

## From raw materials to where the industry happens. Patterns of industry location in the Portuguese cork manufacturing industry, 1880–1980\*

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### ABSTRACT

This article analyses the relocation processes that the Portuguese cork industry underwent between the 1880s and 1980s. Beyond the historical-geographical aspects of the cork industry, its importance lies in the fact that it involves a paradigmatic case of a traditional industrial sector of vital importance for a developing country. Such was the case of Portugal in the late nineteenth century, where the change of location of the industry coincided with the country's rise to become the world's leading power in the cork industry. The article concludes that the factors that made certain regions more attractive for the development of the cork industry compared to others changed over the course of a few decades. There were two industrial relocations in a century as companies adapted to technical and organizational changes; this geographical reorganization was therefore due to a variety of factors and cannot be fully explained by just one theory of industrial location.

### KEYWORDS

Cork; Cork industry; Portugal; Industrial location; Industrial relocation.



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The spatial inequality of economic development is one of the most important subjects in economic analysis.<sup>1</sup> The location of industrial activity is essential in this respect due to its capacity for transforming an economy.<sup>2</sup> As such, the presence of industry is usually identified with development, and its absence with backwardness.<sup>3</sup> This is even more relevant during the industrialization of an economy. This article discusses the location of the cork industry, one of the most important sectors of the Portuguese economy, during the industrialization of this Iberian country between the late nineteenth century and the late twentieth century. Initially gathered near the raw material sites in the more inner regions –particularly Alemtejo and Algarve– the Portuguese cork industry significantly changed its economic geography twice within a century: first towards the Lisbon Metropolitan Area in the early twentieth century, later to the Porto Metropolitan Area from the 1960s onwards.

The change in location of the cork industry in Portugal between the 1880 and the 1980s is interesting for at least three reasons. First, because it is a rare case of a two-time industrial relocation in less than a century of one of the most important industrial sectors of a developing economy that experienced late industrialization. Thus, the study of this phenomena has the potential to identify industrial location factors that may be applied to other developing economies or to sectors with characteristics similar to the cork industry. Second, during the time span considered in this article, Portugal became the world leader in the cork business, a process that took place a little before the second industrial relocation and led to the emergence of a large, world-leading industrial company in the north of the country, where the bulk of the industry is presently located. Finally, the geographic reorganization of the Portuguese cork industry led, in the first phase, to a great reduction in the importance of the inner regions. In this respect, the relocations of the cork industry are heavily related to the growing process of territorial economic inequality and the depopulation of the Portuguese hinterland (and those of the Iberian Peninsula as a whole). In recognition of this, since Portugal's integration into the European Union in 1986, several public policies have tried to mitigate the negative effects of a process that was responsible for the deep depopulation of the Portuguese (and Spanish) in-land regions. Nevertheless, from local governments to those at regional, national and international level, with a few exceptions, these efforts have all failed.

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Given the context outlined above, this article aims to identify the characteristics of the regions that attracted the cork industry and that, consequently, help to explain the successive changes in the industrial geography of cork in Portugal. While not a new issue in the Portuguese economic historiography, to date it has been treated in a more theoretical and qualitative way. In this article, therefore, we analyse the location factors identified in previous studies, adding, whenever possible, a quantitative expression. By

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1. Simon KUZNETS, “Economic Growth and Income Inequality”, *American Economic Review*, 45/1 (1955) pp. 1–28; Jeffrey G. WILLIAMSON, “Regional Inequality and the Process of National Development: A Description of the Patterns”, *Economic Development and Cultural Change*, 13/4 (1965) pp. 1–84, <https://doi.org/10.1086/450136>; Paul KRUGMAN and Anthony J. VENABLES, “Globalization and the Inequality of Nations”, *Quarterly Journal of Economics*, 110/4 (1995), pp. 857–880, <https://doi.org/10.2307/2946642>.

2. Masahisa FUJITA and Jacques-François THISSE, *Economics of agglomeration: Cities, industrial location, and regional growth*, Cambridge, Cambridge University Press (2<sup>nd</sup>), 2013. <https://doi.org/10.1017/CBO9781139051552>.

3. Santiago ZAPATA BLANCO, “Corcho extremeño y andaluz, taponos gerundenses”, *Revista de Historia Industrial*, 10 (1996), pp. 37–68.

doing so, we want to contribute to the discussion of the factors that influence the location of economic activity,<sup>4</sup> relating our conclusions to the existing theories on the subject and also offering suggestions that can be used by public policy-makers to achieve economic development in less-developed regions. The latter objective has great relevance for the Iberian countries since regional economic and social inequalities have increased substantially with the severe decline in economic activity and loss of population in the inner regions.<sup>5</sup> In consequence, almost all of the Iberian local and regional governments outside the large urban areas struggle to reverse this process and constantly discuss and implement measures to attract enterprises. Their ultimate objectives are to attract people to live in the area, to retain the existing population, and to give all inhabitants a reasonable living standard. Unfortunately, with rare exceptions, those policies have been applied with little success.

In order to achieve our goals, the article is divided as follows. After this introduction, we present the historical background of the cork industry in Portugal, underlining its importance in the Portuguese economy and its character as primarily an export industry. Then, we analyse comparatively the regions where the cork industry was located and those to which it relocated (firstly Alemtejo, then the Metropolitan Area of Lisbon, and finally the Metropolitan Area of Porto), making connections with the main factors of industrial location. The choice of Alemtejo was due to its importance in the cork sector, cork being the main secondary activity in the region and because, at the national level, by the late nineteenth century 50% of cork factories, 45% of industry's workforce and 45% of the gross industrial product was located there.<sup>6</sup> Finally, in our conclusions we note that the two moves exhibit different characteristics and occurred for different reasons. Specifically, as the “traditional” factors that had led the industry to locate near the raw material –transport and information costs– disappeared, the industry moved to a region with advantages in terms of labour supply and better access to the consumer markets. In the second move, the main factors appear to have been lower wages but also different business strategies –specialization in the production of stoppers instead of agglomerate and the birth of a large company, Amorim & Irmãos– with public policies interfering directly in these two aspects.




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4. KRUGMAN, FUJITA and VENABLES, *The Spatial Economy*; Nikolaus WOLF, “Endowments vs. Market Potential: What Explains the Relocation of Industry after the Polish Reunification in 1918?”, *Explorations in Economic History*, 44/1 (2007), pp. 22–42, <https://doi.org/10.1016/j.eeh.2005.08.003>.

5. Luís ESPINHA DA SILVEIRA et al., “Caminho de ferro, População e Desigualdades Territoriais em Portugal, 1801–1930”, *Ler História*, 61 (2011) pp. 7–37, <https://doi.org/10.4000/lerhistoria.1563>; Marc BADIA-MIRÓ, Jordi GUILERA and Pedro LAINS, “Regional Incomes in Portugal: Industrialisation, Integration and Inequality, 1890–1980”, *Revista de Historia Económica / Journal of Iberian and Latin American Economic History*, 30/2 (2012), pp. 225–244, <https://doi.org/10.1017/S0212610912000080>; Carlos Manuel FAÍSCA, “Desigualdade regional na Península Ibérica”, *História – Revista da FLUP*, 4/3, (2013), pp. 199–214; Maria Antónia PIRES DE ALMEIDA, “The Use of Rural Areas in Portugal: Historical Perspective and the New Trends”, *Revista Galega de Economía*, 29/2 (2022), pp. 1-17, <https://doi.org/10.15304/rge.29.2.6750>.

6. Helder Adegar FONSECA, *O Alemtejo no século XIX: Economia e atitudes económicas*, Lisboa, Imprensa Nacional Casa da Moeda, 1996.

**Historical background: what we already know**

Although Portugal is the country with the best natural conditions in the world for the development of the cork oak,<sup>7</sup> the tree from which cork is obtained, for several reasons the cork industry only thrived in this country from the middle of the nineteenth century onwards.<sup>8</sup> In this period, the cork industry in Portugal predominantly carried out the early stages of the industrial process, that is, those with less added value. However, as time went by, the proportion of industrial transformation of cork rose, and by the 1900s almost a quarter of Portuguese cork exports were of processed industrial products.<sup>9</sup> At this time, the cork industry was already, along with fish canning, Portugal's main industrial export sector, account for around one-third of total exports.<sup>10</sup> This aspect is essential since the cork sector was, and still is, basically export-based, with a much lower share relating to domestic consumption.<sup>11</sup> Simultaneously, although lagging behind the more industrialized countries, the modernization of the Portuguese cork industry took place at a similar pace to the industry in Spain.<sup>12</sup>

Nevertheless, the cork industry in Portugal was still relatively modest in its dimension when compared to that of industrialized countries like the United States, the United Kingdom, Germany, and, especially, Spain, the world leader at the time. For instance, in 1900, there were 5,000 industrial workers in 115 cork factories in Portugal, while in Spain the figures were 34,000 workers and 1,250 factories.<sup>13</sup> However, in the twentieth century, particularly from the 1940s onwards, the Portuguese cork industry became the most important in the world and continues to lead the sector to this day. A favourable institutional environment, which includes the actions of Portuguese public and private organizations, a beneficial international context, combined with the country's exceptional edaphoclimatic conditions for the growth of the cork oak explains this structural change in the cork sector.<sup>14</sup> It is no wonder that, nowadays, Portugal has more

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7. Joaquim VIEIRA NATIVIDADE, *Subericultura*, Lisboa, Ministério da Economia, 1950.

