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Historical gender discrimination does not explain comparative Western European development: Evidence from Portugal, 1300 - 1900

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HISTORICAL GENDER DISCRIMINATION DOES NOT EXPLAIN COMPARATIVE WESTERN EUROPEAN DEVELOPMENT: EVIDENCE FROM PORTUGAL, 1300-1900[1]

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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.

Keywords: Historical gender discrimination, gender wage gap, culture, social norms, comparative development, the Little Divergence, European Marriage Pattern.

JEL codes: N13, N33, J16.

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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 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.[2] 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.[3]

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

[2] 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 *físico-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.

[3] 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).

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.[4] 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.[5] 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-*

[4] Portugal's cultural and geographic features are both Atlantic and Mediterranean. The same is true of Spain and France.

[5] 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; Szołtysek, 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).

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).[6]

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.[7] Although the present paper does not aim to find the causes of the Iberian Little Divergence, it shows that – whatever the cause – social

[6] 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 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).

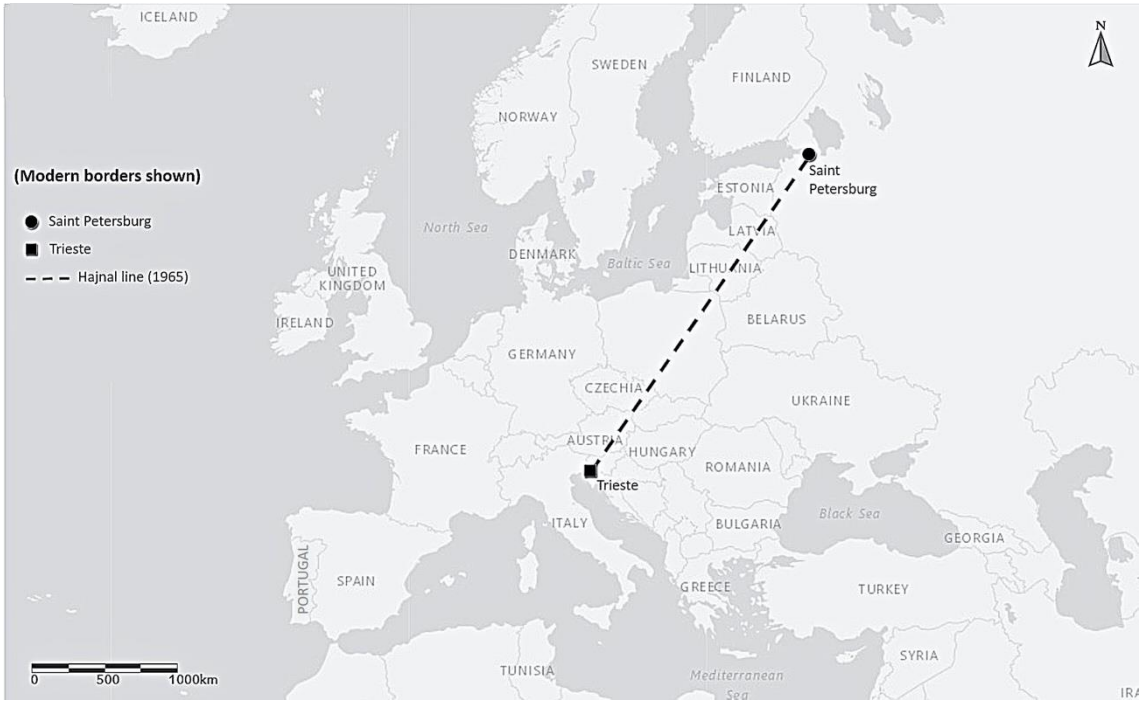
[7] Among other explanations in the literature, one concerns the resource curse: how the large amounts of precious metals in the Americas beset Iberia with Dutch Disease, leading to industrial decline, and with reduced executive checks and state capture (Drelichman, 2005a, 2005b; Palma, 2020; Kedrosky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

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 (Figure 1).

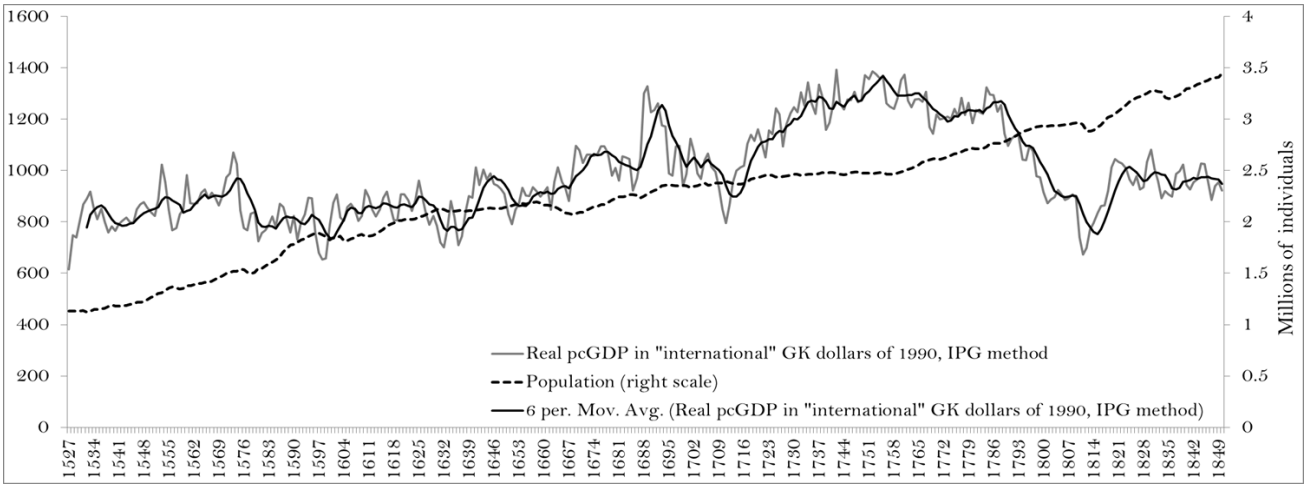
Figure 1. The original Hajnal line



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).[8] As Figure 2 shows its per capita economic performance was comparatively good until the 1750s when it ended.[9] 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 of the eighteenth-century intercontinental trade was at its peak (Costa et al., 2015).[10] 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.

Figure 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).

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,

[8] 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).

[9] 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."

[10] 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.

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).

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).

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 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.[11] 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,

[11] 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.

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).[12] 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.[13] To ensure comparability, we consider the following situations. For agriculture: harvesting grain, grapes, and olives; weeding; carrying

[12] 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).

[13] 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.

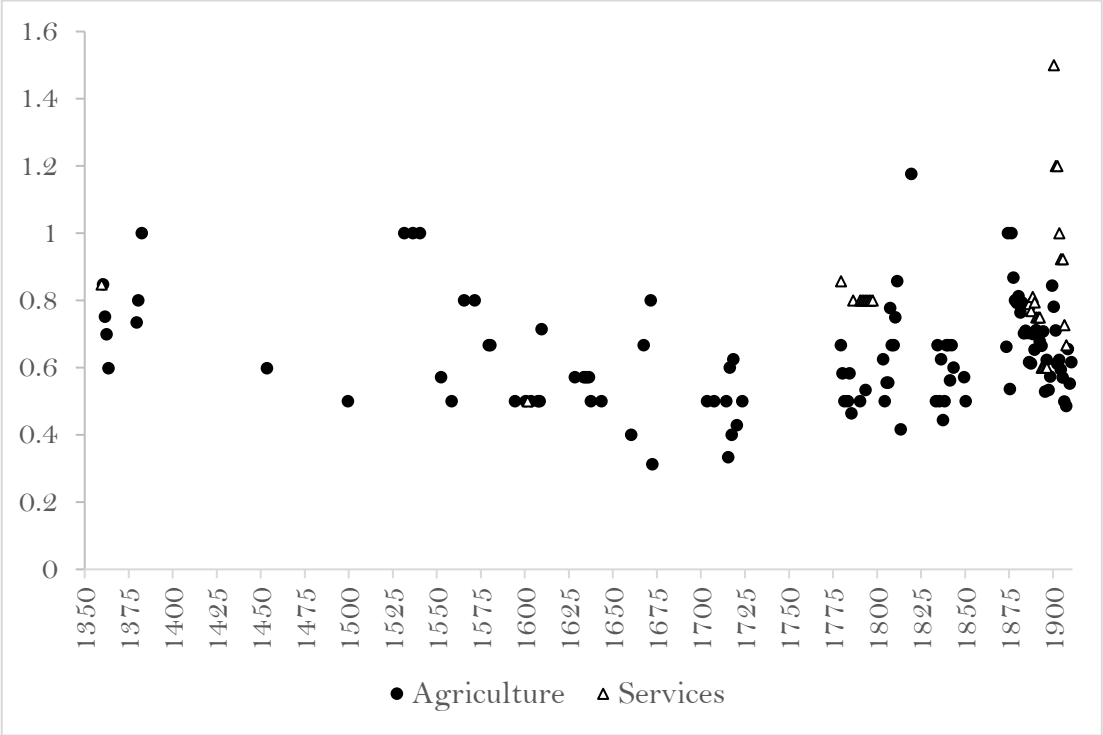
baskets or buckets of grapes, water, manure, wood, or ashes; working in the vineyards.[14] Outside of agriculture, unskilled occupations correspond to helpers, domestic servants, laundresses and sweepers. We have focused on modal wages, as is standard in the literature, and our geographical coverage includes a variety of locations in Portugal.[15]

Figure 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. Figure 3 reveals that women earned between two-thirds and 80 percent of men's wages doing the same jobs for the same employers.[16] 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.[17] 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).[18] 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*).[19] 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).

[14] This included, for example, pruning and clearing vineyards from lopped branches (*podar*).
[15] 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.
[16] 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).
[17] 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).
[18] 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.
[19] This was similar to the situation in other parts of Western Europe, such as England, Germany or Sweden (Whittle and Hailwood, 2020).

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.

Figure 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 ração*).

3.2. Gender wage gaps: annual wages

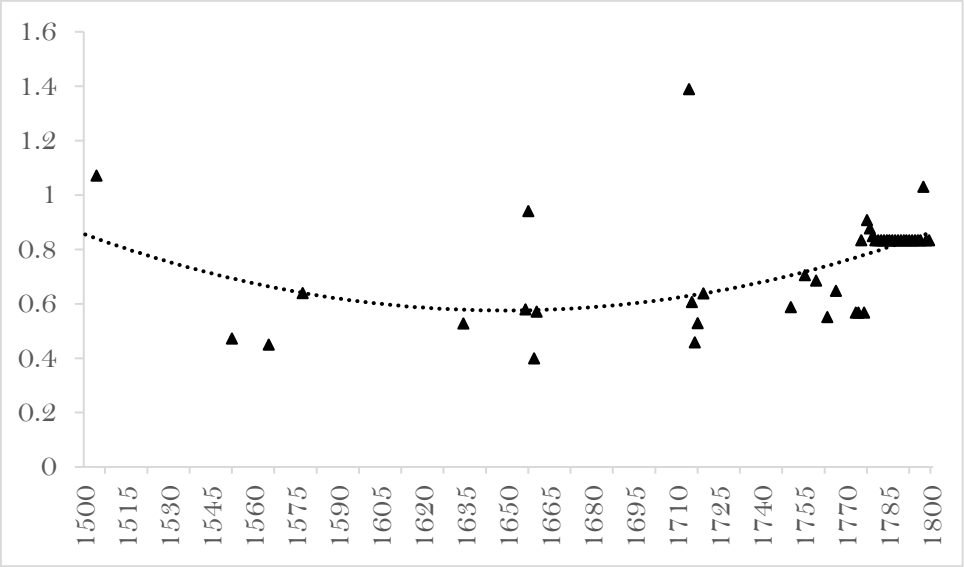
We now focus on the gender wage gap for unskilled and skilled workers on quarterly annual wages.[20] We start with the case of unskilled workers. We focus on nurses, the only profession for which semi-skilled salaries are systematically available for both genders.[21]

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 Figure 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.

[20] There are other frequencies (weekly, monthly) of payment, but these appear much less in the sources.
[21] 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 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.

Figure 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.

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).[22] 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.

[22] The details are given in Appendix C.

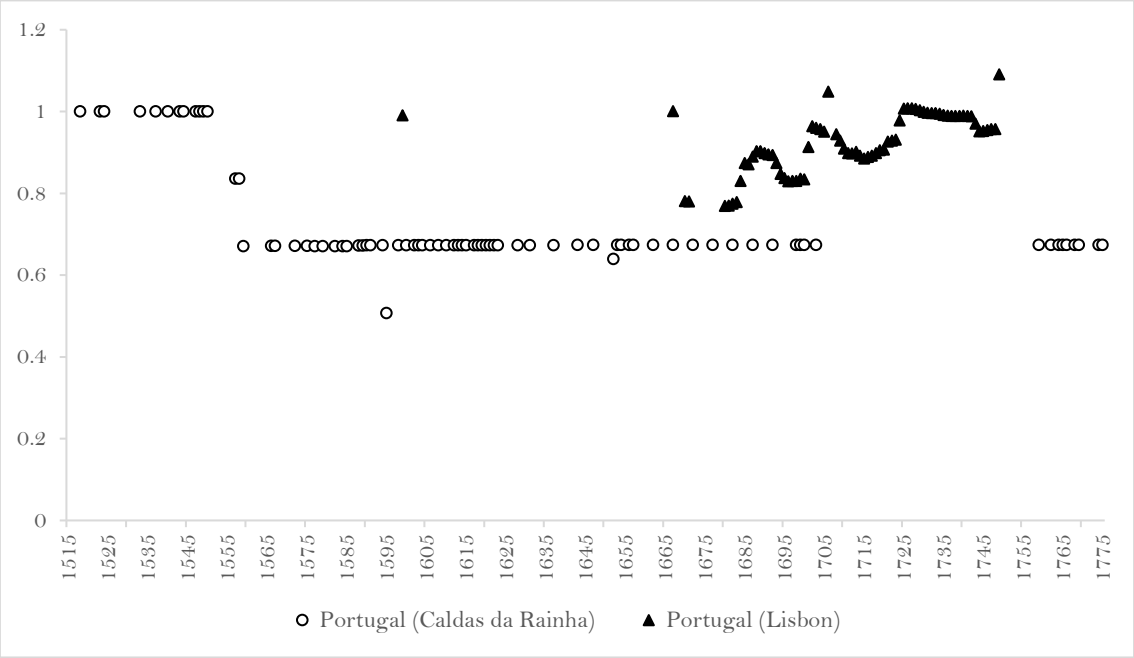
In this paper, we focus only on the cases of male and female nurses treating fevers in these two hospitals, therefore excluding those who treated syphilis and those who worked in other hospitals and were paid daily.[23] Most data from Figure 5 were collected from archival sources and are available here 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. 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.[24]

Figure 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, Figure 5 shows that in both hospitals, the wages of female nurses corresponded to more than 60 percent of their male counterparts.

[23] 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).

[24] In the Appendix, we provide details concerning the methodological assumptions underlying the construction of missing data (including that for the value of lodging).

Figure 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.

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.[25] 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

[25] 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.

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 appears in our sources for each gender. Data shows that men more regularly did jobs subject to a compensating differential for each wage category.[26] 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.

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

[26] For a related argument, see Burnette (2008).

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.

