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Innovating but still poor: The challenges of regional development in regions with mature industries

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Funding information

Ministerio de Economía, Industria y Competitividad, Gobierno de España [Grant number: RYC-2017-22872].
Regional Studies Association

Abstract

The persistence of patterns of decline or stagnation in developed countries has led to a renewed interest in the study of less developed regions. This renewed interest is informed by a variety of approaches, which range from studies on the unequal distribution of economic power and resources to analysis of regional endowments, such as human capital or quality of institutions. However, a persistent misconception in some of this literature is that the primary factor explaining levels of development is innovation happening within firms. In particular, this narrative fails to consider the role of national and international agents and processes, the impact of value chain management on value appropriation, and the challenges to diversification within peripheral regions. This paper will contribute to this debate by developing these matters theoretically and by drawing on an analysis of three wine regions in Portugal.

KEYWORDS

firm innovation, less developed regions, mature industries, regional development

1 | INTRODUCTION

The persistence of patterns of decline or stagnation in European peripheral regions, which became more stark following the economic crisis commencing in 2008, has led to a renewed interest in the study of less developed regions (LDRs). This interest is informed by multiple frameworks, which range from structural approaches to the unequal distribution of power and resources (Hadjimichalis, 2018; MacKinnon, 2012) to those approaches that measure the impact of regional endowments of human capital or governance quality (Di Cataldo & Rodríguez-Pose, 2017; Fonseca et al., 2017). It also led to a “rediscovery of regional development,” as various authors challenged simplistic assumptions about what generates development (Shearmur, 2016), instead seeking to identify the multiple processes and actors which explain different development trajectories (Iammarino et al., 2019).

In the discipline of economic geography, following the “cultural turn” of the late 1980s (Scott, 2000) there have been voices criticising the tendency to explain underdevelopment on the basis of endogenous regional features such as the capacity of actors to learn, or on meso-level dynamics such as firm- or sectoral-level innovation (Birch et al., 2010; MacKinnon, 2012; Peck, 2009). One of the most relevant negative consequences of this tendency was identified by

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Markusen (1994), who cautioned against assuming that regional outcomes can be studied by looking at specific firms or sectors only. Though in recent decades there have been multiple efforts to conceptualise and study the impact of exogenous (to the region) dynamics on regional development (e.g., Isaksen & Trippel, 2016; Rodríguez-Pose & Fitjar, 2013), it will be argued in this paper that two aspects deserve further attention. The first refers to a problem pointed out by Markusen (1994), which is still replicated in “much of the innovation literature, and particularly in policy documents” (Shearmur, 2016, p. 432), whereby innovation in firms or sectors is assumed to automatically lead to development at the regional level. The second is the tendency to focus on successful case studies, rather than on the experience of less developed territories (Marques & Morgan, 2020). As Shearmur forcibly argued, “it is assumed ... that local innovation leads to local economic development. The ecological fallacy embedded in this change of scale is often overlooked” (2016, p. 434).

This paper will contribute to these debates by focusing on the challenges of achieving development in regions specialised in mature industries (Birch et al., 2010), when success is measured as progress in indicators such as employment or income growth. In the European Union, mature industries have been identified as potential anchors for the development of higher value-added activities, for instance through investments in advanced textiles or biotechnology applied to wine production (Foray, 2015). However, this aspirational narrative does not adequately address the role of national and international trends, including the actions of national governments or transnational firms (MacKinnon, 2012; Morgan & Marques, 2019). Importantly, it also fails to capture the economic and institutional shortcomings of these territories, which are likely to hinder efforts to diversify their local economies and trap them in a situation of path extension (Isaksen, 2015).

The paper draws on recent advances in economic geography theory and a re-examination of regional development concepts. Empirically, it draws on an in-depth analysis of the wine industry in three Portuguese regions.

2 | THE DIMENSIONS OF REGIONAL DEVELOPMENT

Persistent regional inequalities in Europe led Iammarino et al. (2019) to argue that European regions fall into development groups, with some being capable of consistently generating high incomes and high growth and others locked-in to decline and/or stagnation (see also Iammarino et al., 2020). This argument, which is line with other contributions that draw on a variety of theoretical and empirical approaches (e.g., Birch et al., 2010; Hadjimichalis, 2018; Pike et al., 2016), underscores how regional development is caused by various economic and social dynamics that intersect in particular territories to generate long-term growth trajectories. These dynamics include the impact of agglomeration effects, knowledge spillovers, and labour mobility (Iammarino et al., 2019).

One valuable aspect of the work of these authors is that it helps to dispel the assumption, which persists in some academic and policy documents, that innovation at the firm level is the main cause of economic growth (Shearmur, 2016). This assumption has led, for instance, to a growing consensus among policy makers that innovation policy is regional policy (Hassink & Marques, 2015), when in fact the connections between the former and the latter are not linear. A variety of agents and socio-economic dynamics must co-exist within a particular territory in order for firm-level activity to generate aggregate regional results, an argument that in its essence dates back to the concept of cumulative causation developed by Myrdal (1957). In what follows, we highlight three socio-economic dynamics that are particularly relevant to the case studies examined in the empirical section of the paper.

First, regional development is not exclusively the product of endogenous forces (Pike et al., 2016; Rodríguez-Pose & Fitjar, 2013). It is shaped by dynamics unfolding at the sub-national, national, and international scales, all of which intersect in particular territories to generate a set of opportunities and challenges. For example, at the national scale, labour regulations or macroeconomic policy shape the incentives and regulatory environment in which all firms operate. The evolution of indicators such as employment or income growth cannot as such be entirely separated from decisions made at the national level. In what concerns innovation, it has been demonstrated by Charlot et al. (2015) that LDRs have to invest between 2% and 3% of their GDP in R&D activities for it to have a significant impact on innovation outputs (measured as patents). This means that in order to generate innovation outputs it is necessary to achieve scale and critical mass, whereas in many countries science and research policy are the responsibility of national governments, even if universities or regional governments have autonomy in certain areas (such as hiring).