8. Francisco Manuel PAREJO-MORUNO, "El negocio de exportación corchera en España y Portugal durante el siglo XX: Cambios e intervención pública", PhD diss., Universidad de Extremadura, <http://hdl.handle.net/10662/475>; Carlos Manuel FAÍSCA, "El negocio corchero en Alemtejo: explotación forestal, industria y política económica, 1848–1914", PhD diss., Universidad Extremadura, <http://dehesa.unex.es/handle/10662/10257>

9. Américo CARVALHO MENDES, *A economia do sector da cortiça em Portugal: Evolução das actividades de produção e de transformação ao longo dos séculos XIX e XX*, Porto, Universidade Católica Portuguesa, 2002.

10. Pedro LAINS, *A economia portuguesa no século XIX: Crescimento económico e comércio externo, 1851–1913*, Lisboa, Imprensa Nacional Casa da Moeda, 1995.

11. Santiago ZAPATA BLANCO, "Del suro a la cortiça: El ascenso de Portugal a primera potencia corchera del mundo", *Revista de Historia Industrial*, 22 (2002), pp. 109–37; Francisco Manuel PAREJO-MORUNO, "Cambios en el negocio mundial corchero: un análisis a largo plazo de las exportaciones españolas (1849–2000)", *Historia Agraria*, 39 (2006), pp. 241–267.

12. Carlos Manuel FAÍSCA, "Lagging Behind or Catching Up? The Mechanization of the Portuguese Cork Industry (1880–1914)", *Revista de Historia Industrial*, 76 (2019), pp. 49–77, <https://doi.org/10.1344/rhi.v28i76.26771>.

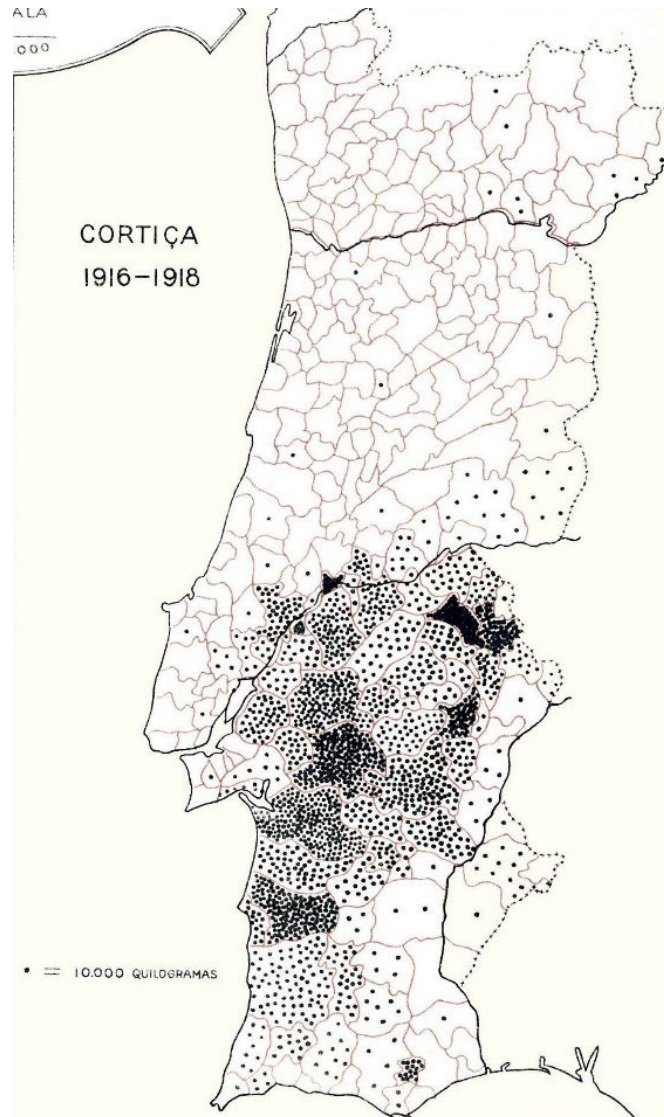
13. Francisco Manuel PAREJO-MORUNO, *El negocio del corcho en España durante el siglo XX*, Madrid, Banco de España, 2010, p. 88.

14. ZAPATA, "Del suro a la cortiça...", pp. 241–267.

than 60% of the value of the world exports of industrial cork, amounting to 1,134 billion euros in 2021.<sup>15</sup>

The factors that made this success possible, in these 120 years of history, involved three distinct types of location. Initially, the majority of the industry was close to the raw material. This meant that the regions housing the bulk of the industry were the southern forest areas of Alentejo and Algarve, where, for environmental, economic and social reasons, the cork oak was found and expanded substantially in the nineteenth century. As shown in Figure 1, the majority of the raw material production took place south of the Tagus River, as is still true today.

Figure 1. Raw cork production in Portugal (1916-1918).

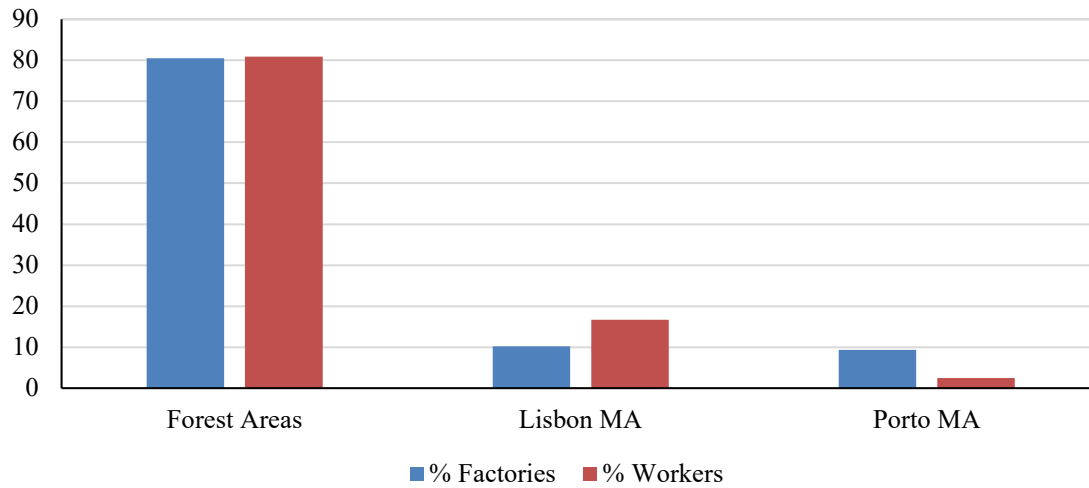


S.: A. de Amorim GIRÃO, *Atlas de Portugal*, Coimbra [s.n], 1941.

15. ASSOCIAÇÃO PORTUGUESA DE CORTIÇA, *Boletim Estatístico*, 11 (2022), [https://www.apcor.pt/portfolio-posts/boletim-trimestral/#dearflip-df\\_22658/1/](https://www.apcor.pt/portfolio-posts/boletim-trimestral/#dearflip-df_22658/1/) (consult 28-1-2022).

In fact, the 1890 industrial enquiry<sup>16</sup> reveals a predominance of the cork industry in the forest regions.<sup>17</sup> However, as noted by several authors, from the end of the 19<sup>th</sup> century Portugal experienced the phenomenon of concentration of the cork industry moving to around the Lisbon Metropolitan Area.<sup>18</sup> *Figures 2 and 3* clearly identify the reorganization over time of the industrial geography of cork in Portugal.

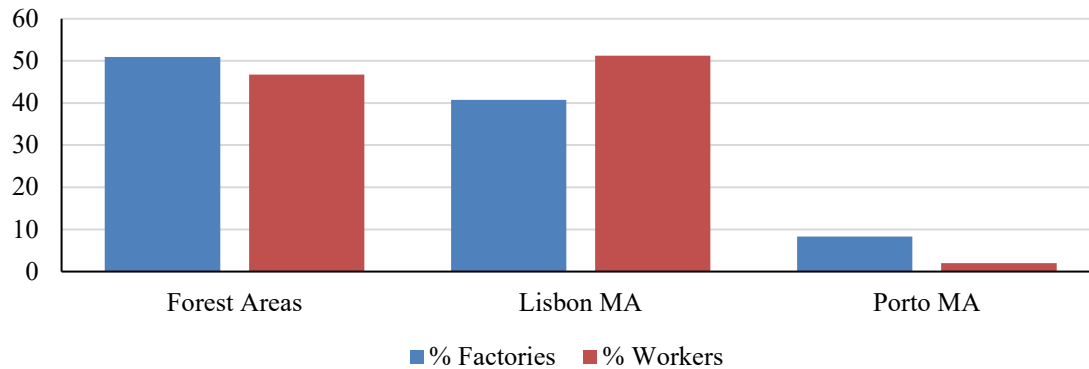
Figure 2. Regional concentration of the cork industry in 1890 (%)



S.: FAÍSCA, “El negocio corchero en Alemtejo...”, p. 214.

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Figure 3. Regional concentration of the cork industry in 1915 (%)



S.: FAÍSCA, “El negocio corchero en Alemtejo...”, p. 215.