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 2,000), tailors (more than 1,000), bakers (close to 800), and weavers (more than 100).[27] 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; 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).[28]

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. Figure 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

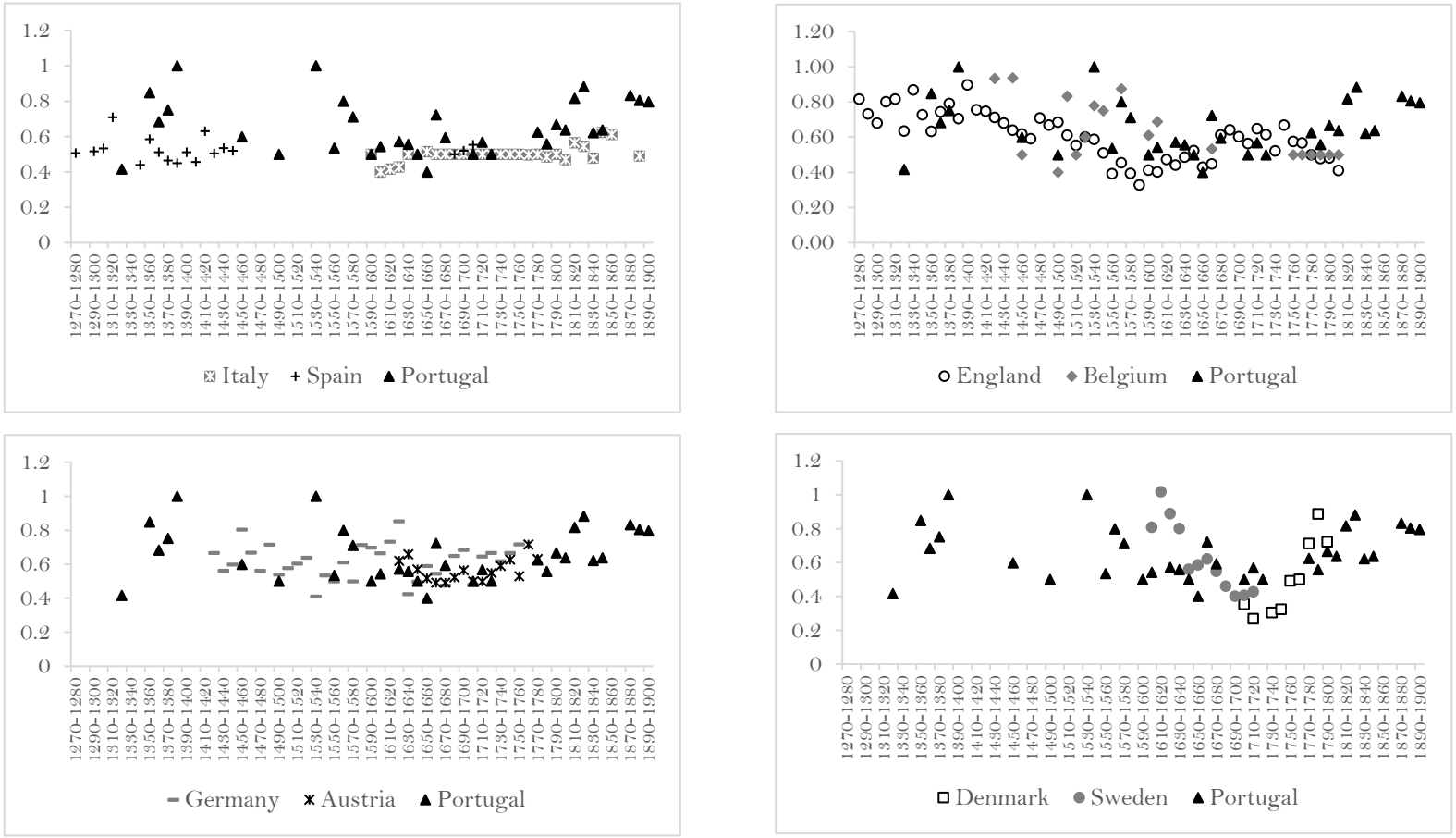
[27] These were large numbers considering that Lisbon's population was around 100,000 individuals according to the same author.

[28] 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).

elsewhere. In the case of Italy, we completed de Pleijt and van Zanden's (2020) gender wage gaps with additional observations for the nineteenth century. Figure 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.[29]

[29] In the case of Italy, the gap also rises by the 1880s due to industrialization.

Figure 6. Comparative gender wage gap (unskilled f/m): daily wages, 1271-1900

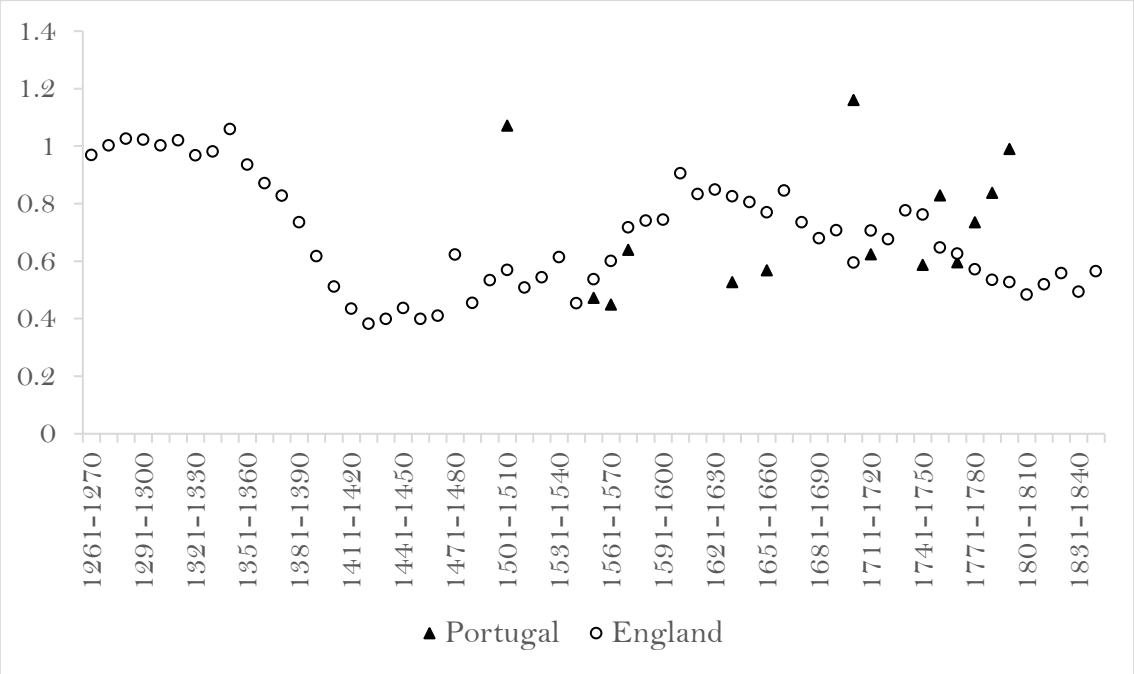


Sources: for Portugal, agricultural and service wages as in Figure 3; for England, Humphries, and Weisdorf (2015); for Denmark, Jensen et al. (2019); for Italy, de Pleijt and van Zanden (2021) for 1590-1800, Melacrinis (2021), which concerns south Italy, for 1802-1859 and Strangio (2021), concerning a tobacco factory, for 1881. For all others, de Pleijt and van Zanden (2021).

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.[30] We begin with the case of unskilled individuals (Figure 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 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.

Figure 7. Comparative gender wage gap (unskilled f/m, annual wages): 1261-1850

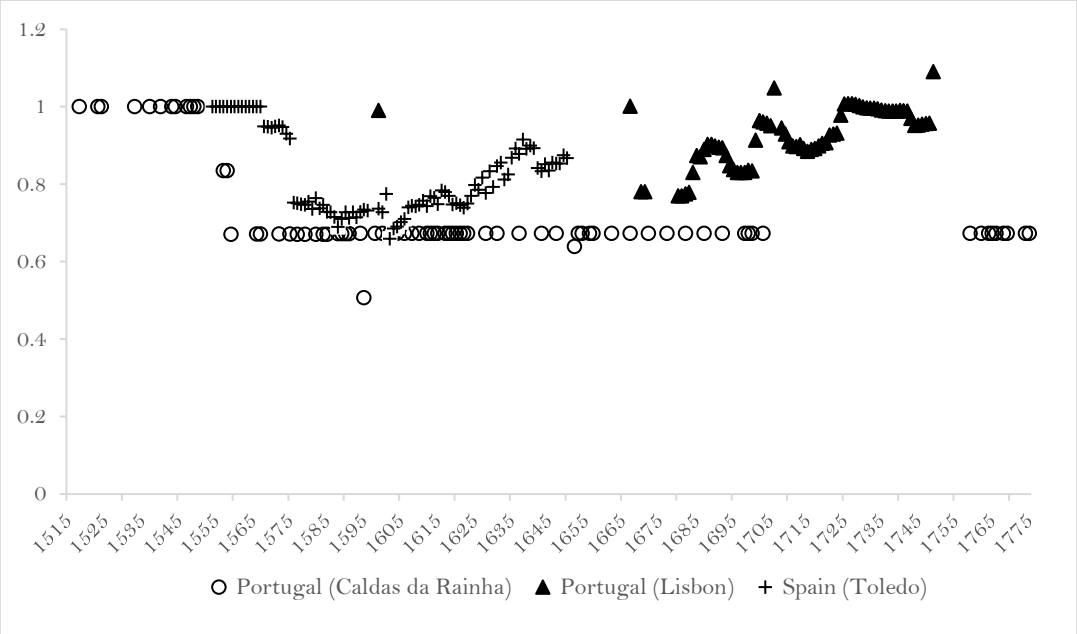


Sources: for England, Humphries and Weisdorf (2015, 2019); for Portugal: see text.

In Figure 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.

[30] 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).

Figure 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 Figure 5.

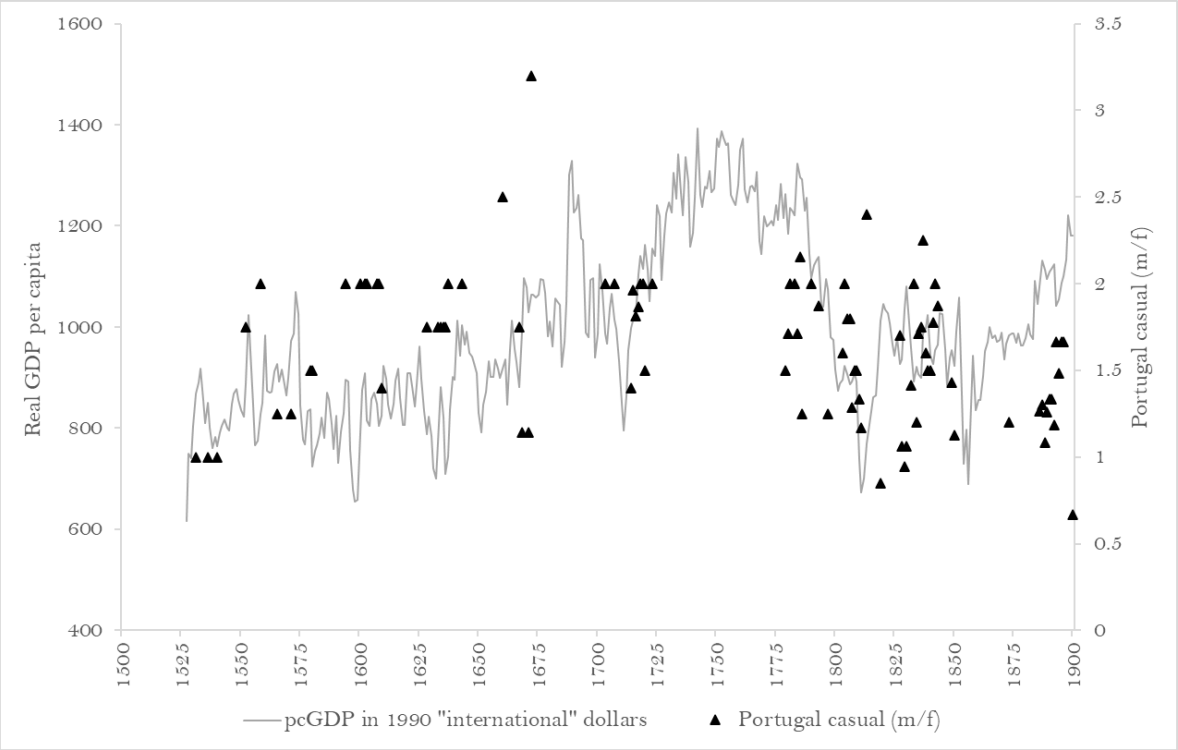
4.3. Social norms and pro-cyclicality of the labor market

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.

Figure 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.[31] 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.

Figure 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.

[31] 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.

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).[32] 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).[33] 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.[34] 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.[35] High female celibacy (above c. 10 percent) was

[32] 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).

[33] 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.

[34] 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.

[35] 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).

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).

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.

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.[36]

[36] 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.

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 neo-locality – 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).[37] 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

[37] 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).

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.

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APPENDICES (for online publication only)

Appendix A: Map of Portugal with the location of our sources indicated

Appendix B: Sources for daily and annual wages in Portugal

Archival sources

Arquivo Distrital de Braga (ADB)

Fundo Monástico Conventual

Beneditinos

São Salvador de Ganfei (Valença), Livro dos gastos, liv. 6

Santa Maria Miranda (Arcos de Valdevez), Livro dos gastos, livs. 23, 25

São Romão do Neiva, Livro dos gastos, liv. 116, 116A, 117

Santa Ana (Viana do Castelo), Livro da receita e despesa, liv. 46, 46A, 47, 48, 91

Mosteiro de Tibães, Livro do gasto deste mosteiro, n.º 656

Mosteiro de Tibães, Livro dos salários e soldadas, n.º 443, 444

Mosteiro de Tibães, Livro do gasto deste mosteiro, n.º 655, 657

Cónegos regrantes

Mosteiro de Santa Maria, Vila Nova de Muia (Ponte de Lima), liv. CR188

Franciscanos

Convento de Nossa Senhora dos Remédios (Braga), liv. F239, F242, F27, F277

Fundo da Santa Casa da Misericórdia de Braga

Livro da despesa do tesoureiro, n.º 657

Livro da despesa do mordomo, n.º 679, 680, 681

Arquivo Distrital de Leiria (ADLRA)

Fundo do Real Hospital das Caldas da Rainha

Livro de receitas e despesas (1518-1774), DEP. VI-3-B-1, DEP. VI-3-B-2, DEP. VI-3-B-3, DEP. VI-3-B-4, DEP. VI-3-B-5, DEP. VI-3-B-6, DEP. VI-3-B-7, DEP. VI-3-B-8, DEP. VI-3-C-1, DEP. VI-3-C-2, DEP. VI-3-C-3, DEP. VI-3-C-4, DEP. VI-3-C-5, DEP. VI-3-C-6, DEP. VI-3-C-7, DEP. VI-3-C-8, DEP. VI-3-C-9, DEP. VI-3-D-1, DEP. VI-3-D-2, DEP. VI-3-D-3, DEP. VI-3-D-4, DEP. VI-3-D-5, DEP. VI-3-D-6, DEP. VI-3-D-7, DEP. VI-3-D-8, DEP. VI-4-A-1, DEP. VI-4-A-2, DEP. VI-4-A-3,

DEP. VI-4-A-4, DEP. VI-4-A-5, DEP. VI-4-A-6, DEP. VI-4-A-7, DEP. VI-4-A-8, DEP. VI-4-A-9, DEP. VI-4-B-1, DEP. VI-4-B-2, DEP. VI-4-B-3, DEP. VI-4-B-3, DEP. VI-4-B-4, DEP. VI-4-B-5, DEP. VI-4-B-6, DEP. VI-4-B-7, DEP. VI-4-B-8, DEP. VI-4-B-9, DEP. VI-4-C-1, DEP. VI-4-C-2, DEP. VI-4-C-3, DEP. VI-4-C-4, DEP. VI-4-C-5, DEP. VI-4-C-6, DEP. VI-4-C-7, DEP. VI-4-C-8, DEP. VI-4-C-9, DEP. VI-4-D-1, DEP. VI-4-D-2, DEP. VI-4-D-3, DEP. VI-4-D-4, DEP. VI-4-D-5, DEP. VI-4-D-6, DEP. VI-4-D-7, DEP. VI-4-D-8, DEP. VI-4-D-9, DEP. VI-4-D-10, DEP. VI-4-D-11, DEP. VI-4-D-12, DEP. VI-5-A-1, DEP. VI-5-A-2, DEP. VI-5-A-3, DEP. VI-5-A-4, DEP. VI-5-A-5, DEP. VI-5-A-6, DEP. VI-5-A-7, DEP. VI-5-A-8, DEP. VI-5-A-9, DEP. VI-5-A-10, DEP. VI-5-A-11, DEP. VI-5-A-12, DEP. VI-5-B-1, DEP. VI-5-B-2, DEP. VI-5-B-3, DEP. VI-5-B-4, DEP. VI-5-B-5, DEP. VI-5-B-6, DEP. VI-5-B-7, DEP. VI-5-B-8, DEP. VI-5-B-9, DEP. VI-5-B-10, DEP. VI-5-B-11, DEP. VI-5-B-12, DEP. VI-5-B-13, DEP. VI-5-C-1, DEP. VI-5-C-2, DEP. VI-5-C-3, DEP. VI-5-C-4, DEP. VI-5-C-5, DEP. VI-5-C-6, DEP. VI-5-C-7, DEP. VI-5-C-8, DEP. VI-5-C-9, DEP. VI-5-C-10, DEP. VI-5-C-11, DEP. VI-5-C-12, DEP. VI-5-C-13, DEP. VI-5-D-1, DEP. VI-5-D-2, DEP. VI-5-D-3, DEP. VI-5-D-4, DEP. VI-5-D-5, DEP. VI-5-D-6, DEP. VI-5-D-7, DEP. VI-5-D-8, DEP. VI-5-D-9, DEP. VI-5-D-10, DEP. VI-5-D-11, DEP. VI-5-D-12, DEP. VI-5-D-13, DEP. VI-6-A-1, DEP. VI-6-A-2, DEP. VI-6-A-3, DEP. VI-6-A-4, DEP. VI-6-A-5.