Internationally, trade policy and regulations emanating from supranational bodies such as the EU affect, among other factors, the behaviour of large firms, whose cycles of investment and divestment, together with their degree of regional embeddedness, have a huge impact on the fate of LDRs (MacKinnon, 2012). It is true that regional actors can influence the location decisions of large firms by developing unique, high-end knowledge-intensive activities (Coe & Yeung, 2019;

Crescenzi et al., 2014). However, such activities tend to be concentrated in a small number of places and are not easily replicated elsewhere (Iammarino et al., 2019). For regions without these unique competencies, their capacity to influence location decisions by large firms will be limited, leaving them exposed (Coe & Hess, 2010; MacKinnon, 2012).

A second interrelated dynamic is the issue of where the value-added of innovation is appropriated (Shearmur, 2016; Tokatli, 2013). “Where” has a double meaning in this context, referring to the organisations within a value chain that appropriate most of the value and the geographic location of these organisations, which is where high-income jobs will be created or maintained as a direct result (Coe & Yeung, 2019). According to UNCTAD (2013), at the end of the previous decade 80% of global trade happened within global value chains (GVC), which means that most exports were of intermediate products rather than final goods and services for final consumers. Though global trade has been in decline since the economic crisis of 2008, GVCs remain central to the global economy and, as such, the position that a firm occupies within a GVC is relevant to its capacity to appropriate value. At the same time, as argued by Tokatli (2013), when firms upgrade their position within a GVC, this does not mean that they capture more value. It can also happen that a lead firm demands that their suppliers provide a more comprehensive set of functions (for instance, by developing engineering capabilities) without necessarily paying them more for their goods and services. In fact, some firms operating in peripheral regions choose to downgrade, precisely in order to avoid taking on more complex activities that are not economically compensated (Blažek, 2016).

A third interrelated dynamic is whether a region can diversify its economic structure, especially if this means attracting or generating higher value-added activities. According to Boschma and Frenken (2018), new sectors of economic activity tend to be technologically related to those that already exist in a territory, through a process called related variety. Unrelated variety, though it is less common, is an important source of radical innovations and can be fundamental to altering the growth path of peripheral regions, for instance through foreign direct investment (FDI) (Boschma & Frenken, 2018; Frenken et al., 2007). Of course, FDI is not a silver bullet for economic development if it results in branch plant economies. This happens when large firms do not embed themselves in a region and maintain arms-length relationships with local suppliers. This usually results in local firms remaining trapped in providing low value-added goods and services (Blažek, 2016; MacKinnon, 2012).

Considering the first two dynamics discussed in this paper (national/international trends and value capture within GVCs), diversification would appear to be the solution for peripheral regions that do not host large firms and that are not currently specialised in the type of high-end activities that allow them to capture a higher share of value within GVCs. However, this is not a process that can be easily engendered by policy makers or even by economic agents. In order for value capture to happen through the mobilisation of endogenous resources, it usually requires the existence of a “thick” regional innovation system (RIS), both organisationally and institutionally (Trippel et al., 2016). The former refers to the density of organisations that are present in a region, including both knowledge producers (universities, research centres) and knowledge exploiters (firms). Institutional thickness refers to the extent to which formal (López-Estornell et al., 2014) and, in particular, informal institutions link organisations in networks that allow for the diffusion of knowledge, collaboration, and other positive systemic dynamics (Cole & Barberá-Tomás, 2014). However, a thick RIS remains a “pipe dream” for many territories, as attempts to replicate the experience of successful regions have shown in the past (Hospers, 2006). Even if firms in regions with thin RIS can access knowledge through links with external actors and improve their innovation potential (Rodríguez-Pose & Fitjar, 2013), the lack of other regional development dynamics (Iammarino et al., 2019) is likely to limit the impact of their activities in the region (Marques & Morgan, 2020).

3 | FIRM-LEVEL PROCESSES AND REGIONAL DEVELOPMENT

The arguments developed in the previous sections are not meant to suggest that LDRs are mired in permanent decline. Previous work on development in old industrial regions (Birch et al., 2010) and on recent shifts in traditional core-periphery economic divisions at a global scale (Yeung, 2016) show that significant shifts in the location of economic activity can happen. However, these arguments do show that innovation and productivity growth within existing firms are not necessarily sufficient to generate regional development. This is especially true for regions specialised in mature sectors, with low knowledge intensity, and where innovation (primarily process innovation, though not exclusively) is more likely to generate higher levels of output for lower levels of employment (Hassink, 2007; Isaksen, 2015). Furthermore, if reduction of employment in mature sectors leads to a shift in employment towards less productive activities, or even to the informal economy, it can result in lower aggregate productivity (McMillan et al., 2014; Shearmur, 2016).

As such, research on these matters would benefit from making more explicit the links between firm- or sectoral-level innovation and its impacts on indicators of regional development, such as employment growth, income growth, productivity growth, and ultimately economic growth. As discussed by Hadjimichalis (2018), for example, Southern European countries continue to show strength in the production of tradeable goods, though overwhelmingly in mature economic sectors. These sectors continue to export and remain important employers, yet they rely on low wages and unpaid work within the family unit, primarily by women.

