



# Historical gender discrimination does not explain comparative Western European development: evidence from Portugal, 1300–1900<sup>☆</sup>

Nuno Palma<sup>a,\*</sup>, Jaime Reis<sup>b</sup>, Lisbeth Rodrigues<sup>c</sup>

<sup>a</sup> University of Manchester, UK; Instituto de Ciências Sociais, Universidade de Lisboa, Portugal; Centre for Economic Policy Research, London, UK.

<sup>b</sup> Instituto de Ciências Sociais, Universidade de Lisboa, Portugal

<sup>c</sup> Nova School of Business and Economics, Universidade Nova de Lisboa, Portugal; GHES/CSG-ISEG - Lisbon School of Economics and Management, Universidade de Lisboa, Portugal

## ARTICLE INFO

### JEL codes:

N13  
N33  
J16

### Keywords:

Historical gender discrimination  
Gender wage gap  
Culture  
Social norms  
Comparative development  
The Little Divergence  
European Marriage Pattern

## ABSTRACT

Gender discrimination has been pointed out as a determining factor behind the long-run divergence in incomes of Southern vis-à-vis Northwestern Europe. In this paper, we show that women in Portugal were not historically more discriminated against than those in other parts of Western Europe, including England and the Netherlands. We rely on a new dataset of thousands of observations from archival sources covering six centuries, and we complement it with a qualitative discussion of comparative social norms. Compared with Northwestern Europe, women in Portugal faced similar gender wage gaps, married at similar ages, and did not face more restrictions on labor market participation. Consequently, other factors must have been responsible for the Little Divergence of Western European incomes.

## 1. Introduction

In November 1786, the male nurses of the Royal Hospital of Coimbra requested a pay rise. They argued that their job required a higher level of physical effort and that their pay was inferior to what the female nurses earned, even though the latter worked less and did lighter tasks (Lopes, 2001, pp. 650). In this paper, we show that although the experience of these men cannot be considered representative of Portugal's history – commonly, men did earn more than women – observable gender wage gap differences can be

<sup>☆</sup> An earlier version of this paper circulated as "Portugal's rise and fall, 1300–1900: a new analysis using occupational and women's data." We thank the members of the "Prices, Wages and Rents in Portugal 1300–1910" project for making this work possible. The editor Marianne H. Wanamaker and two referees provided useful feedback which helped improve the paper. Hélder Carvalhal, Francesco Fiore Melacrinis, Ulrich Pfister, Sandra de Pleijt, Cristina Radu, and Jacob Weisdorf kindly shared data. Carlos Faísca and João Pontes provided access to some primary sources. We are grateful for discussions with all of the above and Victoria Bateman, Mauricio Drelichman, Alice Evans, Rui Faria, António Henriques, Jane Humphries, Oded Galor, Cormac Ó Gráda, Pedro S. Martins, Mauro Rota, Leigh Shaw-Taylor, Xuesheng You and Jan Luiten van Zanden, as well as conference and seminar participants. Joakim Book and Joana Paulino provided research assistance. The authors acknowledge financial support from Fundação para a Ciência e a Tecnologia (CEECIND/04,197/2017) and from GHES/CSG-ISEG – Lisbon School of Economics & Management, Universidade de Lisboa (UIDB/04,521/2020). The dataset we use in this paper is available online (Palma et al. 2022).

\* Corresponding author.

E-mail address: [nuno.palma@manchester.ac.uk](mailto:nuno.palma@manchester.ac.uk) (N. Palma).

explained mainly by compensating differentials and different productivity levels. While gender discrimination did exist in Portugal, its extent was similar to that elsewhere in Western Europe, including England or the Netherlands: there were similar restrictions on labor market participation, gender wage gaps, and marriage ages.<sup>1</sup> This reflected the fact that social norms were also similar: marriage was monogamous, exogamous, based on consensus and neo-locality, and women could own property and have a share in inheritance to the same degree as in many parts of Europe. Portugal had all the characteristics that Carmichael et al. (2016) have argued as defining the European Marriage Pattern (henceforth, EMP). Hence, we argue that social norms related to gender discrimination were unlikely to be determining factors explaining the income divergence of Portugal vis-à-vis Northwestern European countries, including England and the Netherlands, contrary to what much recent literature suggests.<sup>2</sup>

Our motivation is to understand the causes that explain the divergence in incomes within Western Europe, which began in the early modern period (Broadberry, 2021a, 2021b). An influential school of thought attributes much explanatory power to cultural matters, particularly the Reformation, which is argued to have put Catholic countries on a lower growth path (Becker et al., 2016). It is thus relevant to study the social norms and characteristics associated with the Catholic religion and whether they changed over time following the Counter-Reformation. An increasingly prominent “Girl Power” hypothesis suggests that different social practices in Southwestern Europe (relative to the Low Countries or England) are to blame for the inability of the former region to grow during the early modern period.<sup>3</sup> De Moor and van Zanden (2010) argue that the EMP based on consensus and neo-locality as two core principles did not manifest itself in the former countries to the same extent as in the latter; these constituted the core EMP areas where females have had a greater degree of agency since the Middle Ages. As a result of this supposedly higher agency level, historical fertility levels were low and human capital formation higher than elsewhere (de Moor and van Zanden, 2010).

The same literature argues that women in the European South suffered greater gender discrimination. According to de Pleijt and van Zanden (2021), in Southwestern Europe women were paid according to social norms and were not allowed participation in the market economy to the same extent as in Northwestern Europe. The position of women in the Netherlands, measured by the wage gap, is deemed to have been favorable, even in comparison with England but especially with Southern and Eastern Europe.<sup>4</sup> In a recent paper, Drelichman and González Agudo (2020) reject this view for Toledo, at least for 1550–1650. Their evidence is suggestive, but their data only covers one city, one job (nurses), and 100 years. Consequently, de Pleijt and van Zanden (2021) argue that the Drelichman-Agudo finding that female compensation varied between 70 and 100 percent of male levels with fluctuations linked to relative labor scarcity, is not representative because it refers exclusively to the annual wages of women employed in hospitals. It hence only covers a semi-skilled segment of the labor market.

Our evidence concerns Portugal and covers the whole country over several centuries and a wide variety of professions. Overall, it aligns with Drelichman and González Agudo's (2020) conclusions for Spain. We divide our discussion into two primary forms of labor market discrimination: gender wage gaps and restrictions on market participation. Considering each of these matters in turn, different social norms and gender discrimination are not credible explanations for the income divergence of Portugal vis-à-vis Northwestern Europe. Evidence suggests that other factors triggered the Little Divergence in Western European incomes.

This paper contributes to the ongoing debate concerning the causal importance of culture and institutions in explaining comparative development. Our results contradict one channel over which different cultural practices within Western Europe could have been relevant to explaining the Little Divergence. Our evidence is in line with the observation that Protestant countries only began growing a century or more after their respective Reformations – and not all did. In England, for example, per capita growth only began following the Civil War and more than a century after its Reformation (Broadberry et al., 2015). The second European country to have had an Industrial Revolution was Catholic – Belgium – and had been for a long time under the Habsburg rule. Other Catholic countries such as France and Italy soon followed and were able to industrialize during the nineteenth century. The same holds for Spain, Portugal, and Ireland during the twentieth century, when their populations were still overwhelmingly Catholic. Finally, there is the remarkable case of Germany, which had both Catholic and Protestant citizens, for whom there were no significant historical differences in income levels, savings, and literacy rates, except when relating to the presence of a Polish minority in the East (Kersting et al., 2020).<sup>5</sup>

<sup>1</sup> The main way women were discriminated against concerned the range of professions they could take. The most skilled and best-paid jobs, such as lawyers and doctors, were usually not accessible to them; but this was also the case in Northwestern Europe. Few exceptions did exist, such as women who were able to practice medicine after being examined by the *fsico-mor* (for instance, in Évora in 1606, and in Óbidos in 1610) (Silva, 1985, vol. 1, pp. 234). De la Croix and Vitale (2022) find that most women who taught at universities or were members of academies of arts and sciences prior to 1800 lived in Catholic regions; the Protestant world discriminated against them more systematically.

<sup>2</sup> According to van Zanden et al. (2019, pp. 223), “the EMP is a marriage system based on consensus and neolocality, and [...] the basic features of the EMP [...] are the result of these underlying institutions.” Examples of scholars who have recently argued that Northwestern Europe was the core EMP region and considerably less discriminatory towards women relative to Spain and Portugal include de Moor and van Zanden (2010), Bateman (2019, pp. 40–47), van Zanden et al. (2019, pp. 236), and de Pleijt and van Zanden (2021). See also Henrich (2021, pp. 332).

<sup>3</sup> Portugal's cultural and geographic features are both Atlantic and Mediterranean. The same is true of Spain and France.

<sup>4</sup> See de Moor and van Zanden (2010), van Zanden (2011), van Zanden et al. (2019, pp. 223), de Pleijt and van Zanden (2021). In turn, Bateman (2019, pp. 37) argues that it was in Britain that women enjoyed greater freedom. While this paper questions these viewpoints from a Southwestern European perspective, we note that the comparative evidence for Central and Eastern Europe is also mixed at best (Dennison and Ogilvie, 2014; Szoltysek, 2015). The same is true for Sweden (Molinder and Pihl, 2022). In addition, in premodern England fertility practices varied considerably by social status (de la Croix et al., 2019).

<sup>5</sup> Social and religious tolerance was not lower in Catholic Europe until the second half of the seventeenth century. For example, persecution of Jews increased in areas of Germany that became Protestant (Becker and Pascali, 2019). Earlier, too, toleration levels varied in time and space: in England, the expulsion of the Jews happened in 1290 – two centuries before the Iberian expulsions and the forced conversion to Catholicism of the

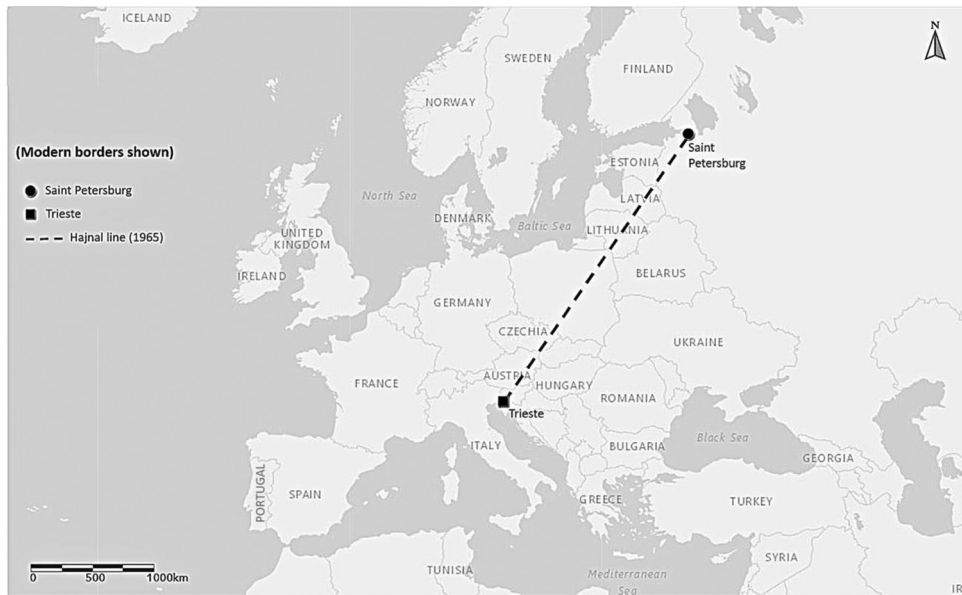


Fig. 1. The original Hajnal line.

