowell, 2011: 64).[9] This drawback is present in the majority of national inequality coefficients presented for the Netherlands, as well as in the comparisons drawn by Williamson (2009) between

[8] For the Netherlands indicators, see Van Zanden (1995); and Soltow and Van Zanden (1998).

[9] The measures of inequality which do permit this treatment are: variance, coefficient of variation, Atkinson's index, Dalton's index, Theil's index, MLD index, Herfindhal's index and generalized entropy. See Cowell(2011: 74). For a claim that Ginis can be decomposed, see Soltow and Van Zanden (1998:18).

inequality in Western Europe and Latin America (table 3), all of them based on weighted arithmetic means of Gini coefficients.

A final reason for shunning some of the estimates in table 1 is that the variables they summarize do not constitute a homogeneous group, so that comparisons between any pair of them can be highly problematic. Although related to each other, the functional forms for this are not only varied but have yet to be well established. Proxying incomes with house rents, for example, is bound to lead to difficulties unless it is preceded by a careful enquiry into the nature of the relationship between these two variables.[10] Similarly, comparing the evolution of inequality in two countries, one of which - England and Wales – refers to income and the other - Holland – to house rental values (Van Zanden, 1995) has to be questioned. Two problems, in particular, should be noted here. One is that differences in levels between two estimates for analogous situations will arise if the yardsticks are not the same, e.g. Theil *versus* Gini. The other is that these differences can be also caused because the inequality measure is applied to different underlying data, e.g. income *versus* wealth (Van Zanden, 1995; McCants, 2007; Nicolini and Ramos-Palencia, 2011). The former is easy to correct, by reducing to the same yardstick. The latter requires that the relationship between the two variables is modeled with a reasonable degree of robustness. At present, few exercises of this kind are available, however, Nicolini and Ramos- Palencia (2011) and Williamson (2009) being rare exceptions.[11]

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[10] Expressions like "[rents] came quite close to the distribution of incomes" (Van Zanden, 1995: 648) need to be substantiated. For a similar view on this relationship in late 18th century North America, see Soltow (1987).

[11] Nicolini and Ramos-Palencia (2011) have estimated linear regressions of income on wealth plus control variables. This should make it possible to infer the inequality of distribution of the former, indirectly, from the latter. This second step has not been undertaken by them. Williamson (2009: table 2) has run a regression to estimate the impact on the Gini coefficients of various historical cases in which one of the

In spite of these limitations, the data in table 1 represent a gain in our historical knowledge of economic inequality and a step in the direction of stronger empirical foundations for this field of research. One of its achievements is to lend support for two points in the literature which have become consensual and will be important in the development of the present paper. One is that in both Europe and the Americas inequality between 1500 and 1800 was very pronounced. By present day standards, the Gini coefficients registered in these societies would be considered high, even extremely high.[12] In fact, Morrison and Snyder (2000:77) have declared that pre-revolutionary France's Gini of 0.59 showed that this country's "income inequality was probably as high as it has ever been anywhere in modern times". In fact, in table 1 it is rare to encounter figures for this metric below 0.5, while the majority lie between 0.5 and 0.8. In the case of wealth, this coefficient tends to be even greater, in some instances reaching almost the limit of inequality. Around 1800, the Scandinavian countries had the highest scores - 0,9 or more – revealing societies where more than half the population had no taxable property whatsoever, and a minute proportion (0.1%) held more than half of the country's entire wealth (Soltow, 1980). Thus, on both sides of the Atlantic, "gross inequality" was undoubtedly one of the hallmarks of these pre-modern economies (McCants, 2007). The practical significance for the present study of this finding is that it provides a benchmark for the range within which any estimates produced by new research must occur if they are to be considered plausible.

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explanatory variables is a dummy for the type of source used, i.e. "tax census" or "social table". The same procedure could be used with a dummy for "wealth" versus "income" data. This could provide a solution for converting the values of one of these classes into the other and thus achieve comparability between them.

[12] The UN's list of country income distribution reveals that outside Latin America and Africa, Ginis above 0.5 are inexistent. The majority of those in the group of the world's most unequal societies have Ginis between 0.5 and 0.6.

The second generalisation generalisation can be obtained by ordering the sub-national indices of inequality displayed in table 1 according to the socio-economic characteristics of the human aggregates to which they pertain. As several have noted, rural inequality in Europe during these centuries tended always to be lower than urban (Van Zanden, 1995). Urbanisation and the scale of urban communities were also directly related to the extent of disparity in incomes, wealth or consumption standards (rents). In 18th century Spain, the larger villages in rural Guadalajara were more unequal than the smaller ones (Santiago-Caballero; 2011). At the same time, in Madrid the Gini for income was 0,770, while in Jerez de la Frontera, a small peripheral town, it was 0,500 (Alvarez-Nogal and Prados de la Escosura, 2007). A further distinction is exemplified by the Dutch province of Overijssel in 1750 and is linked to income levels. Among those of similar scale, towns which were prosperous showed a higher degree of inequality and stagnant ones, conversely. As Van Zanden (1995: 649) has concluded, "economic development, urbanization and capital accumulation in the early modern period went hand in hand with an increase in inequality".

Rankings of inequality associated with social and economic characteristics which are easy to identify can be of assistance in constructing national measures of income disparity in two ways. One is that they provide an additional rule of thumb for testing the quality of freshly mined evidence, when sources are problematic or procedures less reliable. For example, a small village with an inequality measure above that of the country's capital city would either be an outlier or an error of estimation. The other way is that they enable us to select the main types of representative localities, from an inequality point of view, which constituted the fabric of the Early Modern countries in which we are interested. This can then allow us to calculate a weighted mean of "local" indicators, which would be both statistically significant and historically representative.

Using an appropriate methodology (i.e. a decomposable index), this should yield a national measure of inequality built on a properly calibrated set of small, local coefficients, which would be comparable internationally as well as over time. In the following section we will show how such a procedure can be implemented in the case of Portugal.

3. A data set and a methodology for Portugal

The issue of economic inequality in 20th century Iberia has attracted quite a lot of attention recently.[13] This is perhaps not surprising given the region's history of political instability and extremes in this period and the probability of important links existing between such contexts and inequality. As regards Spain, this has spilled back in time, with the result that a clear picture, based on a solid empirical foundation, is beginning to emerge for the Early Modern period (Santiago-Caballero, 2011; Nicolini and Ramos-Palencia, 2011; Alvarez-Nogal and Prados de la Escosura, 2007). In the case of Portugal's pre-industrial era, the only modern work of scholarship is a rarely cited and, as far as we know, unpublished paper by Johnson (2001?).

Somewhat paradoxically, Portugal does not suffer from the dearth of primary material which has often been alleged as one of the causes for the relative underdevelopment of this field. Thanks to the exertions of Harold B. Johnson (2001), eighteen published and unpublished relevant sources have come to light and constitute a far larger collection of evidence on inequality than most other nations can boast of for the period before 1800. It is the crucial starting point for the present research.

[13] See for example, Guillera (2011, 2010), Lains, Silva and Guilera (2008), Alvaredo and Saez (2009), Prados de la Escosura (2008) and Alvaredo (2009).

This pioneering work is not merely a compilation. Its value lies also in its outline of the path followed by the distribution of income and wealth between the fourteenth and the eighteenth centuries, and in the hypothesis it advances for these facts. The approach is essentially Malthusian, namely "that income distribution in Portugal during 480 years […] necessarily fluctuated in lock step with population pressure" (p.21). Unfortunately, it founders on a weak empirical verification, given the piecemeal nature of the data employed and its haphazard geographic dispersion. Its author himself recognizes these problems, concluding that it would be "the height of temerity" to use his "soundings" in order to draw any firm conclusions on the subject.