An illustrative example can be provided by looking at four mature sectors in Portugal, which is where the three case studies that are examined later in this paper are located. In 2015, *The Economist* magazine highlighted the booming Portuguese shoe industry to explain why voters were not as angry with the incumbent government as might be expected after four years of austerity measures (The Economist, 2015). The shoe industry was used to illustrate how new business strategies for mature sectors could help boost growth. Indeed, such sectors have had a significant impact on the Portuguese economy, as they continue to be among the major exporters and to employ a significant number of people (UN, 2019). Of the ten highest exporting sectors in Portugal in 2018, four could be characterised as mature: footwear, paper, textiles, and wine (see Table 1).¹ These sectors are all overwhelmingly dominated by locally owned firms (mostly small or medium-sized enterprises (SMEs)). In 2017, they employed nearly 200,000 people, or 4% of the active working population of the country (Eurostat, 2020). Their export performance is in part due to the success of various firm strategies, including the integration of advanced (mostly foreign) technology, investments in design and brand creation, and the capacity to deliver bespoke products to global value chains (Marques, 2019; Martins, 2016; Vale & Caldeira, 2007). In many ways, they resemble competitive low or medium-tech firms located elsewhere (Hansen & Winther, 2014).

However, the “success” of these industries hides important economic weaknesses. Based on data from Eurostat (2020), the authors found that since 2008 all four mature sectors had witnessed a substantial rise in productivity (measured as GVA per employee), but only two had generated employment growth in the same period. More important, only in footwear manufacturing did rising wages and salaries per employee accompany the rise of productivity. In two other sectors there was wage growth, though below the rise in GVA, and in one (paper manufacturing) wages fell relative to productivity.

TABLE 1 Ten highest exporting sectors in Portugal in 2016, 2017, and 2018 (ranked by 2018 values)

HS Code	4-digit heading of Harmonized System 2012	Value (million US\$)		
		2016	2017	2018
	All commodities	55,371.5	62,116.8	74,135.9
8703	Motor cars and other motor vehicles principally designed for the transport	1,963.0	2,439.2	4,451.9
2710	Petroleum oils, other than crude	2,894.9	3,762.7	4,329.0
8708	Parts and accessories of the motor vehicles of headings 87.01 to 87.05	2,664.9	3,070.4	3,865.1
6403	Footwear with outer soles of rubber, plastics, leather	1,867.8	1,926.9	2,166.4
4802	Uncoated paper and paperboard, of a kind used for writing	1,303.6	1,332.7	1,543.6
4011	New pneumatic tyres, of rubber	1,017.6	1,109.4	1,234.8
6109	T-shirts, singlets and other vests, knitted or crocheted	919.7	987.2	1,126.7
9401	Seats (other than those of heading 94.02)	949.4	983.7	1,102.7
2204	Wine of fresh grapes, including fortified wines	801.1	878.5	1,014.8
3004	Medicaments (excluding goods of heading 30.02, 30.05, or 30.06)	970.8	934.4	976.0

The shaded panels highlight the four mature economic sectors that are relevant for our analysis.

Source: United Nations, 2019.

It is true that unit labour costs in Portugal rose faster than productivity before the 2008 crisis (Hadjimichalis, 2011) and that therefore this outcome could have been the result of a macroeconomic correction. This was an explicit goal of government policy between 2011 and 2015, under the austerity policies demanded by the “troika” of the European Central Bank, the European Commission, and the International Monetary Fund (Hadjimichalis, 2018). However, when looking at the previous period of 1999 to 2008² (Eurostat, 2020), only in wine manufacturing did wages grow faster than GVA per employee. In the other three mature sectors, these variables evolved more or less in line with each other. Furthermore, despite the rise in unit labour costs for the whole economy, Portugal in 2018 was still a low-wage country. According to data from the OECD, the Portuguese minimum wage ranked 19 of 31 countries. However, more significantly, Portugal ranked 32 of 35 countries for average wages, lagging behind countries such as Estonia, Chile, and Poland.

This analysis is important because it shows that despite the obvious advances made in these mature sectors, through a variety of firm-level strategies, their export success was nonetheless heavily reliant on a low-wage policy at the national level. These sectors, as Hadjimichalis (2018) discussed, were also reliant on families internalising the costs of low incomes, namely in terms of unpaid domestic labour, the use of part-time subsistence agriculture as a way to complement family diets, and the use of other forms of informal labour to supplement household budgets. These factors help explain why the Portuguese regions where these sectors are located remain among the poorest in Europe (Eurostat, 2020). Having used these mature sectors to outline the argument we pursue in this paper, we will now examine the issues at hand in greater detail through three case studies.

3.1 | Methodology

The results discussed in this paper rely on case studies of three wine regions in Portugal, Alentejo, Douro and Oporto, and Lisbon. These are the three Portuguese regions that produce the highest volume of wine, and that are each specialised in different market segments. It is important to note that we are referring to wine regions. Especially in the case of Lisbon, the wine region goes significantly beyond the north of the metropolitan area of the city of Lisbon. We approached the study of the three cases with a combination of methods. All companies registered on the websites of the respective regional certification authorities as winemakers were contacted by email. We interviewed representatives (firm owners or managers) of the companies that responded to our invitation, together with other stakeholders. In total, 57 interviews were conducted. The interviews addressed two blocks of questions. First, we asked about the characteristics of the companies and especially about their innovation activities. In the second block of questions, we asked the interviewees for their opinion on the evolution of the sector in the region. We were particularly interested in the factors (regional, national, or international) which, according to the interviewees, had favoured innovation and growth or, on the contrary, had been an impediment to these objectives. In addition to the interviews, we analysed multiple documents related to the Portuguese winemaking industry, with special attention to its historical evolution and the institutional and regulatory context. Finally, we also collected secondary statistical data about the sector.