Our findings suggest that different social norms and culture do not explain the Iberian Little Divergence. Hence, alternative explanations for the long-term decline of the Iberian economies should be considered.<sup>6</sup> Although the present paper does not aim to find the causes of the Iberian Little Divergence, it shows that – whatever the cause – social norms were similar across Western Europe and, therefore, economic and political explanations might hold more promise for understanding the Iberian Little Divergence.

## 2. Historical background

Since Hajnal (1965), a vast literature has argued that the EMP has characterized Western European fertility choices since at least the Middle Ages. This body of practices and social norms implied, for example, that women married in their mid-to-late twenties, considerably later than elsewhere, including in Asia. As initially put forward, Hajnal's EMP ran from Trieste to St. Petersburg (Fig. 1).

In recent articles and books, van Zanden and co-authors have argued that the EMP did not apply to Southwestern Europe, at least not to the same extent as in other European countries such as the Netherlands and England. According to the “Girl Power” hypothesis, the fact that the EMP was not observable – or was, at least, weaker – in Southwestern Europe had consequences for women's labor market participation and fertility choices. The underlying institutional and cultural reasons that explain these different practices are deemed to explain the ultimate failure of economic growth to take off in Portugal, Spain, and Italy.

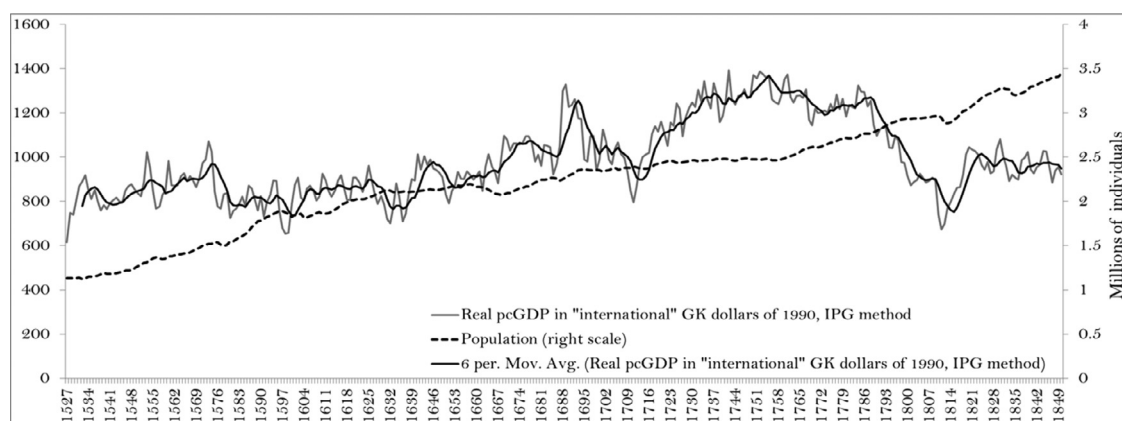
Insofar as Portugal is concerned, one immediate problem with the “Girl Power” hypothesis is that Portugal had a comparatively good economic performance until the mid-eighteenth century (Costa et al., 2015; Palma and Reis, 2019).<sup>7</sup> As Fig. 2 shows its per capita economic performance was comparatively good until the 1750s when it ended.<sup>8</sup> It was only from the 1780s that a persistent decline began. Differences in per capita economic growth rates relative to the best-performing countries then began to emerge. This poor level of performance continued into the nineteenth century. These facts raise several questions. Foremost, why did the Portuguese decline happen, and what explains the timing? It could not have been solely due to the empire's decline since by the second half

1490s. The Jewish community was only accepted in England again under Oliver Cromwell's rule in the mid seventeenth century, in exchange for payments, and Jews in England faced discrimination well into the nineteenth century. In France, the Jews were expelled in the fourteenth century. Catholics were persecuted in Protestant Europe, just as the converse happened in Catholic Europe. By the eighteenth century, Catholic Europe was less tolerant, which was endogenous to its political environment. And yet it remained the case that Protestant countries discriminated against women artists and scientists more systematically than the Catholic world did (de la Croix and Vitale, 2022).

<sup>6</sup> Among other explanations in the literature, one concerns the resource curse: how the large amounts of precious metals in the Americas beset Iberia with Dutch Disease, leading to industrial decline, and with reduced executive checks and state capture (Drelichman, 2005a, 2005b; Palma, 2020; Kedrosky and Palma, 2021; Henriques and Palma, 2022).

<sup>7</sup> Recent research has questioned the notion of an early modern Little Divergence prior to the early eighteenth century (Malanima, 2013; Geloso, 2018; Stephenson, 2018; Mocarelli, 2019; López-Losa and Piquero Zarauz, 2021).

<sup>8</sup> Portugal's economic experience until the 1750s is remarkable considering the statement by Broadberry et al. (2015, pp. 212) that in Britain “[In the period 1780-1830] for the first time the Kuznets condition of simultaneous growth of both GDP per head and population was being met.”



**Fig. 2.** Portugal's GDP per capita and population, 1527–1850. Sources and notes: [Palma and Reis \(2019\)](#) for GDP per capita. IPG stands for the inter-productivity gap, the baseline methodology used in this paper. For population, [Palma et al. \(2020\)](#).

**Table 1**

Average annual per capita real growth (%).

|          | 1500–1550 | 1500–1600 | 1500–1650 | 1500–1700 | 1500–1750 | 1500–1800 | 1500–1850 |
|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| England  | −0.05     | 0.00      | −0.11     | 0.19      | 0.18      | 0.22      | 0.27      |
| France   | −0.31     | −0.06     | −0.05     | 0.03      | 0.02      | 0.00      | 0.12      |
| Germany  | −0.31     | −0.16     | −0.09     | −0.08     | 0.00      | 0.01      | 0.07      |
| Holland  | 0.43      | 0.61      | 0.41      | 0.19      | 0.19      | 0.19      | 0.14      |
| Italy    | −0.14     | −0.12     | −0.06     | −0.02     | 0.00      | −0.04     | −0.01     |
| Poland   | 0.20      | 0.09      | −0.03     | 0.02      | 0.05      | −0.01     | 0.01      |
| Portugal | 0.61      | 0.25      | 0.20      | 0.24      | 0.32      | 0.13      | 0.12      |
| Spain    | 0.75      | 0.15      | −0.07     | 0.07      | 0.06      | 0.05      | 0.12      |
| Sweden   | −0.12     | −0.34     | −0.16     | 0.06      | −0.05     | −0.08     | −0.01     |

Sources: For England, [Broadberry et al. \(2015\)](#); for France, [Ridolfi and Nuvolari \(2020\)](#); for Germany, [Pfister \(2022\)](#); for Holland, [van Zanden and van Leeuwen \(2012\)](#); for Italy, [Malanima \(2011\)](#); for Poland, [Malinowski and van Zanden \(2017\)](#); for Portugal, [Palma and Reis \(2019\)](#); for Spain, [Prados de la Escosura et al. \(2020\)](#); for Sweden, [Krantz \(2017\)](#) and [Schön and Krantz \(2012\)](#).

Notes: Annualized growth rates were calculated using the familiar compound growth formula. As per the available annual data, Portugal's GDP per capita starts in 1527; we assume that the 1527 value also applies to 1500. Modern borders are used when possible. In the case of England, they correspond to England until 1700 and Great Britain afterward; in Italy, they fit North and Central Italy only; in Germany, 1871, borders are used. In Poland, they correspond to the Kraków region until 1795 and modern borders afterward. In the case of Holland, borders correspond to Holland until 1800 and the Netherlands for 1850; a benchmark for 1807 was used for the data before 1800 ([van Zanden and van Leeuwen, 2012](#), pp. 121), and the 1850 level for the Netherlands is from [Smits et al. \(2000\)](#).

of the eighteenth-century intercontinental trade was at its peak ([Costa et al., 2015](#)).<sup>9</sup> In this paper, rather than exploring the actual causes, we aim to show that whatever the reason, it was not related to a differential incidence of the EMP.

In a state-of-the-art summary, [Grafe \(2015\)](#) raises four unsettled issues regarding the dynamics of Western Europe's early modern economies. These raise doubts about several established claims in the literature relevant to our present discussion. The first questions the “dogma of a largely stagnant early modern European economy” ([Grafe, 2015](#), pp. 280). Indeed, Portugal experienced significant bouts of expansion driven by technical and organizational change in this era. The second questions Western European countries' adherence to the canonical Malthusian model – particularly during spells when per capita income deviated persistently from a subsistence level. Also, Portugal does not fit the pattern since the country went through long spells of per capita income growth co-existing with population growth, a phenomenon that suggests modernization ([Kuznets, 1966](#), pp. 34–85; [Broadberry et al., 2015](#), pp. 3).

The third issue raised by Grafe confronts the conventional vision of the geography of a Little Divergence during which early modern European growth was “restricted to the North Sea region ... while per capita income in the rest of Western Europe was constant at best” ([van Zanden, 2009](#), pp. 5). Indeed, current data tells a different story. The timing of Portuguese divergence from the Western European core only took place relatively late, from the second half of the eighteenth century. [Table 1](#) shows no visible

<sup>9</sup> [Abad and Palma \(2021\)](#) suggest that it seems more likely that the empire's focus on mining having had negative economic and institutional consequences for the motherland.

differences in growth rates between Portugal and the Netherlands or England until the mid-seventeenth century. Finally, the fourth issue Grafe raises focuses on the notion of a “premodern intensive growth” process. In this process, divergence from the stagnation equilibrium occurs in sequential sources of growth, with occasional reversals. The latter indeed happened in Portugal, particularly from the second half of the eighteenth century, when Broadberry’s (2021a, 2021b) notion of a European Little Divergence manifests itself in Portugal.

Overall, evidence about the growth rates of the European countries in Table 1 does not support the claim by Baten and de Pleijt (2018, pp. 23–24) that “the Low Countries and England witnessed almost continuous growth between the 14th and the 18th century, whereas in other parts of the continent [Italy, Portugal, Spain, Germany, Sweden, and Poland] real incomes went down or stagnated.” Iberian economic performance was comparable to that of Northwestern Europe until late, which raises doubts about the validity of the EMP being a key causal mechanism behind the Little Divergence. The EMP was supposedly in operation since the Middle Ages, and there is no apparent latent process by which its consequences could only be felt centuries later – and in some countries more than others. More importantly, the EMP or its absence should have impacted people’s behavior in ways that we do not observe empirically.