Arquivo Histórico Alfredo Pimenta (AHAP)

Recolhimento de Torre de Moncorvo (1696), DSCO5156

Arquivo Histórico do Hospital Termal das Caldas da Rainha (AHHTCR)

Livro de receitas e despesas (1520-1521, 1542-1543, 1547-1548), Inv. 235, 577, 236

Biblioteca Nacional de Portugal (BNP)

Livro de Despesa de uma Casa da Companhia de Jesus (Porto) (1714-1721), cod-4512. Available at http://purl.pt/33934

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Appendix C: Historical and methodological details concerning the construction of nurse earnings data

The Hospital Real de Todos-os-Santos was founded in Lisbon in 1492, under the initiative of King João II (r. 1481-1495), and the Hospital de Nossa Senhora do Pópulo was founded in 1485, in a semideserted area in the surroundings of the town of Óbidos (later, in 1511, the site where the hospital was built was granted the title of town of Caldas da Rainha), by Queen Leonor (1458-1525), the wife of King João II. While the former was a general – and the most prominent – hospital that could house 200 inmates daily in its four wards in 1504, the latter was a thermal hospital, which mainly (but not exclusively) treated patients suffering from rheumatic issues (*frialdades*) and housed both poor and rich inmates, up to 100 per day. Unlike the Hospital Real de Todos-os-Santos, which was open all year, the Hospital de Nossa Senhora do Pópulo opened its doors only in the warm months, from April to September, as this was considered the best time to enjoy the therapeutic properties of the thermal waters (Rodrigues, 2013).[1]

Both hospitals were founded in the late fifteenth century by royal initiative, and their historical archives keep an almost complete series of account books and other sources, allowing us to track individuals who worked indoors. The hospitals' inmates suffered from various diseases, from fevers (a broad medical concept that could comprehend several categories: daily, tertian or quartan), apoplexy, choler, headaches, epilepsy, fractures, wounds, urogenital conditions, orthopedic issues, as well as venereal diseases. Although syphilitics were admitted to general hospitals, they were housed separately in different wards, received different treatments, and were assisted by different nurses.Hospitals also employed one *hospitaleiro* (male) and one *hospitaleira* (female), usually a couple responsible for keeping and mending the hospital's clothes (either of inmates or bedding) and, in some instances, they could supervise the nurses' work in their corresponding wards. While in Caldas da Rainha, both *hospitaleiro* and *hospitaleira* received the same cash salary (6,000 *reais* each for six months of work), with no food nor accommodation

[1] Although this hospital functioned only six months a year, it housed, on average, 900 patients in the late sixteenth century (1589), 689 in the mid-seventeenth century (1654), and 652 late in the century (1692). Arquivo Distrital de Leiria (hereafter ADLRA), Fundo do Hospital Real das Caldas da Rainha, Matrículas de Enfermos, Dep.VI-1-A-30, Dep.VI-1-A-36, Dep.VI-1-A-38. In the mid-eighteenth century, 8,438 men (1,298 of whom died) were admitted to the Hospital Real de Todos-os-Santos, and 1,114 women (198 of whom died) (Mendonça, 1761, pp. 63).

or clothing, in Lisbon, there was only one *hospitaleiro* (male) who earned 12,000 *reais* annually, without any ration, but who should live within the hospital's premises.[1]

As a thermal hospital, the nurses of the *hospital of Nossa Senhora do Pópulo*, in Caldas da Rainha, were hired for one semester, from April to September, as it was deemed the best period of the year to go to the baths. During those months, the hospital was open and admitted not only the poor but also rich people whose ailments were expected to benefit from the properties of the mineral waters. The seasonality of the hospital explains both the values and the schedule of wage payments to servants and officials. Male and female nurses were paid 6,000 *reais* each semester between 1512 and 1559, and sources are silent regarding food or lodging, although it is very likely they lived in the hospital (Rodrigues, 2013, vol. 1, pp. 321–326). In 1559, a royal order determined the hiring of another female nurse, and from then onwards, the two nurses earned 4,000 *reais* each, instead of 6,000 *reais*. According to the hospital's notarial records and account books, the wages of male nurses who worked in the *hospital de Nossa Senhora do Pópulo* remained unchanged until the late eighteenth century. In addition to cash wages, nurses – and all those who worked in the hospital – received a *ração* of three-quarters of *arrátel* of mutton (=344,25 grams), one piece of wheat bread (*pada*), and one *quartilho* of wine (half a liter) on festive days, such as the hospital's opening (1 April) and closing days (30 September), and some holy days.[2]

Despite the 1512 statutes and account books only mentioning the annual cash wage it seems that nurses could retrieve a higher income from their services in the hospital. In the mid-seventeenth century, Jorge de São Paulo, the chronicler of the *Hospital de Nossa Senhora do Pópulo* who served twice as its purveyor (1653-1656 and 1662-1664), noted that some nurses, for instance the male nurse who oversaw the clergy members' ward, could earn between 25,000 and 50,000 *réis* per year (four to sixfold the wage stated in the statutes) if one computed the food, money, and tips received (São Paulo, 1968, vol. 2, pp. 465–468). The same applied to female nurses, whose annual income could rise to 40,000 *réis*, considering the tips, linen clothes, and jewels that female patients often gave

[1] In 1567, in the *hospital of Nossa Senhora do Pópulo*, in Caldas da Rainha, the new *hospitaleiro* asked the king to raise his salary, which was updated to 8,000 *reais* (and another 8,000 *reais* to his wife, the *hospitaleira*). In 1582 it was again updated to 9,000 *reais*. In 1588, claiming hard work and the time he had been serving the hospital, the *hospitaleiro* was granted a daily *ração* (ration), corresponding to two *arráteis* of mutton (=918 grams; 2 pounds), two little pieces of wheat bread (*padas*), and half of a *canada* of wine (=1 liter) (Rodrigues, 2013).

[2] These were *Assumption of Our Lady*, 15 August; Holy Ghost; St. John the Baptist, 24 June.

them (São Paulo, 1968, vol. 2, pp. 470–471). This situation appeared not to be limited to nurses, for their helpers "left [the hospital] with full and stuffed pockets." In the chronicler's words, nurses were so well-paid that their daughters could take to marriage "such a perfect trousseau that many ladies of high rank would not have it so perfect as their houses" (São Paulo, 1968, vol. 2, p. 471).

As for the *Hospital Real de Todos-os-Santos*, in Lisbon, the hiring of nurses was different. The hospital was the largest in the realm, with a capacity of 200 patients a day, and at its inception, four male nurses and a nurse worked there too. Contrary to the *Hospital de Nossa Senhora do Pópulo*, Lisbon's hospital was open for the whole year. It became a significant health care institution, not only because it treated thousands of patients yearly but also due to its economic importance, becoming a crucial employer and financial agent in the city. In the mid-eighteenth century, there were already 19 wards, 15 for men and four for women (Mendonça, 1761, p. 59). The salary of nurses – both in cash and in rations – varied during the early modern period. In 1504, male nurses earned 6,000 *reais*, and received a daily *ração*, clothing, and lived within the hospital's premises. In turn, the female nurse earned half of that value (3,000 *reais*), along with the same in-kind compensations.[3]

Figure C1 systematizes the cash wages of male and female nurses of the *Hospital Real de Todos-os-Santos* between 1564 and 1750. These data derive from *The PWR data files* (n.d), and are deflated it with the CPI from Palma and Reis (2019).

[3] In the 1504 statutes, the female nurse earned less than the laundress or the female tailor, who received 4,000 *reais*, food, and lodging each (*Regimento do hospital*, 2004 [1504], pp. 75–107). Only the female nurse helper received less than the female nurse (2,000 *reais*, food, and accommodation).

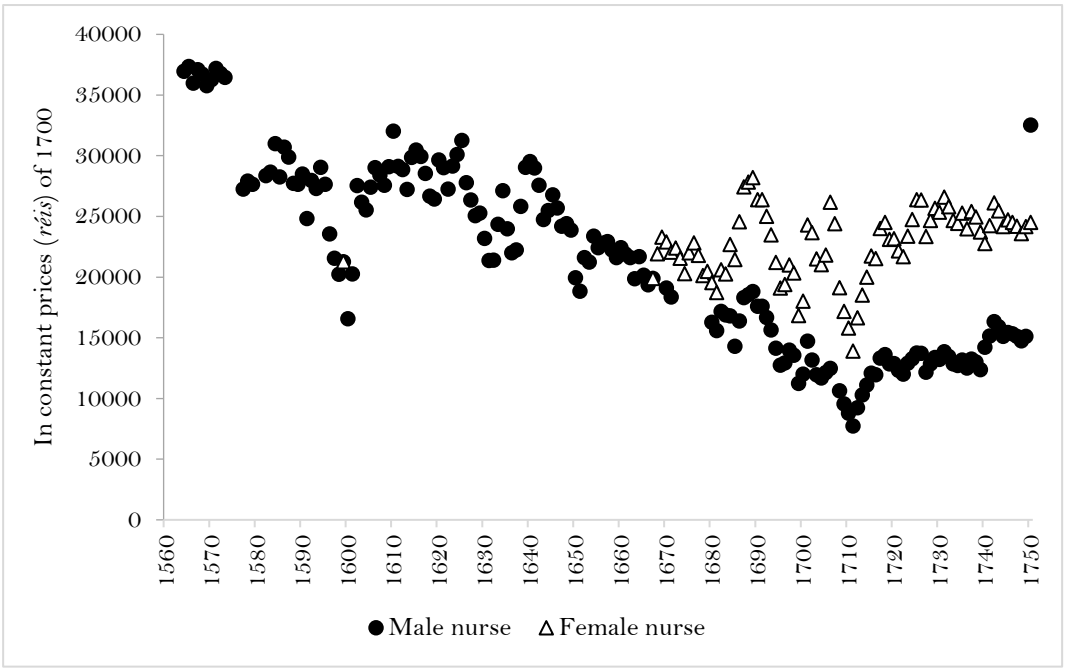

Figure C1. Earnings of the nurses of Hospital Real de Todos-os-Santos, in Lisbon (1560-1750)

Note: From the 1670s, the cash wages of male nurses are missing. See text for details.
Source: *The PWR data files* (n.d).

Figure C1 allows for two conclusions. First, the cash wages of male nurses declined over time because of their nominal stability and the inflation of the second half of the seventeenth century. Second, the cash wages of female nurses seem to have been updated more often and, therefore, were less volatile (note the 1599 female wage observation; wages of female nurses are rarely mentioned in the account books until 1667; only male wages were recorded). Even though we only have one observation for female nurses prior to the second half of the seventeenth century for this hospital, in fact we also know from our sources that the cash salary of male and female nurses were *on a par* in the late sixteenth century (14,400 *reais*), remaining that way until at least 1667. However, from the 1670s, account books no longer record the wages of male nurses. The only information available concerns the payment of 12,000 *réis* for clothing (*vestiaria*). On the other hand, female nurses kept on receiving 14,400 *réis* annually until 1683, when their wages were updated to 18,000 *réis*.[4] In the early eighteenth century (1702), female nurses were again given a rise in their salary (21,600 *réis*) and another one in 1725 (23,040 *réis*), while

[4] In 1683, the female nurses asked for a raise in their salary from 40 *réis* to 50 *réis* per day. Arquivo Nacional da Torre do Tombo (hereafter, ANTT), Hospital de São José, liv. 941 (1603-1697), f. 401r.

the nurses in the male wards continued to receive 12,000 *réis* concerning *vestiaria*, a situation that only changed in 1740 when their wages were again recorded (14,400 *réis*/year) together with a *ração* of bread, meat, fish and wine and 100 *réis* for shoes.[5] A decade later, in 1750, male nurses' cash salary increased threefold to 48,000 *réis*, and their female counterparts doubled (24,000 *réis*).[6]

In addition to cash wages, male and female nurses were obliged to live within the hospital's premises and received food (*ração*) and clothing. In the early sixteenth century, every nurse received bread, three *quartilhos* of wine (=1,5 liters), and one *arrátel* of meat (=459 grams/1 pound) daily, and on the fasting days, the meat was substituted by one *arrátel* (a pound) of fish (*Regimento do hospital*, 2004[1504], pp. 75–107). Account books from the late sixteenth-century register that both male and female nurses received three *arráteis* of meat at Christmas, Easter, and on All Saint's Day and half an *alqueire* of *chícharos* (Indian pea) at Lent.[7] The composition of such rations varied considerably during the period under examination, particularly in the seventeenth and eighteenth centuries. From 1670 onwards, wages of male nurses are absent from the sources, only 12,000 *réis* concerning *vestiaria* and six *alqueires* of grains, six *alqueires* of *chícharos*, and one ram for the Feasts. On the other hand, the wages of female nurses remained at 14,400 *réis* together with half an *alqueire* of *chícharos* and three *arráteis* (three pounds) of meat on Feast days. In the early eighteenth century (1703), the *ração* had changed again: female nurses received a quarter of meat on feast days and half an *alqueire* of *chícharos*, while male nurses were paid their *vestiaria*, *chícharos* and peas.[8] In the 1720s, it changed again: male nurses received their *ração* of bread, meat, fish, and wine and 100 *réis* for shoes, and women only two loaves of bread and the *ração*.[9]

Given that nurses were offered housing, but we do not observe its value, we proceeded as follows. In the case of *Hospital de Todos-os-Santos*, in Lisbon, we know that male and female nurses enjoyed similar lodging conditions (*Regimento do hospital*, 2004 [1504] p.

[5] In 1721, the female nurses asked again for a new raise (to 120 *réis* daily). ANTT, Hospital de São José, liv. 942 (1696-1752), f. 117v, liv. 906 (1740-1741), f. 56r.
[6] In 1758, the wages of both male and female nurses decreased again. In 1759, Jorge Francisco Machado de Mendonça, treasurer and head nurse of the *hospital Real of Todos-os-Santos*, wrote a *memoir* on the hospital, stressing several needed reformations. The salaries paid to officials and servants were, in his opinion, "excessive" and required "regulation." He ordered that, from then onwards, male nurses received not 4,000 *réis* month (48,000 *réis* annually), but 3,600 *réis* (43,200 *réis* annually) and female nurses less 100 *réis* a month, which means their annual wage was fixed at 22,800 *réis* (Mendonça, 1761, pp. 61).
[7] ANTT, Hospital de São José, liv. 761 (1592-1593), ff. 141r, 150r.
[8] ANTT, Hospital de São José, liv. 870 (1703-1704), f. 56r.
[9] ANTT, Hospital de São José, liv. 887 (1720-1721), f. 55r.