4 | CASE STUDIES: THREE PORTUGUESE WINE REGIONS

Since the late 1980s, the wine industry globally has entered a process of transformation with the emergence of new-world producers (such as the USA and Australia) and the restructuring of production in old-world winemakers (such as France, Italy, and Portugal). A variety of elements were shaping this transformation, including changes in consumer behaviour, new regulations (namely in the EU), and significant scientific and technological advances (Giuliani et al., 2011). Scientific and technological advances systematised and codified knowledge, which up to then was mostly tacit and transmitted through learning-by-doing in traditional centres of production. These changes meant that the wine industry should no longer be considered as an agricultural or resource-based sector in the strictest sense. It is instead a sector that generates value through innovation in the manufacture of wine, the creation of brands, distribution strategies, and the emergence of affiliated industries in areas such as enotourism (wine tourism) or other specialised services the sector currently needs, such as testing and certification (Giuliani et al., 2011).

Agents in Portuguese wine regions responded to these shifts at different speeds (see Figure 1 and the discussion in the following section), with the most advanced shifting from their previous specialisation in low quality/high quantity toward lower yields/higher quality wine. This in part reflects a global trend toward lower per capita wine consumption, though Portugal stands out among developed countries for having maintained a relatively high level of consumption

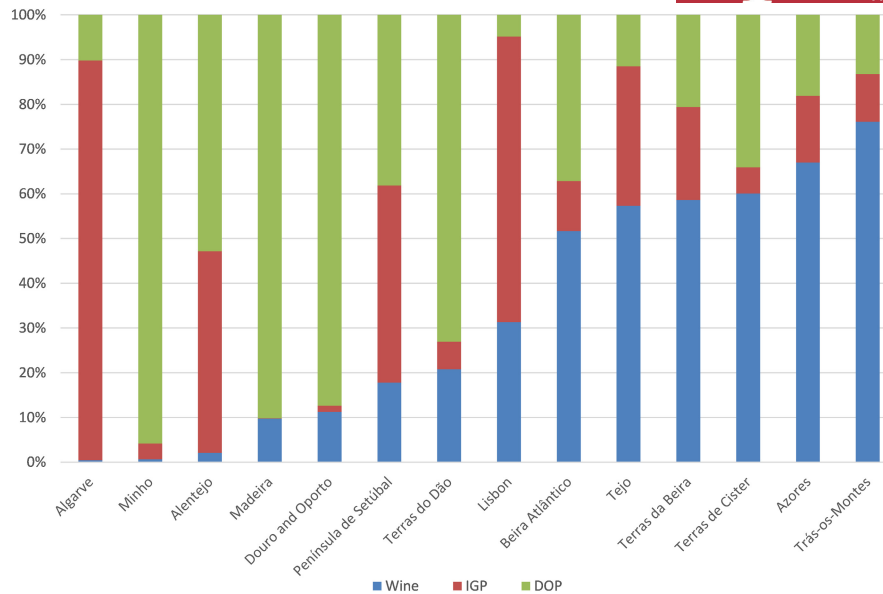


FIGURE 1 Proportion of wine produced in each region with DOP or IGP certificates in 2015/2016 – (measured in hectolitres)

since the 1980s (Eurostat, 2020). The end result of this transformation is that Portuguese wines had, in the period 2008 to 2011, the third highest unit value in the world, up from sixth place in the period from 1975 to 1979 (FAOSTAT, 2014). Our work studies the evolution of three regions participating in this transformation of the Portuguese wine sector toward a high value-added industry.

The Portuguese wine sector has been used previously to illustrate the opportunities that innovation in mature industries offers to regional development in LDRs. For example, Rebelo and Caldas (2013, p. 20) analysed technological innovation in wine industry networks and clusters in the Douro region, arguing that “the economic development of a country or a region is strictly linked to the innovation process,” with the wine industry being a relevant case study to study this process. Similarly, in a volume aimed at compiling studies on “entrepreneurial success and its impact on regional development,” Lima and Carvalho (2016) analyse the “collaborative supply chain” of the wine industry in the Setúbal Peninsula region.

The December 2020 update of the Regional Innovation Monitor Plus (European Commission, 2021) – an online platform developed by the European Commission for sharing knowledge and know-how on major innovation and industrial policy trends in the EU regions – also deals with the wine industry in Portugal at the regional level. One of its “strategic priorities” for regional development in the Norte province is to connect the “regional agricultural potential in high value added products like wine” with “scientific and technology expertise (e.g. oenology, engineering, biology, biotechnology)”, reproducing the narrative that links the evolution of mature sectors to R&D and innovation (European Commission, 2021, n.p.). Other papers suggest a different path of regional development, emphasising possible synergies between the wine industry and tourism. Marques, for example, states that the wine industry can benefit from these synergies and become “a leading sector of regional development with spill-overs to the overall regional economy of the north of Portugal” (2006, p. 154). Finally, Neves and Silva propose a conceptual framework to study the relationship between the wine industry and tourism in the Alentejo region and highlight “the link between the tourism industry and wine as a relevant factor of regional development” (2012, p. 1069).

5 | DISTINCT REGIONAL TRAJECTORIES

The case-study regions (Alentejo, Lisbon, and Douro and Oporto) have the three highest outputs of wine in Portugal, as measured in hectolitres (IVV, 2017). However, since the late 1980s, they have followed different paths in terms of their product specialisations, their use of new technologies, and their investment in wine quality and symbolic value (such as branding or investment in unique or niche wines).

Figure 1 provides a first approximation of these different paths. It shows the proportion of wine in each region that received a quality certificate. These certificates were developed as a result of EU regulations and, in theory at least, they

also represent different levels of quality (for an explanation, see the note at the bottom of Figure 1). As this figure shows, in Alentejo virtually all wine receives a certificate; in Douro this value is close to 90% of total production, while in Lisbon it drops to almost 70%.