16. MINISTÉRIO DAS OBRAS PÚBLICAS, COMMERCCIO E INDUSTRIA, *Inquérito industrial de 1890*, Lisboa, Imprensa Nacional, 1891.

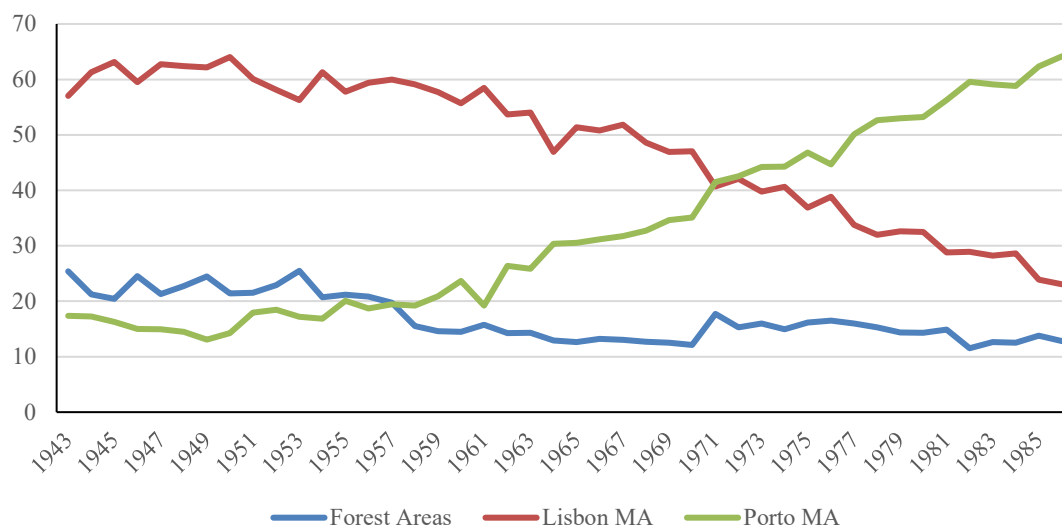
17. FAÍSCA “El negocio corchero en Alemtejo...”, pp. 214-215. In the 19<sup>th</sup> century three industrial surveys were carried out in Portugal, respectively, in 1852, 1881 and 1890. The most complete and reliable of them is the last one, although it still presented several problems. For this issue see Luísa VIEIRA DA SILVA and João Carlos GARCÍA, “O Inquérito Industrial de 1881, nota sobre um centenário”, *Finisterra*, 32 (1981), pp. 318-329 and FAÍSCA, “El negocio corchero en Alemtejo...”, pp. 164-169.

18. *Ibidem*; Paulo GUIMARÃES, *Elites e indústria no Alemtejo (1890–1960): Um estudo sobre o comportamento económico de grupos de elite em contexto regional no Portugal contemporâneo*, Lisboa, Colibri, 2006; Andreas VOTH, “Cambios en la geografía del corcho en Europa”, in Santiago ZAPATA BLANCO (ed.), *Suredes i indústria surera: avui, ahir i demà / Cork Oak Woodlands and Cork Industry: Present, Past and Future*, Palafrugell, Museu del Suro de Palafrugell, 2009, pp. 568-594.

This movement corresponded not only to a larger number of factories going bankrupt in the forest production areas and a greater number of new factories opening near Lisbon, but also to the relocation of some companies' factories from the forest areas to the area around Lisbon.<sup>19</sup> Due to the scarcity of sources, it is very difficult to identify which of these three phenomena contributed most to the geographic change in the location of the cork industry in this period. For the same reason, we were unable to specify when the process started, since the industrial survey of 1881 is too incomplete to carry out a proper analysis. What we can conclude, without any doubt, is that on the eve of the Great War the Lisbon Metropolitan Area was the main area of the cork industry in Portugal and remained so until the 1960s.

It was also during the 1960s that a new region emerged, the Porto Metropolitan Area and, within this region, the municipality of Santa Maria da Feira in the administrative district of Aveiro also came into being.<sup>20</sup> The existence of the cork industry in this region was not in fact new, several cork factories having operated there since the second half of the nineteenth century, stimulated by the proximity of a large international port and by the production of Port wine.<sup>21</sup> However, Porto MA remained a secondary location in the Portuguese cork industry until the 1960s. In this decade, however, as shown in Figure 4, it experienced fairly significant growth, and by the early 1970s it had become the main region for the cork industry, a position it holds to this day. Thus, in a time span of less than one hundred years the geography of the cork industry changed twice, which is quite unusual for an industrial sector of such a large dimension and of such importance to the heart of a national economy.

Figure 4. Number of workers of the cork industry by region, 1942–1987 (%)



S.: Own elaboration from INSTITUTO NACIONAL DE ESTATÍSTICA, *Estatísticas Industriais (1942-1987)*, Lisboa, Instituto Nacional de Estatística.

19. FAÍSCA, “El negocio corchero en Alemtejo...”, pp. 213-219.

20. Amélia BRANCO and João Carlos LOPES, “Cluster and business performance: Historical evidence from the Portuguese cork industry”, *Investigaciones de Historia Económica - Economic History Research*, 14/1 (2018), pp. 43-53, <https://doi.org/10.1016/j.ihe.2016.05.002>.

21. The *Estatística Industrial do Distrito de Aveiro* recorded in 1865 three factories and seven workshops manufacturing cork in this region, with 77 employees in total (see BRANCO and LOPES, “Cluster and business performance...”).



As stated above, the study of the industrial location of the Portuguese cork industry is not entirely new in the Portuguese economic historiography, as several authors have mentioned it over time.<sup>22</sup> All of them emphasize endowments, as well as transportation and information costs, as the main explanations for the concentration of the cork industry near the cork oak forests at the beginning of its history. In terms of information costs, the strong variability of the quality of cork, even within the same property,<sup>23</sup> required greater proximity between the industrial manufacturer and the raw material they bought.<sup>24</sup> In the case of transportation costs, the reason is quite simple because, due to the larger volume and weight, it is more expensive to transport raw material than intermediate or finished products. Additionally, as the majority of the cork factories were of small-to-medium size, local production was enough to supply the industry's raw material requirements.

As for the reason behind the first change in the industrial geography of the cork industry, that is, to the Lisbon MA, there is little consensus. For Bernardo,<sup>25</sup> the fall in the price of transportation reduced the importance of this factor, at the same time as the increase in the size of the factories (i.e., the cork factories that began to appear around Lisbon were larger) required greater quantities of raw material that could no longer be supplied only from the local area. Even more significant in his view was the increased supply of labour in Lisbon and the area's greater proximity to the consumer markets since most of the production was destined for export through the port of Lisbon. In addition to these explanations, academic production in economic historiography has added others. For example, Fonseca claimed that the economic policy of the Portuguese state, which from 1910 onwards protected the production of cork stoppers and penalized the processing of cork, negatively impacted cork factories close to the forest regions which were more specialized in the cork processing. Mendes<sup>26</sup> argued that technological development in the cork industry drove the move to an area with a greater supply of skilled labour –Lisbon. On the other hand, Guimarães<sup>27</sup> was of the opinion that the creation of networks of local agents by the principal companies in the forest regions made it unnecessary for the industry to be located close to the raw materials. Voth also pointed out the weakness of the labour supply in the sparsely populated areas of the south, as well as the reduction of transport costs that allowed the cork industry to be brought to locations closer to the consumer market<sup>28</sup>. Finally, as pointed out by Parejo Moruno,<sup>29</sup> it is

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22. José António D'OLIVEIRA SOARES, Carlos AMARAL NETTO and Joaquim NUNES MEXIA, *Produção e indústria corticeira*, Lisboa, Typ. A Editora, 1912; Hernâni Bernardo BARROS, "A Indústria corticeira em Portugal", *Economia e Finanças*, 14 (1946), pp. 117–253; Amélia BRANCO and Francisco Manuel PAREJO-MORUNO, "Distrito industrial y competitividad en el mercado internacional: la industria corchera de Feira en Portugal", in J. A. MIRANDA, J. CATALÁN and R. RAMÓN-MUÑOZ, *Distritos y clusters en la Europa del Sur*, Madrid, LID Editorial, 2011, pp. 123-142; FONSECA, *O Alemtejo no século XIX...*; GUIMARÃES, *Elites e Indústria no Alemtejo (1890-1960)*.

23. NATIVIDADE, *Subericultura*.

24. It is important to point out that this only occurs when we talk about the natural cork processing industry, since the cork agglomerate industry feeds on the poorer quality corks and cork waste to make its manufactures, an aspect that must be considered when analyzing the location of the cork industry.