In this article, we show that there was nothing special about the Netherlands or England regarding relevant social norms of this kind. Portugal was a Western European country that followed the same marriage patterns as elsewhere. We show that gender discrimination was not worse than in England or the Netherlands, and inheritance laws were more favorable. Not surprisingly, and unlike what much of the literature claims, women in Portugal married late – around the age of 25.<sup>10</sup> This was similar to the average age for England or the Netherlands and much higher than the claims often made in the literature that it was common for women in Southern Europe to marry in their teens (de Moor and van Zanden, 2010, pp. 17–18; van Zanden et al., 2019, pp. 55; Bateman, 2019, pp. 44). Even within a country as small as Portugal, there were regional variations. As we show below, the average age for marrying could be as high as 28 years in the northern part of the country, by far the most populous (Palma et al., 2020).<sup>11</sup> The situation was similar in Spain (Rowland, 1989, pp. 513, 515).

### 3. Measuring historical gender discrimination in Portugal, 1300–1900

We now consider Portuguese gender wage gaps in detail. We find that women earned no less than two-thirds of what men did for jobs that required physical strength. This was in proportion to their approximate physical strength difference since physiological studies show that women have, on average, only up to two-thirds of the physical strength of men (Rasch, 1990; Burnette, 2008, pp. 141). We also consider the comparative extent of women’s market participation on the extensive margin, i.e., the percentage of women who worked for wages and the range of jobs available to them. We find that such rates were not lower in Portugal than in England or the Netherlands.

#### 3.1. Gender wage gaps: daily wages

A straightforward form of assessing job discrimination is to measure the gender wage gap: the extent to which women were paid less to do the same job. There is no obvious way to make these comparisons because even when the tasks were the same, defining what “the same job” mean is not straightforward. As we expect wages to be related to productivity, it is not surprising that men earned more for agricultural work done by both genders since grain agriculture requires considerable upper-body strength, which men have an advantage in providing (Baten et al., 2017).

For our discussion of daily wages, we focus on unskilled workers. We observe female and male workers’ wages and take all our information from the same source, place, institution, and year. Our observations refer to wages paid to women and men for identical tasks and by the same employer.<sup>12</sup> To ensure comparability, we consider the following situations. For agriculture: harvesting grain, grapes, and olives; weeding; carrying baskets or buckets of grapes, water, manure, wood, or ashes; working in the vineyards.<sup>13</sup> Outside of agriculture, unskilled occupations correspond to helpers, domestic servants, laundresses and sweepers. We have focused on modal wages, as is standard in the literature, and our geographical coverage includes a variety of locations in Portugal.<sup>14</sup>

Fig. 3 shows the gender wage gap for daily unskilled workers, 1350–1910. We have taken these data from primary sources listed in full in Appendix B. They are mainly composed of the account books of institutions such as monasteries and hospitals, which were critical employers at the local and regional levels, hiring a considerable number of individuals to work in and outdoors on a daily, weekly, and annual basis. Fig. 3 reveals that women earned between two-thirds and 80 percent of men’s wages doing the same jobs

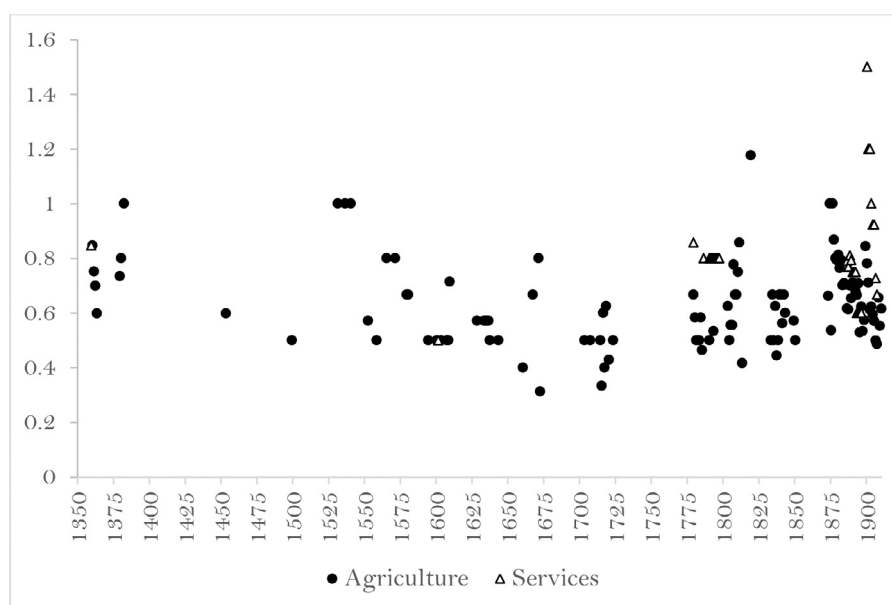
<sup>10</sup> The meta-study by Dennison and Ogilvie (2014, pp. 654) similarly finds the average female age at first marriage to be 25 in Portugal, based on 34 observations.

<sup>11</sup> The higher marriage age in the North of Portugal may be related to land property distribution and persisted into the late nineteenth century (Rowland, 1984, pp. 28). In Minho (North of Portugal), inheritance practices benefited women, again contradicting what is commonly claimed to be true even for Europe as a whole (Durães, 2000; Bateman, 2019, pp. 41).

<sup>12</sup> Data for Spain from de Pleijt and van Zanden (2021) mixes laundresses with unskilled male labor occupations, which could have had considerable physical strength requirements.

<sup>13</sup> This included, for example, pruning and clearing vineyards from lopped branches (*podar*).

<sup>14</sup> The locations covered by our data are as follows. In the North: Barcelos, Braga, Guimarães, Lamego, Ponte de Lima, Porto, Torre de Moncorvo, Valença, Viana do Castelo. In the Centre: Aveiro, Coimbra, Caldas da Rainha, Tomar. In the South: Alfeite, Carregado, Évora, Lisboa, Queluz, Salvaterra de Magos, Setúbal, Sintra, Vila Viçosa. We show these locations in a map in Appendix A.



**Fig. 3.** Gender wage gap (unskilled f/m): daily wages, 1350–1910. Sources: primary and secondary sources are listed in Appendix B. Notes: All the observations in this figure refer to the same (agricultural) occupation, in the same region and the same employer, for any given year. These observations refer to wages paid without in-kind benefits (mentioned in the sources as *seco* or *sem razão*).

for the same employers.<sup>15</sup> The wage gap was systematically larger for agricultural than service jobs. The range stayed approximately stable over the centuries, and the gap in agricultural jobs corresponded to women's lower physical strength and consequently lower productivity in these types of jobs.<sup>16</sup> As mentioned, women have, on average, up to two-thirds of the physical strength of men, implying lower productivity levels in many agricultural jobs (Boserup, 2007).<sup>17</sup> The wage gap tended to be larger for agricultural jobs, that required physical strength, such as mowing or weeding (*ceifar*, *mondar*), compared to those where the main force came from oxen or horses pulling agricultural instruments, as harrowing (*gradar*).<sup>18</sup> In our sample, the average gap is around 0.6 for the former two jobs but only 0.8 for the latter. Additionally, we do not consider agricultural jobs related to the production of olive oil because men and women performed different tasks: men thrashed the trees (*vareja*) while women hand-picked the olives from the ground (*apanha*). This division of labor implies that men did the heavier work, and indeed had we compared these different jobs across genders, the average gap would have been larger (0.4).

Hence, we do not find evidence of discrimination in these gender wage gaps. While less systematic data is available for the service sector, it suggests that the wage gap was smaller than in agriculture. For example, in Coimbra, between 1790 and 1797, the wage gap was only 0.8 for servants (Lopes, 2012, pp. 154–155). The same continued to be true almost a century later for palace servants during 1886–1892 (*The PWR data files*, n.d.). By the early twentieth century (1900–1907), women and men earned similar wages for these jobs (*The PWR data files*, n.d.). In contrast with agricultural jobs, the gender wage gaps were smaller – and often non-existent – in service jobs, where physical strength did not matter for productivity.

### 3.2. Gender wage gaps: annual wages

We now focus on the gender wage gap for unskilled and skilled workers on quarterly annual wages.<sup>19</sup> We start with the case of unskilled workers. We focus on nurses, the only profession for which semi-skilled salaries are systematically available for both genders.<sup>20</sup>

<sup>15</sup> The wage gap that we find is considerably smaller than if women had earned half of the male wage, as claimed by van Zanden et al. (2019, pp. 223–224) and de Pleijt and van Zanden (2021).

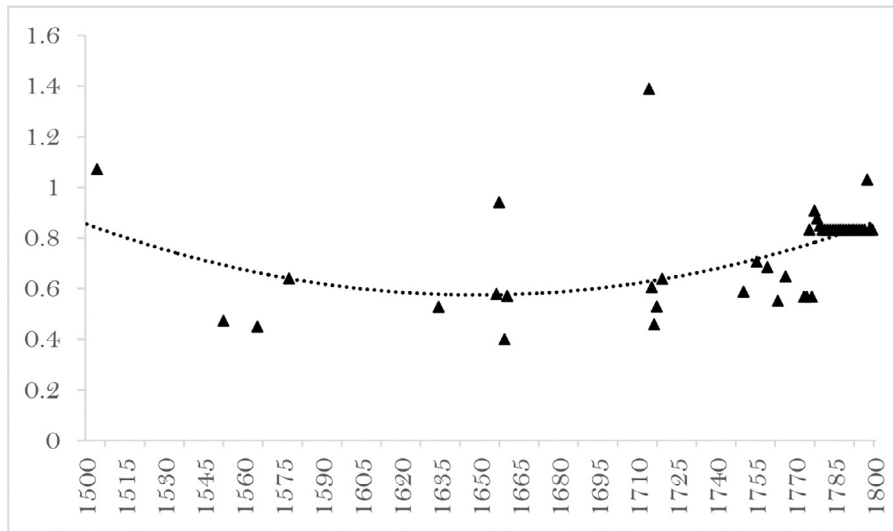
<sup>16</sup> Women also do not require as much food consumption as men; this was particularly relevant when most people were poor and a large part of even a respectability basket was spent on food (Allen, 2001).

<sup>17</sup> As men had about 50 percent more physical strength, a wage premium of 50 percent (i.e., women earning 2/3 of the wages of men doing the same job) was expected for wages to be in line with productivity in jobs that required physical strength.

<sup>18</sup> This was similar to the situation in other parts of Western Europe, such as England, Germany or Sweden (Whittle and Hailwood, 2020).

<sup>19</sup> There are other frequencies (weekly, monthly) of payment, but these appear much less in the sources.