These data corroborate the narrative that interviewees in all regions provided regarding the evolution of the wine industry in the three case-study regions. Economic agents in Alentejo, especially cooperatives, were the first to recognise the potential of requalifying their wine industry towards the end of the 1980s. Using incentives from the EU, they replanted or planted wine varieties identified as autochthonous plus some that were in high demand internationally. They invested in the latest technologies for wine production and hired specialised human capital at all levels: engineering staff to assist farmers; wine tasters and later oenologists to oversee the production process; and professional managers to help create brands and adopt strategic business plans. This process of institutional entrepreneurship (Cole & Barberá-Tomás, 2014) included the creation or support of region-wide organisations that act as knowledge disseminators and as promoters of the regional brand. As a result, the region currently dominates the market for quality wines in Portugal, with a 40% market share.

In the Douro and Oporto region, this process of transformation happened later, and the region continues to exhibit a degree of system fragmentation. Only when the market for port wine entered into decline did local economic agents consider the potential of using excess crops to produce quality wines. Due to the presence of large players as a legacy of port wine, this transformation happened quite rapidly and with a strong international orientation. Contributing to this capacity for rapid international reach was the presence of many foreign-owned firms in the region. Three of the four biggest port wine producers in Portugal are family-based British firms and have been for several centuries. Relationships between large producers and small farmers remain very asymmetrical, even if, due to a complex regulatory system created in the 18th century, there is a steady flow of income to the latter. Additionally, local associations and networks tend to be more localised and less open than in Alentejo, due to low interpersonal trust.

Lisbon is the region that has progressed least in this domain. A significant share of its local production, especially but not exclusively from cooperatives, is still geared towards low-quality wines. There are some large local producers that do invest in quality wines but that do not necessarily value the Lisbon brand. Among the firms interviewed in this region, at least three were personal projects from people who had worked in other areas, usually in Lisbon, and retired to the countryside. Another four were small wineries developing more producer-led type wines, whose owners criticised the region for specialising in low-quality wines. Overall, networks in the region are highly fragmented. More advanced producers find partners or suppliers depending on their need and irrespective of their location.

The result of these different trajectories on employment creation is seen in Table 2. It shows that firms in Douro and Oporto are the largest on average, followed by Alentejo and finally Lisbon. Though the sample cannot be said to be representative, when put together with qualitative information collected through interviews, it does allow for a certain amount of extrapolation. The higher average size of firms in Douro and Oporto is very likely connected to the presence of large firms that benefit from the higher value-added port wine. As mentioned previously, above a certain firm size there are several auxiliary functions in activities such as bottling and packaging, marketing and sales, or management that become necessary.

However, it is the strength of enotourism in this region, particularly in the city of Oporto itself, that has fostered a process of economic diversification. The fact that there remains a functional connection between the city of Oporto, which has in recent years witnessed a significant increase in tourist visits (INE, 2019), and the Douro region helps to sustain a level of tourism that Alentejo, for example, cannot emulate. Due to the lack of specific data for enotourism it is not possible to measure this claim quantitatively. However, opinions collected for the case study corroborate this interpretation:

TABLE 2 Descriptive statistics based on number of employees in firms interviewed according to the region where they are headquartered

	Min	Max	Average	Number of firms
Alentejo	1	70	17.2	15
Douro and Oporto	1	300	28	15
Lisbon	1	28	6	8

Source: Authors' calculation based on case-study data.

Enotourism is a popular topic but there is very little of it [in Alentejo] ... It's a small sector, very local, but it has contributed to local development, for the restaurant next door, for the souvenir shop, the supermarket. But there are also villages that do not take advantage of it, for example Monsaraz, which is a very beautiful place, it has nothing. (Interview with regional wine certification authority representative, 25 September 2012, Évora)

As a result of the number of articles in specialist and non-specialist magazines, and the quantity of tourists that we see visiting the Douro ..., an area where there has been exponential growth in the past 10 years ... we see that there is a boom there and that it is putting Douro on the map. (Interview with wine firm treasurer, 3 February 2014, Pinhão)

Regarding the emergence of economic activities in other related areas, such as production technologies and other intermediate outputs, the qualitative data point to very limited impacts. According to interviewees, virtually all technology used in winemaking has been developed and produced abroad. There are some companies producing it in Portugal, mostly along the coastline in Centro and Norte (NUTS 2 regions), where one can find the traditional manufacturing base in Portugal. There are also a number of firms commercialising foreign-produced intermediate goods to local firms. The following quote illustrates these points:

In terms of technologies for winemaking, unfortunately there is very little national production. Our bottling machines come from Italy. The containers are produced in Portugal, but some have a technology that is patented by an Italian firm. In terms of equipment, technology, and products for this sector there is nothing in Alentejo, only a few companies in Norte, but most technology comes from Germany, Italy. (Interview with wine cooperative quality manager, 27 November 2012, Vidigueira)

Additionally, there is also a limited offer in terms of service activities such as bottling or packaging, which in France are done by specialised companies, allowing wineries to avoid buying expensive machinery such as bottling equipment or to avoid accumulating stocks. According to one interviewee:

My training is in civil engineering. So initially I thought about doing something without equipment, hiring services. But where are the services? I understood that in farming if you don't have the tools you either plough before or after. I had to hire a tractor to come here, but it was like he was doing me a big favour ... I wanted to hire all these activities but people wouldn't respond in a timely manner. (Interview with bottler/producer, 10 January 2014, Aldeia Galega da Merceana)

These results, though focusing on a very specific sector, are in line with those obtained by quantitative analysis covering a wide variety of regions (Charlot et al., 2015). Though there is significant economic specialisation in some Portuguese wine regions, there are low levels of R&D investment in general (there are no specific data for R&D in the wine industry). In Norte (where Douro and Oporto is located), the wine industry amounts to 1.35% of GDP, in Alentejo to 0.53%, and in Centro to 1.22% (most of Lisbon's wine region is in this NUTS 2 region) (Eurostat, 2020). These investments are significantly below the threshold identified by Charlot et al. (2015) and are not therefore expected to have an impact on innovation (measured as patents). This might help explain the limited impact on economic diversification, as shown by the lack of firms developing and producing intermediate goods and services to the wine industry.