The present paper follows in these footsteps but introduces three improvements. The first is to enlarge Johnson's pool of "soundings", by taking advantage of a very large body of available sources which have yet to be explored, and thus improve our stock of knowledge.[14] The second is to select local observations on inequality in a systematic manner dictated by the nature and aims of the exercise, and not simply by the chance of discovery. This search is also restricted to three benchmark years separated by long intervals, which makes the effort more feasible, while making a satisfactory perception of long run change possible. In addition, the data are selected in accordance with a grid of types of population settlement. The latter are presumed to have distinctive time invariant features in terms of income and wealth inequality and their choice is inspired by the results of the recent research on other countries, as indicated above.

The third improvement has to do with how these indicators of local inequality are pulled together into a single national measure which is truly representative. Instead of the more

[14] Although some have been used for other purposes and all are reasonably accessible in organized archives.

common Gini coefficients, we adopt Theil indices, which are not inferior in other respects, but, as mentioned above, have the advantage of being decomposable (Santiago-Caballero, 2011). They can therefore be used correctly for averaging local weighted estimates to obtain national measures, something which the Gini yardstick does not allow.[15]

The only available sources for evaluating economic inequality in Portugal before 1800 are fiscal. No social table is known to have been composed and probate inventories are too scarce and patchy to be of great use.[16] As elsewhere, when it comes to gathering detailed information on the distribution of the economic capacity of the population, direct taxes are the best tool. Unlike duties on specific professions, which were too narrow in their incidence, or poll taxes, which were applied widely but had little, if any variance, these were applied universally and display a considerable degree of variance as a result. This universality was, however, mitigated by the customary exemptions for groups or individuals, which the crown sought to favour. Coverage was usually very high and biases can be easily discerned since such exceptions are clearly specified in the rules drawn up to organize these impositions.

A second advantage of direct taxes is that they were expressly designed so that the amount assessed should reflect the ability of each person to contribute. In every royal order defining or revising the rules on fiscal appraisals, the crown was always at pains to insist with the evaluators that they "keep justice and equality" and "be especially careful in judging the commercial, business and manufacturing activity of each subject" (Oliveira, 1971: 308). Finally, direct taxes were never farmed but administered by the

[15] In order to permit comparisons with the results of other researcher, our presentation below displays ours both in the form of Theil and Gini coefficients.

[16] The first known social table was published in the 1840s and had no successors. See Franzini, (1843).

crown. This has two consequences. One is that a great deal of documentation was produced in the process and is now accessible for research. The other is that procedures were clearer, and irregularities less likely to occur because their implementation was subject to hierarchical supervision by royally appointed officials. Consequently tax payers were not left at the mercy of private intermediaries and this in all probability meant a tighter relationship between assessed and actual income or wealth.

In order to judge how accurate these sources were, we must know how direct personal taxes were administered in Portugal at this time. From this point of view, the first step was the most important one because it is that which generated the information we shall be using. This consisted in compiling a complete list of householders in every locality in the country, which contained data for personal identification (name, residence, occupation) and data for estimating individual fiscal capacity. The task was committed to pairs of assessors, chosen by the local authorities because of their knowledge of the population and usually representing an economic sector – trade, manufacturing, and business. It was supervised by a magistrate appointed by the crown and subject to various external controls. Taxpayers had a right of appeal from their assessment. To prevent collusion between those involved in the different procedures, payment of the sums due was kept functionally separate from their assessment. A final precaution was that the list was compiled following a geographic criterion. In the urban centres, it was done house-by-house and street-by-street. In the countryside, it was done hamlet-by-hamlet or farm-by-farm. In both instances the aim of stamping out evasion is obvious.

Regular direct taxes only became an integral part of the regular fiscal system in 1641, when the *décima de guerra* (or *décima*, for short) was instituted.[17] Prior to this, however, the crown often imposed occasional ones on a part of or on the entire country, as an extraordinary measure destined to meet exceptional circumstances. This practice went back well into the middle ages (Gonçalves, 1966, 1964). Typically, the motives were war or preparations for defence; festivities on the occasion of special events in the royal family or dowries for princes; and consolidation of crown finances. They had to be agreed to by the representatives of the estates in the *cortes,* with whom they were very carefully contractualized. They were meant to be unrepeatable, one-off events, at least in theory.

With the advent of the *décima*, extraordinary direct taxes gradually seem to have fallen into disuse. The new tax was an annual, national imposition and was supposed to apply to every member of the community without exception. It was due on every form of income – real estate; profits and employment in business, trade, manufacturing and agriculture; and interest on loans. Every head of household was obliged to pay the tax on as many of these activities as he was engaged in, a clear sign that the Portuguese crown did not believe that economic agents in pre-industrial society normally had only one source of earnings.[18] These different components are all laid out fully in the tax rolls for each head of household, thus making it a potentially very rich source for a variety of studies. The initial rate charged was 10 per cent of net income and lasted until 1668. It was then lowered to 4.5 % and only raised again, to 10 %, in the early 18th

[17] At present, there is no history of Portuguese public finance under the Ancien Regime. The same is true for individual taxes, even for the *décima*, which is one of the most remarkable fiscal instruments of this era. On the latter, see nevertheless Magalhães (2004) and Silva (1987).

[18] For the modern belief that pre-industrial economies were simpler than their successors and, namely, that most households had only one source of income, see Morrison (2000).

century (1705), to meet the renewed threat of war. In 1715, with the return to international stability, it fell again to 4.5 %, and was only brought back to the higher rate in 1762, when international tensions and war broke out again. It remained at this level until 1800.[19]

Although it cast a remarkably fine net, the *décima* was not 100% comprehensive. Its most important limitation came from the clergy, which, after some resistance, was allowed to pay a fixed contribution in lieu of its obligation under the original law of the *décima*. Individual members of this body are present in the rolls, however, though without their respective valuations. This allows some reconstruction of their individual income levels although not of their shares in the income accruing to religious orders to which they might belong. On the other hand, the nobility were not exempt, nor were the other usual privileged classes, such as holders of university titles, judges, and the like. At the other social extreme, manual labourers and the poor were listed and assessed, usually a very modest fixed amount and in some cases nothing at all.

Certainly after 1641, and to a certain extent also before, the stock of rolls of direct taxes offers a remarkable basis for estimating economic inequality at the national level, across all social classes and at different points in time. In practice, however, bringing such a strategy to fruition raises several difficulties and requires significant a certainthe data. There are two reasons for this. Even if the complete stock of documentation were still in existence and kept in good condition, in a central location, extracting the necessary data base from it would still be a herculean and probably impossible task to carry out. A second difficulty is that, in any case, such a national collection does not exist at present.

[19] This chronology is reasonably accurate but not yet perfect. It was put together from the fiscal legislation available in the legal data base *Ius Lusitaniae* at http://www.iuslusitaniae.fcsh.unl.pt/.

A growing number of tax rolls, especially for the *décima,* has come to light but patchiness remains a problem. This deficiency can be surmounted, however, by obtaining a sufficient number of estimates of distributional inequality for the four different types of population settlement referred to above. They are respectively, the capital (Lisbon) or the major city closest to it in scale (Porto); large towns, of more than 5,000 inhabitants; small towns, of less than 5,000 inhabitants; and the rural environment, including villages and hamlets.[20] For the three benchmark years we have selected, table 2 displays the shares of the national population attributable to each of these categories, which we will employ, in the following section, for weighting our "local" inequality measures so as to obtain a national figure.