79), and we looked for the rental cost of modest homes near the hospital such as *Rua da Bistega*. We tracked as much as possible the same home over time, and halved the value of the annual rents which applied for given years, under the assumption that each home had on average two adults and two children (Palma et al., 2020). We find that lodging costs were in the range of 10% of nurses' overall income, hence roughly in line with the shares that Drelichman and González Agudo (2020, pp. 9-10) find for Toledo. Note, too, that Allen (2009, p. 38) assumes 5% of spending on the subsistence basket went to housing.

In the case of *Hospital de Nossa Senhora do Pópulo* in Caldas da Rainha, lodging in the hospital was also given to nurses, but we do not once again observe its market value. Hence, we proxied it as follows. When Queen Leonor founded the hospital in Caldas, then a semi-deserted region, she also ordered the construction of several houses close to the hospital. The main street in town was *Rua Nova*, with ten houses and their corresponding backyard. In 1508, Queen Leonor donated the buildings and houses to the hospital and stated that she "ordered the construction of houses to lodge the chaplains and all the officials and servants of the Hospital."[10]

The houses in *Rua Nova* were all similar: one-floor houses with the same area and morphology. They occupied, on average, between 31 and 40 m^2 and were of elongated rectangular shape (ratio 1.6). Each of these houses had two main areas: "the front house" (*casa dianteira*) and "the back house" (*casa de dentro*); the former corresponded to a more public area, and the latter to the most private space within the house (frequently called *câmara*). The backyards were contracted together with the house and, on average, occupied 51 m^2 (Rodrigues, vol II, 2013, pp. 443-450). Each of these houses was under emphyteutic contracts, and the annual rent (*foro*) was 100 *reais* and one or two hens, paid on August 15th.

We assumed that the nurses of the hospitals lived in one of the houses in *Rua Nova*. Several notarial records testify that the hospital officials were granted one house in this street, as happened with the cooker of the hospital, Maria Álvares, who was exempted from paying the annual rent (*foro*) while serving the hospital (Rodrigues, vol II, 2013, pp. 451-452). In 1656, Maurício Tavares, nurse of the religious men's ward, also lived in

[10] ADLRA, Fundo do Real Hospital das Caldas da Rainha, Pergaminhos - Doação da rainha D. Leonor da administração do hospital de Caldas da Rainha, Dep.VI-Gav.3-Doc.29)

one of these houses and paid 100 réis and one hen per year (São Paulo, 1968, vol. III, p. 318). This is what we used, and as with the Lisbon case tracking as much as possible the same home over time and dividing the total value of the rent by 2. We interpolated or extrapolated missing data as needed.

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Appendix D: Classification of occupations

D1: Unskilled daily

Occupation	Gender	Repugnant	Danger	Physical	Wage category	Observations
Breaking stones	M	No	No	Yes	Unskilled daily	1
Cabbage-seller	F	No	No	No	Unskilled daily	1
Carrying ashes/baskets/grapes/water/wood/wine	M/F	No	No	Yes	Unskilled daily	16
Carrying manure	M/F	Yes	No	Yes	Unskilled daily	4
Charwoman	F	No	No	No	Unskilled daily	166
Cleaning wine barrels	F	No	No	No	Unskilled daily	3
Clearing a vineyard up of lopped branches	M/F	No	No	No	Unskilled daily	19
Clearing maize, wheat	F	No	No	No	Unskilled daily	4
Cook assistant	M	No	No	Yes	Unskilled daily	4
Cutting firewood/wild trees/wood	M	No	No	Yes	Unskilled daily	13
Day laborer	M	No	No	Yes	Unskilled daily	73
Digger	M/F	No	No	Yes	Unskilled daily	63
Ditch maker	M	No	No	Yes	Unskilled daily	1
Farm Laborer	M/F	No	No	Yes	Unskilled daily	11
Fence the vineyards	M	No	No	No	Unskilled daily	9
Gardener	M	No	No	No	Unskilled daily	1
Gathering firewood/maize/maize straw/wood	M	No	No	Yes	Unskilled daily	7
Grape harvest	M/F	No	No	No	Unskilled daily	77
Hoeing/beans/flax/maize	M/F	No	No	Yes	Unskilled daily	16
Husking	M	No	No	No	Unskilled daily	1
Journeyman	M	No	No	Yes	Unskilled daily	2
Kneading lime	M	No	No	No	Unskilled daily	1
Laborer	M	No	No	Yes	Unskilled daily	4
Laundress	M/F	No	No	No	Unskilled daily	15
Nurse assistant	M/F	Yes	No	Yes	Unskilled daily	2
Oil presser assistant	F	No	No	Yes	Unskilled daily	3
Olive journeyman/journeywomen	M/F	No	No	Yes	Unskilled daily	31
Servant	M/F	No	No	Yes	Unskilled daily	116
Pipe cleaner	M	Yes	Yes	No	Unskilled daily	1
Planting olive trees/vineyard	M/F	No	No	Yes	Unskilled daily	12
Ploughman	M	No	No	Yes	Unskilled daily	6
Pruning vines	M	No	No	No	Unskilled daily	43
Reaping barley/corn/rye	M/F	No	No	Yes	Unskilled daily	9
Sawyer	M	No	No	Yes	Unskilled daily	1
Sheep keeper	M	No	No	No	Unskilled daily	1
Sieve	F	No	No	No	Unskilled daily	1
Sowing beans/the garden/wheat	M	No	No	No	Unskilled daily	4

Staking vineyards	M	No	No	Yes	Unskilled daily	24
Steward assistant	M	No	No	No	Unskilled daily	2
Sweeper	M/F	No	No	No	Unskilled daily	23
Taking the grapes to the wine press/the rye and wheat to the threshing floor/the wood to the vineyards	M/F	No	No	Yes	Unskilled daily	4
Laying vines	M	No	No	Yes	Unskilled daily	8
To water the garden	F	No	No	Yes	Unskilled daily	1
Thresher	M/F	No	No	Yes	Unskilled daily	12
Vineyard guard	M	No	Yes	No	Unskilled daily	14
Weeding (maize/vines)	M/F	No	No	Yes	Unskilled daily	18
Wheat harvester	M/F	No	No	Yes	Unskilled daily	4

D2: Unskilled annual

Occupation	Gender	Repugnant	Danger	Physical	Wage category	Observations
Apothecary assistant	M	No	No	No	Unskilled Annual	1
Bell operator	M	No	No	Yes	Unskilled Annual	1
Carrying water	M/F	No	No	Yes	Unskilled Annual	43
Chaplain assistant	M	No	No	No	Unskilled Annual	3
Cattleman	M	No	No	Yes	Unskilled Annual	11
Chicken keeper	F	No	No	No	Unskilled Annual	3
Cleaning man/woman	M/F	No	No	No	Unskilled Annual	8
Cook assistant	M/F	No	No	Yes	Unskilled Annual	7
Doorkeeper	M/F	No	No	No	Unskilled Annual	17
Sheep shepherd	M	No	No	No	Unskilled Annual	14
Farmer	M	No	No	Yes	Unskilled Annual	1
Field guard	M	No	Yes	No	Unskilled Annual	1
Fisherman	M	No	Yes	Yes	Unskilled Annual	3
Gardener	M	No	No	Yes	Unskilled Annual	21
Grave digger	M	Yes	No	Yes	Unskilled Annual	1
Laundress	M/F	No/Yes	No	No	Unskilled Annual	138
Muleteer	M	No	No	No	Unskilled Annual	4
Nurse assistant	M/F	No	No	No	Unskilled Annual	58
Oven man/woman assistant	M	No	No	No	Unskilled Annual	1
Pigeon keeper	M	No	No	No	Unskilled Annual	1
Pipe cleaner	M	Yes	No	Yes	Unskilled Annual	1
Servant	M/F	No	No	Yes	Unskilled Annual	144
Stable boy	M	Yes	No	Yes	Unskilled Annual	3
Surgeon assistant	M	No	No	No	Unskilled Annual	1
Sweeper	M	No	No	No	Unskilled Annual	1
Swineherd	M	No	No	No	Unskilled Annual	7
Turkey keeper	M	No	No	No	Unskilled Annual	3

D3: Skilled Annual

Occupation	Gender	Repugnant	Danger	Physical	Wage category	Observations
Barber	M	No	No	No	Skilled Annual	2
Barber-Surgeon	M	No	No	No	Skilled Annual	52
Blacksmith	M	No	No	Yes	Skilled Annual	2
Bread baker	M/F	No	No	Yes	Skilled Annual	15
Butcher	M	No	No	Yes	Skilled Annual	2
Cook	M/F	No	No	Yes	Skilled Annual	52
Administration/preparation of enemas or clysters	M/F	Yes	No	No	Skilled Annual	5
Farm supervisor	M	No	No	No	Skilled Annual	5
Head manager	M	No	No	No	Skilled Annual	1
Head nurse	M	No	No	No	Skilled Annual	1
Innkeeper for poor	M/F	No	No	No	Skilled Annual	3
Miller	M	No	No	Yes	Skilled Annual	2
Nurse	M/F	No	No	Yes	Skilled Annual	527
Oven man/woman	M	No	Yes	Yes	Skilled Annual	11
Shoemaker	M	No	No	No	Skilled Annual	1
Steward	M	No	No	No	Skilled Annual	3
Tailor	M/F	No	No	No	Skilled Annual	3

Appendix E: Regression analysis of the relationship between the gender wage gap and real GDP per capita, 1500-1900

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Estimation method	OLS	OLS	OLS	OLS	Nonparametric kernel regression	Nonparametric kernel regression	Nonparametric kernel regression	Nonparametric kernel regression
Dependent variable	Gender wage gap	Gender wage gap	Ln of Gender wage gap	Ln of Gender wage gap	Gender wage gap	Gender wage gap	Ln of Gender wage gap	Ln of Gender wage gap
GDP per capita	-0.00 (0.00)	0.00 (0.00)	-	-	0.00 (0.00)	-	-0.10 (0.24)	-
Ln (GDP per capita)	-	-	-0.09 (0.20)	0.11 (0.19)	-	0.00 (0.00)	-	0.14 (0.20)
Year trend	Yes	No	Yes	No	Yes	No	Yes	No
Observations	90	90	90	90	90	90	90	90
R-squared	0.037	0.006	0.04	0.01	0.44	0.00	0.32	0.038

Notes: Standard errors in parenthesis. In the case of the linear regressions, standard errors are robust, and in the case of the nonparametric kernel nonlinear regressions, they are bootstrapped. In the case of nonlinear regressions, the bandwidth was chosen using a cross validation approach and effect estimates are averages of derivatives.

Appendix F: A qualitative discussion of further comparative evidence

Marital property regimes and inheritance practices

De Moor and van Zanden (2010) claim that early marriage was encouraged in South-western Europe because the bulk of the daughter's share of the inheritance was transferred to her at the start of her marriage (the dowry). According to these authors, the dowry was not as common in Northwestern Europe: "If a woman had a right to her parent's inheritance without having to marry, there was no financial incentive for an early marriage … in areas with partible inheritance, where women were certain about their share of their parent's estate, women could afford to wait before marrying … they used this time to accumulate extra resources in order to make themselves more attractive as a potential marriage partner" (de Moor and van Zanden, 2010, p. 9).[1] In Iberia in general and in Portugal in particular marriage was not a decisive condition for daughters to receive family patrimony, and, partly, as a result, women did not marry early. Regarding human capital, Stolz et al. (2013, p. 562) show that Portugal's numeracy was similar to that of the most advanced parts of Europe as late as the 1730s.[2]

In Portugal, inheritance laws did not discriminate women against their male siblings. Therefore, they did not need to marry to have access to inheritance from their parents, as they could be given family assets at any moment, in life, through endowments. If they married, women were not excluded from inheritances, nor were they entirely powerless regarding their spouses' patrimony. According to the Portuguese Law (*Ordenações Filipinas*, 1965[1603], Book IV, Title XCIV), the default Portuguese marital system was joint ownership (*casamento por carta de ametade*), whereby husband and wife shared the same rights over the assets acquired during the marriage (Brandão, 1994, p. 203; Abreu-Ferreira, 2015, p. 52; Sá, 2021, pp. 50–53).

Marriages could be celebrated upon dowries (*arras/dote*) – but did not have to. When family members (not necessarily parents) awarded a dowry to the bride, the assets were not transferable and always remained separate from the husband's (Sá and Fernandes, 1986, pp. 92; Sá, 2021, pp. 53–54). Although this aimed at legally protecting women, it did not apply to assets acquired after wedlock, as they were considered joint ownership. Women also received the assets promised to them on marriage (*arras*) plus half of all

[1] See also Carmichael et al. (2016, pp. 200).
[2] This comparative situation was, however, to change dramatically during the second half of the eighteenth century (Kedrosky and Palma, 2021).

assets acquired after wedlock. Although husbands were responsible for managing the couple's and the wife's assets during the marriage, women had agency regarding the conjugal estate. For instance, according to the Law (*Ordenações Filipinas*, 1965[1603], Book IV, Title XLVIII), husbands needed explicit and formal permission from their spouses to alienate or mortgage the couple's estate; otherwise, the contract was invalid.[3]

In practice, dowries constituted an anticipation of the daughter's rightful share of her parents' inheritance (*legítima*) (Sá and Fernandes, 1986; Durães, 2000a).[4] Once receiving the dowry, women had no further right to claim the family estate. Based on 1,372 last wills drawn up in Northwestern Portugal between 1720 and 1820, Durães (2000a, vol. 2, pp. 476–485) thoroughly examined how members of the family inherited and succeeded in the family patrimony and the strategies adopted by testators to keep managing the household after their death. As daughters and sons could be granted family assets at any moment in life, the drawing up of a last will represented a perfect moment to benefit all offspring equally. In Portugal, offspring – either male or female – were considered "mandatory heirs" (*herdeiros obrigatórios*), meaning that only exceptionally could parents disinherit them (Durães, 2002, pp. 135). Last wills often mention descendants and their marital status, declaring whether they still lived with their parents or independently, whether the family had supported them financially at any given moment (when they left home to study or migrated), whether they had received a dowry (mentioning its composition and worth), and whether they were satisfied with their rights. This ensured that all heirs, regardless of gender, received the same share of the inheritance. However, after their parents' death, they could challenge in or out of court the fairness of the division of assets if they felt wronged relative to other heirs. When successful, the assets comprehended in the dowry returned to the pool of the family's patrimony (*monte*) to be equally divided anew between all heirs (Durães, 2000a, vol. 2, pp. 476–485, 2000b). Studies on family patrimony and inheritance in Northwestern Portugal demonstrate that these laws (which were similar in Castile) were usually enforced (Brandão, 1994, pp. 259–265; Durães, 2000a, vol. 2, pp. 537–553; 2002, pp. 137).

[3] There are plenty of examples of this situation in notarial records. Although Portuguese Law seems to have been favorable for women regarding property transmission and inheritances, it is important to stress that they were barred from specific legal actions, such as witnessing written testaments (*Ordenações Filipinas*, 1965[1603], Book IV, Title LXXXV).

[4] Family assets were divided into three parts. Two-thirds (*legítima*) were equally distributed among the legitimate heirs after all debts had been paid. The remaining third (*terço*) could be freely assigned to whomever the testator wished – either descendants, their souls, or religious/charitable institutions.