TABLE 3 Descriptive statistics based on number of employees in 42 firms interviewed

Minimum	Maximum	Average	Average (no outliers) ^a	Median	Mode
1	940	40.93	11.98	5.00	1.00

^aOne firm in this sample employed 940 employees worldwide. If this firm is removed, the average value is closer to the reality of most Portuguese firms, as confirmed by data in Figure 1.

Source: Authors' calculation based on case-study data

TABLE 4 Descriptive statistics for employment in several areas of activity for NUTS 3 covering Douro and Oporto, Lisbon, and Alentejo wine regions

Region (NUTS3)	Agriculture, forestry, and fishing			% of firms in viticulture as proportion of AAPHFF	% of firms in manufacture of wine as % of total manufacturing
	% of total employment in region in 2014	% change in employment between 2000 and 2014 in region	% change in employment between 2000 and 2014 in region		
<i>Douro wine region</i>					
Douro	48.16%	-11.24%	71.90%	22.09%	
<i>Lisbon wine region</i>					
Oeste	35.93%	-32.29%	26.28%	2.90%	
Coimbra region	12.83%	-32.35%	21.59%	5.34%	
Leiria region	11.18%	-52.52%	5.97%	0.39%	
<i>Alentejo wine region^a</i>					
Baixo Alentejo	23.67%	2.39%	3.77%	3.06%	
Alto Alentejo	16.71%	-17.01%	1.89%	4.04%	
Alentejo Central	16.01%	-15.24%	12.15%	6.03%	

Abbreviation: AAPHFF, Agriculture, animal products, hunting, forestry, and fishing.

Source: Eurostat (2017), INE (2017)

^aNUTS3 region Alentejo Litoral is also part of the wine region Alentejo. However its share of wine production is negligible and was therefore left out of this table.

5.1 | Winemaking and regional development

As mentioned earlier, employment in the wine industry grew slightly in absolute terms between 2015 and 2017 after years of decay. However, there has been a steady reduction in the number of people employed per firm in wine manufacturing since 1999 (Eurostat, 2020), consistent with wine becoming a capital-intensive activity. These data are complemented with descriptive statistics from the firms interviewed for the case studies (Table 3). Though the average firm size is small, with a mode of one full-time employee (FTE) per firm and 50% of firms interviewed having five or less FTE, the average is higher than for the rest of the country. This might be because two of the three case studies are the most advanced wine regions in the country (Alentejo and Douro; see next section for more details), or because there is a bias in the sample towards larger firms that were more likely to reply to our interview request. Equally important, the qualitative data gathered through interviews indicate that even for large firms, the number of people working directly on wine production is relatively small (apart from during specific moments, such as harvest season). The difference is that larger firms tend to have staff in auxiliary activities, including in sales, branding, management, and manual workers in areas such as site maintenance, bottling, and packaging. In summary, employment generation within this sector is primarily the result of growth in the total number of firms, the demand within large firms for a variety of functions, and the growth of enotourism, which among the case-study regions is most significant in the case of Douro and Oporto.

Beyond job creation within the wine industry itself and in related activities, it is also relevant to examine the wine sector's overall impact on the regions where it is located. However, any extrapolations must be careful and tentative because regions tend to be heterogeneous entities. To strengthen our interpretations, the paper uses NUTS3 statistical units, which tend to be smaller and as such the economic effects of one key sector of the economy should be easier to notice. The downside of this choice is that no data are available for employment in the wine industry at this level, which means that other indicators must be used. Although, as other contributions have argued, the wine industry can be an important source of economic development, internationally (Giuliani et al., 2011) and in the Portuguese context (Lima & Carvalho, 2016; Neves & Silva, 2012; Rebelo & Caldas, 2013), in this paper we did not attempt to establish causality between wine-industry activity and economic growth in the host regions. We are merely identifying general trends that can help illuminate the point made throughout this paper, that innovation at the firm level is not sufficient to generate growth (Shearmur, 2016). These trends are also used to support our main conclusions, which draw primarily on the case-study data.

Table 4 shows the importance of employment in agriculture, forestry, and fishing (AFF) for the NUTS3 regions which cover the case-study regions (columns 1 and 2). The cities of Oporto (in the wine region Douro and Oporto) and Lisbon (in the wine region Lisbon) are excluded from this table. In all these NUTS3 areas, AFF accounts for a greater share of the regional economy than it does at the national level (10.8%). Douro is the region where this contribution is relatively higher, whereas in Coimbra and Leiria it is lower. The latter is because these two regions also include some of the most important manufacturing clusters in the country. With the exception of Baixo Alentejo, all these regions have witnessed a decline in employment in AFF between 2000 and 2014. This is not surprising considering that, as mentioned, agriculture as a whole became more capital intensive in this period.