25. BARROS, "A Indústria corticeira em Portugal...".

26. MENDES, *A economia do sector da cortiça em Portugal...*

27. GUIMARÃES, *Elites e Indústria no Alemtejo (1890-1960)...*

28. VOTH, "Cambios en la geografía del corcho en Europa..."

29. PAREJO-MORUNO, "El negocio de exportación corchera"...



important to take into consideration that a large rise in the manufacture and consumption of cork products in the United States occurred at the beginning of the twentieth century, which provided an incentive for the cork industry to establish itself closer to the port of Lisbon, the natural departure point for cork products travelling from Western Europe to the American continent.<sup>30</sup>

Regarding the second change in the industrial geography of cork, (i.e., from the Lisbon MA to the Porto MA) the literature shows more of a consensus in terms of the factors behind it.<sup>31</sup> Firstly, it is important to note that these changes coincided temporally with the *Iberization* process of the world cork industry,<sup>32</sup> which implied the abandonment of cork manufacturing in developed countries –the United States, Germany, the United Kingdom. and others.<sup>33</sup> Consequently, the industry became concentrated almost exclusively in Spain and Portugal. This was due to the collapse of cork agglomerate manufacturing in the more developed countries as a consequence of the appearance, since the 1930s, of more competitive synthetic substitutes for insulation applications, the principal use of processed cork.<sup>34</sup>

Branco and Parejo<sup>35</sup> point out that the institutional framework of *Estado Novo* could have been a determining factor in the location of the cork industry in the north of the country. In fact, the industrial and wage policies applied in the cork sector by the Salazar dictatorship may have been a stimulus for the concentration of cork manufacturing around Porto for two reasons: first, because the industrial legislation (*Condicionamento Industrial*) was not able to prevent the proliferation of small industrial establishments in the north, leading to the development of a highly competitive industrial district, since they had tremendous supply flexibility and adaptability in the face of the changes in demand that were happening. And second, the fact that the wage policy of the Estado Novo set lower salaries in the north of the country than in the south<sup>36</sup> gave the former a huge advantage because of the importance of wages in the cost structure of the cork industry.<sup>37</sup>

Linked to this policy of reduced salaries in the north of the country, other authors have pointed out the existence of an abundant labour supply in comparison with other regions in the centre and south, and the fact that there was less social and labour conflict




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30. This was what happened with Mundet & Sons, a multinational firm of Catalan origin that established itself in Seixal, near Lisbon, in 1905, quickly becoming the largest exporter of cork products in the world.

31. BRANCO and PAREJO-MORUNO, “Distrito industrial y competitividad en el mercado internacional...”.

32. ZAPATA, “Del suro a la cortiça...”

33. Jaime SALAZAR SAMPAIO, *À La Recherche d'une Politique Économique pour le Liège au Portugal*, Lisboa, Grafitécnica, 1977.

34. ZAPATA, “Del suro a la cortiça...”; SAMPAIO, *À La Recherche d'une Politique Économique...*

35. BRANCO and PAREJO-MORUNO, “Distrito industrial y competitividad en el mercado internacional...”

36. Natércia MIRA, “Modelo de custos de transporte explicativos das decisões de localização: aplicação ao sector corticeiro português”, *Estudos de Economia*, 3 (1998) pp. 373-384; Carla Raquel DA SILVA MATOS and Marta Raquel FERREIRA PINTO, “A indústria transformadora de cortiça em Santa Maria de Lamas nos anos 50 e 60”, *História – Revista da FLUP*, 4 (2003), pp. 297-341.

37 About this cork structure, see SAMPAIO, *À La Recherche d'une Politique Économique...* and FAISCA, “*El negocio corchero en Alemtejo...*”, pp. 166-169.

in the north compared to the rest of the country.<sup>38</sup> Research has also identified the importance of one company, Amorim & Irmãos (currently *Corticeira Amorim*, SGPS), in the development of the cork industrial district of Aveiro,<sup>39</sup> and consequently Portugal's rise to the status of the world's leading power in the cork business in the second half of the twentieth century.<sup>40</sup> The strong growth of this firm led to its predominance in the world market for cork manufactures, a position it maintains even now, and would have been an indisputable attraction for the location of the industry in the north. In short, the existence of a leading company located in a specific region would have represented an important factor for attracting investments, something that can theoretically be explained by the dynamics of industrial organization associated with business agglomerations.<sup>41</sup>

Finally, although from the 1950s on transport costs were a less important part of the industry's cost structure, the proximity to the port of Leixões, to the north of Oporto, should also be considered as an industrial location factor,<sup>42</sup> as too should the area's closeness to one of the most important centres of consumption of cork stoppers in Europe: the Porto wine industry.<sup>43</sup> In both cases, the location of factories around Porto can be considered efficient, especially if, as Branco and Parejo Moruno<sup>44</sup> argue, the supply of raw material from the central and southern regions of the country was efficiently organized for the entire industrial district of Aveiro from the 1950s, thanks to the intervention of Amorim & Irmãos.

### Determinants of industrial location in the Portuguese cork industry

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At least since Alfred Weber published his seminal work *Über den Standort der Industrie* in 1909, many authors have studied the determinants of industrial location. Neoclassical theory, and its variants such as the Heckscher–Ohlin model, emphasized endowment factors combined with transport costs, arguing that industrial location will be distributed according to the comparative advantage of each region in terms of its endowments and the relative cost of the transportation of raw materials and industrial products. With the progressive decline in the importance of transport costs, the comparative advantages of endowments becomes the more compelling explanation for

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38. Lucília de Jesus CAETANO, *A indústria no distrito de Aveiro: Análise geográfica relativa ao eixo rodoviário principal entre Malaposta e Albergaria-a-Nova*, Coimbra, Comissão de Coordenação da Região Centro, 1986.

39. Amélia BRANCO et. al., "From a Portuguese small firm to world leader in the cork business: The role of the internationalization of Corticeira Amorim to Spain" in C. PERRIN, *Petites entreprises dans l'histoire industrielle*, Paris, L'Harmattan, 2017, pp. 165-183, <https://doi.org/10.3917/maorg.030.0165>.

40. ZAPATA, "Del suro a la cortiça...".

41. G. BECATTINON, *La oruga y la mariposa. Un caso ejemplar de desarrollo en la Italia de los distritos industriales: Prato (1954-1993)*, Valladolid, Universidad de Valladolid, 2005.

42. A. de Amorim GIRÃO, *Geografia de Portugal*, Porto, Editora Portucalense, 1951.

43. Conceição ANDRADE MARTINS, *Memória do Vinho do Porto*, Lisboa, Imprensa de Ciências Sociais, 1990.

44. BRANCO and PAREJO-MORUNO, "Distrito industrial y competitividad en el mercado internacional...".

industrial location.<sup>45</sup>

However, this view was latter challenged by the New Trade Theory, which since the 1970s focused on market access. To this end, industrial activities, with the exception of a few industries that depend on raw materials such as mining, will tend to be concentrated around the largest markets. Consequently, peripheral areas will suffer from deindustrialization and depopulation, with the consequent reinforcement of industrial geographic inequality, and the concentration of industry will occur in only a few centres.<sup>46</sup> However, by the 1990s, New Economic Geography had emerged. Although maintaining a focus on the markets, this perspective considers industrial concentration along a centre-periphery dichotomy to be just one of a number of possible scenarios. In fact, while market effects attract industries to locate next to each other in large urban areas (markets), there are also opposite centrifugal forces –for instance the increase in the price of land and labour due to congestion –that lead to industrial dispersion.<sup>47</sup>

Several recent studies stressing which theory better explains industrial location in a given context have found that there are often factors from both sides that play a role.<sup>48</sup> Our primary aim here is not to discuss whether endowments or markets better explain the relocation processes of the Portuguese cork industry, but rather to offer a quantitative approach to the factors that the economic historiography has pointed to thus far in terms of the theoretical basis of the phenomenon. These factors, as noted in the previous section, are labour, transport costs, information costs, business strategies, and industrial characteristics. In the conclusion of this article, we add our findings to the debate over factors influencing industrial location.

### **From the raw materials towards the markets: The changes in cork industry location in the early twentieth century**

#### *Labour supply: Quality, Cost and Quantity*

Regarding labour supply, we start by looking into the *quality* of the workforce. The mechanization of the cork industry in Portugal by the late 19<sup>th</sup> century<sup>49</sup> may have led, as occurred in Catalonia, to a reduced need for skilled labour<sup>50</sup>. If that were the case the following exercise based on literacy levels would be of little interest. However, it is

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45. Paul KRUGMAN, “Increasing Returns and Economic Geography”, *Journal of Political Economy*, 99/31 (1991), pp. 484-485, <https://doi.org/10.1086/261763>; Marius BRULHART, “Trading Places: Industrial Specialization in the European Union”, *Journal of Common Market Studies*, 36/3 (1998), pp. 319-346, <https://doi.org/10.1111/1468-5965.00113>.

46. BRULHART, “Trading Places...”.

47. *Ibidem*.

49. Anna MISSIAIA, “Market versus Endowment: Explaining Early Industrial Location in Italy (1871–1911)”, *Cliometrica*, 13/1 (2018), pp. 127–161, <https://doi.org/10.1007/s11698-018-0172-6>; WOLF, “Endowments vs. Market Potential...”.

49. FAÍSCA, “Lagging Behind or Catching Up?...”

50. Joaquim ALVARO I COSTA, “Cambios estructurales, migraciones y movilidad laboral en el sector corchero catalán a principios del siglo XX”, *Revista de Historia Industrial*, 77 (2019), pp. 149-176; Rosa ROS MASSANA, “Trellall i pluriactivitat al sector català c.1750-1920”, *Estudis d'història agrària*, 19 (2006), pp. 105-141.



also known that this period was characterized by an increase in the number of large industrial companies operating in the Portuguese cork sector that settled mainly in the Lisbon MA<sup>51</sup>. This was the case, for instance, for the companies William Rankin and Sons, Ltd; Henry Bucknall & Sons; L. Mundet & Son; and the *Sociedade Nacional de Cortiças*, all of which relocated from the Alemtejo to the Lisbon MA. For all these companies, having a greater supply of skilled labour was important.