<sup>20</sup> Drelichman and González Agudo (2020) consider it a “non-gendered low-skill occupation.” We classify it as semi-skilled since the wages for nurses were systematically about 50 percent higher than the unskilled female wages for the same years. Male nurses' wages were close to those of other semi-skilled professions, such as weavers and candle-makers. Nursing is also a low/medium-skill occupation according to the standard



**Fig. 4.** Gender wage gap (unskilled f/m): annual wages, 1500–1800. Sources: all sources are listed in Appendix B. Notes: we deleted three outliers (above and below the trendline) due to uncertainty about the exact nature of their jobs. The trendline is a second-order polynomial.

### 3.2.1. Unskilled workers on annual wages

We first consider the case of unskilled workers paid on an annual basis. While most unskilled workers were hired by the day, we also found several cases of workers paid yearly wages. Drawing on primary and secondary sources, we collected the wages of men and women performing the same task and paid annually. Data derive mainly from hospitals and religious institutions, namely such as monasteries and convents. To fulfill their foundational obligations, treating the sick poor (*pobres enfermos*) or praying for the soul of the living and the dead, these organizations required a significant number of employees to ensure a wide range of tasks, from sweeping and carrying water to washing clothes and religious vestments. Data from Fig. 4 rely mainly on services, such as nurse helpers, servants, or laundresses. They show that women earned about two-thirds of what men did during most periods, which is in line with what we previously found with the daily data.

#### Semi-skilled workers: the case of nurses

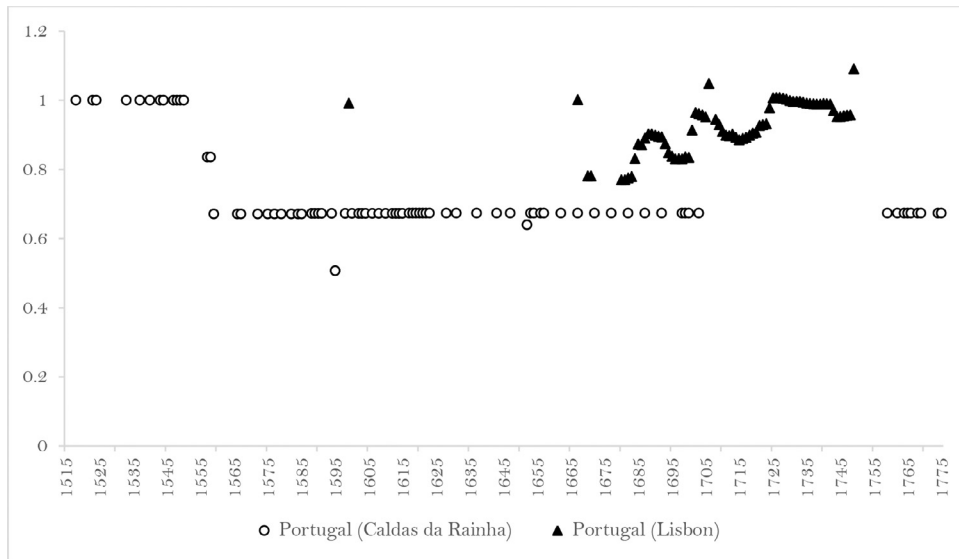
In the case of nurses, we have annual wages for females and males. They correspond to the same source for the same institution in the same place and year. Data derive from the two largest hospitals in the realm: *Hospital Real de Todos-os-Santos* (Lisbon) and *Hospital de Nossa Senhora do Pópulo* (Caldas da Rainha).<sup>21</sup> The nurses' main tasks included caring for the sick, feeding them, administering the medicines, cleaning the wards, being vigilant to the sick poor calling the doctor or the priest if needed and being present at the two daily medical rounds. Hospitals' statutes refer that male nurses were expected to have writing and reading skills to understand the physicians' prescriptions and to be able to administer the medicines to the patients (Rodrigues, 2013, vol. 1, pp. 322). Although hospitals often (though not always) hired couples in their female and male wards, but did not form a team, as their quarterly payments were registered separately in account books.

In this paper, we focus only on the cases of male and female nurses treating fevers in these two hospitals, therefore excluding those who treated syphilis and those who worked in other hospitals and were paid daily.<sup>22</sup> Most data from Fig. 5 were collected from archival sources and are available here for the first time. When included in the sources, we gathered the value of money wages and added the monetary value of in-kind compensation such as food, clothing, and lodging. In the case of the *Hospital Real de Todos-os-Santos* (Lisbon), payment included the economic value of in-kind compensation (clothing and food). Information about the monetary wages for men, the value of clothing given to men, and the value of food given to women are sometimes missing in this source. When this was the case, we assumed that the same ratio for the corresponding category applied, using the information from nearby years.

international classification known as HISCLASS (van Leeuwen and Maas, 2011). For example, Humphries and Weisdorf (2015, pp. 410) also classify nurses as having a skill component above unskilled workers. Drelichman and González-Agudo (2020) report that Hospital de Tavera in Toledo was unhappy with the unskilled girls hired for low wages, which suggests that nurses had additional skills.

<sup>21</sup> The details are given in Appendix C.

<sup>22</sup> Other early modern Portuguese hospitals paid daily wages to their nurses. For instance, in 1779, the hospitals of the University of Coimbra paid 80 réis per day to its female nurses and 60 réis to their male counterparts; in 1790, male and female nurses received 80 réis daily each, plus a *ração* (food). In 1730, the Hospital of St. Marcus in Braga paid 60 réis per day to its male nurse and 50 réis to its female nurse. Besides the cash salary, the former received 35 bushels of wheat annually and a dress biannually; the latter 30 bushels of wheat annually and one dress biannually. In the early eighteenth century, male and female nurses working at the Hospital of St. Marcus earned 100 and 90 réis, respectively (Lopes, 2019).



**Fig. 5.** Gender wage gap (semi-skilled f/m): nursing annual wages, 1515–1775. Sources: for Lisbon, *The PWR data files* (n.d.); for Caldas da Rainha, ADLRA, Fundo do Hospital das Caldas da Rainha, Livros de receitas e despesas (1518–1774), DEP. VI-3-B-1-DEP. VI-6-A-5.

The value of clothing given to women is always missing, and we assumed that it was 2/3 of the value given to men. In the case of *Hospital de Nossa Senhora do Pópulo* (Caldas da Rainha), we proceeded similarly with respect to missing data.<sup>23</sup>

Fig. 5 shows that women earned about two-thirds of men's wages, as was also the case with the unskilled workers paid daily and those paid annually. While the trendless series of the *hospital of Nossa Senhora do Pópulo* (in Caldas da Rainha) is justified both by the absence of in-kind compensation (food and clothing) and the omission of other bonifications in the sources (such as tips and gifts in the form of clothes), the series concerning the *Hospital Real de Todos-os-Santos* (in Lisbon) reflects the fluctuation of the price of the in-kind compensation nurses received. In any case, Fig. 5 shows that in both hospitals, the wages of female nurses corresponded to more than 60 percent of their male counterparts.

### 3.3. Understanding wage premia

While raw labor jobs did not require skills, the same was not true for the other professions we have considered. As is well-known in labor economics, wages reflect productivity and embedded human capital in competitive markets.<sup>24</sup> We now show that men frequently did jobs subject to a compensating differential, hence it is not surprising that they were paid more than women.

In the medieval and early modern period, some jobs could be done by both genders, while others were considered gender-specific. Our sources include many more professions beyond those we have so far considered. Men had access to a broader variety of jobs, but many of these had negative characteristics of one kind or another. Many male-only jobs had a negative social stigma, disagreeable features, or were dangerous. It is well known in labor economics that a compensating differential is paid to jobs with such characteristics (Carpenter et al., 2017). There is no reason to believe that it was different in the past. For example, carrying manure or even night soil (*carregar esterco*) was repugnant; being a guard could be dangerous; digging required much physical effort. For such jobs, the fact that a male premium existed relative to female wages of comparable skill does not necessarily reflect discrimination. Even in today's world, only a small percentage of women choose to be masons, bricklayers, or garbage collectors, jobs labor economists have measured to have a premium over others of comparable skill levels due to compensating differentials. As late as 2010, "conventional human capital variables taken together explained little of the gender wage gap, while gender differences in occupation and industry continued to be important" (Blau and Kahn, 2017, pp. 789).

Contrary to studies that freely mix men and women performing different tasks albeit admitting that men often did more physically demanding jobs than women (de Pleijt and van Zanden, 2021, pp. 8, 25), we have classified the jobs from our sources along four dimensions expected to have a compensating differential: repugnant, dangerous, requiring high physical effort, or none of the above (Table 2). We assign a wage category to each job and show the number of observations that suggest how frequently that profession

<sup>23</sup> In the Appendix, we provide details concerning the methodological assumptions underlying the construction of missing data (including that for the value of lodging).

<sup>24</sup> In Portugal, serfs were rare and there were no limitations to labor movements after 1300 (Henriques, 2017, pp. 28). From the fifteenth to the mid-eighteenth century, however, slaves of African origin worked in domestic service or other unskilled professions. Although their numbers reached around 10 percent of Lisbon's population during the sixteenth century (Oliveira, 1987[1551]), percentages were small for the mainland country in most periods.

**Table 2**  
A sample of gender-specific occupations with compensating differentials indicated.

| Occupation                  | Gender | Repugnant | Danger | Physical | Wage category    | Observations |
|-----------------------------|--------|-----------|--------|----------|------------------|--------------|
| Gardener                    | M      | No        | No     | Yes      | Unskilled annual | 21           |
| Sheep shepherd              | M      | No        | No     | No       | Unskilled annual | 14           |
| Ox-driver                   | M      | No        | No     | Yes      | Unskilled annual | 11           |
| Chicken minder              | F      | No        | No     | No       | Unskilled annual | 3            |
| Cleaner                     | F      | No        | No     | No       | Unskilled daily  | 166          |
| Day laborer                 | M      | No        | No     | Yes      | Unskilled daily  | 73           |
| Pruning vines               | M      | No        | No     | No       | Unskilled daily  | 43           |
| Staking vineyards           | M      | No        | No     | Yes      | Unskilled daily  | 24           |
| Vineyard guard              | M      | No        | Yes    | No       | Unskilled daily  | 14           |
| Cutting firewood            | M      | No        | No     | Yes      | Unskilled daily  | 13           |
| To second dress maize/vines | M      | No        | No     | Yes      | Unskilled daily  | 10           |
| Selecting grain             | F      | No        | No     | No       | Unskilled daily  | 4            |
| Cleaning wine barrels       | F      | No        | No     | No       | Unskilled daily  | 3            |
| Oil press assistant         | F      | No        | No     | Yes      | Unskilled daily  | 3            |

Sources: Appendix B.

Note: This table shows all occupations for which we have at least three observations. We give the complete list in Appendices D1 and D2.

appears in our sources for each gender. Data shows that men more regularly did jobs subject to a compensating differential for each wage category.<sup>25</sup> To avoid heterogeneity driving our results, we do not use all these professions in our earlier results, focusing solely on comparing women and men doing identical occupations.