Looking at data for the number of firms in various areas of activity, Table 4 (column 3) also shows that viticulture stands out as representing a very significant share of firms in agriculture, animal products, hunting, forestry, and fishing (AAPHFF) in Douro, and a significant share in Oeste and Alentejo Central. Regarding wine manufacturing (column 4), only in Douro does AAPHFF achieve a significant share of total manufacturing firms. Considering these data, one would

TABLE 5 Gross domestic product for NUTS3 regions as % of EU GDP (measured in power purchasing parities)

	2000	2017	% change
Douro	48	54	12.50
Oeste	73	62	-15.07
Coimbra region	74	69	-6.76
Leiria region	83	76	-8.43
Baixo Alentejo	62	75	20.97
Alto Alentejo	64	59	-7.81
Alentejo Central	84	68	-19.05

Source: Eurostat (2020)

expect the effects of technological catch-up in the wine industry to be felt more strongly in Douro, Oeste, and Alentejo Central, where agriculture is an important source of employment and viticulture an important sector among manufacturing firms. In the Coimbra region, viticulture firms are also important in terms of employment, but because of the presence of the city of Coimbra (the largest Portuguese city outside the two major metropolitan regions of Lisbon and Oporto) it would be more difficult to isolate the impact of the wine sector.

Table 5 shows that Douro and Baixo Alentejo are the only Portuguese regions exhibiting GDP growth between 2000 and 2015, though they remain significantly below the EU28 average in terms of GDP per capita, with all other regions experiencing decline. Considering that Portugal's GDP declined 8.33% during this period, the GDP performance of Oeste and Alentejo Central is particularly negative. Of course, the GDP performance of these two regions does not mean that the wine industry has not had a positive impact on their economy, since many factors are at play. Nevertheless, it does demonstrate the danger of assuming that because a sector has been capable of catching up technologically and becoming more innovative (both in process and organisational innovation), this will automatically translate into regional development on an aggregate level.

By bringing all these data together, a few tentative empirical conclusions can be reached, drawing on the framework for regional development outlined previously in the paper. Douro appears to be the region where the transformation of the wine industry has had the greatest impact in terms of jobs creation and GDP growth. Employment in agriculture, forestry and fishing did decline, but it was in line with the overall decline in employment in Portugal of 10.5%, which means that the region performed only slightly below the national average. According to our analysis, growth was driven initially by large firms that could execute this transformation rapidly while continuing to maintain their specialisation in a high value-added product. Combined with the close links to Portugal's second city Oporto, it has also been possible to start a process of economic diversification through the emergence and consolidation of enotourism. Still, considering that a significant share of this tourism happens within the city of Oporto itself, either through visits to wine cellars, the sale of river cruise tickets, or other activities related to wine tasting, it is likely that most of the value associated with wine production in the Douro valley is either appropriated within the city itself and/or channelled to the big winemakers located in the region or elsewhere.

For the other two wine regions we studied, the picture is mixed, with both experiencing overall economic decline. In the Lisbon wine region, it would always be difficult for an activity such as wine to have a significant impact on aggregate regional statistics because the region hosts some of the most dynamic manufacturing sectors in the country and includes several important second-tier cities, such as Leiria and Coimbra. While taking into consideration that the wine industry remains relatively underdeveloped in the Lisbon region, its impact is even less than could otherwise be expected. In the case of Alentejo, where agriculture continues to be an important source of employment, and where winemaking has witnessed the most significant process of innovation and growth, its impact is also not felt in terms of higher aggregate growth. In fact, the three NUTS3 regions in Alentejo that we considered have seen their total employment decline between 2000 and 2014 (Eurostat, 2020), including in agriculture, forestry, and fishing, most likely due to agriculture as a whole becoming more capital intensive.

Regarding the impact of activities unfolding at different scales, the importance of the international level was addressed when discussing global shifts in the wine industry. It was also addressed when discussing the importance of large firms that are well integrated into global value chains. In this respect, Douro is clearly in a stronger position compared with Lisbon or Alentejo. This comparison is relevant especially in relation to Alentejo, which remains focused on the national market and where its firms have a less marked international orientation (Marques, 2019). Concerning the national level, in our review of Portuguese mature sectors in section 2 we showed how their export success is reliant on a national policy of maintaining low wages, despite the progress made in the integration of new technologies. In the more fine-grained analyses of our three case regions, the national scale has been important in two ways. First, demographic patterns in Portugal have meant the progressive concentration of the population in a small strip of territory along the coast, especially within the metropolitan areas of Lisbon and Oporto. Whereas in the city of Lisbon traditional large distributors in the wine industry have virtually disappeared, this is not the case for the Oporto metropolitan region, which continues to be the headquarters for the largest wine producers in the country. Since they have strengthened their links with the region of Douro, there is likely a direct functional connection between the agglomeration economies in the city and the development of its hinterland. These links are weaker in the case of Alentejo, even though geographically a significant number of wine firms are as close to Lisbon as those in the Douro region are to the city of Oporto.

A second way in which the national scale was important was in the effect of regulation. The impact of port wine in the Douro is the result of a heavily regulated mode of interaction between large producers and farmers, which guarantees a certain amount of profit-sharing along the local value chain despite the strong power asymmetries between the two

sides. This regulation dates from the 18th century, when port wine was identified as a sector of strategic interest for the country, and it remains in place. In contrast, the new regulatory regime implemented after accession to the EU is rather liberal, especially when compared to how it was applied in places like Spain, where it tends to favour large established firms (González et al., 2017). This has allowed a bottom-up process of regeneration of the wine sector, especially but not exclusively in Alentejo, with the emergence of a large number of new producers. The negative dimension of this bottom-up regeneration is the fragmentation of the business structure, with many firms lacking the financial or human resources to engage in exporting. This combination of one heavily regulated activity and a liberal approach to regulation elsewhere fits with the categorising of Southern European countries as mixed market economies within the varieties of capitalism literature (Hancké et al., 2007).