Therefore, and because, unfortunately, there is no available statistical data on the level of professional training of the cork workers, we chose to use literacy levels as a proxy for skilled labour, either already working in the industry or available in local communities and thus constituting a potential labour market for recruitment. Despite the limitations of this analysis, it is, however, the only possible option, given the information available. According to the available data, the illiteracy rate in the cork industry in forest areas in 1890 was around 79%,<sup>52</sup> which dropped to around 65% in the period 1901–1903.<sup>53</sup> In Lisbon, in 1890, using the same source, the illiteracy rate in the cork industry was approximately 63%.<sup>54</sup> The literacy rate was therefore higher among cork workers in the Lisbon region in 1890 than for the cork workers in Alemtejo a decade later. The level of literacy in Lisbon was also higher in the general population.

Table 1. Illiteracy rate in the populations of the Industrial Cork belt of the Lisbon Metropolitan Area and Alemtejo (1900, %)

REGION	MEN	WOMEN	TOTAL
Lisbon MA	64.00	64.68	64.32
Alemtejo	75.83	82.66	79.21

S: MINISTÉRIO DAS OBRAS PÚBLICAS, COMMERCIO E INDUSTRIA, *Boletim do Trabalho Industrial*, 19 (1907), Lisboa, Imprensa Nacional.

As for the cost of labour, in Alemtejo, wages registered higher maximum levels and lower minimum levels than in Lisbon. As such, in the case of skilled labour, it was cheaper to hire in the Metropolitan Area of Lisbon, although the inverse situation was true for unskilled labour. Also, comparing key professions in this industry, labour was more expensive in Alemtejo. In fact, by 1903, the daily wage of a cork stopper mechanic was 395 réis, while in a leading factory near Lisbon, The Cork Company, each of its 26 cork stopper mechanics earned 378 réis per day.<sup>55</sup>

Table 2. Industrial Wages in the Cork Industry in Lisbon and in Alemtejo in 1890 (in Réis)

REGION	COMPANIES	WORKERS	MAX. DAILY WAGE (réis)	MIN. DAILY WAGE (réis)
Lisbon	11	620	510.48	401.42
Alemtejo	28	367	525.99	323.11

S: MINISTÉRIO DAS OBRAS PÚBLICAS, COMMERCIO E INDUSTRIA, *Inquérito industrial de 1890*.

Finally, the recruitment potential of Alemtejo was still higher than the *cork municipalities* around Lisbon. However, this issue seems to be of less importance than

51. FAÍSCA, “El negocio corchero en Alemtejo...”, pp. 186-196. See the chapter about large industrial companies.

52. MINISTÉRIO DAS OBRAS PÚBLICAS, COMMERCIO E INDUSTRIA, *Inquérito industrial de 1890*...

53. MINISTÉRIO DAS OBRAS PÚBLICAS, COMMERCIO E INDUSTRIA, *Estatística industrial: Districtos de Évora, Beja e Faro*, Lisboa, Imprensa Nacional, 1905.

54. MINISTÉRIO DAS OBRAS PÚBLICAS, COMMERCIO E INDUSTRIA, *Inquérito industrial de 1890*...

55. FAÍSCA, “El negocio corchero en Alemtejo...”, pp. 221-222.

other factors since in 1915 the cork industry employed little more than 7,000 workers at a national level,<sup>56</sup> which any of the regions was in a demographic position to supply. Additionally, the workforce scenario was changing, as evidenced by the rate of population growth in the Lisbon cork industrial municipalities, which was over 45.5% between 1890 and 1911 but almost half that in Alemtejo (26.9%).

Table 3. Population evolution in the cork industrial belt of Lisbon and of Alemtejo (1890–1911).

LISBON			ALEMTEJO		
Municipality	Population (1890)	Population (1911)	Municipality	Population (1890)	Population (1911)
Almada	13,530	18,076	Estremoz	15,151	18,142
Barreiro	5,628	12,057	Évora	25,177	29,880
Moita	5,490	6,117	Montemor	15,335	22,162
Montijo	9,094	11,105	Odemira	19,386	23,883
Seixal	5,492	8,531	Portalegre	16,908	21,358
Setúbal	21,252	32,096	Santiago	13,304	18,158
<b>TOTAL</b>	<b>60,486</b>	<b>87,982</b>	<b>TOTAL</b>	<b>105,261</b>	<b>133,583</b>
<b>Lisbon</b>	<b>300,964</b>	<b>431,738</b>			

S: DIRECÇÃO DA ESTATÍSTICA GERAL E COMMERCIO, *Censo da População de Portugal no 1.º de Dezembro de 1890*, Lisboa, Imprensa Nacional, 1900; DIRECÇÃO GERAL DE ESTATÍSTICA, *Censo da População de Portugal no 1.º de Dezembro de 1911*, Lisboa, Imprensa Nacional, 1913.

### Transportation costs

The cost of transport has been acknowledged as a classic factor in terms of industrial location since it was first identified by Alfred Weber.<sup>57</sup> However, its importance depends on the technological context of each industry and the historical moment in question. Thus, transport costs can favour a location closer to the raw material when it is more expensive to transport than the finished products. That is the case with the cork industry, especially in this historical period, because in the process of making a cork stopper 40–50% of the weight of the raw material is lost<sup>58</sup>, and the waste at that time had no industrial use, the production of agglomerates only taking hold in Portugal after World War I.<sup>59</sup> However, the cost of transport tends to decrease as communication systems improve and, consequently, this overhead becomes less important as an industrial location factor over time. In the cork industry, by the early twentieth century transport costs represented about 10% of the total cost structure, still making it an important factor.<sup>60</sup> However, it can be assumed to have been even greater in the mid-nineteenth

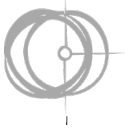
56. José CAMPOS PEREIRA, *A propriedade rústica em Portugal: superfícies, produções, rendimentos, valores*, Lisboa, Imprensa Nacional, 1915.

57. Alfred WEBER, *Theory of the Location of Industries*, Chicago, University of Chicago Press, 1929.

58. Luís GIL, *Cortiça: Da árvore aos produtos finais*, São Brás de Alportel, Pelcor, 2004.

59. Alexandre M. FLORES, *Almada na história da indústria corticeira e do movimento operário: Da regeneração ao Estado Novo, 1860–1930*, Almada, Câmara Municipal de Almada, 2003; Graça FILIPE and Fátima AFONSO, *Quem diz cortiça, diz Mundet*, Seixal, Ecomuseu Municipal do Seixal, 2010. With the discovery of the cork agglomerate, it became possible to industrially use the waste from the manufacture of cork stoppers, as well as the poorest quality cork. By agglomerating pieces of crushed cork, a wide variety of new cork materials were produced such as insulation for civil construction, as well as agglomerated cork stoppers. These, although with lesser quality, were (and are) cheaper, thus being used in less expensive wines.

60. FAÍSCA, “El negocio corchero en Alemtejo...”, p. 169.



century, when the Portuguese railway network was poorly developed, consequently helping to explain the initial location of cork industry near the raw materials. In fact, the available data confirms that the cost of transportation fell by almost 50% between the mid-nineteenth century and the beginning of the twentieth century, thus mitigating one of the factors that most contributed to the location of the industry near the source of the raw material.

Table 4. Cost of transporting raw cork from Alemtejo to Lisbon (in réis).

YEARS	TRANSPORT COST (@/KM)
1855–1856	1.24
1869–1871	0.71
1909–1910	0.65

S: FAÍSCA, “El negocio corchero en Alemtejo...”, p. 226.

### *Information costs*

Information costs can explain a given industrial geography, a reduction in such costs being one of the possible benefits of industrial agglomeration. In the case of the cork industry, this aspect becomes even more important due to the business’s particular characteristics in that the quality of cork varies greatly from tree to tree.<sup>61</sup> Therefore, in order to make a good contract, it is essential to fully understand local cork forests, as well as the strategies of competitors.<sup>62</sup> It is for precisely this reason that Guimarães<sup>63</sup> argued that large companies, by creating a local agents network in the early twentieth century, no longer needed to be near raw materials as a result of information costs. Although this is a logical argument, it loses power when confronted by empirical research. In fact, large companies such as Henry Bucknall and Sons already had, in 1870, a well-established network of agents in the cork forest areas. Consequently, when this company bought raw cork in places like Ponte de Sor (in the region of Alemtejo), it was always done by their local agents. This strategy was not exclusive to Henry Bucknall and Sons, and indeed was used frequently by other companies, both large and small.<sup>64</sup>

### *Business strategies and industrial characteristics*

The structure of an industrial sector and certain business strategies influence industrial location. With respect to these aspects, unlike those previously discussed, some favoured the permanence of part of the industry in the forest production regions. This was the case with vertical integration and the putting-out system. In fact, even in the nineteenth century, large companies were characterized by vertical integration. Thus, with the exception of Robinson Cork Growers, the headquarters and the majority of the higher value-added phases were located in, or near, Lisbon, while the initial preparation phases took place in the forest areas. Also, the putting-out system, in a kind of joint venture between large and small companies, helped maintain small industries in regions that had lost their initial economic competitiveness. From a quasi-domestic system, with

61. NATIVIDADE, *Subericultura...*

62. Joaquín ALVARADO and Francisco Manuel PAREJO-MORUNO, “De la diversificación a la especialización: la incursión de la familia Torrellas en el negocio corchero (1879-1923)”, *Revista de Historia Industrial*, 72 (2018) pp. 109-136.