[Table 2]

4. Results and discussion

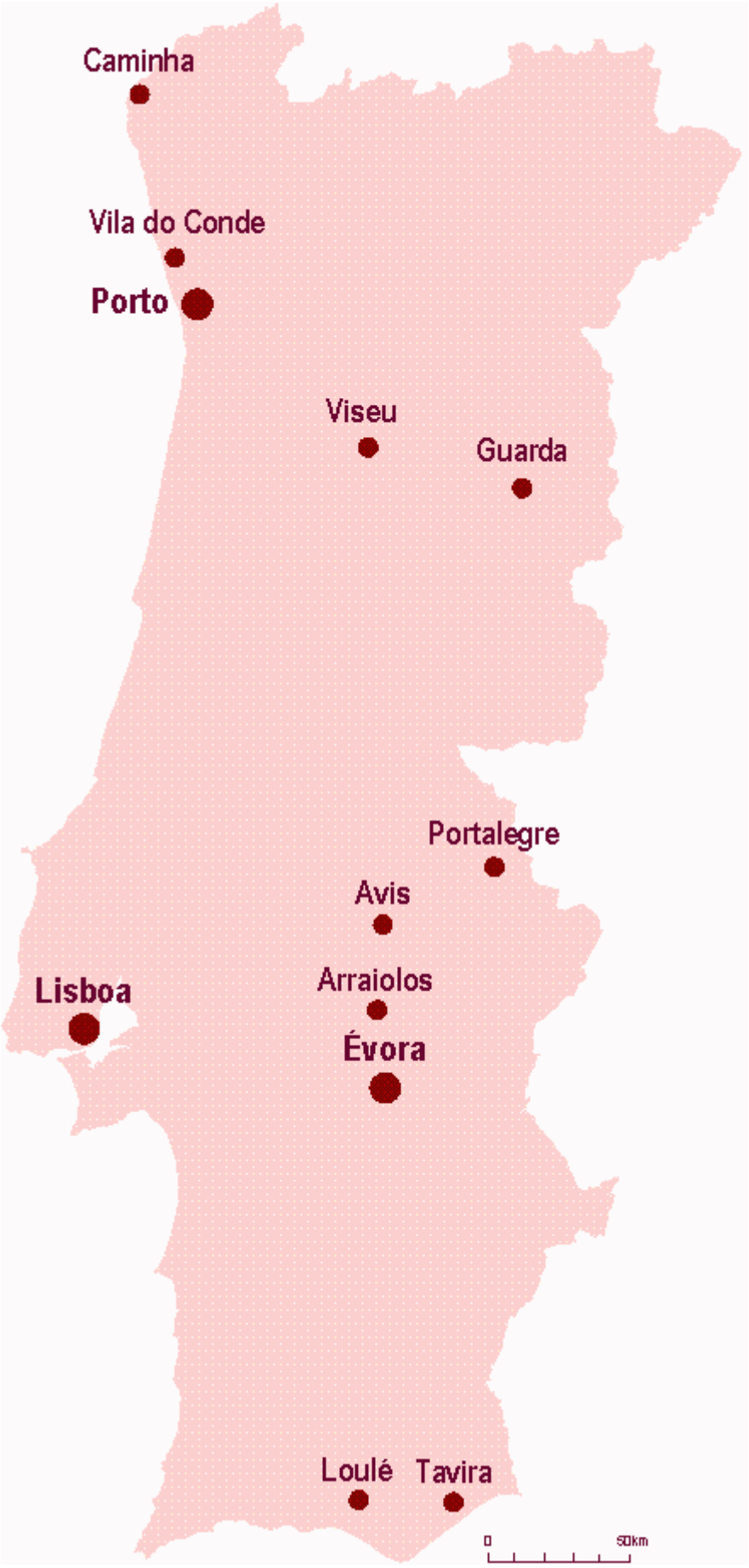
Our first result is displayed in Table 3. It is a set of direct taxation rolls over two centuries which we have put together mainly from archives around the country. It is organized into three panels – A, B and C - corresponding to each one of our three benchmark years: 1550, 1700 and the 1770s. Aside from the standard Gini and Theil measures of inequality, it shows the location and the date of production of each document, whether it was from an urban or a rural setting, the number of households described, and whether wealth or income were assessed. To give an idea of the levels of prosperity across time and space, we have included the per capita tax paid per household, whilst recognizing that this is a tentative and hardly homogeneous indicator,.

[table 3 about here]

[20] Van Zanden (1995) follows the same procedure but employs five such categories instead.

Twenty one items have been gathered to date yet, a number that is growing still. Within each panel, they are ordered according to origin: principal (or capital) cities, large towns (above 1,000 households), small towns (urban agglomerations of less than 1,000 households) and rural, dispersed settlement. They do not constitute a geographically balanced sample, although an effort has been made to avoid bunching up information in one or two regions alone (see map).[21]

[21] Hopefully, more will be added to each of the four classes as the project advances, the aim being to achieve a balanced view based on two or three soundings per category.


Caminha
Vila do Conde
Porto
Viseu
Guarda
Portalegre
Avis
Lisboa
Arraiolos
Évora
Loulé
Tavira
0
50km

Nearly all of these observations are complete – two only at present are samples of original schedules of taxpayers – and the set therefore cuts across all income categories, thus providing us with a global vision of income or wealth distribution at the specific place and time. Some selection bias seems likely, although we have already discarded a number of less satisfactory rolls from Johnson's (2001) earlier listing because of distortions which they might cause as a result of fiscal exemptions and exclusions.[22] Three quarters of the present compilation are from *Décima* tax rolls and this makes it a reasonably homogeneous whole which should be fairly free from biases.

Establishing comparisons on the basis of these inequality estimates raises three problems. One is the fact noted in the literature that the inequality measures of wealth and income distributions are differently biased. Other things being equal, the former tend to be greater for a given wealth or income level. The second has to do with our "principal city" category, which consists of Lisbon and Porto and which has to be represented first by one and then by the other, owing to the present lack of consistent information for both of them throughout the period.[23] Between the 16th and the 18th centuries, Lisbon concentrated the most important administrative and political functions, attracted a large part of the richest social elements and enjoyed trading and shipping privileges which made it the economic hub of empire. With a population several times that of Porto, it was bound to display for this reason alone a greater inequality than its northern counterpart. The third difficulty stems from the fact that, in classifying locations according to their structural inequality, we have ignored the impact also of region and of economic specialization (e.g. administrative, manufacturing, port),

[22] Of his original eighteen rolls, we have retained here only five.

[23] Hopefully this will be remedied soon.

and attended only to size and whether they were urban or rural, a distortion which needs to be corrected.

Lack of data prevents us from dealing satisfactorily with the last of these. In the cases of the other two, we resort to a simple linear regression model which allows us to take into account for the impact on inequality of these biases. This is done by estimating the expression

$$G = \alpha + \beta * HH + \gamma * WY + \delta * T + \varepsilon \qquad (1)$$

in which G is the Gini coefficient, HH is the number of households which comprise the observed location, WY is a dummy for the type of distribution which is being measured (wealth=1; income=0) and T is a time dummy which reflects the century in which the measure of inequality was taken. The error term is ε.