It is also important to note that women commonly engaged in petty trades and proto-industrial jobs. For example, according to a 1551 source (Oliveira, 1987), women in Lisbon did hundreds of jobs, such as petty traders (more than 2000), tailors (more than 1000), bakers (close to 800), and weavers (more than 100).<sup>26</sup> Other sources concerning later periods and parts of the country give a similar picture: women participated in the labor market and were not limited to housework (Oliveira, 1991; Silva, 1985, vol. 1, pp. 231–235; Mota, 1986; da Silva and Carvalhal, 2020). Even some case studies show successful stories of women who ran their shops during their parents' lives and were able to amass significant fortunes (Lopes, 2005).<sup>27</sup>

#### 4. Comparative quantitative evidence

We now discuss the comparative evidence in the context of the current historical consensus about Southwestern Europe. There were dimensions of life in which Portuguese women were discriminated against – but this was also true in England or the Netherlands. Therefore, our comparative discussion focuses on whether they were more discriminated against in Portugal.

##### 4.1. Comparative daily data

We compare the data for Portugal with the international evidence. Fig. 6 shows the gender wage gap for unskilled workers. We include data for services and agriculture to allow comparability with the studies using data for other countries. Results show that women in Portugal – or Spain and Italy – were not more discriminated against than elsewhere. In the case of Italy, we completed de Pleijt and van Zanden's (2021) gender wage gaps with additional observations for the nineteenth century. Fig. 6 also indicates that women in the south of Europe faced lower wage gaps than in Sweden or Denmark. It also shows no trend in the Southwestern European gender gaps, unlike in England, where the gaps increased over time.<sup>28</sup>

##### 4.2. Comparative annual data

In this subsection, we compare workers paid annually with those in England – the only country for which data at this frequency are available.<sup>29</sup> We begin with the case of unskilled individuals (Fig. 7). The figure confirms the previous findings: the situation in Portugal was like that of England. In the latter country, women became initially worse off with the process of industrialization from the eighteenth century because it led to the technological substitution of traditionally female professions such as spinners and the

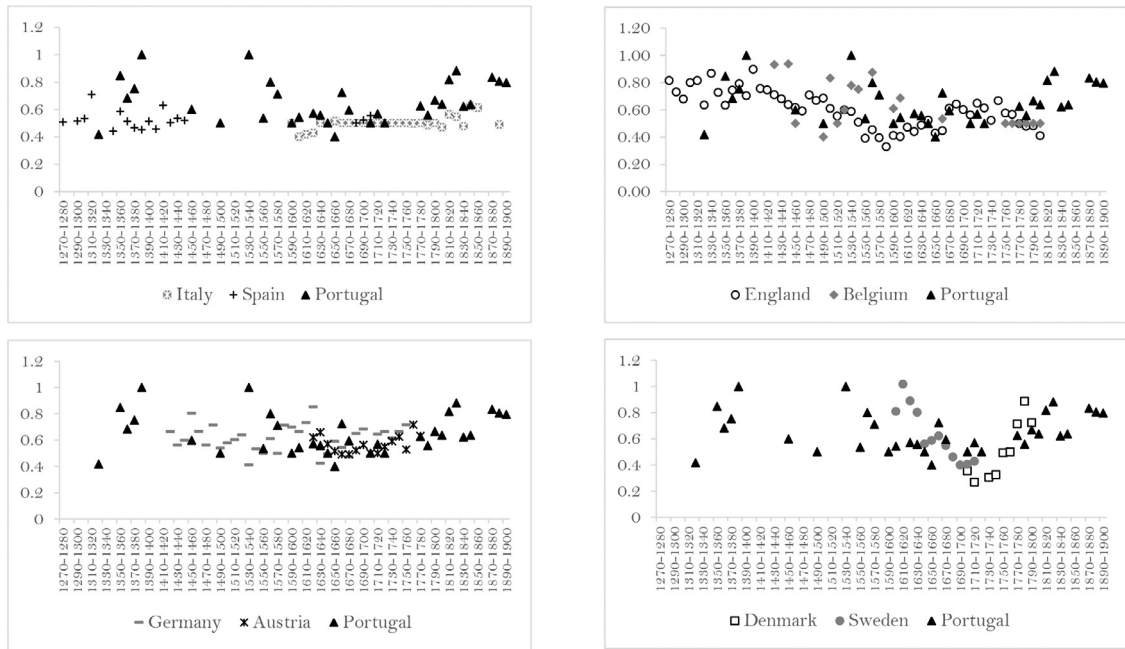
<sup>25</sup> For a related argument, see Burnette (2008).

<sup>26</sup> These were large numbers considering that Lisbon's population was around 100,000 individuals according to the same author.

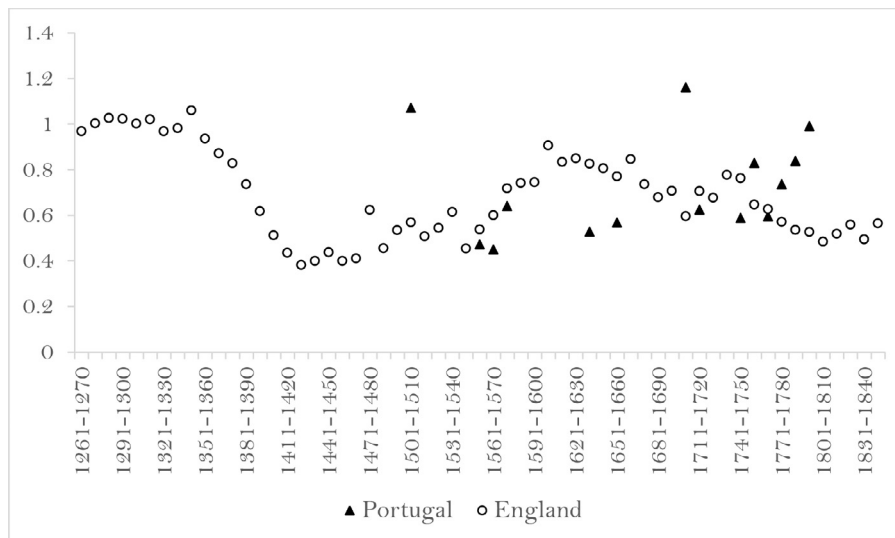
<sup>27</sup> The case of Sebastiana da Luz, a single woman from Coimbra, is striking. The daughter of a merchant, she inherited c. 600,000 réis, and upon her death, her fortune was estimated at four million réis, a sum she obtained from her work in a shop she owned and her lending activities. Her fortune was four times her father's (Lopes, 2005).

<sup>28</sup> In the case of Italy, the gap also rises by the 1880s due to industrialization.

<sup>29</sup> Although we lack systematic data for the Netherlands, the available data suggests that the overall picture was not different: "The differences in salary between the Utrecht orphan father and orphan mother were large. The salary of the orphan mother was sometimes two-thirds, half or even a third of the orphan father's salary" (Schmidt, 2008, pp. 50).



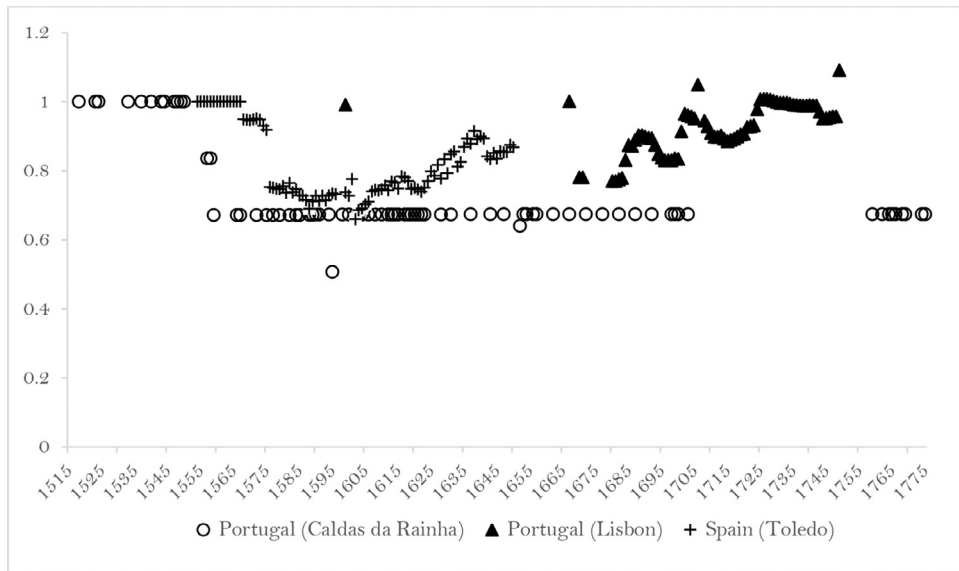
**Fig. 6.** Comparative gender wage gap (unskilled  $f/m$ ): daily wages, 1271–1900. Sources: for Portugal, agricultural and service wages as in Fig. 3; for England, Humphries, and Weisdorf (2015); for Denmark, Jensen et al. (2019); for Italy, de Pleijt and van Zanden (2021) for 1590–1850, Melacrinis (2021), which concerns south Italy, for 1802–1859 and Strangio (2021), concerning a tobacco factory, for 1881. For all others, de Pleijt and van Zanden (2021).



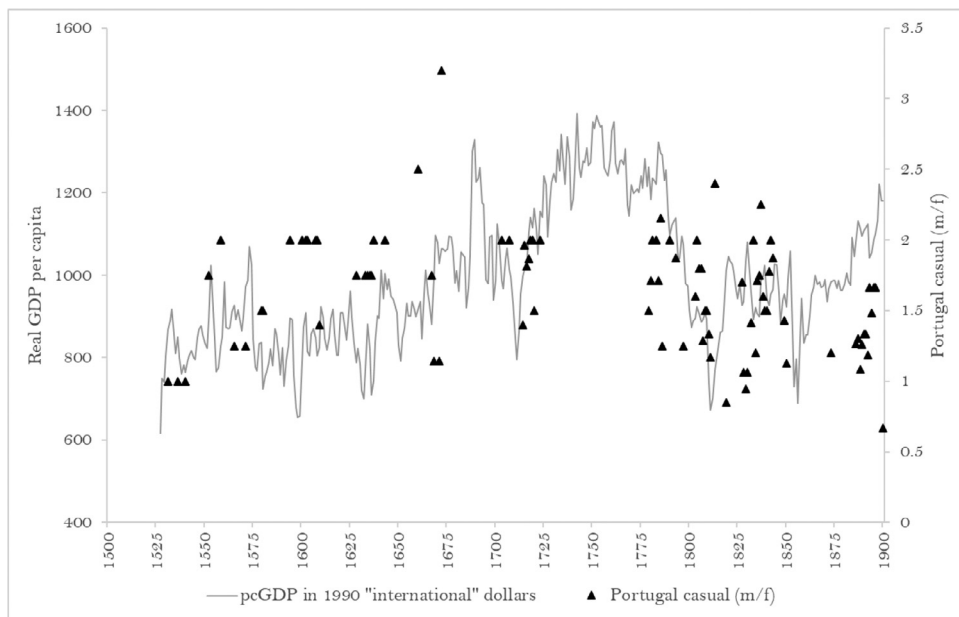
**Fig. 7.** Comparative gender wage gap (unskilled  $f/m$ , annual wages): 1261–1850. Sources: for England, Humphries and Weisdorf (2015, 2019); for Portugal: see text.

rise of the male breadwinner family (Horrell and Humphries, 1995, 1997; Humphries and Weisdorf, 2015). Delayed industrialization in Portugal may be responsible for the smaller wage gaps observed compared with England from the second half of the eighteenth century.