63. GUIMARÃES, *Elites e Indústria no Alemtejo (1890-1960)...*

64. FAÍSCA, “El negocio corchero en Alemtejo...”, pp. 184-208.

little use of capital, these companies were able to adapt quickly to fluctuations in demand.<sup>65</sup> This has been identified in places like Évora, Portalegre and Ponte de Sor (in Alemtejo) and certainly helped to retain some transformation units in these places.<sup>66</sup> Finally, returning to Fonseca's argument that economic policy began to penalize the forest region which was specialized in the preparation of cork, it is true that this type of processing plant was in the majority in Alemtejo, although transformation units still had weight in the region, consuming more than 40% of the cork that entered the factories in Alemtejo by the early twentieth century. In fact, this figure was not particularly different from those of the Lisbon cork industry.<sup>67</sup>

## Towards the north: where the industry happens

### *Labour supply: Quality, Cost and Quantity*

Starting once again by looking into the quality of skilled labour using literacy levels as a proxy for its measurement, it can be concluded that there was a small difference between the Porto and Lisbon Metropolitan Areas, in favour of the latter. However, if we eliminate the Lisbon municipality from the data for the Lisbon MA, the difference becomes extremely small. Given that the municipality of Lisbon, the capital of Portugal, was home to a relatively much higher number of public-educated people working in ministries, universities and other public organizations, it seems logical to restrict the analysis to the other municipalities of the region, where the majority of the cork industry was located. As Table 5 shows, the differences are at most minimal, being 0% for those with a university education, 0.9% in terms of secondary education and 1.3% for basic education.

Table 5. Education level completed by the population over 15 years old in 1960 (in %)

MUNICIPALITY/ REGION	NO FORMAL EDUCATION	BASIC EDUCATION	SECONDARY EDUCATION	UNIVERSITY EDUCATION
Santa Maria da Feira	70.1	28.6	1.1	0.2
Porto MA	62.2	33.4	3.8	0.7
Lisbon MA (excluding Lisbon)	59.9	34.7	4.7	0.7
Lisbon MA	53.2	37.4	7.6	1.8

S: INSTITUTO NACIONAL DE ESTATÍSTICA, *X Recenseamento Geral da População*, Lisboa, 1964.

One of the factors pointed out in the literature that explains the opening of industrial cork establishments in the north of Portugal is the existence of lower wages in this region compared to the rest of the country. This factor has been mentioned by Matos and Pinto,<sup>68</sup> who consider the northern cork industry based its competitiveness on lower wages and on the exploitation of female labour and apprentices. In a similar way, Cordeiro<sup>69</sup> also thought it relevant, attributing the *transfer* of companies to the north to

65. Pere SALA LÓPEZ and Jordi NADAL OLLER, *La contribució catalana al desenvolupament de la indústria surera portuguesa*, Barcelona, Generalitat de Catalunya, 2010.

66. FAÍSCA, “El negocio corchero en Alemtejo...”.

67. *Ibidem*, pp. 151-153.

68. MATOS and PINTO, “A indústria transformadora de cortiça em Santa Maria de Lamas...”

69. José Manuel LOPES CORDEIRO, “‘Viver a indústria’ ou a vantagem competitiva da indústria corticeira nortenha”, *XXII annual meeting of the Portuguese Economic and Social History Association*, Aveiro, November 15-16, 2002.



wage inequality. Without fully agreeing with these reflections, the truth is that a law promulgated by the Estado Novo on August 2, 1941, institutionalized the wage differences between the north, centre and south in Portugal.

Table 6. Index of salaries set institutionally in Portugal by the Estado Novo for the cork industry.

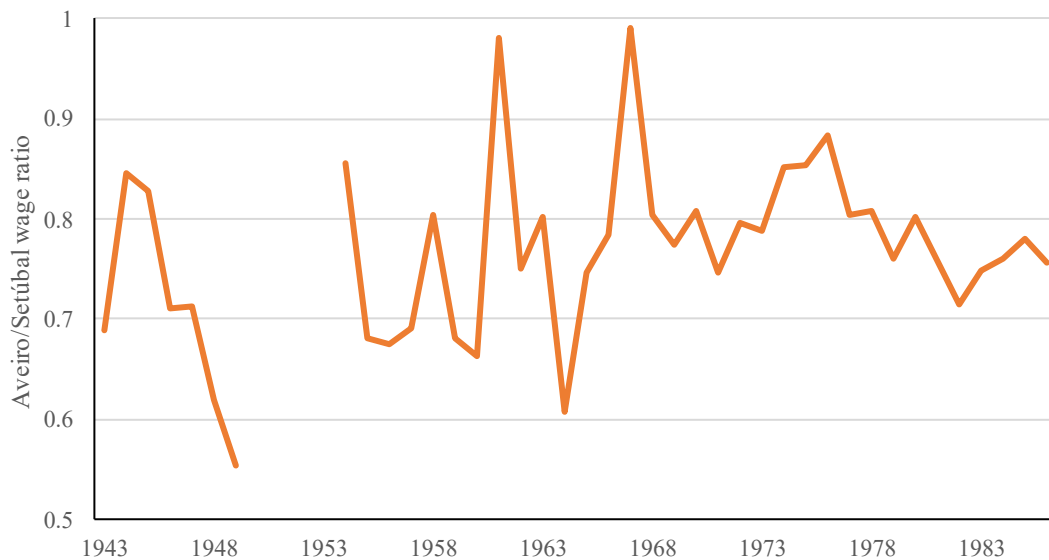
TYPE OF WORKER	SOUTH (A)	CENTRE (B)	NORTH (C)
Men (handwork)	131	147	100
Men (mechanical work)	108	149	100
Women (handwork)	118	126	100
Women (mechanical work)	100	135	100
Auxiliary staff (apprentices)	120	143	100
<i>AVERAGE SALARY</i>	<i>117</i>	<i>142</i>	<i>100</i>

The data takes the salary in the north as being the standard (100). (a) Includes the administrative districts of Portalegre, Evora, Beja and Faro; (b) comprises the districts of Setubal, Lisbon and Santarem; (c) is composed of the districts of Aveiro, Porto, Coimbra and Castelo Branco. S.: BRANCO and PAREJO MORUNO, “Distrito industrial y competitividad en el mercado internacional...” p. 132.

Based on the information in this table, it is possible to conclude that the wage policy of the Portuguese dictatorship granted in law a significant wage advantage to industrial establishments installed in the north, salaries being almost 50% lower with respect to the centre and close to 20% with respect to the south –a significant advantage if we consider that in the cost structure of the industry labour accounted for over 10% of costs.<sup>70</sup> In fact, the practice matched the law, as the wage ratio between Aveiro and Setúbal –respectively the main industrial cork-producing districts in the metropolitan areas of Porto and Lisbon– shows a lower labour cost in the north. It should also be noted that the end of the Dictatorship, in 1974, did not change the situation, which remained stable until 1986.

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Figure 5. Wage ratio between Aveiro and Setubal Districts



S: INSTITUTO NACIONAL DE ESTATÍSTICA, *Estatísticas Industriais*, Lisboa, 1943-1986.

70. SAMPAIO, *À La Recherche d'une Politique Économique...*, pp. 132. With respect to this, the trade unionist José Dos Reis Sequeiro said: “The cork workers from Lamas de Feira (Aveiro) were the lowest paid in the entire country, with a difference of 40% or more (...). And this constituted an obstacle for the corkers from the south (...) because of the concurrence of the industrialists from the north, who had much cheaper labor” (own translation from CORDEIRO, “Viver a indústria”...”).



As for recruitment potential, the issue was not important for this second relocation process, since both the Lisbon and Porto Metropolitan Areas were already densely populated by the mid-twentieth century. Although, as is currently the case, Lisbon had a higher total population and population density than Porto, the truth is that Porto MA already had a very considerable supply of human capital. It suffices to say that, in 1960, Porto MA had almost one million inhabitants and that the municipality of Santa Maria da Feira specifically had more than 80,000 inhabitants.

### *Transportation costs*

Without conducting rigorous analysis, it seems clear that the Lisbon region had advantages in terms of lower transport costs compared to the Porto region that suggest that, at least on this basis, the industrial relocation of the cork industry to the north was not economically justified. On the one hand, the Lisbon region was closer to the main sources of cork supply, especially since the railway line linked it to the principle southern towns.<sup>71</sup> On the other, the Port of Lisbon was, in the twentieth century, still one of the main European exit routes to the American continent.<sup>72</sup> As such, this access to the North American market for manufactured and unmanufactured cork, which was only equalled in terms of importance by routes from England during the first half of the twentieth century, was easier and less expensive for those firms established in this region.<sup>73</sup> However, the circumstances in the cork business changed dramatically from the middle of the century onwards. The United States market shrank dramatically as a result of the much decreased consumption of cork manufactures and the subsequent disappearance of the cork industry from the country. This was due to the appearance and strong performance of synthetic substitutes for cork in the North American market, which highlighted the lack of price competitiveness of natural cork material in insulation and float applications.<sup>74</sup> In this sense, international demand became *Europeanized*, and the historical links of the Port of Leixões with northern European ports<sup>75</sup> must have been an attraction for the cork industry in this new business situation.