[table 4 about here]

Table 4 presents the results of this estimation, which are significant globally and for each individual variable. They allow us to draw two useful conclusions. The first concerns the coefficient of the WY dummy. Given that it is so small, involving a less than a 10% impact on the size of the dependent variable, direct comparison of the two types of inequality measure+ does not appear too problematic. The second relates to the coefficient on the household variable (HH), which indicates that using data for Porto instead of Lisbon to represent "principal city" inequality requires a substantial correction to ensure true comparability. An increase of 10,000 households would imply an increase of 90 Gini points. i.e. a bias worth 13%. This means that in order to be

comparable to the Lisbon Gini for 1565, the Porto Gini in 1700 would need to be raised by something of the order of 0,200. [24]

To start making sense of this mass of data, the next step is to construct figure 1, which simplifies the information contained in table 3, resuming it to Gini coefficients only, and displays it graphically. Where more than one observation is available for a given time/location-type pair, we use their mean. In the other cases, we employ the only value available. Figure 1 also includes the corrections suggested above for the Gini coefficients by the regression results in table 4 (Porto in 1700).

[figure 1 about here]

Figure 1 allows us first of all to check the plausibility of our estimates by placing them in their contemporary European context. Above, in section **2,** we noted that before 1800 measures of inequality to be plausible ought to be high by present day standards and this is clearly satisfied by these data. Only one out of the twenty one Gini coefficients displayed was below 0.5, half of them were above 0,6 and four were above 0.7. The second criterion is that, for any given historical moment, these values should fit a descending pattern of inequality, the principal cities being highest through major and then lesser towns, and down to rural communities being lowest. Again this is confirmed by the figure although we still lack an adequate observation for "principal city" in the 1760s.

Apart from data plausibility tests, figure 1 makes it possible, by means of a simple graphic analysis to give tentative answers to two of the main questions that motivate this paper. The first one concerns the long run evolution of Portuguese inequality

[24] The household effect would be something like 0,270 from which one has to subtract the WY effect of 0,61, ie 0,209 to be exact.

between the mid 16th and the late 18th centuries. The evidence, at first sight, is ambiguous. The indicators for inequality in "principal cities" and "large towns" appear stable in the long run (some data for Porto and Lisbon still missing). On the other hand, those for small towns and the countryside point to an unmistakable decline. This does not mean, however, that country wide inequality might not have risen instead. Even if all four sectors had experienced a common fall in their respective Ginis, simultaneous inter-sectoral population movements could have led to an overall increase in inequality. This would have happened in the event that they caused sufficiently large net shifts from the sectors with lower (rural) Ginis to those with higher ones (urban centres with more than 5,000 inhabitants). Fortunately, the matter can be laid to rest by looking at the evolution of the population structure over the period of this study.

At second look at table 2, however, shows that the urbanisation rate was not only modest but remained also practically stable during the entire interval considered. Shifts between the different levels of the urban world were also not marked. Altogether the most plausible scenario is probably one of concurrent long term inequality decline, in keeping with a steady fall in per capita GDP and scarce structural change in the economy (Reis et al. 2011).

Our second line of enquiry is where should Portugal be placed in the ranking of economic inequality of this time? Was it unusually "unequal" by European, American or Spanish standards? Figure 2 puts together the relevant evidence from tables 1 and 3. For reasons reviewed above, consistent and comparable data such as we have gathered for Portugal is scarce in other countries of Europe, and simply does not exist for the Americas. National measures, such as can be obtained from social tables, have to be excluded as they are not available either for Portugal or some other countries. Ginis estimated from rents and wealth are discarded too because most Portuguese data are

drawn from income distributions. For the time being, we are forced therefore to confine this analysis to the late 18th century and focus it on a tiny handful of case studies.

[figure 2 about there]

On the basis of the available but rather incomplete records of Ginis for Spain, the Netherlands and Portugal, we can now note that the dispersion of local inequality measures was far from pronounced in their categories of "principal cities" and "countryside". An exception may have been the "large towns" of Castille, which were much less unequal than was the case in Portugal and the Netherlands. Overall, however, a strong pattern of international differentiation fails to emerge. Rather, what is striking is the "gross inequality" (McCants, 2007; Soltow, 1979, 1880,1985) which appears to have permeated uniformly the nations of Early Modern Europe, including Portugal. Finally, the evidence is too weak to allow a conclusion to be drawn about, for example, how the economic prosperity of the Netherlands affected its inequality, in comparison to what happened in the less well-off Iberian countries. Clearly, a lot more work needs to be done in this area.

Given the limitations imposed by the nature of the Gini methodology, our next exercise is to construct national inequality measures for each one of our benchmark years using the local estimates of Theil indices [GE(1)] from column 9 of table 3. This takes advantage of the decomposability of this index (Sala-i-Martin, 2002) but uses it in the inverse way to the usual procedure. Rather than starting from an existing national estimate of inequality, which we do not possess, and decomposing it into sub-indices of inequality, we follow an "additive strategy". This means calculating a national Theil from all the "local" Theils, weighting them by their respective populations and per capita outputs, in accordance with the standard expression

$$T = \sum (Nj/N)*(Mj/M)*Tj + \sum (Nj/N)*(Mj/M)* \ln (Mj/M) \qquad (2)$$

where T is the national Theil, Nj and N are the sizes of the "local" and national populations respectively, Mj and M are their respective production means and Tj are the local Theil indices of each of the four groups. Local production means are proxied by the nominal per capita tax assessment (col. 5, table 3) and the national mean is their population-weighted average (see table 2).

The result is shown in table 5 and is currently subject to revision and improvement. There are two main reasons for this. One is that it rests on an assumption of intra-group uniformity of inequality, which allows treating our local measures as representative of the whole group to which they belong. This may not be too far fetched but needs to be tested by incorporating fresh data from different locations into each group, a process which is currently going on. Hopefully, we should thus be able to do away with single representative values, as at present in some instances (e.g. urban Portalegre, 1725 or rural Vila do Conde, 1763). The second arises from the lacunae in table 3, which we have had to fill in, somewhat heroically, by interpolation (e.g. Porto 1760s). When these have been replaced by reliable representative information, many current doubts regarding the empirics of this exercise should disappear.

[table 5 about here]

The path of Portuguese economic inequality revealed by these figures is a consistently downward sloping line, with a low gradient from the middle of the sixteenth century to 1700 and a more pronounced one in the ensuing seven decades or so. In the present state of the art, these estimates are somewhat unusual. The first aspect is to note that this is possibly the longest time span (1550-1770) for which we have consistent and

comparable national indices of inequality for Early Modern Europe[25]. The second is that it is the first instance of a non-core economy of the Early Modern period for which results exist on a large temporal scale. In the third place, the steady decline of Portuguese inequality over more than two centuries sets it clearly apart from the better-studied examples of England and the Netherlands. The former witnessed a decline during the first half of the eighteenth century and then a rise over the next fifty years. The latter experienced a prolonged increase in income disparity between 1590 and 1740, followed by stabilization up to around 1800. This is particularly important from the viewpoint of testing the relevance of the Kuznets curve for the pre-industrial age, given that it is on these two case studies alone that this discussion has rested empirically to date. The present new run of Portuguese Theil indices thus provides a chance, for the first time, of verifying this approach in the context of the much more common "non-dynamic" economies of this era (Allen, 2003).

5. Portuguese inequality and the Early Modern Kuznets curve

Portugal is probably closer, in this period, to the European norm than England and the Netherlands, which were distinct outliers as regards significant aspects of macroeconomic performance. Analysing the causes of the long term decline of its pre-modern economic inequality is therefore an important contribution to Early Modern European economic history. To make it easier to grasp the forces which determined this evolution, we have graphed the Portuguese Theil index in figure 4 along with a number of possible explanatory variables suggested by the literature.

[Figure 4 about here]

[25] Morrison (2000)'s comparative study encompasses several significant time spans for different countries but they are not longer and they cover mainly the industrialisation period and very little time prior to 1800.