In Fig. 8, we repeat the exercise for semi-skilled workers (nurses). We find that once again, wage gaps in Portugal were similar to those in other Western European locations.



**Fig. 8.** Comparative gender wage gap (nursing f/m, annual wages): 1515–1775. Sources: for Spain (Toledo), [Drelichman and González Agudo \(2020\)](#); for Portugal, the same as in [Fig. 5](#).



**Fig. 9.** Gender wage gap of unskilled workers paid daily, and real GDP per capita in constant prices (1990 Geary-Khamis “international” dollars), 1500-1900. Sources: GDP per head in constant prices from [Palma and Reis \(2019\)](#) and [Henriques et al. \(2020\)](#); gender gaps from the present paper.

#### 4.3. Social norms and pro-cyclicality of the labor market

The “Girl Power” literature argues that social norms determined women’s pay in Southwestern Europe, unlike in Northwestern Europe. According to this literature, in the former region, women’s wages were fixed at half of the level of males and did not vary with market activity, as was the case in Northwestern Europe ([de Moor and van Zanden, 2010](#); [van Zanden et al., 2019](#)). [De Pleijt and van Zanden \(2021, pp. 11–12\)](#) write that “our focus is on identifying the presence or absence of long-run shifts in the gender wage ratio across different countries. We expect that in places where wage ratios are fixed by custom, the ratio will be stable; where market forces dominate, shifts in the ratio are expected.” Our results show that women in Southwestern Europe earned more than half of what men did. We now show that the gap in this region also varied with market forces.

**Table 3**  
Historical marriage ages in Portugal: some examples.

| Year      | Region | Location                 | Population shares of the region | Women | Men  | Observations      |
|-----------|--------|--------------------------|---------------------------------|-------|------|-------------------|
| 1670–1699 | North  | Guimarães (rural parish) | 28.8 – 30.7                     | 26.8  | 28.5 | 77 (W); 34 (M)    |
| 1650–1709 | Center | Eixo                     | 29.4 – 34.7                     | 27.2  | 25.9 | 233 (W); 223 (M)  |
| 1710–1749 | Center | Eixo                     | 28.3–29.4                       | 27.4  | 29.6 | 266 (W); 152 (M)  |
| 1750–1799 | Center | Eixo                     | 28.4–30.6                       | 27.3  | 27.5 | 319 (W); 246 (M)  |
| 1800–1860 | Center | Eixo                     | 30.1–33.1                       | 28.9  | 29.7 | 326 (W); 308 (M)  |
| 1670–1719 | Lisbon | Ericeira                 | 19.8–22.1                       | 26.0  | 28.4 | 227 (W); 178 (M)  |
| 1720–1819 | Lisbon | Ericeira                 | 21.1–23.1                       | 23.7  | 26.5 | 1057 (W); 902 (M) |
| 1820–1855 | Lisbon | Ericeira                 | 21.9–22.5                       | 25.0  | 27.9 | 518 (W); 485 (M)  |
| 1680–1699 | South  | Selmes                   | 16.2–17.5                       | 20.4  | 24.9 | 22 (W); 17 (M)    |
| 1700–1749 | South  | Selmes                   | 13.6–18.0                       | 22.3  | 26.5 | 119 (W); 67 (M)   |
| 1750–1799 | South  | Selmes                   | 13.2–14.2                       | 22.1  | 26.6 | 190 (W); 134 (M)  |

Sources: for Guimarães, [Amorim \(2013, pp. 95\)](#); for Eixo, [Ferreira \(2005, pp. 310, 312\)](#); for Ericeira, [Reis \(2003, pp. 27\)](#); for Selmes, [Santos and Lopes \(2017, pp. 69\)](#). The regional shares are based on [Palma et al. \(2020\)](#), with North consisting of the Porto hinterland, Center consisting of the Coimbra hinterland, and South consisting of the Évora hinterland.

Note: this table is an abridged version of Appendix G; for sources regarding historical marriage age in Portugal, see Appendix I.

**Fig. 9** plots the daily unskilled gender wage gap and compares it with the long-term evolution of Portugal's real GDP per capita. The wage gap was trendless in the long run, and we do not find that it co-moved with overall incomes over time.<sup>30</sup> Hence, our results show that female payments were not set by custom in Southwestern Europe and that they did not gain the most in relative terms during economic booms, unlike the argument sustained by the “Girl Power” literature.

## 5. Further comparative evidence

In the previous sections, we examined the wage gap to assess to what extent women were discriminated against, and we found that although they were not allowed to perform all the jobs that men did, women in Portugal were not more discriminated against than those in the North Sea region. Equally important is to analyze whether women faced more restrictions on labor market participation in the European South compared to the North. According to the “Girl Power” literature, the desire to access dowries led Southern Europe to early marriage associated with low female agency, market participation, investment in human capital, and high fertility ([de Moor and van Zanden, 2010](#)).<sup>31</sup> But in fact, women in Portugal did not marry younger than elsewhere in Western Europe, and numeracy levels were similar until the mid-eighteenth century ([Stolz et al., 2013, pp. 562](#)). In this section, we summarize the details concerning all the matters, which we then cover in detail in Appendix F.

The “Girl Power” literature claims that women in the South of Europe married earlier than in the North, so the EMP only developed in the latter regions ([de Moor and van Zanden, 2010, pp. 7–8](#)).<sup>32</sup> Using an extensive survey of secondary sources comprehending thousands of parish records, we show that, in Portugal, women married late. [Table 3](#) shows that mean age at first marriage was mid-twenties for women, and late twenties for men.<sup>33</sup> These patterns were hence similar to those in Northwestern Europe. Furthermore, marriage ages did not fall during Portugal's positive growth performance period, as shown in our Appendix F.<sup>34</sup> High female

<sup>30</sup> Linear and nonparametric regressions fail to find any significant relationship between these variables (in levels or natural logarithms). The magnitude of the estimated coefficients is precisely estimated at zero whether including a year trend as a control or not. We used robust standard errors for the linear regression and a bootstrap for the nonparametric kernel nonlinear regression with a bandwidth chosen using a cross validation approach. The results are shown in the Appendix E. We also ran the same exercise while also including preliminary GDP per capita in constant prices from [Henriques et al. \(2020\)](#) for the fifteenth and early sixteenth centuries (until 1526); all the results remain similar.

<sup>31</sup> We do not consider the matter of comparative sex ratios due to the lack of systematic comparative data for most the period under consideration. Still, we note that between 1680 and 1780, most abandoned children (*expostos*) in Portugal's second-largest city (Porto) were males ([Sá, 1992, pp. 167–168](#)). Additionally, one study on the Bonfim parish (Porto) shows that the child mortality sex ratio varied between 0.9 to 1.5 boys per girl from 1842 to 1859 ([Santos, 1982, pp. 75](#)).

<sup>32</sup> [Carmichael et al. \(2016, pp. 199\)](#) argue that [Dennison and Ogilvie's \(2014\)](#) evidence about the first age of marriage is based on only a few observations. By contrast, our data is much more systematic and should leave no doubt that the age at which Portugal's women married was firmly consistent with the existence of the EMP in this region.

<sup>33</sup> [Table 3](#) is an abridged version of Appendix G. As we show in the Appendix, other regions of Portugal were similar. Note that the situation was also similar in Spain, where only about a quarter of women under 25 were married ([Casey, 1999, pp. 27](#)). While the mean age at first marriage for men was comparatively uniform in Portugal, the mean age for women unveils regional variations, with later marriages in the North (above 24 years) than in the South (below 23 years). The mean age also did not vary on an East-West axis, as is visible in Appendix G from locations such as Chaves, Pinhel, Torre de Moncorvo, Trancoso, or Vila Real.

<sup>34</sup> Late age at marriage in a system of neo-locality could be related to the time required to save – on the part of both brides and grooms – in order to form a separate household ([Bennett, 2019; Dennison and Ogilvie, 2014](#)). This is a mechanism that the “Girl Power” literature does not acknowledge but which is consistent with the evidence that Portugal's economy did not have lower income per capita levels than even the most advanced parts of Western Europe until the late eighteenth century ([Palma and Reis, 2019](#)).

celibacy (above c. 10 percent) was another feature of the EMP. Empirical studies on nuptiality for Portugal show a high rate of unmarried women and men – more predominant in the North – which also did not differ from the Northwestern European standards (Rodrigues, 2008, pp. 392–394). The situation was again similar in Spain, where celibacy rates were also above 10 percent for the country as a whole, and 20 percent in Galicia (Casey, 1999, pp. 28).

In Appendix F, we additionally show that women inherited a share of their parent's wealth to the same extent as their male siblings. They also did not participate less in the market, marriage was not an obstacle to their labor market participation, and in widowhood, they could be heads of household to the same extent as elsewhere in Western Europe.<sup>35</sup>

## 6. Conclusion

This paper aimed to assess the extent to which women in Portugal were more discriminated against relative to those in the North Sea region, considering gender wage gaps and qualitative evidence regarding social norms that regulated female participation in the labor market. We have found that women were not more discriminated against in Portugal than anywhere else in Western Europe. This finding raises questions about the causal link between industrialization and social norms within Western Europe. The evidence points to women's rights following, rather than causing, economic development. Portugal's early modern marriage regime was characterized by the two key EMP features defined by van Zanden et al. (2019) – consensus and neolocality – to a degree similar to that of the North Sea region. Our results do not support the view that “in southern Europe [...] the EMP was not characteristic or was much less prevalent” (van Zanden et al., 2019, pp. 160). Women in Portugal in fact married late, and gender wage gaps were similar to the North Sea region: unskilled women earned about two-thirds of male wages. We additionally find that women's labor market participation or property rights were not weaker in Portugal than elsewhere in Western Europe.

The “Girl Power” literature proposed that inheritance practices or, at least, the relative access to land may have conditioned the matrimonial market and household formation (de Moor and van Zanden, 2010). According to it, women in the South of Europe were twice discriminated against when inheriting because they were disadvantaged compared to brothers when accessing their parents' estate, and they had no right over conjugal patrimony. Early marriage was also suggested to be a means to access the family patrimony in the form of a dowry. This literature argues that by contrast to the situation in Southern Europe, marriage could be postponed in Northwestern Europe, where women are assumed to have been sure about the share they would inherit from their parents. We have shown that this was not the case.