On the other hand, Alemtejo was also linked by railway with the north of the country, through the East line. In addition, the existence of efficiently organized rail transport to take cork to the north may also have reduced the relative importance of transport costs, leading to a decrease in the importance of this factor in the location of cork companies, especially when comparing the north with the centre and south of Portugal.<sup>76</sup> It is for this reason, unsurprisingly, that Amorim & Irmãos, based in the north

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71. The railway connection between Lisbon and the main cork Alemtejo regions was a very early one in the history of railways of Portugal. Thus, in 1863 all the northern Alemtejo was connected with Lisbon, being the first line to be completed due to its international connection with the Spanish border. Also, in the same year Évora, capital of the Central Alemtejo, was properly linked with the Lisbon Metropolitan Area by train.

72. GIRÃO, *Geografia...*, pp. 370.

73. PAREJO-MORUNO, *El negocio de exportación corchera...*, p. 112.

74. SAMPAIO, *À La Recherche d'une Politique Économique...*; ZAPATA, "Del suro a la cortiça...".

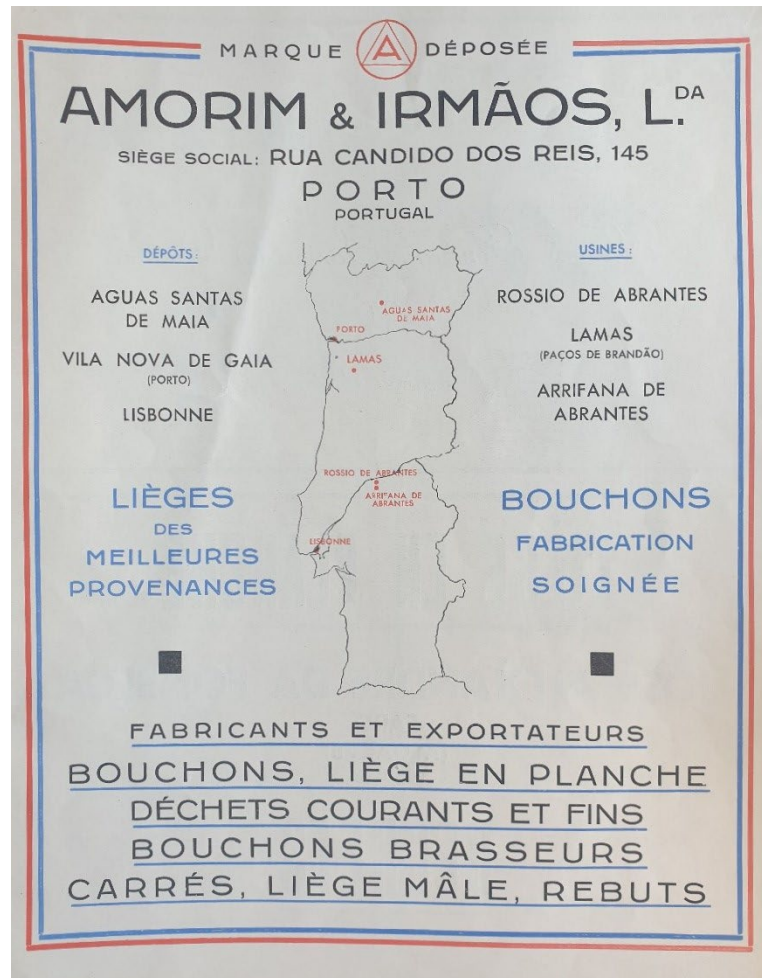
75. GIRÃO, *Geografia...*, pp. 369-378.

76. In Carlos OLIVEIRA SANTOS, *Amorim: História de uma família*, Mozelos, Grupo Amorim, 1997, which tells the story of Amorim & Irmãos, several episodes are related in which this company organized the arrival of the raw material to the industrial district of Santa Maria de Feira, in Aveiro. Amorim & Irmãos had a raw cork warehouse in Abrantes since the 1930s, from which it supplied its northern factories by train.



and which became world leader of the cork business, had had two cork preparation units near the Tagus River since at least the 1930s.

Figure 6. Presence of Amorim & Irmãos, Lda. in Portugal (1937).



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S.: João CALHEIROS, *Portugal Corticeiro: número especial da Exposição Internacional de Paris*. Lisbon, Empresa do Anuário Comercial, p. 53.

### Information costs

As mentioned earlier, the raw material acquisition process requires the cork industry to be close to supply because of the qualitative heterogeneity of cork. In this sense, the supply of quality cork for manufacturing is only possible if the characteristics of the individual cork oak forests acting as sources of the raw material are known exactly, making for obvious information costs in the absence of such knowledge. In line with this, the physical distance of the north from the main sources of supply of cork dictates that companies located there would incur greater information costs compared to their competitors in the south and centre of the country.

In our opinion, however, these information costs would, by the second half of the 20<sup>th</sup> century, no longer have been relevant in the Portuguese cork business for one fundamental reason: the Portuguese cork industry, especially that the factories was developing around the Porto region, had already specialized in the transformation of cork (manufacturing production) by 1950, and this specialization only intensified in the

following decades;<sup>77</sup> that is, the industry had abandoned its traditional specialization in the preparation of cork (primary transformation), which had historically characterized the Portuguese industry, and which is the part of the cork production chain that requires a greater physical connection with the forest producers. In short, the northern cork industry, to the extent that it specialized in the transformation of prepared cork, was able to dispense with the need for physical proximity to cork oak forests, since its raw material was supplied by the primary transformation sector, where information costs were significantly less important.

### *Business strategies and industrial characteristics*

In addition to all the factors and circumstance described above, we believe that, following the establishment of the Portuguese Estado Novo (1933-1974), there have been events in the institutional and business sphere that made the Porto region more attractive for the establishment of the transformed cork industry. Let us start with the institutional factors, to which, of course, should be added the salary measures adopted by the Salazar dictatorship, discussed above.

During the 1930s, the Estado Novo reinforced the control of private initiatives through the establishment of a previous-authorization regime for those wishing to invest in the creation of new industries or the modification of existing ones. The so-called *Condicionamento Industrial* was launched in January 1931 and was in force, with greater or lesser rigour, until 1975, when it lost all relevance shortly after the end of the Portuguese dictatorship.<sup>78</sup> Its general aim was to adjust Portuguese industries to existing demand and future potential on the basis of the development and potential of the different production sectors in the country. The cork industry was subjected to this investment control intervention in March 1931,<sup>79</sup> although small establishments (fewer than five workers and with an installed power of less than 5 hp) were treated more generously, in particular those in the so-called *caseira* industry (domestic system). Consequently, the bulk of the Portuguese cork industry around 1940 was exempted from the obligation to obtain previous administrative authorization to expand or modify facilities.<sup>80</sup>




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77. According to data from L. BARROS, J. GRAÇA and H. PEREIRA, “Classificação das unidades industriais corticeiras por tipo de actividade”, *Boletim do Instituto dos Produtos Florestais*, 570 (1986), pp. 105, by 1985 there were 498 cork industrial establishments in Portugal, of which 362 (73%) were dedicated to the production of manufactures (cork stoppers). Likewise, there were 335 industrial establishments in the administrative district of Aveiro, 331 transformers (99%) and only 4 specialized in the preparation of cork.

78. João CONFRARIA, “Política económica”, in Pedro LAINS and Álvaro FERREIRA DA SILVA, *História Económica de Portugal, Vol. III, O Século XX*, Lisboa, Imprensa de Ciências Sociais, pp. 397-423.

79. BRANCO and PAREJO-MORUNO, “Distrito industrial y competitividad en el mercado internacional...”, p. 134.

80. 219 of the 294 cork industrial establishments that existed in Portugal in 1940 (the  $\frac{3}{4}$  parts) fit the definition of small industry and *caseira* industry offered in the decree, being exempted from supervision. In addition, of the remaining 55 industries that were audited, as they were *medium-sized* or *large-sized* industries, only 7 were in the Aveiro district, compared to 35, for example, in the districts of Setúbal, Santarem and Lisbon (around what we have considered as the Lisbon region), so that public supervision of cork manufacturing must have been significantly higher in the north than in the center (data obtained from the *Boletim da Junta Nacional da Cortiça*).

The result of this exemption was the proliferation of small firms in the Portuguese cork industry,<sup>81</sup> especially in the north,<sup>82</sup> possibly because, in addition to the location factors explained above, the location of the leader company Amorim & Irmãos provided important business opportunities for small companies that based their production model on the cooperation and flexibility of the “Planet-Satellites” model. Indeed, it was a typical way of organizing production in industrial districts where some leading or large companies coexisted with a multitude of SMEs. In them, the leader company (the “planet”, or “anchor company” in the terminology of Belussi and Sedita)<sup>83</sup> cooperates with SMEs to complete its production. In this model, the SMEs subsist or are created near the leader company behaving as satellites of the former. The result is a tremendously flexible production model in the face of changes in demand, which is therefore very competitive, when compared to other models based in different industrial locations. Obviously, it also ends up being a factor in attracting new investment, not only from the local area, but from other regions.

