

French Port Hinterlands in a Competitive Europe: The Case of the Port of Le Havre (Haropa)

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Abstract. This paper examines the dynamics and typology of French port hinterlands in the context of intensified European port competition, with a particular focus on the hinterland of the Port of Le Havre as a case study. By analysing recent structural changes in the maritime and logistics sectors, it highlights the growing strategic role of hinterlands in the economic development and competitiveness of port regions. The originality of this contribution lies in the use of detailed and official customs data provided by the French customs administration. These data, which are difficult to access and rarely mobilised in academic research, offer a unique and highly precise representation of real import and export flows. They make it possible to move beyond conventional and often simplified definitions of port hinterlands by capturing actual trade relationships between ports and their inland markets. Applied to the case of Le Havre (HAROPA), this approach reveals the complexity and evolving nature of port–hinterland relations. The results show that, despite its central position within the French port system, Le Havre faces increasing difficulties in maintaining and extending its hinterland market share in the face of strong competition from major European ports such as Antwerp. By distinguishing import and export flows, the analyses provide a fine-grained characterisation of hinterland structures and dynamics, offering new insights into the challenges faced by French ports within the contemporary European port system.

1 Introduction

The maritime and port sectors have undergone profound structural transformations over the last few decades, driven by technological innovation, infrastructure modernization, and new governance models. French ports have been central to these changes, notably following the 2008 reform of autonomous ports⁴. While academic research has extensively covered shipping networks and port operations, the analysis of "hinterlands", the continental areas served by a port, has often lagged behind.

However, the hinterland remains a critical pillar of strategic and political discourse. The French National Port Strategy (2021-2022) identified the expansion of port hinterlands as one of its four priority axes, emphasizing their role in regional economic development. This focus is essential because French ports face fierce competition from other European gateways

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for the service of the national territory. Unlike their Northern European neighbours, French ports are rarely connected to foreign hinterlands, further limiting their market reach. This paper aims to analyze these dynamics, focusing on the Port of Le Havre (HAROPA) as it navigates the pressures of the Northern Range.

2 The evolving concept of port hinterland

If the notion of the hinterland cannot be confined solely to coastal or fluvial spaces, it nevertheless relates to the geography of trade and maritime transport. The term was first introduced by the Scottish geographer G. Chisholm in the early twentieth century [1]. He defined it as the area of attraction and service of a port (generally maritime, exceptionally fluvial), that is, the continental space supplied by a port and, conversely, from which it draws the goods it dispatches [2].

2.1 Spatial and competitive reconfiguration of port hinterlands

In maritime geography, according to the traditional conception recalled by Vigarié [3], the hinterland refers to the port's landward sphere of influence, conceived as a relatively stable and exclusive zone within which a seaport markets its services and, consequently, recruits its clientele. This perspective was grounded in a logic of geographical proximity and terrestrial transport costs.

However, from the 1980s onwards, several authors demonstrated the limitations of this approach. Hayuth [4] and Slack [5] emphasised that hinterlands are not fixed and may be shared among several ports [6, 7]. Within such geographical spaces, a single hinterland may be served by multiple ports, which then compete within the same area and share cargo flows [3, 8]. At the same time, geographers introduced a distinction between the core hinterland, representing the port's primary market area, and competitive margins, where the port competes with neighbouring ports. A distinction is thus made between the fundamental hinterland, where the port controls the majority of traffic, and a competitive hinterland, located inland, where the port's competitiveness depends on land transport connections. In the latter case, the port competes with other facilities for commercial activities. Consequently, hinterlands over which ports exercise little or no commercial control may be described as uncontrolled hinterlands. Moreover, the spatial extent of a port's hinterland also varies according to the types of goods transported [9]. Competitive margins thus emerge as areas in which port users may route their goods through one port or another depending on factors such as cost, capacity, or convenience. These margins may differ between import and export flows.

The hinterland of a port thus refers to the land-based space that exerts an economic influence on its activities. It is the area within which a port provides its services and interacts with its customers. The hinterland encompasses both the origin and destination points of goods transiting through a given port. The area covered varies according to port traffic, competition between transport modes, and the quality of its transport infrastructure, particularly multimodal connections enabling the movement of goods in large volumes over longer distances.

This approach to the hinterland remains widely used in port geography, despite transformations. Although the concept of the hinterland has evolved with containerisation, sometimes reducing its explanatory power, it remains relevant in certain contexts, especially in Western Europe. Within this framework, hinterlands can be divided into "captive" areas, where port activities are not subject to competition from other territories, and competitive areas, where such competition exists. A port's competitiveness therefore depends on its

infrastructure and on intermodal competition, with degrees of flexibility depending on the types of goods and geopolitical factors.