Finally, at the regional level a variety of factors make a reading of what constitutes success somewhat difficult. Alentejo is a region with institutional thickness but organisational thinness. There are several region-wide associations responsible for disseminating knowledge. When asked about their local networks, all interviewees in Alentejo referred to the region as a whole (this does not exclude that they also have connections elsewhere). In contrast, both interviewees in Lisbon and in Douro had more localised networks, which suggests greater regional fragmentation. Also, in Douro and Lisbon there was a clear distinction between knowledge-sharing networks, involving colleagues and partners, and links within value chains, where the governance modes of large firms were mostly detached and arms-length. In Alentejo, broader networks were not supported by the existence of knowledge-generating organisations, whereas in Douro, despite higher network fragmentation, there was some organisational thickness. For example, there is an important generator of knowledge at the University of Trás-os-Montes and Alto Douro (UTMAD), which has the only oenology degree in the country and has some research capacity in this area. The large majority of oenologists working in the region studied at UTMAD and maintain informal links with academic staff there. To sum up, two wine regions have been successful in the regeneration of their wine industry through various forms of innovation. Nonetheless, only in Douro has there been concurrent regional development, and even then only in a region whose GDP continues to be significantly below the EU average.

6 | CONCLUSIONS

This paper has examined the roles of national and international dynamics, value appropriation within value chains, and the challenges of economic diversification, to explore why regions specialised in mature industries fail to alter their growth path, even when firms innovate and increase productivity. As Sherman put it, “it is possible – and indeed likely – that in many circumstances ... local firms can be innovative without engendering any local growth or development” (2016, p. 432). On a more general level, the goal of the paper was to reinforce the argument that the impact of firm-level activity on the wider region has to be understood as part of a broader framework of regional development (Iammarino et al., 2019; Markusen, 1994; Pike et al., 2016).

The paper has several theoretical and policy implications. A first theoretical implication is that economic geography, which tends to focus on sub-national units, needs to devote more research to the way in which national and international agents and institutions shape particular territories (Coe & Yeung, 2019; Morgan & Marques, 2019; Peck, 2009). Though the discipline has been very good at theorising and demonstrating empirically that economic processes and dynamics are not equally distributed across space, there has often been an overemphasis on regional differences, without explaining why territories that in theory operate within a very similar institutional context generate such different economic and social outputs (Di Cataldo & Rodríguez-Pose, 2017). As argued in this paper, the explanation will not be simply about how agents in certain regions are able to better use resources that are available to them, but also about dynamic interactions between more and less developed places (Charlot et al., 2015), and how some firms or economic agents use their power to appropriate a disproportionate share of value added (Hadjimichalis, 2018; MacKinnon, 2012; Tokatli, 2013). This argument is relevant for debates about place-based strategies (Barca, 2009), which are required to build on regional specificities and local institutions as the basis for regional development. As Celata and Coletti (2014) point out, these approaches are often the basis for endogenous development strategies that underestimate the importance of transregional relations and institutions.

The second theoretical implication is that in order to understand how regions diversify and grow, it is necessary to underscore that firm-level processes are only one of the elements that contribute to regional development, entangled with various other economic dynamics (Iammarino et al., 2019, 2020). The existence of an innovative sector in a region is not

sufficient to generate knowledge externalities and spread innovation dynamics to other sectors, especially if the region lacks firms that can leverage their resources to invest in new areas of activity or attract investments that could contribute to diversification and higher economic complexity (Fonseca et al., 2017).

From a policy perspective, the conclusions drawn from the analysis of the case studies would suggest that decision-makers should avoid narrowing regional policy to innovation policy (Hassink & Marques, 2015; Shearmur, 2016). Dealing with territorial inequalities will necessarily involve the use of some “traditional” policy approaches, such as the attraction of foreign direct investment (provided that they include mechanisms to encourage multinationals to engage with local firms), along with other approaches that emerge from more recent findings, such as actions to improve the quality of governance (Di Cataldo & Rodríguez-Pose, 2017; Pike et al., 2016). It will also involve actions at other scales (such as the national or international) that seek to rebalance power asymmetries between multinationals and immobile SMEs, not only by improving the capabilities of the latter (Coe & Yeung, 2019) but also by regulating the actions of the former (MacKinnon, 2012).

ACKNOWLEDGEMENTS

The authors would like to thank David Waite for his comments on an earlier version of this paper. Pedro Marques would like to thank the financial support of a Ramon y Cajal fellowship with the code RYC-2017-22872, awarded by the Ministerio de Economía, Industria y Competitividad. Empirical research for this paper was supported by an Early Career Grant from the Regional Studies Association. Pedro Marques would also like to thank Carmen Cañizares for her support during a difficult year, namely in terms of taking the burden of childcare during lockdowns and at other times. Without her this paper would not have been written nor revised.

DATA AVAILABILITY STATEMENT

The interviews conducted for this research project were done under the protection of anonymity. For that reason, they cannot be shared and any information that could be used to identify the interviewees will not be provided.

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ENDNOTES

- ¹ The definition for each sector varies between databases. The data used by the United Nations (UN 2019) are based on a 4-digit harmonised system, whereas the Eurostat data (2020) discussed utilise NACE Rev. 2 codes with 3 digits, and as such refer to a larger number of firms. Also, in the Eurostat data, textiles are represented by two 3-digit sectors, to capture all the goods and services that are produced in Portugal. Figures 1 and 2 show cumulative annual change for each variable, with the first year in each chart representing the starting point.
- ² The data are separated into two time periods: 1999 to 2008 and 2008 to 2017. These two periods are separated due to a break in the series as a result of a revision of sectors of activity (from NACE Rev. 1 to NACE Rev. 2). Therefore, the results cannot be compared directly, though they are useful in identifying general trends.

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How to cite this article: Marques, P. & Barberá-Tomás, D. (2022) Innovating but still poor: The challenges of regional development in regions with mature industries. *Transactions of the Institute of British Geographers*, 47, 440–454. <https://doi.org/10.1111/tran.12507>