Indeed, the presence in the Porto region of the world leading company in the cork business, Amorim & Irmãos, must be seen as a powerful factor with respect to industrial location. But why was the original company, called simply Amorim, established in Santa Maria de Lamas (in the Aveiro administrative district), a few kilometres from Porto? What led António Alves Amorim, patriarch of this business family, to start his activity in 1908 in the north, far from the priority location of the Portuguese cork industry? The reason was happenstance. His wife, Ana Pinto Alves, was born in Santa Maria de Lamas, and for that reason he decided to start a new project manufacturing cork stoppers in a small workshop in Lamas,<sup>84</sup> where he probably found security in having at hand the family and it being his wife’s birthplace. This little workshop, which originally had a markedly domestic character (initially, in addition to six employees, Amorim and Alves’s eleven children also worked there), became a larger firm in 1922, when the second generation of the family took command. By 1930 Amorim was already the largest cork stopper producer in the north of Portugal, and just a few decades later, the largest cork stopper producer in the world, with a presence in markets around the world.<sup>85</sup>

In short, it was chance that led a future world-leading company to settle and grow in the north, something that has also been noted with respect to other successful industrial

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81. This process has been defined by some authors as the *pulverization* of the cork industry in Portugal and generated not a few controversies at the time. See A. MIRA, “Indústria caseira”, *Boletim da Junta Nacional da Cortiça*, 167 (1952) pp. 301-303.

82. BRANCO and PAREJO-MORUNO, “Distrito industrial y competitividad en el mercado internacional...”, p. 134, estimated that, throughout the 1940s, at least 161 domiciliary establishments (*caseira* industry) were opened or authorized to open in the administrative district of Aveiro, which gives an idea on the dynamism of this industrial *pulverization* process.

83. Fiorenza BELUSSI and Silvia Rita SEDITA “Life Cycle vs. Multiple Path Dependency in Industrial Districts”, *European Planning Studies*, 17/4 (2009), pp. 505-528, <https://doi.org/10.1080/09654310802682065>.

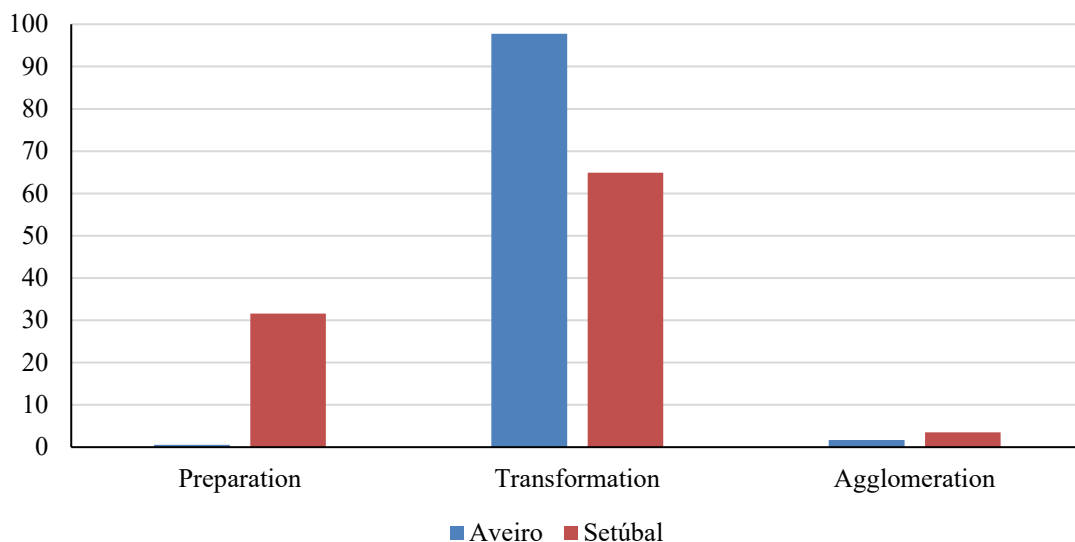
84. João Carlos LOPES et. al., “Determinants of success and failure in the internationalization of the cork business: a tale of two Iberian family firms”, in M. BILGIN and H. DANIS, *Entrepreneurship, Business and Economics. Proceedings of the 15th Eurasia Business and Economics Society Conference*, Springer International Publishing, 2016, pp. 417-440, [https://doi.org/10.1007/978-3-319-27573-4\\_29](https://doi.org/10.1007/978-3-319-27573-4_29).

85. LOPES et. al., “Determinants of success and failure in the internationalization of the cork business...”.

cases in an atypical location,<sup>86</sup> and in contrast to the classical factors that governed the location of the cork industry in Portugal at the beginning of the twentieth century. Later, starting in the 1930s, it was the business success of the Amorim family, in addition to their successful business strategies, which in many cases were based on cooperation, which attracted newly created small firms to settle in the north, where the industry happens, unlike what happened in the south, where people barely make a living from the industry.<sup>87</sup>

Finally, Amorim and the majority of cork companies in the north, from the 1960s to the 1980s, focused specially on the production of cork stoppers. The preparation of cork and agglomerate factories remained in the south, as Figure 7 shows. However, it was precisely these two subsectors of the cork industry that entered into crisis, either because of the increase in the cost of labour that occurred after World War II in western economies or, and more particularly competition from synthetic products in civil construction and other solutions which replaced the more expensive cork agglomerate. This therefore penalized, once again, the industries that were located outside the northern region.

Figure 7. Number of factories according to main type of final product in 1965 (%).



S.: INSTITUTO NACIONAL DE ESTATÍSTICA, *Estatística Industrial*, Lisboa, 1996.

## Conclusions

The initial location of the cork industry near to the southern cork forest seems relatively easy to explain, given the industry's high information and transportation costs; the logical thing was to locate the industry near the raw material. Later, by the early twentieth century, however, Lisbon's *industrial belt* had started to offer certain advantages that contributed to the increase in its ascendance as the main location for the cork industry. The workforce, in the same period, had become literate and less expensive, and although increasing mechanization did not require more specialized human capital,

86. Phillipe AYDALOT, *Économie régionale et urbaine*, Paris, Economica, 1985; María Luisa BUSTOS GILBERT, "Las teorías de localización industrial: una breve aproximación", *Estudios Regionales*, 35 (1993), pp. 51-76.

87. CORDEIRO, "Viver a indústria'...".



the growing number of different large industrial companies did as they increasingly hired workers for technical and administrative positions. Nevertheless, even though the more skilled workforce around Lisbon was not in itself an advantage in terms of relocation, both information costs and transport costs had fallen considerably: the former because of the networks of local agents in the forest areas that had started to develop in 1870s, and the latter because of the development of the railway. In this scenario, then, the movement and establishment of cork processing factories in locations with better access to external markets –namely, the port of Lisbon– in a region of progressively greater industrial concentration and close to the main Portuguese city, presumably allowed large companies to benefit from the inherent advantages of the concentration of industry in particular areas. Those advantages were several. First of all, regarding human capital, better qualification and greater labour supply. Moreover, the inclusion in a large urban area also meant easier access to technical and specialized services related to production, while the higher concentration of companies led to a reduction of transaction costs since there is evidence of strong cooperation in the cork industry. Finally, in a combination of all these factors, there was a possible creation of an “industrial atmosphere,” as Weber claimed, that promoted the creation of innovation and knowledge.

As a matter of fact, it is precisely these factors that economic historiography identifies as having been responsible for the growth of inequality in industrial concentration, both in Spain and in Portugal, especially from the late nineteenth century onwards. As such, the (re)location of the Portuguese cork industry followed the pattern of Iberian industrialization in general. However, the industry later moved northwards in a seemingly peculiar movement that took it further away from the raw materials and towards an urban area of a comparable size, although a little smaller than that of Lisbon. In this case, three factors stand out in terms of explaining the move: the cost of human capital; business strategies, through the specialization of production in cork stoppers rather than agglomerate; and the growth of a large anchor company that allowed for the creation of a network of small companies that were free from the restrictions of a highly bureaucratic economy.

Unlike in the previous period, public policies exerted an influence, namely the creation of the conditions for cheaper labour in the north. Private initiatives, through business strategies that favoured the production of cork stoppers and Amorim’s success, also contributed considerably to this process. When dealing with private initiatives, personal factors must be taken into consideration as regard the localization of economic activity, which is confirmed by the example of the Portuguese cork sector and of Amorim & Irmãos in particular.

Like in many other recent studies, the factors that apparently explain these movements of the cork industry from one part of Portugal to another can be found either in Neoclassical theory –transport costs and the comparative advantage of endowment factors –or in New Economic Geography –the effect of large markets. Therefore, it can be concluded that factors from both theories matter, as does happenstance, since Amorim established its business in the north because of personal factors relating to its founders. Finally, it should be noted that it is possible to reconcile public policies with high economic success, as was the case with the concentration of the world leader Portuguese cork industry in Porto MA, despite the theoretical optimum location being elsewhere. Although this article has no direct applicability to the design of public policies aimed at correcting territorial inequality in the Iberian Peninsula, it does highlight that it is possible to design policies that can stimulate the location of economic activity in specific areas. Perhaps, in the not so distant future, it will be possible to do so in the vast unpopulated

areas of *empty Iberia*, particularly knowing, in this specific case, that some of the more depopulated areas on the Peninsula were once home to the bulk of the cork industry.