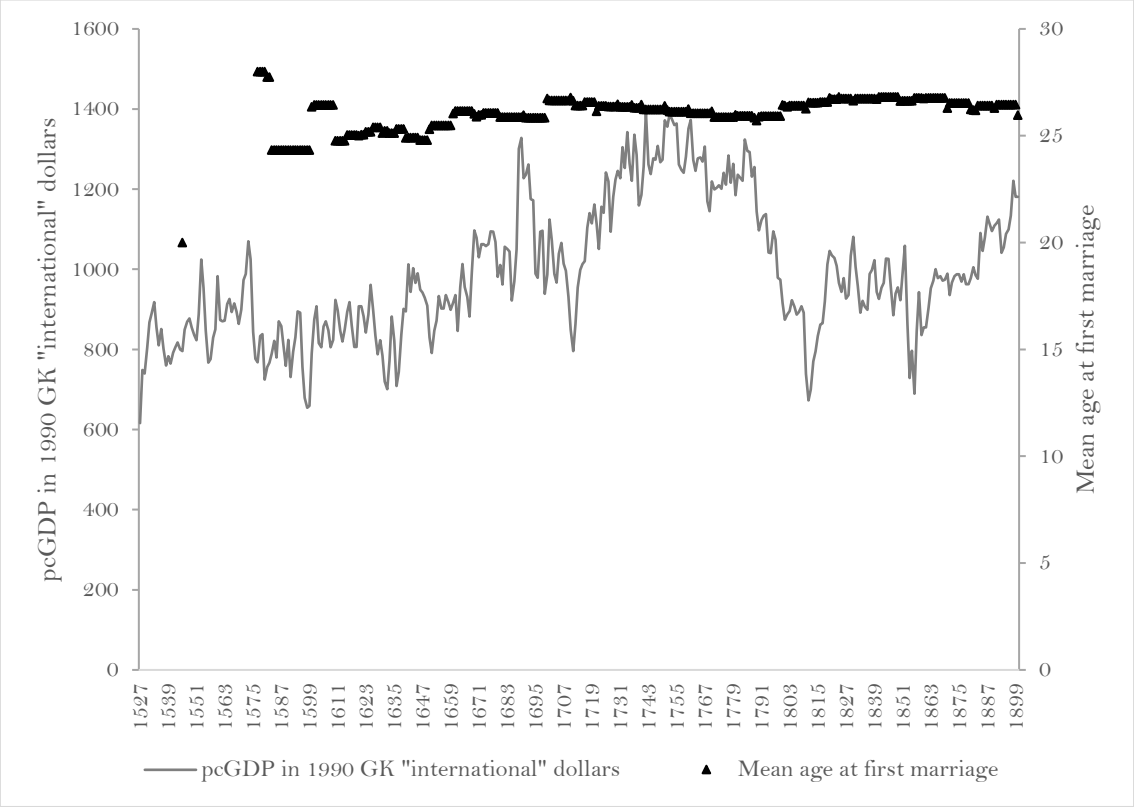
Marriage and labor market participation

The "Girl Power" literature argues that not only were the gender wage gaps in the North Sea area lower than in the South but also that female marriage ages and the rates of women's participation in the labor force were higher there than elsewhere in Western Europe due to different social norms (van Zanden et al., 2019, pp. 223–224; de Pleijt and van Zanden, 2021). We now show that this was also not the case. We consider, in turn, the cases of single, married women, and widows, as well as property regimes and inheritance practices. Portuguese women did not marry earlier, first marriage age gaps relative to grooms were not larger, and women participated in the labor market to a similar degree as elsewhere.

Marriage "was not an obstacle to the participation of Portuguese women in the economy of mid-eighteenth-century Portugal, rather the opposite, as marriage seems to have provided women with the resources needed to work in the tertiary sector, more often than not in commercial activities as self-employed" (Silva and Carvalhal, 2020, pp. 2).[5] According to the same authors, more than half of the women who were heads of the household worked for the market, and most were self-employed; hence, the situation was similar to what other authors found in the Netherlands between 1600 and 1900 (Schmidt and Nederveen Meerkerk, 2012).

[5] For independent evidence, see for example Silva (1985, vol. 1, pp. 231).

Figure F1. Mean age of first marriage and real GDP per capita in constant prices (1990 Geary-Khamis "international" dollars), 1500-1910



Sources: GDP per head in constant prices from Palma and Reis (2019) for 1527-1850 and Henriques et al. (2020) for 1850-1910. Mean age at first marriage, see Appendix E; for sources regarding historical marriage age in Portugal, see Appendix G.

Note: Information on the age at first marriage only began to be collected systematically after the Council of Trent (1545-1563).

Post-marriage, labor market participation, and widowhood

In Portugal, family assets belonged to the woman and children when the husband died.[6] Upon their husbands' death, widows could become head of household – even if there were adult male descendants in the household – and had rights over the conjugal patrimony, receiving half of all marital assets (*meação*).[7] The other half of the assets was

[6] By contrast, de Moor and van Zanden (2010, pp. 10) argue that in the southern system, social norms "prevented women from becoming active in the labor market (after marriage) because it remained uncertain whether they would ever benefit from their efforts after the death of their husbands." The authors argue that early motherhood prevented women from being as active in the labor market as women in Northwestern Europe.

[7] From the other half, one-third (*terço*) could be given through a will to any party, including the widow, chosen in advance by the deceased. The remaining two-thirds (of the half, known as *legítima*) were given in equal parts to the children. The same situation existed in Holland (Schmidt, 2007). In Portugal, however, daughters were commonly preferred over sons (Durães, 2009). In the North of Portugal, parents

distributed among the deceased's heirs. Therefore, upon their husband's death, widows received the assets they had brought into the marriage (dowry). Table F1 shows the percentage of women as heads of household in Portugal from a comparative perspective. Although in the seafaring parts of Portugal with high migration rates to the empire (e.g., Vila do Conde), the percentage of women and heads of household was remarkably high – 43 percent according to Polónia et al. (2002) –, even elsewhere it was similar (and close to the higher bound) to other European regions.[8]

Table F1. Percentage of women as Heads of Household

Location	Year	Percentage
Portugal (country-wide)	1765	14
Portugal (Porto)	1698	9.1
Portugal (Vila do Conde)	1643	43
Bohemia (rural)	1654	3.2
Netherlands (urban)	1750	3 - 24
Western Europe (global)	1750	10 - 15

Source: Carvalhal (2021), relying on Klein and Ogilvie (2016) for Bohemia 1654 and country-specific figures: Silva and Carvalhal (2020) for Portugal, corresponding to the 1765 average (from a range of 2.9 to 21.5 percent); Polónia (1999) for Portugal (Vila do Conde) 1643 and Porto 1698; Schmidt and Nederveen Meerkerk (2012) for the Netherlands 1750.

It was also common for women to manage businesses, especially during widowhood (Lopes, 2020, 2022); they commonly appeared in court cases as defendants or plaintiffs, and they also provided large quantities of credit to the market: for instance, in eighteenth-century Lisbon, women awarded a large share of the credit volume, even compared with attorneys or merchants (Costa et al., 2018, p. 91).

According to de Moor and van Zanden (2010, p. 26) "In southern Europe, vulnerable members of society were helped by the family or by individual charities, while in northern societies this was largely accomplished through public and private institutions." In Portugal, besides other charities and confraternities, there was an extensive network of charitable houses known as Houses of Mercy (*Misericórdias*). Founded in the late fifteenth century to perform the fourteen works of mercy, at the end of the sixteenth

could (and often did) favor firstborn daughters at the expense of male sons, attributing to them the land-lease estate or the *terço* (the third part of the inheritance they could freely assign to whomever they wanted). When writing their wills, they often favored daughters because they believed daughters would assure their old age better than their daughters-in-law (Durães, 2009).

[8] On the migration of men to overseas territories and the prominent role women played in the local economy (either agrarian or maritime) see, for instance, Brettell (1986) and Polónia (2007).

century, there were more than 200 such organizations, further increasing to 300 by 1800 (Paiva, 2013, pp. 517–524). The *Misericórdias* were financially autonomous and administratively independent from the Church and the Crown; they performed a wide range of charitable works and managed several other organizations, such as hospitals, prisons, and orphanages (Sá, 1997, 2017). In urban or rural settings, these confraternities offered dowries to single women who needed to marry and cared for those who remained celibate into old age. The financial and economic power of the *Misericórdias* was significant: in 1770, the revenues of the House of Mercy of Lisbon, the largest one, were threefold those of the Lisbon Inquisition (Rodrigues, 2019; Lopes, 2021, p. 665). Even rural and smaller *Misericórdias* yielded indisputable economic, social, and political power at the local level. In addition to these confraternities, there were several other organizations devoted to helping the neediest echelons of society, such as craft guilds that assisted their members (*confrarias de ofício*), hospitals, retirement homes for women (*recolhimentos*), and orphanages. Overall, this complex and intertwined net of welfare institutions assured that the vulnerable members of society were not exclusively helped by the family, also benefiting from a wide range of institutional relief.

Celibacy rates and degree of consensus

Our criticism of the "Girl Power" literature is related to prior work by Ogilvie (2003) and Dennison and Ogilvie (2014; 2016). It has been argued that the existence of the EMP (at least as traditionally defined) did not matter for growth because parts of Western Europe had it without important consequences for growth. Furthermore, these authors claim that it was not present in Italy (not even Northern Italy) or Spain (Dennison and Ogilvie, 2016, pp. 208–210).[9] They focus on three critical demographic indicators: female age at first marriage, female lifetime celibacy rates, and neo-local family structure (Dennison and Ogilvie, 2014, pp. 652–672). Carmichael et al. (2016) argue that the most important criteria were consensus in marriage and neo-locality. According to this, Portugal had the EMP: marriage ages were high, there was also a neo-local household structure in most of the country, and celibacy rates were similar to elsewhere in Western

[9] Several sources for early modern and nineteenth-century Italy confirm that the typical age of first marriage for women ranged between 22 and 26 years old, regardless of the period or region (Levi, 1976, da Molin, 1995, ge Rondi, 2007, Bertocchi and Bozzano, 2019, Rossi, 2020). Italian women hence tended to marry considerably later than their teens., unlike what is suggested in the "Girl Power" literature (de Moor and van Zanden, 2010, pp. 17–18; van Zanden et al., 2019, pp. 55; Bateman, 2019, pp. 44). The marriage age of Italian women from the late Middle Ages onward also contrasts with the typical first marriage ages of 15-19 for females during Ancient Rome (Beard, 2015, pp. 312).

Europe, as shown in Table F2 (on average 15 to 25 percent) (Kowaleski, 1999, p. 46; van Zanden et al., 2019, p. 39).[10]

Table F2. Celibacy rates in Portugal

Year	Region	Location	Female	Male
1623-1749	North	Alvito (S. Pedro)	49.0	37.0
1750-1849	North	Alvito (S. Pedro)	45.0	29.0
1850-1939	North	Alvito (S. Pedro)	33.0	24.0
Prior 1650	Center	Eixo	10.6	13.3
1650-1709	Center	Eixo	12.4	5.7
1710-1749	Center	Eixo	19.1	9.5
1750-1799	Center	Eixo	27.9	14.8
1800-1860	Center	Eixo	36.4	14.4
1802	South	Avis	39.0	40.0
1802	South	Elvas	20.0	34.0
1802	South	Portalegre	16.0	11.0
1802	South	Vila Viçosa	14.0	15.0

Sources: for Alvito (S. Pedro), Juncal (2004, p. 100); for Eixo, Ferreira (2005, p. 350); for Avis, Elvas, Portalegre, and Vila Viçosa, Sousa (1979, p. 269).

Although we lack comparative figures on the degree of consensus, such figures are also absent for Northwestern Europe (Carmichael et al., 2016; van Zanden et al., 2019; de Pleijt and van Zanden, 2021). Overall, the extant information suggests that the social norms of Western European societies were not fundamentally different.

The comparative degree of female labor market participation

In Portugal, women participated in the labor market regardless of their marital status. Drawing on eighteenth-century tax records (*décima*), Silva and Carvalhal (2020) showed that more than two-thirds of women who were heads of household (c. 14 percent) had an occupation mostly related to the primary sector. Their evidence revealed that marriage and widowhood encouraged women to actively engage in the labor market rather than deter them. Evidence for the late sixteenth and early seventeenth century Porto also shows that women actively participated in the labour market, if not on their own at least together with their husbands: for instance, in 1590, municipal records show that 15 couples ran eating and drinking houses, and 68 in 1621 (Silva, 1985, vol. 1, p. 231). For the early modern period, comparative data on female labor participation is

[10] Table F2 presents an abridged version of the information in Appendix H; see Appendix I for the sources on celibacy rates in Portugal.

fragmentary. The earliest systematic and comparative information comes from census-type data and concerns the second half of the nineteenth century.[11] Table F3 suggests that Portuguese women's participation in the labor market was not far behind that of the Netherlands, while Italy was well ahead into the twentieth century.

Table F3. Percentage of female labor force participation

	1861	1890	1900	1910
Australia	-	-	31.5	27.2
Belgium	-	40.8	40.1	41.2
Canada	-	13.4	14.0	16.5
Denmark	-	-	43.0	40.0
Finland	-	-	25.5	45.3
France	-	-	48.2	51.5
Germany	-	-	-	-
Ireland	-	-	-	30.7
Italy	50.0	-	49.4	43.1
The Netherlands	27.1	25.4	27.5	-
Norway	-	35.5	32.9	34.3
Portugal	21.5	36.8	27.6	27.8
Spain	-	-	21.5	14.7
Sweden	-	27.6	34.2	31.2
UK	38.2	40.0	36.4	36.6
USA	-	18.6	20.4	22.8

Sources: for Portugal, Reis (2005, p. 123), and the figure for 1861 corresponds to 1862; for Italy, the figure excludes the Latium and the Venetian provinces and is from Ministero dell'agricoltura, commercio ed industria (1864); for the UK, the 1861 figure corresponds to England and Wales and comes from Parliamentary papers, 1861 census, vol. II, parts I-II, population tables, occupations, p. 1863. All the other figures are from Olivetti (2013, pp. 41, 44) and Mitchell (1975, pp. 153–165).

Discussion

A final source of discrimination concerns the extent to which women were blocked from specific jobs and participation in the political process. While it is true that many white-

[11] In the case of Portugal (1862), the data results from the aggregation of 150,000 maps put together in 1862 by the priests of all the parishes in the country. 1890, 1900, and 1910 correspond to censuses. Their limitations include the possibility that individuals had more than one job, the role of unpaid and seasonal work, and ambiguity concerning hired labor (Reis, 2005, pp. 121–124).

collar jobs were not accessible for women in Portugal, this was equally the case in the Netherlands and England, where no examples of female lawyers existed until the early twentieth century. Also, admission of women to universities was uncommon before then. In fact, up to now, there is no systematic comparative data concerning the extent to which women in the European South did the same range of jobs as those in Northwestern Europe. As for participation in the political arena, the first woman allowed to vote in Portuguese national elections, Carolina Beatriz Ângelo, did so in 1911 after a judge ruled that excluding her for being a woman would be "absurd and wicked" (Silva, 2013, p. 58). Even though it did not become a permanent right immediately, this happened earlier than in England (1918) or the Netherlands (1919). Portuguese women were gradually allowed to vote over the twentieth century – when the country was under a dictatorship, and voting was meaningless – but the delay was not uncommon, even by Western European standards: French women, for instance, were granted suffrage only as late as 1944.