In panel A, we grapple with the classical Kuznetsian formulation, namely that the dynamic which drove income disparities was the shift in labour from low-paid, "traditional" occupations to more highly remunerated jobs in the "modern" sector (Kuznets, 1955). The simple urban-rural dichotomy, which is the commonly used proxy in such contexts, was essentially stable in Portugal from 1550 to 1770. In this optic, it seems therefore to have a weak bearing on the long run movement of the Theil index. A different conclusion is reached, however, if we consider instead the share of the non-agricultural labour force, which combines both urban and rural workers in the tertiary and secondary sectors. This is perhaps more relevant when analysing an epoch in which a significant part of the "modern sector" may not have occupied urban locations. Panel A shows an inverse relationship between inequality and this indicator of economic modernization, suggesting that an expansion in traditional low productivity activity (agriculture) in the long run had an influence on the long term decline in economic inequality in this country.

This "classical" Kuznets curve analysis has evolved in recent times as a result of the improvement in the empirical base for Early Modern economic History. In particular, it has focused on the fairly lengthy episodes of pre-industrial growth in countries like the Netherlands and England, characterised by international trade expansion, growth of export industries, rapid capital formation and an inordinate accumulation of large urban fortunes (Van Zanden, 1995; Morrison, 2000; Lindert, 2000). These were times also of escalating trends in real wages, which nevertheless rose more slowly than the rewards to other production factors, such as land and capital. A rise in the disparity of incomes was thus induced, in tandem with the general increase in average incomes in these economies long before the onset of industrialization. Because such situations bear a likeness to the impact of Modern Economic Growth on economic distribution in

industrializing countries, Van Zanden (1995: 662) has called this interaction a "super Kuznets curve". [26]

None of this, however, fits comfortably with Portugal's macroeconomic record between 1550 and 1770, or indeed with that of the majority of European nations during these two centuries. As shown in panel B of figure 4, in addition to an increasingly archaic economic structure, the sustained fall in Portuguese per capita GDP reveals an economy experiencing a decline in productivity and a loss in welfare over at least two centuries, except for the uncharacteristic boom of the first half of the eighteenth century fuelled by mineral-based colonial development. It is thus unlikely that its income distribution could have been shaped by the same forces as sustained British or Dutch prolonged per capita growth and structural transformation. On the contrary, in a country like Portugal, a more suitable strategy might be to examine the link between economic stagnation or regression, on the one hand, and falling inequality, on the other. If this relationship were to be confirmed, then Portugal's tendency towards greater equality during the sixteenth, seventeenth and eighteenth centuries might be construed as the counterfactual to the model considered above for the Netherlands and England, which connected long term inequality movements with pre-industrial economic dynamism.

The possibility of adapting and extending the Kuznets curve analysis devised to explain inequality the two small outliers is an attractive proposition, particularly because of its simplicity

[26] This is a reference not only to the intellectual authorship of this hypothesis but also to the long duration of the swings in distributional inequality.

model hypothesis such as this, which is simple, empirically well founded and enjoys an excellent pedigree, is naturally tempting to accept. Probably, there will never be sufficient empirical evidence at our disposal to validate it satisfactorily. The inequality literature suggests robustness tests, however, of which we retain here only one, given the inadequacy at present of the data for the others (Lindert, 2000). These are presented in panel C of figure 4. The issue at stake is whether over time independent evidence on income redistribution evolved in a manner compatible with the hypothesis. Of particular interest is how the share of unskilled workers, presumably the largest component of the labour force and hence a powerful influence on any measure of distribution, fared. As the graph shows, as a result of a rising pressure of population on the land, from the sixteenth to the late eighteenth centuries, there was a productivity decline in agriculture (only in 1700-1759 did this not happen because of the massive inflow of gold and the beginning of a Dutch disease in Portugal, which raised wages in the non traded sector] . This in turn caused unskilled wages in general to fall relatively to per capita GDP. The reduction was of the order of a quarter over the two centuries in question, which is a surprisingly modest reduction. At the same time, the amount of land per worker in agriculture went down to about 40 % of the original figure, suggesting some significant improvement in agriculture was possible in the meantime (Reis et al., 2011).

Though perhaps not a hefty decline, this drop in the income share of the poorest segment of society undoubtedly contradicts the evolution of Portugal's global Theil portrayed in table 5. How can these two facts be reconciled? The best available explanation at the moment is to argue that inequality declined in spite of the loss sustained by the lower deciles of the distribution. What may have made this possible was that, concurrently, other movements at points higher up in the distribution were

taking place and their effect on the Theil compensated this one. This is tentative and lacks sufficient empirical support but there are circumstantial signs of its occurrence.

In the highly unequal pre-industrial societies we are considering, with their sharp social and economic differentiation, redistribution could happen between higher deciles, as much, or perhaps even more, as between the lowest ones and the rest. The former might result not only in greater equality but also in a situation in which the middle strata – something akin to our present day middle class – might gain ground on the very wealthy and powerful.

There are two ways of considering this. One is to compare the evolution in the share of total income of the low, high and middle deciles respectively by means of an analysis of deciles. This can be done with the help of some of the fiscal records at our disposal, a feasible task which has not yet been undertaken. The other is to look at the ebb and flow of the incomes of the intermediate segments of this society, of individuals who neither lived off large scale land ownership, political office or major business, nor off the sweat of their brows. This refers to those engaged in "white collar" activities, namely the liberal professions or the administrative classes which served the state. In an earlier paper (Pereira et al, 2010), the earnings of these two groups were compared to those of unskilled workers in Coimbra, a major Portuguese town with a large and diverse non-manual salaried labour force. Between 1550 and 1770, the wage of nominal unskilled labour increased by a factor of three. In the same interval, the salaries of professors of the university, choristers and organists, burocrats, librarians and surgeons, rose by between four and six times, an evolution which resembles what happened with salaried employees in cities like Amsterdam and Vienna. Shifts such as these would affect our Theil estimates in the direction we observed in table 5 but were much more extensive probably than the groups in the example we have just given. Besides them, they were

occurring throughout the country amongst larger farmers, who were successfully transforming agricultural practice, small merchants who were rising thanks to the protection of the state, returned colonial civil servants and the like. This is a vast and complex reality and much of the evidence on it is anecdotal. The signs of a society moving towards greater equality and driven by a middle stratum in Portugal constitutes a hypothesis which deserves further exploration.

A final point derived from Table 5 takes us back to the elusive question of whether Latin inequality by European standards was particularly pronounced. It does not provide an iron-clad answer but it offers, however, clues to an indirect solution to this conundrum. The argument start with the belief that medieval inequality was a good deal less than what it became one or two centuries later has been widely accepted as regards Europe. Insofar as Portugal is concerned, this appears to be correct as well, the prevailing view being that its society was relatively egalitarian until the era of the overseas discoveries (15th century) or until the creation of its empire (1500). Johnson (2001) has adduced evidence in support of this and of the subsequent alteration of Portuguese society by rapid urbanization, overseas trade and the development of a centralized state, all of them leading to the emergence of a very wealthy strata of Portuguese. We can thus presume that income distribution worsened from, say, the early fourteenth century and that this proceeded until the mid or late 1500s.

By this time, the factors that had provoked this change had weakened, the empire was in retreat, and it seems reasonable to infer that the long swing of falling inequality portrayed in table 5 had started. In the Netherlands a similar process of economic development and concurrently rising disparity of incomes started later, only *circa* 1590, and was to go on until the mid-eighteenth century. A plausible scenario might be that when Portugal's inequality peaked it did so early and at this stage may not have been

much higher than in the contemporary Netherlands. After 1600 or perhaps sooner, Dutch inequality rose continuously for a century and a half, a time in which in Portugal it fell steadily. By the 18th century then, there seem to be reasons to believe that Portuguese inequality had long been overtaken and might therefore be thought of as being less than in the Netherlands. In other words, Portugal may well not have been as unequal as the Dutch.