For many centuries, women have had more freedom in Western Europe and its offshoots than in most other parts of the world (Siedentop, 2015, pp. 233, 239; van Zanden et al., 2017; Bateman, 2019, pp. 39–50).<sup>36</sup> The comparatively high level of agency that females have experienced in Western Europe is a valid candidate to be part of the conditions associated with this region's economic success and offshoots. However, despite different cultural norms, the direction of causation remains to be demonstrated. Comparative data show that in England, industrialization was associated with the worsening of the labor conditions for women (Horrell and Humphries, 1995; Humphries and Weisdorf, 2015). In this paper we argue that by comparison with the first-order cultural differences of Western Europe *vis-à-vis* other regions of the world such as India or China, any discrepancies related to the female agency which existed within Western Europe must have been of no first-order importance for our understanding of development outcomes. In this, we differ from what is argued in the “Girl Power” literature; our detailed case study of Portugal supports the evidence for Spain put forward by Drelichman and González Agudo (2020).

Our evidence suggests that the sources of comparative European early modern economic growth performances reside in causes unrelated to different EMP practices (Ogilvie, 2003; Dennison and Ogilvie, 2016). All Western Europe was broadly similar concerning female agency. This implies that an explanation of the growing income inequality between European countries during the early modern period, especially from the mid-seventeenth century onward – the Little Divergence – must be found elsewhere.

## References

The numerous archival sources we consulted to build our database are detailed in Appendix B.

## Online databases

*The PWR data files.* (n.d.). Prices, Wages and Rents in Portugal, 1300–1910. Retrieved November 7, 2021, from <http://pwr-portugal.ics.ul.pt/>

## Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.eeh.2022.101481](https://doi.org/10.1016/j.eeh.2022.101481).

<sup>35</sup> As previously mentioned, the primary way women were discriminated against concerned the range of professions they were allowed to take. The same situation also occurred in Northwestern Europe, including the North Sea area, and there is no evidence that it did so to a lower degree than elsewhere in Western Europe.

<sup>36</sup> In Portuguese India, for example, women converted to Christianity could inherit under the same rights as men, in opposition to local tradition (Thomaz, 2021, pp. 147).

## References

- Abad, L., Palma, N., 2021. The fruits of El Dorado: the global impact of American precious metals. In: Doblado, R., Garcia-Hiernaux, A. (Eds.), *The Fruits of the Early Globalization: An Iberian Perspective*. Palgrave Macmillan, Cham, pp. 95–131.
- Allen, R.C., 2001. The great divergence in European wages and prices from the middle ages to the first world war. *Explor. Econ. Hist.* 38, 411–447. doi:10.1006/exeh.2001.0775.
- Amorim, M.N., 2013. Desafios da Cidade numa abordagem clássica de Demografia Histórica. O caso de Guimarães entre o século XVI e o XX, in: *actas Do I Congresso Histórico Internacional “As Cidades Na História: população. Câmara Munic. Guimarães, Guimarães 83–114*.
- Bateman, V.N., 2019. *The Sex Factor: How Women Made the West Rich*. Polity Press, Medford, MA.
- Baten, J., De Pleijt, A.M., 2018. Female autonomy generates superstars in long-term development: evidence from 15th to 19th century Europe. CEPR Working Paper 13348.
- Baten, J., Szoltysek, M., Campestrini, M., 2017. Girl power’ in Eastern Europe? The human capital development of central-eastern and eastern Europe in the seventeenth to nineteenth centuries and its determinants. *Eur. Rev. Econ. Hist.* 21 (1), 29–63. doi:10.1093/ereh/hew017.
- Becker, S.O., Pascali, L., 2019. Religion, division of labor, and conflict: Anti-semitism in Germany over 600 Years. *Am. Econ. Rev.* 109 (5), 1764–1804. doi:10.1257/aer.20170279.
- Becker, S.O., Pfaff, S., Rubin, J., 2016. Causes and Consequences of the Protestant Reformation. *Explor. Econ. Hist.* 62, 1–25. doi:10.1016/j.eeh.2016.07.007.
- Bennett, J.M., 2019. Wretched girls, wretched boys and the European marriage Pattern in England (c. 1250–1350). *Contin. Change* 34 (3), 315–347. doi:10.1017/S0268416019000328.
- Blau, F.D., Kahn, L.M., 2017. The gender wage gap: extent, trends, and explanations. *J. Econ. Lit.* 55 (3), 789–865. doi:10.1257/jel.20160995.
- Boserup, E., 2007. *Woman’s Role in Economic Development*. Routledge, London; Sterling, VA.
- Broadberry, S., 2021a. Accounting for the great divergence: recent findings from historical national accounting. CEPR Discussion Paper 15936.
- Broadberry, S., 2021b. The industrial revolution and the great divergence: recent findings from Historical national accounting. In: Bisin, A., Federico, G. (Eds.), *The Handbook of Historical Economics*. Elsevier, London; San Diego, CA, pp. 749–771.
- Broadberry, S., Campbell, B.M., Klein, A., Overton, M., van Leeuwen, B., 2015. *British Economic Growth*. Cambridge University Press, Cambridge, pp. 1270–1870.
- Burnette, J., 2008. *Gender, Work and Wages in Industrial Revolution Britain*. Cambridge University Press, Cambridge; New York.
- Carmichael, S.G., de Pleijt, A.M., van Zanden, J.L., 2016. The European marriage pattern and its measurement. *J. Eco. History* 76 (1), 196–204. doi:10.1017/S0022050716000474.
- Carpenter, J., Hans Matthews, P., Robbett, A., 2017. Compensating differentials in experimental labor markets. *J. Behav. Exp. Econ.* 69, 50–60. doi:10.1016/j.soec.2017.05.007.
- Casey, J., 1999. *Early Modern Spain: A Social History*. Routledge, London.
- Costa, L.F., Palma, N., Reis, J., 2015. The Great Escape? The Contribution of the Empire to Portugal’s Economic Growth, 1500–1800. *Eur. Rev. Econ. Hist.* 19 (1), 1–22. doi:10.1093/ereh/heu019.
- de la Croix, D., Vitale, M., 2022. Women in European academia before 1800 - religion, marriage, and human Capital. CEPR Discussion Paper 17229.
- de Moor, T., van Zanden, J.L., 2010. Girl Power: the European marriage pattern and labour markets in the north sea region in the late medieval and early Modern Period. *Econ. Hist. Rev.* 63 (1), 1–33. doi:10.1111/j.1468-0289.2009.00483.x.
- de Pleijt, A.M., van Zanden, J.L., 2021. Two Worlds of Female Labour: gender wage inequality in Western Europe, 1300–1800. *Econ. Hist. Rev.* 74 (3), 611–638. doi:10.1111/ehr.13045.
- da Silva, F. R., Carvalhal, H., 2020. Reconsidering the southern European model: marital status, women’s work and Labour relations in mid-eighteenth-century Portugal. *Rev. Hist. Econ. / J. Iber. Latin Am. Econ. Hist.* 38 (1), 45–77. doi:10.1017/S0212610919000338.
- de la Croix, D., Schneider, E.B., Weisdorf, J., 2019. Childlessness, celibacy and net fertility in pre-industrial England: the middle-class evolutionary advantage. *J. Econ. Growth* 24 (3), 223–256. doi:10.1007/s10887-019-09170-6.
- Dennison, T., Ogilvie, S., 2014. Does the European marriage pattern explain economic growth? *J. Econ. Hist.* 74 (3), 651–693. doi:10.1017/S0022050714000564.
- Dennison, T.K., Ogilvie, S., 2016. Institutions, demography, and economic growth. *J. Econ. Hist.* 76 (1), 205–217. doi:10.1017/S0022050716000486.
- Drelichman, Mauricio, 2005a. The curse of moctezuma: American silver and the Dutch disease. *Explor. Econ. Hist.* 42 (3), 349–380. doi:10.1016/j.eeh.2004.10.005.
- Drelichman, M., 2005b. All that glitters: precious metals, rent seeking and the Decline of Spain. *Eur. Rev. Econ. Hist.* 9 (3), 313–336. doi:10.1017/S1361491605001528.
- Drelichman, M., González Agudo, D., 2020. The gender wage gap in early modern Toledo, 1550–1650. *J. Econ. Hist.* 80 (2), 351–385. doi:10.1017/S0022050720000145.
- Durães, M., 2000. *Herança e sucessão. Leis, Práticas e Costumes No Termo De Braga (Séculos XVIII-XIX)* (PhD Diss.). Universidade do Minho, Braga.
- Ferreira, F.M.T., 2005. *Viver e Morrer No Território Do Antigo Concelho De Eixo (1590-1910)* (PhD Diss.). Universidade do Minho, Braga.
- Geloso, V., 2018. Were wages that low? Real wages in the Strasbourg region before 1775. *J. Interdiscip. Hist.* 48 (4), 511–522. doi:10.1162/JINH\_a\_01197.
- Grafe, R., 2015. Social and economic trends. In: Scott, H. (Ed.), *Oxford Handbook of Early Modern European History, 1350-1750*. Oxford University Press, Oxford, pp. 269–294.
- Hajnal, J., 1965. European Marriage Patterns in Perspective. In: Glass, D.V., Eversley, D.E. (Eds.), *Population in History: Essays in Historical Demography*. Aldine Publishing, Chicago, pp. 101–143.
- Henrich, J., 2021. *The Weirdest People in the World: How the West Became Psychologically Peculiar and Particularly Prosperous*. Penguin Books, London.
- Henriques, A., 2017. *The Reconquista and Its Legacy, 1000–1348*. In: Freire, D., Lains, P. (Eds.), *An Agrarian History of Portugal, 1000-2000: Economic Development On the European Frontier*. Brill, Leiden, pp. 11–44.
- Henriques, A., Palma, N., 2022. Comparative European Institutions and the Little Divergence, 1385–1800. *J. Econ. Growth* doi:10.1007/s10887-022-09213-5.
- Henriques, A., Palma, N., Reis, J., 2020. Economic Growth in Portugal from the Reconquista to the Present. Unpublished manuscript.
- Horrell, S., Humphries, J., 1997. The origins and expansion of the male breadwinner family: the case of nineteenth-century Britain. *Int. Rev. Soc. History* 42 (55), 25–64. doi:10.1017/S0020859000114786.
- Horrell, S., Humphries, J., 1995. Women’s labour force participation and the transition to the male-breadwinner Family, 1790–1865. *Econ. Hist. Rev.* 48 (1), 89–117. doi:10.2307/2597872.
- Humphries, J., Weisdorf, J., 2019. Unreal Wages? Real Income and economic growth in England, 1260–1850. *Econ. J.* 129 (623), 2867–2887. doi:10.1093/ej/uez017.
- Humphries, J., Weisdorf, J., 2015. The Wages of Women in England, 1260–1850. *J. Econ. Hist.* 75 (2), 405–447. doi:10.1017/S0022050715000662.
- Jensen, P.S., Radu, C.V., Sharp, P., 2019. A microlevel wage dataset for eighteenth century Denmark. EHES Working Paper 159.
- Kedrosky, D., Palma, N., 2021. The cross of gold: Brazilian treasure and the decline of Portugal. CAGE Working Paper 574.
- Kersting, F., Wohnsiedler, L., Wolf, N., 2020. Weber revisited: the protestant ethic and the spirit of nationalism. *J. Econ. Hist.* 80 (3), 710–745. doi:10.1017/S0022050720000364.
- Krantz, O., 2017. Swedish GDP 1300–1560: a Tentative Estimate. *Lund Pap. Econ. Hist.* 152.
- Kuznets, S., 1966. *Modern Economic Growth: Rate, Structure, and Spread*. Yale University Press, New Haven.
- van Leeuwen, M.H.D., Maas, I., 2011. Hisclass: A Historical International Social Class Scheme. Universitaire Pers Leuven, Leuven.
- Lopes, M.A., 2019. A enfermagem hospitalar em Portugal entre os séculos XVI e XIX: mitos e realidades. In: Festas, C., Subtil, C.L., Sá, L.O., Costa, R.M.P. (Eds.), *Sob o Sino da História Comparada: A Enfermagem Na Europa do Sul. Sociedade Portuguesa De História Da Enfermagem, Porto*, pp. 8–29.
- Lopes, M.A., 2012. Os hospitais de Coimbra e a alimentação dos seus enfermos e funcionários (meados do séc. XVIII – meados do séc. XIX). In: da Silva, C.G. (Ed.), *História Da Saúde e das Doenças. Colibri; Câmara Municipal De Torres Vedras, Lisboa*, pp. 147–164.
- Lopes, M.A., 2005. Sebastiana da Luz, mercadora coimbrã setecentista (elementos para a história de As mulheres e o trabalho). *Rev. Hist. Soc. Cult.* 5, 133–156.
- Lopes, M.A., 2001. *Pobreza, Assistência e Controlo social. Coimbra (1750-1850)*. Palimage, Coimbra.