Our discussion has focused on the case of Portugal, but much of what was covered is representative of Iberian norms more generally. In the control and division of assets, Iberian society had a tradition of equity between the sexes (Elliott, 2006, p. 158). In the case of Castile, law and custom favored women "in ways that the English common law did not. Daughters inherited equally with sons a mandatory share of the estate known as the *legítima*, and widows took back on the deaths of their husbands not only their dowries, and the sum known as the arras [...] which the husband promised on marriage, but also half of the property gains made jointly by the spouses" (Elliott, 2006, p. 158).[12]

By and large, our results do not hold the claim that women had little time for resource accumulation due to receiving only part of their parent's estate on marriage in Southwestern Europe. Consensual marriage, neo-locality, and a high share of celibacy were present in Portugal to a comparable extent to Northwestern Europe. Even in a country as small as Portugal, practices were not uniform; for instance, while in the South of Portugal, neo-locality was the norm, in the North, where female celibacy was higher and women married later, neo-locality co-existed with alternative and more complex family

[12] Casey (1999, pp. 28–29) notes that "It was a characteristic of Spanish, and particularly, Castilian, law and, custom to favor women. The Castilian tradition had been that girls inherited equally with boys. Even in the Crown of Aragon [...], the medieval system favored division of at least part of the patrimony." One cause for this egalitarianism among heirs was the post-Reconquest frontier nature of the economy. This factor was less relevant in Aragon and Navarre (Casey, 1999, pp. 198).

structures in which several generations of related family members co-habited (Durães, 1995, pp. 70).[13]

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Appendix G: Historical marriage ages for women in Portugal

Year	Region	Location	F	F (N obs)	M	M (N obs)	Source
1770-1779	Azores	Ribeiras do Pico	26.3	56	29.4	56	Amorim, 2001, pp. 13
1780-1789	Azores	Ribeiras do Pico	25.4	68	27.2	61	Amorim, 2001, pp. 13
1790-1799	Azores	Ribeiras do Pico	26.6	76	29.7	65	Amorim, 2001, pp. 13
1800-1809	Azores	Ribeiras do Pico	27.3	66	29.1	62	Amorim, 2001, pp. 13
1810-1819	Azores	Ribeiras do Pico	26.5	98	28.9	82	Amorim, 2001, pp. 13
1820-1829	Azores	Ribeiras do Pico	27.0	119	28.2	99	Amorim, 2001, pp. 13
1830-1839	Azores	Ribeiras do Pico	24.3	107	27.0	93	Amorim, 2001, pp. 13
1840-1849	Azores	Ribeiras do Pico	26.8	112	28.6	92	Amorim, 2001, pp. 13
1850-1859	Azores	Ribeiras do Pico	26.5	97	28.3	93	Amorim, 2001, pp. 13
1860-1869	Azores	Ribeiras do Pico	28.0	105	30.4	83	Amorim, 2001, pp. 13
1870-1879	Azores	Ribeiras do Pico	27.3	101	29.3	86	Amorim, 2001, pp. 13
1880-1889	Azores	Ribeiras do Pico	27.7	89	29.9	72	Amorim, 2001, pp. 13
1890-1899	Azores	Ribeiras do Pico	25.6	118	27.6	103	Amorim, 2001, pp. 13
1900-1909	Azores	Ribeiras do Pico	24.5	110	28.1	106	Amorim, 2001, pp. 13
1910-1919	Azores	Ribeiras do Pico	23.6	83	29.1	68	Amorim, 2001, pp. 13
1920-1929	Azores	Ribeiras do Pico	23.2	111	28.9	94	Amorim, 2001, pp. 13
1930-1939	Azores	Ribeiras do Pico	24.0	107	26.7	92	Amorim, 2001, pp. 13
1940-1949	Azores	Ribeiras do Pico	23.7	114	28.0	76	Amorim, 2001, pp. 13
1950-1959	Azores	Ribeiras do Pico	23.1	118	28.0	90	Amorim, 2001, pp. 13
1960-1969	Azores	Ribeiras do Pico	22.3	97	27.3	60	Amorim, 2001, pp. 13
1970-1979	Azores	Ribeiras do Pico	21.2	67	25.6	43	Amorim, 2001, pp. 13
1980-1989	Azores	Ribeiras do Pico	20.7	30	27.2	20	Amorim, 2001, pp. 13
1680-1749	Azores	S. Mateus do Pico	25.1	-	-	-	Amorim, 2004, pp. 165
1750-99	Azores	S. Mateus do Pico	26.2	-	-	-	Amorim, 2004, pp. 165
1802	Center	Aveiro	23.0	-	26.0	-	Sousa, 1979, pp. 269
1878	Center	Aveiro	27.2	-	-	-	Leite, 2012, pp. 67
1878 (census)	Center	Beira Alta	26.9	-	29.1	-	Rowland, 1989, pp. 533
1878 (census)	Center	Beira Baixa	25.5	-	28.5	-	Rowland, 1989, pp. 533
1878 (census)	Center	Beira Litoral	27.4	-	28.6	-	Rowland, 1989, pp. 533
1802	Center	Castelo Branco	26.0	-	31.0	-	Sousa, 1979, pp. 269
1878	Center	Castelo Branco	25.3	-	-	-	Leite, 2012, pp. 67
1878	Center	Coimbra	27.5	-	-	-	Leite, 2012, pp. 67
1789	Center	Coruche	20.6	-	-	-	Rowland, 1989, pp. 513
1680-1749	Center	Couto do Mosteiro	28.2	-	-	-	Amorim, 2004, pp. 165
1750-99	Center	Couto do Mosteiro	28.2	-	-	-	Amorim, 2004, pp. 165
1650-1709	Center	Eixo	27.2	233	25.9	223	Ferreira, 2005, pp. 310, 312
1710-1749	Center	Eixo	27.4	266	29.6	152	Ferreira, 2005, pp. 310, 312

1750-1799	Center	Eixo	27.3	319	27.5	246	Ferreira, 2005, pp. 310, 312
1800-1860	Center	Eixo	28.9	326	29.7	308	Ferreira, 2005, pp. 310, 312
Until 1650	Center	Eixo	24.5	94	26.2	33	Ferreira, 2005, pp. 310, 312
1670-1719	Center	Ericeira	26.0	227	28.4	178	Reis, 2003, p. 27
1720-1819	Center	Ericeira	23.7	1057	26.5	902	Reis, 2003, p. 27
1820-1855	Center	Ericeira	25.0	518	27.9	485	Reis, 2003, p. 27
1650-1709	Center	Fermentelos	26.7	19	28.5	21	Ferreira, 2005, pp. 310, 312
1710-1749	Center	Fermentelos	26.8	148	29.1	131	Ferreira, 2005, pp. 310, 312
1750-1799	Center	Fermentelos	27.8	239	29.4	188	Ferreira, 2005, pp. 310, 312
1800-1860	Center	Fermentelos	28.2	239	29.9	222	Ferreira, 2005, pp. 310, 312
1878	Center	Guarda	26.0	-	-	-	Leite, 2012, p. 67
1802	Center	Lamego	27.0	-	29.0	-	Sousa, 1979, p. 269
1802	Center	Leiria	24.0	-	28.0	-	Sousa, 1979, p. 269
1878	Center	Leiria	27.6	-	-	-	Leite, 2012, p. 67
1878	Center	Lisboa	27.1	-	-	-	Leite, 2012, p. 67
1878 (census)	Center	Lisboa	26.7	-	30.6	-	Rowland, 1989, p. 533
1650-1709	Center	Nariz	23.2	33	24.1	32	Ferreira, 2005, pp. 310, 312
1710-1749	Center	Nariz	27.8	62	29.1	81	Ferreira, 2005, pp. 310, 312
1750-1799	Center	Nariz	27.8	160	27.3	122	Ferreira, 2005, pp. 310, 312
1800-1860	Center	Nariz	29.1	173	30.6	132	Ferreira, 2005, pp. 310, 312
1650-1709	Center	Oliveirinha	27.0	307	26.3	221	Ferreira, 2005, pp. 310, 312
1710-1749	Center	Oliveirinha	27.9	384	28.7	277	Ferreira, 2005, pp. 310, 312
1750-1799	Center	Oliveirinha	27.3	417	28.4	317	Ferreira, 2005, pp. 310, 312
1800-1860	Center	Oliveirinha	28.5	460	29.0	373	Ferreira, 2005, pp. 310, 312
Until 1650	Center	Oliveirinha	24.5	70	24.7	43	Ferreira, 2005, pp. 310, 312
1802	Center	Ourém	27.0	-	28.0	-	Sousa, 1979, p. 269
1802	Center	Portalegre	23.0	-	25.0	-	Sousa, 1979, p. 269
1650-1709	Center	Requeixo	23.5	147	24.2	174	Ferreira, 2005, pp. 310, 312
1710-1749	Center	Requeixo	29.2	227	30.2	246	Ferreira, 2005, pp. 310, 312
1750-1799	Center	Requeixo	28.6	578	28.0	421	Ferreira, 2005, pp. 310, 312
1800-1860	Center	Requeixo	29.7	484	30.2	413	Ferreira, 2005, pp. 310, 312
1878	Center	Santarém	26.9	-	-	-	Leite, 2012, p. 67
1701-1715	Center	Soure	22.7	-	21.9	-	Pais, 2010, p. 40
1716-1725	Center	Soure	25.6	-	26.1	-	Pais, 2010, p. 40
1726-1735	Center	Soure	24.9	-	26.9	-	Pais, 2010, p. 40
1650-1699	Center	Torres Vedras (zona urbana)	25.1	153	25.7	66	Santos, 2013, p. 214
1700-1749	Center	Torres Vedras (zona urbana)	25.6	396	28.1	202	Santos, 2013, p. 214
1750-1799	Center	Torres Vedras (zona urbana)	25.7	340	28.4	214	Santos, 2013, p. 214
1878	Center	Viseu	27.3	-	-	-	Leite, 2012, p. 67

1802	North	Barcelos	26.0	-	26.0	-	Sousa, 1979, p. 269
1673-1749	North	Belinho (Braga)	27.8	-	-	-	Scott, 1999, p. 198
1750-1824	North	Belinho (Braga)	27.8	-	-	-	Scott, 1999, p. 198
1890-1910	North	Belinho (Braga)	26.6	-	-	-	Scott, 1999, p. 198
1802	North	Braga	24.0	-	27.0	-	Sousa, 1979, p. 269
1878	North	Braga	27.5	-	-	-	Leite, 2012, p. 67
1802	North	Bragança	27.0	-	31.0	-	Sousa, 1979, p. 269
1878	North	Bragança	26.5	-	-	-	Leite, 2012, p. 67
1730-1739	North	Calvão (Vila Real)	27.8	11	24.9	8	Faustino, 1998, p. 87
1740-1749	North	Calvão (Vila Real)	29.5	19	25.1	9	Faustino, 1998, p. 87
1750-1759	North	Calvão (Vila Real)	32.0	23	30.4	16	Faustino, 1998, p. 87
1760-1769	North	Calvão (Vila Real)	31.9	21	29.4	14	Faustino, 1998, p. 87
1770-1779	North	Calvão (Vila Real)	28.3	25	29.9	20	Faustino, 1998, p. 87
1780-1789	North	Calvão (Vila Real)	27.6	25	30.8	12	Faustino, 1998, p. 87
1790-1799	North	Calvão (Vila Real)	25.4	20	28.4	16	Faustino, 1998, p. 87
1800-1809	North	Calvão (Vila Real)	24.6	38	27.6	32	Faustino, 1998, p. 87
1810-1819	North	Calvão (Vila Real)	24.8	24	26.5	21	Faustino, 1998, p. 87
1820-1829	North	Calvão (Vila Real)	23.9	18	30.1	17	Faustino, 1998, p. 87
1830-1839	North	Calvão (Vila Real)	25.1	34	30.8	32	Faustino, 1998, p. 87
1840-1849	North	Calvão (Vila Real)	27.0	39	26.3	35	Faustino, 1998, p. 87
1850-1859	North	Calvão (Vila Real)	25.3	41	28.4	38	Faustino, 1998, p. 87
1601-1700	North	Cardanha	26.9	-	-	-	Rowland, 1989, p. 513
1701-1800	North	Cardanha	28.3	-	-	-	Rowland, 1989, p. 513
1881-1882	North	Cedofeita (Porto)	23.5	-	24.2	-	Scott, 1999, p. 199
1780-1789	North	Chaves	22.6	123	25.6	53	Faustino, 2014, p. 104
1790-1799	North	Chaves	21.9	118	25.4	51	Faustino, 2014, p. 104
1800-1809	North	Chaves	23.5	109	26.5	63	Faustino, 2014, p. 104
1810-1819	North	Chaves	24.4	122	26.5	72	Faustino, 2014, p. 104
1820-1829	North	Chaves	23.2	133	27.8	53	Faustino, 2014, p. 104
1583-1639	North	Cortegaça	24.8	-	25.9	-	Gomes, 1998, p. 25
1640-1659	North	Cortegaça	21.9	-	22.6	-	Gomes, 1998, p. 25
1660-1679	North	Cortegaça	25.5	-	25.6	-	Gomes, 1998, p. 25
1680-1699	North	Cortegaça	26.2	-	27.3	-	Gomes, 1998, p. 25
1700-1709	North	Cortegaça	30.7	-	25.4	-	Gomes, 1998, p. 25
1710-1719	North	Cortegaça	20.1	-	27.1	-	Gomes, 1998, p. 25
1720-1729	North	Cortegaça	28.4	-	27.8	-	Gomes, 1998, p. 25
1730-1739	North	Cortegaça	27.8	-	27.1	-	Gomes, 1998, p. 25
1740-1749	North	Cortegaça	27.4	-	28.2	-	Gomes, 1998, p. 25
1750-1759	North	Cortegaça	27.0	-	27.7	-	Gomes, 1998, p. 25

1760-1769	North	Cortegaça	28.0	-	27.9	-	Gomes, 1998, p. 25
1770-1779	North	Cortegaça	27.9	-	29.2	-	Gomes, 1998, p. 25
1780-1789	North	Cortegaça	27.7	-	26.9	-	Gomes, 1998, p. 25
1790-1799	North	Cortegaça	26.5	-	27.6	-	Gomes, 1998, p. 25
1800-1809	North	Cortegaça	26.1	-	26.8	-	Gomes, 1998, p. 25
1810-819	North	Cortegaça	24.6	-	28.0	-	Gomes, 1998, p. 25
1820-1829	North	Cortegaça	26.2	-	26.8	-	Gomes, 1998, p. 25
1830-1839	North	Cortegaça	26.5	-	26.2	-	Gomes, 1998, p. 25
1840-1849	North	Cortegaça	23.7	-	24.8	-	Gomes, 1998, p. 25
1850-1859	North	Cortegaça	22.4	-	23.1	-	Gomes, 1998, p. 25
1860-1869	North	Cortegaça	21.7	-	22.7	-	Gomes, 1998, p. 25
1870-1879	North	Cortegaça	22.4	-	23.9	-	Gomes, 1998, p. 25
1880-1889	North	Cortegaça	22.2	-	24.5	-	Gomes, 1998, p. 25
1890-1899	North	Cortegaça	23.1	-	24.6	-	Gomes, 1998, p. 25
1900-1909	North	Cortegaça	24.5	-	25.9	-	Gomes, 1998, p. 25
1910-1919	North	Cortegaça	25.9	-	26.3	-	Gomes, 1998, p. 25
1920-1925	North	Cortegaça	24.4	-	26.8	-	Gomes, 1998, p. 25
1860-1900	North	Couto (Viana)	28.8	-	29.6	-	Scott, 1999, p. 198
1670-1815	North	Famalicão	26.0	315	25.0	213	Leite, 2014, p. 92
1752-1929	North	Famalicão	24.8	1043	26.1	841	Leite, 2014, p. 92
1930-1960	North	Famalicão	24.8	609	26.4	552	Leite, 2014, p. 92
1802	North	Guimarães	25.0	-	28.0	-	Sousa, 1979, p. 269
1650-1699	North	Guimarães (urban area)	24.8	121	24.2	86	Santos, 2013, p. 214
1700-1749	North	Guimarães (urban area)	26.9	169	28.0	117	Santos, 2013, p. 214
1750-1799	North	Guimarães (urban area)	23.7	221	25.8	162	Santos, 2013, p. 214
1670-1699	North	Guimarães (rural area)	26.8	77	28.5	34	Amorim, 2013, p. 95
1700-1719	North	Guimarães (rural area)	29.2	86	28.8	43	Amorim, 2013, p. 95
1720-1739	North	Guimarães (rural area)	25.9	110	27.9	78	Amorim, 2013, p. 95
1740-1759	North	Guimarães (rural area)	27.7	120	26.9	83	Amorim, 2013, p. 95
1760-1779	North	Guimarães (rural area)	25.6	155	26.5	84	Amorim, 2013, p. 95
1780-1799	North	Guimarães (rural area)	25.1	171	25.0	114	Amorim, 2013, p. 95
1800-1819	North	Guimarães (rural area)	24.5	151	25.5	105	Amorim, 2013, p. 95
1820-1839	North	Guimarães (rural area)	24.4	144	27.7	92	Amorim, 2013, p. 95
1840-1859	North	Guimarães (rural area)	25.0	130	27.5	86	Amorim, 2013, p. 95
1860-1879	North	Guimarães (rural area)	25.2	195	27.9	155	Amorim, 2013, p. 95
1880-1899	North	Guimarães (rural área)	24.0	233	25.3	174	Amorim, 2013, p. 95
1900-1910	North	Guimarães (zona rural)	24.5	195	25.3	158	Amorim, 2013, p. 95
1670-1699	North	Guimarães (rural area)	24.8	241	25.6	166	Amorim, 2013, p. 95
1700-1719	North	Guimarães (rural area)	24.6	294	26.1	185	Amorim, 2013, p. 95