5. Conclusions

This paper set out to construct a new data set on income inequality in Portugal between 1550 and 1770 with two aims in mind. One was to contribute to the comparison of economic inequality on both sides of the Atlantic as part of the ongoing debate concerning the roots of economic backwardness in Latin America. The other was to participate in the spreading effort to measure European inequality patterns during the Early Modern period and integrate its study into the broader field of long term pre-industrial performance of this region.

The paper has been successful in various ways. It has enlarged and improved significantly the pool of information on inequality in Portugal. It has shown that fiscal information is not only a rich source for this, but one which promises to break a looming data bottleneck in the field. To render this exercise feasible, it was necessary to employ the less common Theil yardstick in order to overcome certain shortcomings in the more popular Gini methodology. The result is a set of national and global consistent estimates at long intervals which show that, in Portugal, income declined steadily over two hundred years, starting in the middle of the sixteenth century.

Further contributions lie in the explanation of this result. The Kuznets curve was adopted as an analytical model and served to contrast two Early Modern paradigmatic situations. On the one hand, in the case of economically successful countries like England or the Netherlands, the rise of GDP per capita over long periods had as a consequence an increase in distributional inequality. On the other, a more numerous group, including Portugal, experienced slow structural change and stagnant or regressive GDP per capita, and followed therefore a trend towards a lesser degree of income disparity.

This paper was less successful with its first objective. A satisfactory international comparison based on Portugal was not forthcoming and it is unclear how this country stands in this respect vis-à-vis Brazil and other former Latin American colonies. Nevertheless, the Portuguese data suggested that whatever happened across the Atlantic, high inequality was indeed the rule in Europe between the Middle Ages and the nineteenth century. Moreover, one can also infer from it that by the eighteenth century, if not earlier, Portugal was at least less unequal than the Netherlands and possibly France too. "Latin inequality" may well be nothing more than a red herring.

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TABLE 1

The Measurment of Economic inequality: Europe and Americas, 1500-1808

Place	**Year**	**Population**	**GINI**	**location**	**observations**	**Economic** variable
SPAIN						
Castille	c.1750	?	0,39 - 0,56	rural + "towns"		
Castille	1752	3,945 families	0,525	rural + "towns"		
Guadalajara	1690-1800	14,000 producers	0,47-0,50	rural	14,000 producers	Y - tithe
Madrid	late 18 c.	160,000 (1800)	0,77	urban		
Jerez	c. 1750	?	0,5	rural?		
Castille/Palencia	c.1750	106 hh	0,527	rural/small town		Y
Castille/Palencia	c.1750	97 hh	0,523	rural		Y
Castille/Palencia	c.1750	9,000 inhabitants	0,557	small town: Palencia		Y
BRITAIN						
England and Wales	1688		0,556	whole country	HH	Y
England and Wales	1759		0,552	whole country	HH	Y
England and Wales	1801/1803		0,593	whole country	HH	Y
GERMANY						
Germany	1542	426 hh	0,64	Weimar (Urban)		
Germany	1542	632 hh	0,65	Eisenach (Urban)		
NETHERLANDS						
NL	1561		0,56	national		
NL	1732		0,611			
NL	1750	2438 hh	0,67	Swolle		
NL	1740-82	na		Amsterdam		rents
NL				all		
NL	1742	1,600,000'''	0,69	Amsterdam		?

NL	1808	2,100,000	0,57	national		
FRANCE						
France	late 18c	27,300,000 inhabits	0,59	national		Y
NORTH AMERICA						
USA	1774	919 HH	0,694	dispersed, whole country	(Hanson) net worth	Wealth (free HH)
USA	1774	919 HH	0,642		(Hanson) total assets	Wealth (free HH)
USA	1798	40,000HH (sample)	0,706	national	many omissions, Lindert, 19	Y (house values)
SWEDEN						
Sweden	1800	640,000 inhabitants	0,923	all>20 - national		Wealth
Sweden	1800	574,000 inhabitants	0,914	only rural		Wealth
Sweden	1800	65,000	0,937	only urban		Wealth
FINLAND						
Finland	1800	222,000 inhabitants	0.905	all>20 national		Wealth
Finland	1800	206,000 inhabitants	0.896	rural		Wealth
Finland	1800	16,000 inhabitants	0.953	urban		Wealth
DENMARK	1789	900,000 inhabitants	0,952	all >26 national		Wealth
NORWAY	1789	900,000 inhabitants	0,881	all >26 national		Wealth
LATIN AMERICA						
New Spain	1790	4,500,000 inhabits	0,635	national		Y

Table 2: Portugal's shares of national population by type of settlement
(thousands)

	end 16th c.	%	**end 17th c.**	**%**	**late 18th c.***	**%**
Principal cities (Lisbon and Porto)	144	8,34	205	9,32	238	8,21
Major towns	119	6,89	117	5,32	T264	9,10
Minor towns	76	4,40	73	3,32	56	1,93
Countryside	1388	80,37	1805	82,05	2342	80,76
Total population	1727		2200		2900	
Urbanization rate		19,60%		18,00%		19,10 %

Source: Bairoch (1988) with adaptations.

Notes:major towns are >5,000 pop; minor towns are <5,000 and >2,000
Countryside= total - all towns
*= 1800

TABLE 3

Gini and Theil coefficients: Local economic inequality

1	2	3	4	5	6	7	8
locality	**date**	**households taxed**	**urban/rural**	**Assessment per cap**	**Wealth/Income**	**Gini**	**Theil**
Panel A -circa 1550							
Lisboa	1565	15,000 (9638)	U	430	W	0,798	1,392
Coimbra	1567	1334	U	118	Y	0,697	1,178
Coimbra	1613	1599	U	427	Y	0,698	1,165
Loulé	1564	694	U	(302)	W	0,714	1,127
Loulé	1564	507	R	(156)	W	0,553	0,538
Panel B - circa 1700							
Porto	1698-1701	674	U	263,6	Y	0,660	0,998
Portalegre siza	1725	1489	U	609	Y	0,648	0,887
Avis	1690	311	U	569	Y	0,656	0,829
Vila do Conde	1698	706	U	293	Y	0,577	0,688
Portalegre (siza)	1725	1011	R	680	Y	0,541	0,559
Avis	1690	313	R	1260	Y	0,637	0,791
Panel C- 1770s							
Porto			U	800 "guess"	Y	0,660 "guess"	0,998
Viseu	1763		U		Y		
Guarda	1763-9	1042	U	735	Y	0,744	1,360

Caminha			U				
Vila do Conde	1763	706	U	709	Y	0,559	0,663
Portalegre	1787		U				
Vila do Conde	1763	124	R	639	Y	0,461	0,279
Avis	?		R		Y		
Caminha	1767		R				
Viseu	1763						
Guarda	1763-9						

Sources: Johnson (2001); various archives.

Table 4

Determinants of Gini Coefficients: a regression

(ordinary least squares)

Dependent variable: Gini coefficients

Explanatory variables	coefficients	p values
constant	0,705***	0,000
17th c.	-0,053*	0,070
18th c.	-0,123**	0,037
number of households	0,000009***	0,008
Wealth vs. income#	-0,061**	0,053

N = 17
R squared = 0,409
Adjusted R squared = 0,212

Sources: table 3
Notes: # - wealth =1, income= 0; coefficients significant at 10, 5 and 1 percent levels denoted by respectively one, two or three asterisks

Table 5

Global Income Inequality in Portugal: Theil, 1600-1800

		Decomposition	
	Theil	within groups	across groups
1550	0,918	0,817	0,0978
1700	0,872	0,768	0,102
Ca. 1770	0,654	0,624	0,034

Source: Data from table 3. For adjustments and interpolations, see text.