- López-Losa, E., Piquero Zarauz, S., 2021. Spanish subsistence wages and the little divergence in Europe, 1500-1800. *Eur Rev Econ Hist* 25 (1), 59–84. doi:10.1093/ereh/heaa005.
- Malanima, P., 2013. When did England overtake Italy? medieval and early modern divergence in prices and wages. *Eur. Rev. Econ. Hist.* 17 (1), 45–70. doi:10.1093/ereh/hes022.
- Malanima, P., 2011. The long decline of a leading economy: GDP in central and northern Italy, 1300–1913. *Eur. Rev. Econ. Hist.* 15 (2), 169–219. doi:10.1017/S136149161000016X.
- Malinowski, M., van Zanden, J.L., 2017. Income and its distribution in preindustrial Poland. *Cliometrica (Berl)* 11 (3), 375–404. doi:10.1007/s11698-016-0154-5.
- Melacrinis, F.F., 2021. *Exploration in Italian Little Divergence Before Unification, Wages and Prices in the South of Italy from 1800 to 1860* (PhD Diss.). University of Rome, Sapienza, Rome.
- Mocarelli, L., 2019. What is wrong with the history of wages: or the divide in economic history – a reappraisal suggested by eighteenth-century Milan. In: Hatcher, J., Stephenson, J. (Eds.), *Seven Centuries of Unreal Wages: The Unreliable Data, Sources and Methods That Have Been Used for Measuring Standards of Living in the Past*. Palgrave Macmillan, Cham, pp. 95–116.
- Molinder, J., Pihl, C., 2022. Women's Work and Wages in the Sixteenth Century and Sweden's Position in the 'Little Divergence. *Econ Hist Rev* 1–24. doi:10.1111/ehr.13177.
- Mota, G., 1986. O trabalho feminino e o comércio em Coimbra (séculos XVII-XVIII). *Notas para um estudo. Sep. A Mulher Soc. Port. Actas Colóquio* 5–21.
- Ogilvie, S.C., 2003. *A Bitter Living: Women, Markets, and Social Capital in Early Modern Germany*. Oxford University Press, Oxford; New York.
- Oliveira, C., 1987. *Lisboa Em 1551. Livros Horizonte, Lisboa*.
- Oliveira, N.de, 1991. *Livro Das Grandezas de Lisboa*. Vega, Lisbon.
- Palma, N., 2020. American Precious Metals and Their Consequences for Early Modern Europe, in: Battilossi, S., Cassis, Y., Yago, K. (Eds.), *Handbook of the History of Money and Currency*. Springer, Singapore, pp. 363–382.
- Palma, N., Reis, J., 2019. From Convergence to Divergence: portuguese Economic Growth, 1527–1850. *J. Econ. Hist.* 79 (2), 477–506. doi:10.1017/S0022050719000056.
- Palma, N., Reis, J., Zhang, M., 2020. Reconstruction of regional and national population using intermittent census-type data: the case of Portugal, 1527–1864. *Hist. Methods A J. Quant. Interdiscip. Hist.* 53 (1), 11–27. doi:10.1080/01615440.2019.1666762.
- Palma, N., Reis, J., Rodrigues, L., 2022. Data for: Historical gender Discrimination Does Not Explain Comparative Western European development: Evidence from Portugal, 1300-1900. Inter-university Consortium for Political and Social Research [distributor], Ann Arbor, MI 2022-10-31 doi:10.3886/E182664V1.
- Pfister, U., 2022. *Economic growth in Germany, 1500-1800*. *J. Econ. Hist.* [forthcoming].
- Prados de la Escosura, L., Álvarez-Nogal, C., Santiago-Caballero, C., 2020. Growth recurring in preindustrial Spain: half a millennium perspective. CEPR Discussion Paper 14479.
- Rasch, P., 1990. *Weight Training*. Dubuque, Iowa.
- Reis, M.D.C.C.D., 2003. *São Pedro da Ericeira de 1622 a 1855: Estudo Demográfico* (Master Diss.). Universidade do Minho, Braga.
- Ridolfi, L., Nuvolari, A., 2020. L'Histoire Immobile? A reappraisal of french economic growth using the demand-side approach, 1280-1850. CEPR Discussion Paper 14985.
- Rodrigues, L., 2013. *Os Hospitais Portugueses No Renascimento (1480-1580): o Caso De Nossa Senhora Do Pópulo das Caldas da Rainha* (PhD Diss. Universidade do Minho, Braga).
- Rodrigues, T.F., 2008. O século XIX, in: Rodrigues (coord.), T.F. (Ed.), *História Da População Portuguesa. Das Longas Permanências à Conquista Da Modernidade*. CEPESE, Afrontamento, Porto, pp. 327–416.
- Rowland, R., 1989. Sistemas matrimoniais na Península Ibérica. *Estud. Econ. (São Paulo)* 19, 497–553.
- Rowland, R., 1984. Sistemas familiares e padrões demográficos em Portugal: questões para uma investigação comparada. *Ler História* 3, 13–32.
- dos Sá, I.G., 1992. *The Circulation of Children in Eighteenth Century Southern Europe: The Case of the Foundling Hospital of Porto* (PhD Diss.). European University Institute, Florence.
- Santos, C., 1982. Nota sobre a mortalidade infantil nos séculos XVIII e XIX. *Humanidades* 2, 47–75.
- Santos, C., Lopes, B., 2017. Marriage Strategies in Communities of Southern Portugal (17th-18th Centuries). *Rev. Demogr. Hist.* 35 (1), 55–91.
- Schmidt, A., 2008. Managing a Large Household. the Gender division of work in orphanages in dutch towns in the early modern period, 1580-1800. *Hist. Family* 13 (1), 42–57. doi:10.1016/j.hisfam.2008.01.002.
- Schön, L., Krantz, O., 2012. The Swedish economy in the early modern period: constructing historical national accounts. *Eur. Rev. Econ. Hist.* 16 (4), 529–549. doi:10.1093/ereh/hes015.
- Siedentop, L., 2015. *Inventing the Individual: the Origins of Western liberalism*. Penguin Books, London.
- Silva, F.R., 1985. *O Porto e o Seu Termo (1580-1640): Os homens, As Instituições e o Poder* (PhD Diss.). Universidade do Porto, Porto.
- Smits, J.P., Horlings, E., van Zanden, J.L., 2000. Dutch GNP and its Components, 1800-1913. *Gron. Growth Dev. Centre* s.l.
- Stephenson, J.Z., 2018. 'Real' wages? Contractors, workers, and pay in London building trades, 1650-1800. *Econ. Hist. Rev.* 71 (1), 106–132. doi:10.1111/ehr.12491.
- Stolz, Y., Baten, J., Reis, J., 2013. Portuguese living standards, 1720-1980, in European comparison: heights, income, and human capital. *Econ. Hist. Rev.* 66 (2), 545–578. doi:10.1111/j.1468-0289.2012.00658.x.
- Strangio, D., 2021. Work and Care of Women. The Case of Two "Manifatture" (factories): The San Michele a Ripa Factory and the Italian Tobacco Factory. Presented at the Women. Economics and History: Diversity within Europe Workshop, Paris.
- Szołtysek, M., 2015. *Rethinking East-Central Europe: Family Systems and Co-Residence in the Polish-Lithuanian Commonwealth*. Verlag Peter Lang, Bern.
- Thomaz, L.F.F.R., 2021. *A Expansão portuguesa: Um Prisma De Muitas Faces*. Gradiva, Lisboa.
- van Zanden, J.L., 2011. The malthusian intermezzo: women's wages and human capital formation between the late middle ages and the demographic transition of the 19th Century. *Hist. Family* 16 (4), 331–342. doi:10.1016/j.hisfam.2011.08.003.
- van Zanden, J.L., 2009. *The Long Road to the Industrial Revolution: The European Economy in a Global Perspective, 1000-1800*. Brill, Leiden; Boston.
- van Zanden, J.L., de Moor, T., Carmichael, S.G., 2019. *Capital Women: The European Marriage Pattern, Female Empowerment, and Economic Development in Western Europe, 1300-1800*. Oxford University Press, New York.
- van Zanden, J.L., Leeuwen, B.V., 2012. Persistent but not consistent: the growth of national income in Holland 1347-1807. *Explor Econ. Hist.* 49 (2), 119–130. doi:10.1016/j.eeh.2011.11.002.
- van Zanden, J.L., Rijpma, A., Kok, J., 2017. *Agency, Gender and Economic Development in the World Economy 1850-2000*. Routledge, London.
- Whittle, J., Hailwood, M., 2020. The gender division of labour in early modern England. *Econ. Hist. Rev.* 73 (1), 3–32. doi:10.1111/ehr.12821.