1720-1739	North	Guimarães (rural area)	24.9	250	26.4	135	Amorim, 2013, p. 95
1740-1759	North	Guimarães (rural area)	26.3	247	26.2	125	Amorim, 2013, p. 95
1760-1779	North	Guimarães (rural area)	24.8	312	25.8	187	Amorim, 2013, p. 95
1780-1799	North	Guimarães (rural area)	23.1	291	24.6	245	Amorim, 2013, p. 95
1800-1819	North	Guimarães (rural area)	23.1	405	25.5	262	Amorim, 2013, p. 95
1820-1839	North	Guimarães (rural area)	24.4	316	26.6	197	Amorim, 2013, p. 95
1840-1859	North	Guimarães (rural area)	25.6	283	27.6	159	Amorim, 2013, p. 95
1860-1879	North	Guimarães (rural area)	25.1	279	26.4	175	Amorim, 2013, p. 95
1880-1899	North	Guimarães (rural area)	24.7	279	25.7	205	Amorim, 2013, p. 95
1900-1910	North	Guimarães (rural area)	23.3	163	25.7	118	Amorim, 2013, p. 95
1633-1659	North	Lordelo (Braga)	24.0	-	-	-	Scott, 1999, p. 198
1700-1749	North	Lordelo (Braga)	27.1	-	-	-	Scott, 1999, p. 198
1750-1799	North	Lordelo (Braga)	27.1	-	-	-	Scott, 1999, p. 198
1850-1879	North	Lordelo (Braga)	26.9	-	-	-	Scott, 1999, p. 198
1880-1910	North	Lordelo (Braga)	26.8	-	-	-	Scott, 1999, p. 198
17th century	North	Lordelo (Braga)	28.3	-	-	-	Scott, 1999, p. 198
1600-1609	North	Meadela	34.5	4	32.5	1	Solé, 2001, p. 104
1610-1619	North	Meadela	26.8	3	29.5	3	Solé, 2001, p. 104
1620-1629	North	Meadela	30.2	15	28.3	10	Solé, 2001, p. 104
1630-1639	North	Meadela	27.1	12	21.2	7	Solé, 2001, p. 104
1640-1649	North	Meadela	28.3	22	26.0	8	Solé, 2001, p. 104
1650-1659	North	Meadela	30.4	18	22.6	10	Solé, 2001, p. 104
1660-1669	North	Meadela	28.7	21	27.4	7	Solé, 2001, p. 104
1670-1679	North	Meadela	27.9	13	27.1	15	Solé, 2001, p. 104
1680-1689	North	Meadela	25.8	21	27.6	12	Solé, 2001, p. 104
1690-1699	North	Meadela	25.4	22	21.9	5	Solé, 2001, p. 104
1700-1709	North	Meadela	25.7	20	22.7	13	Solé, 2001, p. 104
1710-1719	North	Meadela	25.0	20	24.4	12	Solé, 2001, p. 104
1720-1729	North	Meadela	25.9	16	25.8	19	Solé, 2001, p. 104
1730-1739	North	Meadela	26.3	21	29.3	6	Solé, 2001, p. 104
1740-1749	North	Meadela	26.7	9	24.2	10	Solé, 2001, p. 104
1750-1759	North	Meadela	24.6	20	25.8	12	Solé, 2001, p. 104
1760-1769	North	Meadela	23.4	14	25.4	8	Solé, 2001, p. 104
1770-1779	North	Meadela	28.1	19	23.8	8	Solé, 2001, p. 104
1780-1789	North	Meadela	26.0	20	25.2	20	Solé, 2001, p. 104
1790-1799	North	Meadela	27.8	22	27.2	12	Solé, 2001, p. 104
1878 (census)	North	Minho	27.0	-	27.8	-	Rowland, 1989, p. 533
1802	North	Miranda	25.0	-	27.0	-	Sousa, 1979, p. 269
1802	North	Moncorvo	28.0	-	29.0	-	Sousa, 1979, p. 269

1750-1759	North	Mosteiro (Braga)	28.0	27	26.1	13	Brandão, 1994, pp. 215-216
1760-1769	North	Mosteiro (Braga)	26.6	33	29.1	16	Brandão, 1994, pp. 215-216
1770-1779	North	Mosteiro (Braga)	28.5	34	32.1	25	Brandão, 1994, pp. 215-216
1780-1789	North	Mosteiro (Braga)	27.7	42	29.0	17	Brandão, 1994, pp. 215-216
1790-1799	North	Mosteiro (Braga)	26.1	35	29.1	15	Brandão, 1994, pp. 215-216
1800-1809	North	Mosteiro (Braga)	24.4	24	27.0	19	Brandão, 1994, pp. 215-216
1810-1819	North	Mosteiro (Braga)	26.5	47	27.6	25	Brandão, 1994, pp. 215-216
1820-1829	North	Mosteiro (Braga)	28.2	44	28.3	29	Brandão, 1994, pp. 215-216
1830-1839	North	Mosteiro (Braga)	28.0	39	29.3	25	Brandão, 1994, pp. 215-216
1840-1849	North	Mosteiro (Braga)	28.0	41	28.8	29	Brandão, 1994, pp. 215-216
1850-1859	North	Mosteiro (Braga)	27.3	51	30.0	26	Brandão, 1994, pp. 215-216
1860-1869	North	Mosteiro (Braga)	28.5	59	32.5	23	Brandão, 1994, pp. 215-216
1870-1879	North	Mosteiro (Braga)	27.3	54	29.8	28	Brandão, 1994, pp. 215-216
1880-1889	North	Mosteiro (Braga)	26.4	45	27.5	22	Brandão, 1994, pp. 215-216
1890-1899	North	Mosteiro (Braga)	28.9	28	30.4	20	Brandão, 1994, pp. 215-216
1880-1900	North	Paço (Viana)	26.3	-	27.2	-	Scott, 1999, p. 198
1710-1749	North	Palaçoulo	25.0	114	26.3	39	Raposo, 2000, p. 65
1750-1819	North	Palaçoulo	26.0	110	30.5	58	Raposo, 2000, p. 65
1820-1900	North	Palaçoulo	26.4	210	28.3	158	Raposo, 2000, p. 65
1802	North	Penafiel	25.0	-	26.0	-	Sousa, 1979, p. 269
1802	North	Pinhel	28.0	-	26.0	-	Sousa, 1979, p. 269
1680-1749	North	Poiares	24.6	-	-	-	Amorim 2004, 165
1750-99	North	Poiares	24.6	-	-	-	Amorim 2004, 165
1802	North	Porto	26.0	-	27.0	-	Sousa, 1979, p. 269
1878	North	Porto	25.8	-	-	-	Leite, 2012, p. 67
1630-1699	North	Priscos (Braga)	25.4	83	25.3	48	Fernandes, 2015, p. 32
1700-1820	North	Priscos (Braga)	26.3	202	28.2	97	Fernandes, 2015, p. 32
1610-1700	North	Rebordãos	22.4	-	-	-	Rowland, 1989, p. 513
1721-1800	North	Rebordãos	26.4	-	-	-	Rowland, 1989, p. 513
1680-1749	North	Ronfe	27.6	-	-	-	Amorim 2004, 165
1750-99	North	Ronfe	26.8	-	-	-	Amorim 2004, 165
1700-1749	North	Santa Eulália (Viana)	26.7	-	25.6	-	Scott, 1999, p. 198
1750-1799	North	Santa Eulália (Viana)	28.2	-	28.1	-	Scott, 1999, p. 198
1800-1849	North	Santa Eulália (Viana)	27.3	-	27.6	-	Scott, 1999, p. 198
1850-1899	North	Santa Eulália (Viana)	29.3	-	30.5	-	Scott, 1999, p. 198
1623-1799	North	Santa Tecla	26.3	288	27.2	168	Carvalho, 1999, pp. 45, 48
1800-1919	North	Santa Tecla	25.4	370	27.9	240	Carvalho, 1999, pp. 45, 48
1920-1959	North	Santa Tecla	24.6	231	28.2	207	Carvalho, 1999, pp. 45, 48
1960-1991	North	Santa Tecla	23.4	249	25.5	265	Carvalho, 1999, pp. 45, 48

1581-1779	North	Santiago de Antas (Famalicão)	27.5	247	28.0	54	Juncal, 2004, p. 77
1780-1829	North	Santiago de Antas (Famalicão)	27.4	97	27.5	66	Juncal, 2004, p. 77
1830-1859	North	Santiago de Antas (Famalicão)	27.2	130	27.3	120	Juncal, 2004, p. 77
1690-1699	North	Santiago de Romarigães (Viana)	25.2	-	-	23.3	Santos, 1999, p. 129
1700-1709	North	Santiago de Romarigães (Viana)	25.1	-	-	22.0	Santos, 1999, p. 129
1710-1719	North	Santiago de Romarigães (Viana)	30.0	-	-	22.8	Santos, 1999, p. 129
1720-1729	North	Santiago de Romarigães (Viana)	29.8	-	-	24.2	Santos, 1999, p. 129
1730-1739	North	Santiago de Romarigães (Viana)	29.7	-	-	22.2	Santos, 1999, p. 129
1740-1749	North	Santiago de Romarigães (Viana)	26.7	-	-	23.6	Santos, 1999, p. 129
1750-1759	North	Santiago de Romarigães (Viana)	25.9	-	-	24.6	Santos, 1999, p. 129
1760-1769	North	Santiago de Romarigães (Viana)	28.4	-	-	28.6	Santos, 1999, p. 129
1770-1779	North	Santiago de Romarigães (Viana)	27.3	-	-	30.0	Santos, 1999, p. 129
1780-1789	North	Santiago de Romarigães (Viana)	26.4	-	-	24.6	Santos, 1999, p. 129
1790-1799	North	Santiago de Romarigães (Viana)	27.3	-	-	25.2	Santos, 1999, p. 129
1800-1809	North	Santiago de Romarigães (Viana)	24.8	-	-	21.0	Santos, 1999, p. 129
1810-1819	North	Santiago de Romarigães (Viana)	25.5	-	-	22.2	Santos, 1999, p. 129
1820-1829	North	Santiago de Romarigães (Viana)	29.0	-	-	22.7	Santos, 1999, p. 129
1830-1839	North	Santiago de Romarigães (Viana)	28.9	-	-	27.8	Santos, 1999, p. 129
1840-1849	North	Santiago de Romarigães (Viana)	35.1	-	-	28.3	Santos, 1999, p. 129
1620-1659	North	Santo André (Barcelinhos)	24.7	36	25.7	17	Faria, 1998, p. 70
1660-1739	North	Santo André (Barcelinhos)	26.7	181	27.4	87	Faria, 1998, pp. 70, 88
1740-1799	North	Santo André (Barcelinhos)	24.9	112	25.7	56	Faria, 1998, pp. 70, 88
1800-1839	North	Santo André (Barcelinhos)	28.5	74	31.1	66	Faria, 1998, pp. 70, 88
1840-1859	North	Santo André (Barcelinhos)	25.4	61	26.4	35	Faria, 1998, p. 70
1650	North	São João das Caldas (Vizela)	25.9	-	26.1	-	Ferreira, 2001, p. 135
1660	North	São João das Caldas (Vizela)	23.8	-	23.3	-	Ferreira, 2001, p. 135
1670	North	São João das Caldas (Vizela)	24.3	-	22.8	-	Ferreira, 2001, p. 135
1680	North	São João das Caldas (Vizela)	25.8	-	23.5	-	Ferreira, 2001, p. 135
1690	North	São João das Caldas (Vizela)	28.3	-	26.2	-	Ferreira, 2001, p. 135
1700	North	São João das Caldas (Vizela)	30.5	-	26.8	-	Ferreira, 2001, p. 135
1710	North	São João das Caldas (Vizela)	29.4	-	27.5	-	Ferreira, 2001, p. 135
1720	North	São João das Caldas (Vizela)	29.7	-	28.2	-	Ferreira, 2001, p. 135
1730	North	São João das Caldas (Vizela)	28.7	-	27.3	-	Ferreira, 2001, p. 135
1740	North	São João das Caldas (Vizela)	30.8	-	24.8	-	Ferreira, 2001, p. 135
1750	North	São João das Caldas (Vizela)	30.0	-	24.5	-	Ferreira, 2001, p. 135
1760	North	São João das Caldas (Vizela)	30.4	-	26.1	-	Ferreira, 2001, p. 135
1770	North	São João das Caldas (Vizela)	27.9	-	27.9	-	Ferreira, 2001, p. 135
1780	North	São João das Caldas (Vizela)	27.0	-	27.8	-	Ferreira, 2001, p. 135
1790	North	São João das Caldas (Vizela)	25.1	-	27.0	-	Ferreira, 2001, p. 135

1800	North	São João das Caldas (Vizela)	24.4	-	25.8	-	Ferreira, 2001, p. 135
1810	North	São João das Caldas (Vizela)	24.8	-	24.8	-	Ferreira, 2001, p. 135
1820	North	São João das Caldas (Vizela)	25.0	-	24.6	-	Ferreira, 2001, p. 135
1830	North	São João das Caldas (Vizela)	25.2	-	25.1	-	Ferreira, 2001, p. 135
1840	North	São João das Caldas (Vizela)	25.6	-	26.5	-	Ferreira, 2001, p. 135
1850	North	São João das Caldas (Vizela)	25.0	-	26.6	-	Ferreira, 2001, p. 135
1860	North	São João das Caldas (Vizela)	24.2	-	27.5	-	Ferreira, 2001, p. 135
1870	North	São João das Caldas (Vizela)	23.6	-	26.7	-	Ferreira, 2001, p. 135
1880	North	São João das Caldas (Vizela)	23.9	-	28.1	-	Ferreira, 2001, p. 135
1890	North	São João das Caldas (Vizela)	24.0	-	26.4	-	Ferreira, 2001, p. 135
1900	North	São João das Caldas (Vizela)	24.7	-	27.6	-	Ferreira, 2001, p. 135
1660-1711	North	São Martinho de Avidos	30.1	44	31.0	8	Leite, 2001, p. 105
1712-1811	North	São Martinho de Avidos	26.1	92	29.1	48	Leite, 2001, p. 105
1812-1881	North	São Martinho de Avidos	25.8	140	27.5	84	Leite, 2001, p. 105
1882-1911	North	São Martinho de Avidos	25.7	79	27.8	49	Leite, 2001, p. 105
1912-1945	North	São Martinho de Avidos	25.2	177	26.4	171	Leite, 2001, p. 105
1583-1614	North	São Nicolau (Porto)	17.0	428	-	428	Osswald, 2008, p. 356
1615-1620	North	São Nicolau (Porto)	18.8	197	20.7	197	Osswald, 2008, p. 356
1621-1625	North	São Nicolau (Porto)	19.2	159	19.4	159	Osswald, 2008, p. 356
1626-1630	North	São Nicolau (Porto)	21.4	154	23.1	154	Osswald, 2008, p. 356
1631-1635	North	São Nicolau (Porto)	22.6	142	23.9	142	Osswald, 2008, p. 356
1636-1640	North	São Nicolau (Porto)	25.0	153	22.9	153	Osswald, 2008, p. 356
1641-1645	North	São Nicolau (Porto)	25.1	168	25.0	168	Osswald, 2008, p. 356
1646-1650	North	São Nicolau (Porto)	23.8	143	24.6	143	Osswald, 2008, p. 356
1651-1700	North	São Tiago de Ronfe	27.1	53	30.5	33	Scott, 1999, pp. 200, 205
1701-1750	North	São Tiago de Ronfe	27.5	108	27.4	65	Scott, 1999, pp. 200, 205
1751-1800	North	São Tiago de Ronfe	27.2	163	28.3	113	Scott, 1999, pp. 200, 205
1801-1850	North	São Tiago de Ronfe	29.1	138	27.4	101	Scott, 1999, pp. 200, 205
1851-1900	North	São Tiago de Ronfe	27.7	121	27.0	129	Scott, 1999, pp. 200, 205
1901-1930	North	São Tiago de Ronfe	26.1	120	27.9	111	Scott, 1999, pp. 200, 205
1802	North	Trancoso	27.0	-	28.0	-	Sousa, 1979, p. 269
1878 (census)	North	Trás-os-Montes	27.1	-	29.6	-	Rowland, 1989, p. 533
1577-1719	North	Unhão (Porto)	28.0	-	-	-	Scott, 1999, p. 199
1720-1799	North	Unhão (Porto)	25.7	-	-	-	Scott, 1999, p. 199
1800-1849	North	Unhão (Porto)	26.3	-	-	-	Scott, 1999, p. 199
1850-1910	North	Unhão (Porto)	26.0	-	-	-	Scott, 1999, p. 199
1802	North	Valença	28.0	-	29.0	-	Sousa, 1979, p. 269
1802	North	Viana	26.0	-	26.0	-	Sousa, 1979, p. 269
1878	North	Viana do Castelo	28.7	-	-	-	Leite, 2012, p. 67