Fig 1: Inequality in Portugal, 1600-1800

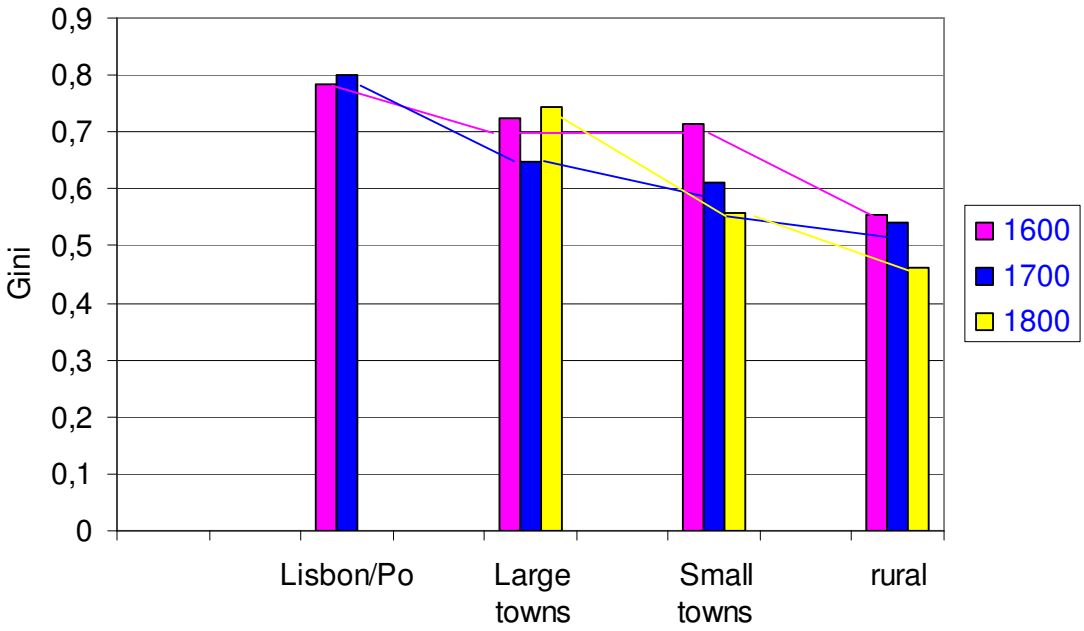
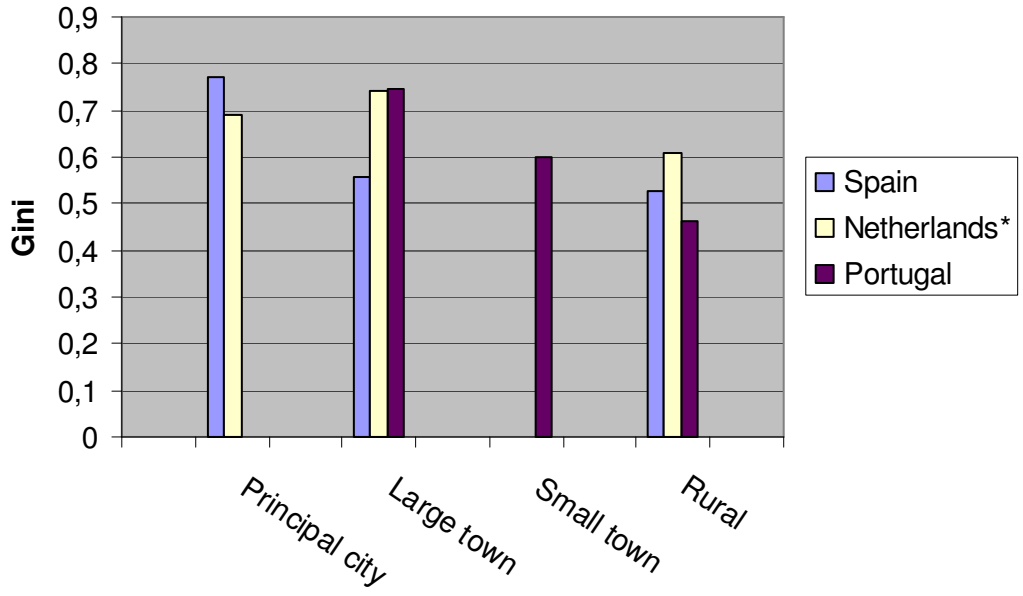


Fig 2 Inequality in Portugal and other countries, 18c.



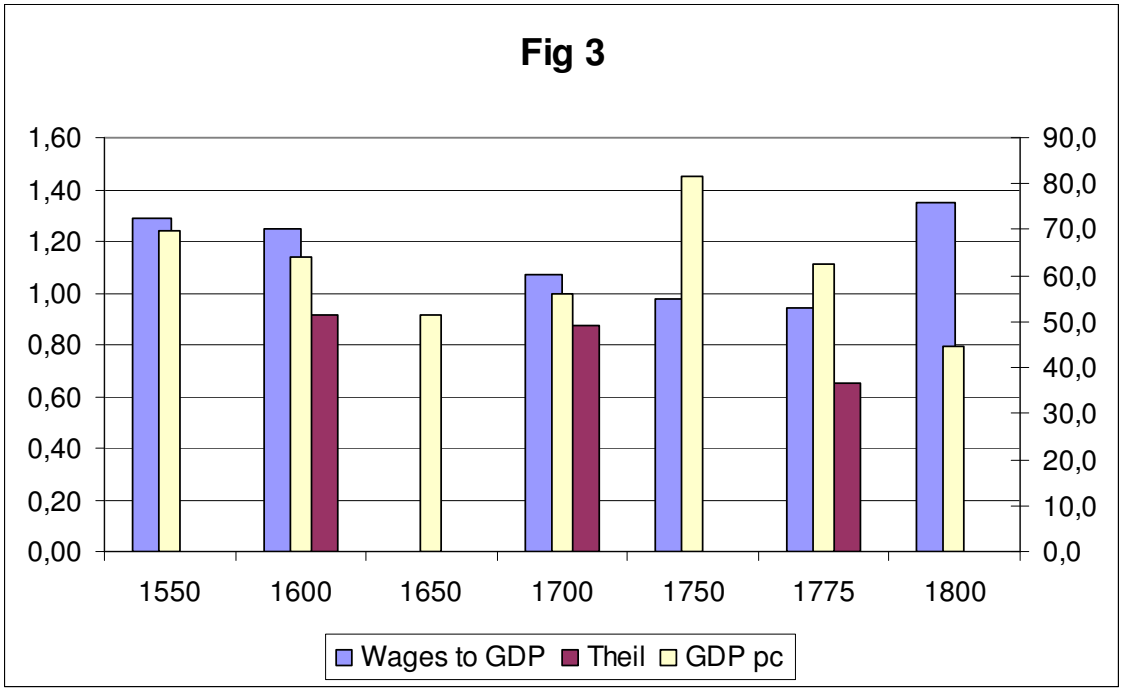


Fig 3
1,60
1,40
1,20
1,00
0,80
0,60
0,40
0,20
0,00
90,0
80,0
70,0
60,0
50,0
40,0
30,0
20,0
10,0
0,0
1550
1600
1650
1700
1750
1775
1800
Wages to GDP
Theil
GDP pc