2.2 The impact of containerization

From the 1980s onwards, the rise of containerisation, the evolution of shipping lines' commercial strategies, and the pursuit of increased profitability profoundly transformed the organisation of port calls. Without going so far as to conclude that "the concept of the port hinterland has been undermined by the containerisation of maritime transport", it nevertheless clearly challenged the assumption of captive hinterlands concentrated spatially around ports [10].

At the same time, containerisation and the development of integrated intermodal transport networks, combined with the establishment of interconnected inland terminal networks and the growing involvement of maritime industry actors in door-to-door services and operations, have reinforced the importance of hinterland connectivity in determining port competitiveness. Indeed, for ports located along the same seaboard and in close geographical proximity, containerisation has made hinterland servicing increasingly competitive, as illustrated by the Northern European range. Integrated logistics chains, controlled by global operators, have progressively replaced a sequence of segmented transport operations [11]. Antoine Frémont clearly summarised these developments by emphasising the increasing complexity of major ports' hinterlands, characterised by continuity in the immediate hinterland and discontinuity beyond this proximate zone, in connection with the development of inland terminals cultivating their own distinct hinterlands. Ports are no longer selected solely on the basis of their proximity to markets, but rather according to their integration within the most efficient, cost-effective, rapid, reliable, or flexible logistics chains. From this perspective, several authors have introduced the concept of port regionalisation, whereby ports extend the reach of their hinterlands by forging close links with inland freight distribution centres [12]. Notteboom and Rodrigue [13] thus formalised a theory of port systems within a regional space, distinguishing in particular between continuous and discontinuous hinterlands. This regionalisation is consistent with the development of priority inland corridors, as observed by Monios and Wilmsmeier [14].

The hinterland has thus partially given way to a generalised network integrating the world's major ports. It may therefore be conceptualised as an inland area delineating the points of origin and destination of maritime shipments handled by a given port [10]. Ports consequently seek to extend their hinterlands in order to increase maritime traffic, which implies the development of intermodality and inland ports to enhance hinterland connectivity [15].

With regard to maritime services to France, national ports face strong competition from other European ports. The most notable and well-known example is the importance of the Port of Antwerp in serving the Paris Basin. In the absence of reliable and comprehensive data on the origin and destination of goods transiting through these ports, it is difficult to establish the exact market share of each port in serving this area of France. However, as highlighted by previous research [16, 17, 18, 19], it is estimated that a significant share of containerised goods transported by sea to the Paris region is unloaded at the Port of Antwerp.

3 French ports in the European competitive landscape

The Northern Range is characterized by an intense concentration of ports, offering numerous alternatives to shipping lines. Within this range, French ports often struggle to maintain their market share.

3.1 The Challenge of "Cannibalization"

The aforementioned process places secondary ports under the threat of a genuine "cannibalisation" of their hinterland by the dominant port. Indeed, due to geographical proximity, a lack of coordination, or redundant investments, this phenomenon may lead to economic inefficiency and fragmentation of resources: ports compete for the same markets, and this intensified competition can result in an increase in unnecessary or inefficient flows. Within the European Union, the Northern European port range constitutes a typical example of intense competition. To mitigate such cannibalisation, approaches such as cooptation (i.e., the combination of cooperation and competition) are being considered. These include the specialisation of ports according to their respective strengths, the development of integrated logistics corridors to optimise flows, and the establishment of shared governance frameworks to coordinate investments and reduce duplication of effort [20].

It is within this highly competitive context that manufactured goods, emblematic of globalisation, are predominantly transported. Containerisation has facilitated the interconnection between maritime and inland transport. Indeed, it is no longer the goods themselves that are transported and handled, but rather a container that can be adapted to multiple modes of transport. As a result, port hinterlands have been transformed and, in Europe, they increasingly overlap. Containerisation has thus exposed French ports to strong competition in serving the national territory, particularly with regard to manufactured goods traffic [21].

3.2 Data and Methodology

The empirical analysis relies on data provided by the French Customs Administration. Two complementary datasets were used: an open-access database and a restricted-access database. Access to the latter was granted following approval by the French Statistical Confidentiality Committee, which authorizes the use of confidential statistical information for scientific research purposes.

The dataset covers the years 2009 and 2019 and provides highly detailed information on French international trade flows. For each shipment, the database includes the port of entry or exit, the origin and destination of goods at the departmental level (NUTS 3 equivalent), the weight of the cargo, the type of commodity transported, the inland transport mode used, and several additional logistical characteristics. It should be noted that the customs data considered in this study only capture trade flows between France and non-European Union countries, as intra-EU trade is recorded through a different statistical system [22].