1660-1699	North	Vila Praia de Âncora	24.3	207	23.2	147	Rego, 2013, p. 81
1700-1749	North	Vila Praia de Âncora	27.7	206	26.3	166	Rego, 2013, p. 81
1750-1799	North	Vila Praia de Âncora	27.3	197	26.1	132	Rego, 2013, p. 81
1800-1869	North	Vila Praia de Âncora	28.9	298	29.5	266	Rego, 2013, p. 81
1802	North	Vila Real	29.0	-	28.0	-	Sousa, 1979, p. 269
1878	North	Vila Real	27.3	-	-	-	Leite, 2012, p. 67
1878 (census)	South	Alentejo	24.6	-	28.9	-	Rowland, 1989, p. 533
1878 (census)	South	Algarve	24.4	-	27.9	-	Rowland, 1989, p. 533
1802	South	Avis	19.0	-	24.0	-	Sousa, 1979, p. 269
1878	South	Beja	24.2	-	-	-	Leite, 2012, p. 67
1737-99	South	Conceição de Tavira	23.8	-	25.8	-	Moreira and Veiga, p. 59
1620-1699	South	Divor (Évora; rural parish)	21.8	64	27.6	37	Santos and Lopes, 2017, p. 69
1700-1749	South	Divor (Évora; rural parish)	23.4	43	30.3	19	Santos and Lopes, 2017, p. 69
1750-1799	South	Divor (Évora; rural parish)	24.1	41	27.1	27	Santos and Lopes, 2017, p. 69
1802	South	Elvas	22.0	-	31.0	-	Sousa, 1979, p. 269
1878	South	Évora	25.1	-	-	-	Leite, 2012, p. 67
1878	South	Faro	24.5	-	-	-	Leite, 2012, p. 67
1545	South	Moncarapacho	20.0 (median)	-	-	-	Rowland, 1989, p. 513
1878	South	Portalegre	24.7	-	-	-	Leite, 2012, p. 67
1788	South	Salvaterra de Magos (Santarém)	23.7	-	29.2	-	Rowland, 1989, p. 513; Scott, 1999, p. 199
1721	South	Santa Luzia (Beja)	21.2	-	26.9	-	Rowland, 1989, p. 513; Scott, 1999, p. 199
1680-1699	South	Santo Antão (Évora; urban parish)	23.3	82	25.1	41	Santos and Lopes, 2017, p. 69
1700-1749	South	Santo Antão (Évora; urban parish)	22.8	204	26.5	117	Santos and Lopes, 2017, p. 69
1750-1799	South	Santo Antão (Évora; urban parish)	23.9	254	27.2	170	Santos and Lopes, 2017, p. 69
1680-1699	South	Selmes (Beja; rural parish)	20.4	22	24.9	17	Santos and Lopes, 2017, p. 69
1700-1749	South	Selmes (Beja; rural parish)	22.3	119	26.5	66	Santos and Lopes, 2017, p. 69
1750-1799	South	Selmes (Beja; rural parish)	22.1	190	26.6	134	Santos and Lopes, 2017, p. 69
1802	South	Vila Viçosa	23.0	-	29.0	-	Sousa, 1979, p. 269

Appendix H: Celibacy rates in Portugal

Year	Region	Location	Female	Male	Source
1750-1779	Azores	Ribeiras do Pico	14.3	-	Amorim, 2001, p. 16
1780-1809	Azores	Ribeiras do Pico	17.2	-	Amorim, 2001, p. 16
1800-1849	Azores	Ribeiras do Pico	15.7	11.1	Amorim, 2001, p. 15
1810-1839	Azores	Ribeiras do Pico	24.9	-	Amorim, 2001, p. 16
1840-1869	Azores	Ribeiras do Pico	30.3	-	Amorim, 2001, p. 16
1850-1899	Azores	Ribeiras do Pico	17.9	7.1	Amorim, 2001, p. 15
1870-1899	Azores	Ribeiras do Pico	16.4		Amorim, 2001, p. 16
1900-1949	Azores	Ribeiras do Pico	29.2	10.5	Amorim, 2001, p. 15
1950-1999	Azores	Ribeiras do Pico	14.5	11.5	Amorim, 2001, p. 15
Before 1800	Azores	Ribeiras do Pico	11.0	8.8	Amorim, 2001, p. 15
1750-1779	Azores	Sul do Pico	19.2	-	Amorim, 2001, p. 16
1780-1809	Azores	Sul do Pico	17.1	-	Amorim, 2001, p. 16
1810-1839	Azores	Sul do Pico	33.3	-	Amorim, 2001, p. 16
1840-1869	Azores	Sul do Pico	38.4	-	Amorim, 2001, p. 16
1870-1899	Azores	Sul do Pico	19.3	-	Amorim, 2001, p. 16
1802	Center	Aveiro	33.0	30.0	Sousa, 1979, p. 269
1878 (census)	Center	Beira Alta	22.2	14.1	Rowland, 1989, p. 533
1878 (census)	Center	Beira Baixa	14.2	10.1	Rowland, 1989, p. 533
1878 (census)	Center	Beira Litoral	22.4	11.8	Rowland, 1989, p. 533
1650-1709	Center	Eixo	12.4	5.7	Ferreira, 2005, p. 350
1710-1749	Center	Eixo	19.1	9.5	Ferreira, 2005, p. 350
1750-1799	Center	Eixo	27.9	14.8	Ferreira, 2005, p. 350
1800-1860	Center	Eixo	36.4	14.4	Ferreira, 2005, p. 350
Before 1650	Center	Eixo	10.6	13.3	Ferreira, 2005, p. 350
1670-1719	Center	Ericeira	10.2	9.4	Reis, 2003, p. 35
1720-1819	Center	Ericeira	6.7	9.2	Reis, 2003, p. 35
1820-1855	Center	Ericeira	6.8	3.7	Reis, 2003, p. 35
1802	Center	Leiria	21.0	11.0	Sousa, 1979, p. 269
1878 (census)	Center	Lisboa	17.5	16.0	Rowland, 1989, p. 533
1802	Center	Ourém	17.0	15.0	Sousa, 1979, p. 269
1623-1749	North	Alvito (S. Pedro)	49.0	37.0	Juncal, 2004, p. 100
1750-1849	North	Alvito (S. Pedro)	45.0	29.0	Juncal, 2004, p. 100
1850-1939	North	Alvito (S. Pedro)	33.0	24.0	Juncal, 2004, p. 100
1680-1779	North	Aveleda (Braga)	23.9	14.5	Fernandes, 2015, p. 37
1780-1829	North	Aveleda (Braga)	25.0	16.3	Fernandes, 2015, p. 37
1802	North	Barcelos	47.0	44.0	Sousa, 1979, p. 269
1802	North	Braga	42.0	30.0	Sousa, 1979, p. 269

1802	North	Bragança	34.0	28.0	Sousa, 1979, p. 269
1680-1709	North	Calvão (Vila Real)	45.0	36.1	Faustino, 1998, p. 112
1710-1739	North	Calvão (Vila Real)	36.2	10.2	Faustino, 1998, p. 112
1740-1775	North	Calvão (Vila Real)	14.5	10.0	Faustino, 1998, p. 112
1650-1761	North	Cardanha	13.0	11.0	Fernandes, 2015, p. 37
1802	North	Castelo Branco	18.0	5.0	Sousa, 1979, p. 269
1695-1749	North	Cervães (Vila Verde)	27.7	20.5	Juncal, 2004, p. 100
1750-1809	North	Cervães (Vila Verde)	27.2	12.6	Juncal, 2004, p. 100
1780-1829	North	Chaves	18.3	11.1	Faustino, 2014, p. 133
1650-1719	North	Cortegaça	12.6	12.9	Gomes, 1998, p. 43
1720-1779	North	Cortegaça	18.9	9.2	Gomes, 1998, p. 43
1780-1839	North	Cortegaça	16.1	12.6	Gomes, 1998, p. 43
1840-1899	North	Cortegaça	12.5	2.2	Gomes, 1998, p. 43
1710-1779	North	Facha (Ponte de Lima)	41.5	18.6	Juncal, 2004, p. 100
1780-1839	North	Facha (Ponte de Lima)	41.9	21.6	Juncal, 2004, p. 100
1840-1999	North	Facha (Ponte de Lima)	40.6	12.8	Juncal, 2004, p. 100
1852-1929	North	Famalicão	14.9	5.1	Leite, 2014, p. 106
1930-1960	North	Famalicão	10.1	4.9	Leite, 2014, p. 106
1700-1749	North	Gotinhães	9.6	18.4	Fernandes, 2015, p. 37
1750-1799	North	Gotinhães	9.5	37.0	Fernandes, 2015, p. 37
1802	North	Guimarães	31.0	18.0	Sousa, 1979, p. 269
18th-early 19th centuries	North	Guimarães (rural parish)	11.0	5.0 – 7.0	Amorim, 2013, p. 92
18th-early 19th centuries	North	Guimarães (urban parish)	30.0	21.0	Amorim, 2013, p. 92
1802	North	Lamego	27.0	21.0	Sousa, 1979, p. 269
1700-1749	North	Meadela	14.6	8.3	Solé, 2001, p. 146
1750-1799	North	Meadela	20.0	4.7	Solé, 2001, p. 146
1800-1849	North	Meadela	15.6	2.1	Solé, 2001, p. 146
1878 (census)	North	Minho	27.7	13.6	Rowland, 1989, p. 533
1802	North	Miranda	31.0	35.0	Sousa, 1979, p. 269
1802	North	Moncorvo	25.0	16.0	Sousa, 1979, p. 269
1730-1779	North	Mouquim	24.2	17.2	Juncal, 2004, p. 100
1800-1859	North	Mouquim	27.2	16.6	Juncal, 2004, p. 100
1656-1849	North	Palaçoulo	7.4	6.7	Raposo, 2000, p. 83
1850-1910	North	Palaçoulo	7.5	9.1	Raposo, 2000, p. 83
1802	North	Penafiel	32.0	20.0	Sousa, 1979, p. 269
1802	North	Pinhel	30.0	30.0	Sousa, 1979, p. 269
1650-1760	North	Poiares	13.5	11.5	Fernandes, 2015, p. 37
1802	North	Porto	37.0	22.0	Sousa, 1979, p. 269
1580-1699	North	Priscos (Braga)	33.8	24.2	Fernandes, 2015, p. 37

1700-1820	North	Priscos (Braga)	37.9	22.3	Fernandes, 2015, p. 37
18th century	North	Rebordãos	10.7	13.2	Fernandes, 2015, p. 37
1623-1799	North	Santa Tecla	15.3	2.2	Carvalho, 1999, pp. 45, 48
1800-1919	North	Santa Tecla	23.3	4.4	Carvalho, 1999, pp. 45, 48
1920-1959	North	Santa Tecla	12.8	11.3	Carvalho, 1999, pp. 45, 48
1960-1991	North	Santa Tecla	4.5	11.2	Carvalho, 1999, pp. 45, 48
1630-1799	North	Santiago de Antas (Famalicão)	29.0	14.2	Juncal, 2004, p. 100
1800-1849	North	Santiago de Antas (Famalicão)	27.8	25.0	Juncal, 2004, p. 100
1850-1879	North	Santiago de Antas (Famalicão)	32.8	4.3	Juncal, 2004, p. 100
1880-1909	North	Santiago de Antas (Famalicão)	38.7	11.1	Juncal, 2004, p. 100
1700-1749	North	Santiago de Romarigães (Viana)	17.6	16.1	Santos, 1999, pp. 145-146
1750-1799	North	Santiago de Romarigães (Viana)	25.9	12.9	Santos, 1999, pp. 145-146
1800-1849	North	Santiago de Romarigães (Viana)	21.5	13.5	Santos, 1999, pp. 145-146
1660-1739	North	Santo André (Barcelinhos)	43.2	27.6	Faria, 1998, pp. 70, 88
1740-1799	North	Santo André (Barcelinhos)	33.7	20.4	Faria, 1998, pp. 70, 88
1800-1839	North	Santo André (Barcelinhos)	37.3	18.8	Faria, 1998, pp. 70, 88
1600-1759	North	São João das Caldas (Vizela)	12.0	4.0	Ferreira, 2001, p. 79
1760-1910	North	São João das Caldas (Vizela)	24.0	7.0	Ferreira, 2001, p. 79
1660-1709	North	São Martinho de Avidos	30.4	0.0	Leite, 2001, p. 120
1710-1809	North	São Martinho de Avidos	15.1	3.0	Leite, 2001, p. 120
1810-1879	North	São Martinho de Avidos	17.0	13.5	Leite, 2001, p. 120
1880-1945	North	São Martinho de Avidos	20.0	14.7	Leite, 2001, p. 120
1651-1700	North	São Tiago de Ronfe	42.3	23.4	Scott, 1999, pp. 200, 205
1701-1750	North	São Tiago de Ronfe	26.0	11.8	Scott, 1999, pp. 200, 205
1751-1800	North	São Tiago de Ronfe	31.7	15.2	Scott, 1999, pp. 200, 205
1801-1850	North	São Tiago de Ronfe	35.5	14.0	Scott, 1999, pp. 200, 205
1851-1900	North	São Tiago de Ronfe	10.3	4.2	Scott, 1999, pp. 200, 205
1802	North	Trancoso	17.0	12.0	Sousa, 1979, p. 269
1878 (census)	North	Trás-os-Montes	23.1	18.8	Rowland, 1989, p. 533
1802	North	Valença	24.0	11.0	Sousa, 1979, p. 269
1802	North	Viana	37.0	12.0	Sousa, 1979, p. 269
1660-1699	North	Vila Praia de Âncora	23.1	8.3	Rego, 2013, p. 96
1700-1749	North	Vila Praia de Âncora	46.0	11.6	Rego, 2013, p. 96
1750-1799	North	Vila Praia de Âncora	35.8	14.4	Rego, 2013, p. 96
1800-1869	North	Vila Praia de Âncora	42.9	14.9	Rego, 2013, p. 96
1802	North	Vila Real	44.0	41.0	Sousa, 1979, p. 269
1878 (census)	South	Alentejo	13.7	15.3	Rowland, 1989, p. 533
1878 (census)	South	Algarve	9.9	7.8	Rowland, 1989, p. 533
1802	South	Avis	39.0	40.0	Sousa, 1979, p. 269

1802	South	Elvas	20.0	34.0	Sousa, 1979, p. 269
1802	South	Portalegre	16.0	11.0	Sousa, 1979, p. 269
1802	South	Vila Viçosa	14.0	15.0	Sousa, 1979, p. 269

Appendix I: Sources for celibacy rates and mean ages at first marriage for women and men in Portugal

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