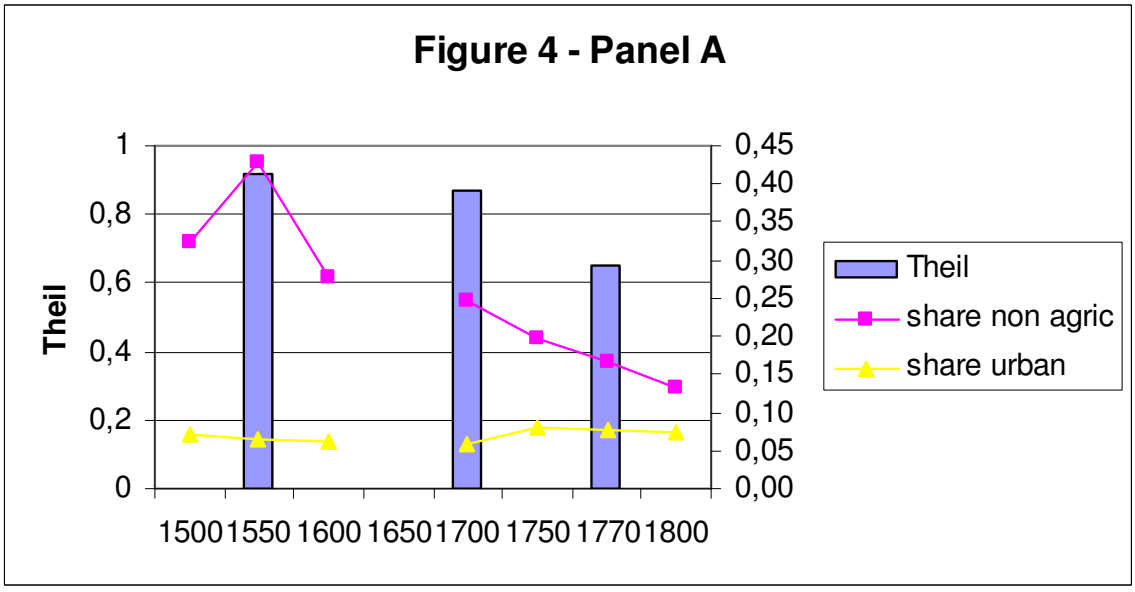


Figure 4 - Panel A
Theil
1
0,8
0,6
0,4
0,2
0
0,45
0,40
0,35
0,30
0,25
0,20
0,15
0,10
0,05
0,00
1500
1550
1600
1650
1700
1750
1770
1800
Theil
share non agric
share urban

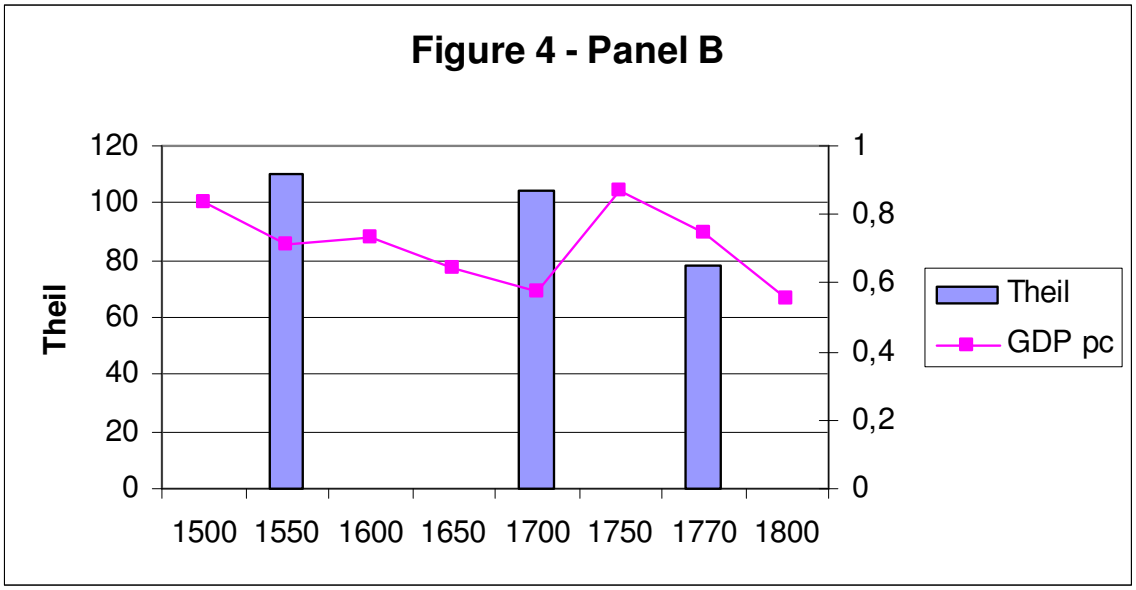


Figure 4 - Panel B
Theil
120
100
80
60
40
20
0
1
0,8
0,6
0,4
0,2
0
1500 1550 1600 1650 1700 1750 1770 1800
Theil
GDP pc

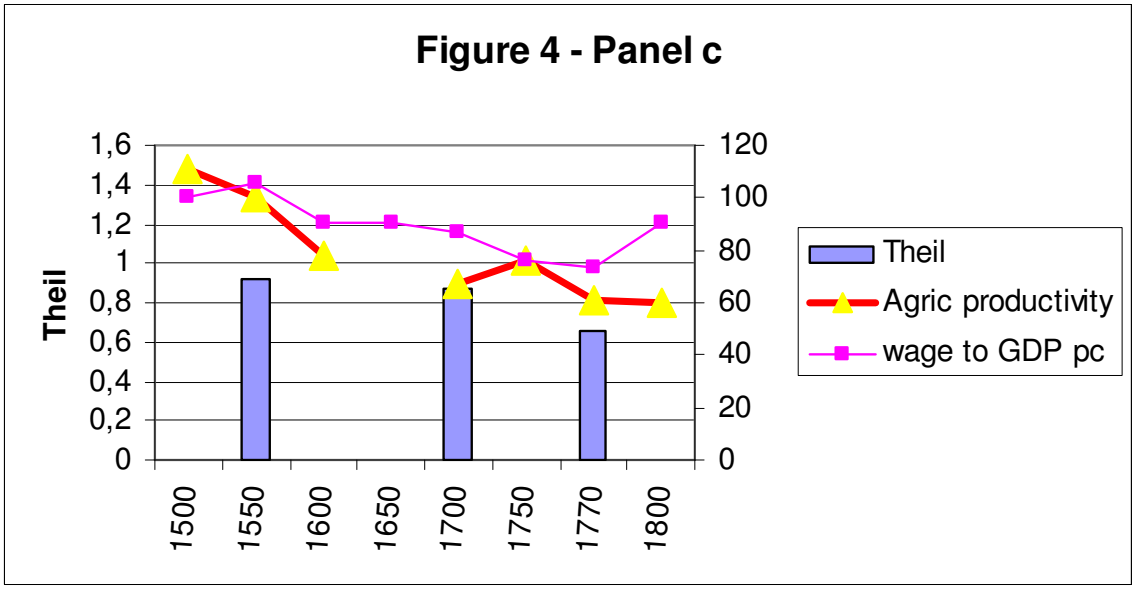


Figure 4 - Panel c
Theil
1,6
1,4
1,2
1
0,8
0,6
0,4
0,2
0
120
100
80
60
40
20
0
1500 1550 1600 1650 1700 1750 1770 1800
Theil
Agric productivity
wage to GDP pc