The combination of these datasets makes it possible to reconstruct the hinterlands of French seaports by identifying the territorial distribution of import and export flows handled by each port. More specifically, the analysis measures the market share controlled by individual ports at the departmental scale, thereby providing a detailed representation of their areas of influence. In this study, particular attention is given to HAROPA – Port of Le Havre, whose import and export hinterlands are examined in 2019 and compared with those observed in 2009.

The use of customs data addresses a long-standing limitation in port and transport geography research, namely the scarcity of reliable and highly disaggregated information on the inland origins and destinations of maritime freight flows. Previous studies have often relied on aggregate statistics or indirect estimations, limiting the ability to accurately characterize port hinterlands and their evolution over time.

The dataset employed in this research offers three major analytical advantages. First, it provides a high level of spatial precision, allowing freight flows to be analysed at the departmental level rather than through broader regional aggregations. This level of detail

makes it possible to identify territorial variations in port influence that would otherwise remain hidden. Second, the data allow imports and exports to be examined separately, thereby revealing potential asymmetries in port performance according to the direction of trade flows. Third, the availability of data for both 2009 and 2019 enables a diachronic analysis of hinterland dynamics over a ten-year period, facilitating the identification of structural changes while reducing the influence of short-term fluctuations. Based on these data, the methodology consists of mapping and quantifying the spatial distribution of import and export flows handled by French ports, with a particular focus on HAROPA – Port of Le Havre. This approach makes it possible to assess the extent and evolution of port influence across the national territory and to identify the territorial reconfigurations that have occurred during the decade under consideration.

3.3 Main “national” results

Our previous study (Kerbiriou, Serry, 2026), based on the cross-analysis of detailed customs data for the years 2009 and 2019, highlights the profound transformations of the hinterlands of French ports within this context of intensified European competition. It first shows that French ports occupy a contrasted position in the national foreign trade system: while they largely dominate flows of energy products and maintain a strong position in the export of manufactured goods (87% of volumes), their market share is significantly more limited in imports (71%), revealing a substantial dependence on foreign ports for supplying the national territory (Table 1). In 2019, nearly 12 million tonnes of manufactured goods destined for France transited through other European ports, confirming the significance of competition exerted in particular by the major hubs of the Northern European range.

Table 1. Import and export profile of French ports in 2019.

Wording CPF1	Share of French ports in imports in 2019	Share of French ports in exports in 2019
Agricultural, forestry and fishery products	55%	74%
Mining and quarrying products	100%	18%
Manufactured goods	71%	87%
Others	50%	80%

Spatial analysis at the departmental level reveals a marked geographical differentiation of hinterlands. French ports primarily control proximate hinterlands, often limited to their immediate region, whereas more distant territories, particularly in eastern and central-eastern France, largely escape their influence. These areas, described as uncontrolled hinterlands, are predominantly served by foreign ports such as Antwerp or Rotterdam. Conversely, certain coastal or peripheral regions, such as Brittany, display more captive configurations for exports but competitive ones for imports, illustrating the diversity of territorial situations. The diachronic analysis further reveals an overall erosion of French ports’ market shares between 2009 and 2019, particularly pronounced in regions distant from maritime façades. The gains observed are mainly concentrated within nearby hinterlands, especially along major structuring corridors such as the Seine and Rhône valleys. These results suggest that port policies, including the 2008 reform, have only enabled a limited strengthening of the deeper influence of French ports and have not prevented their decline in more distant areas.

The proposed typology, distinguishing between captive, competitive, and uncontrolled hinterlands, confirms the fragmentation and fragility of French port areas of influence. Captive hinterlands appear restricted and spatially concentrated, while large portions of the territory fall within competitive situations or largely escape the control of national ports. This configuration reflects the intensification of inter-port competition within a logistics system shaped by containerisation and intermodality.

Ultimately, the study underscores that the competitiveness of French ports now depends closely on their ability to enhance inland connectivity and their integration into European and global logistics chains. In the face of the dominance of major Northern European ports, strengthening multimodal corridors and logistics strategies appears to be a key lever for regaining market share and expanding hinterlands that are currently limited and contested

4 The Case of the Port of Le Havre (HAROPA)

Figures 1 and 2 depict the market share of the Port of Le Havre for manufactured goods imports and exports at the departmental level in 2019. These maps provide a detailed representation of the port's hinterland and reveal significant differences between import and export dynamics.

For imports, the Port of Le Havre exhibits relatively limited territorial control. Outside its immediate vicinity, market shares rapidly decline and are generally comprised between 20% and 60%, indicating the presence of strong inter-port competition. In many departments located further inland, Le Havre's market share falls below 20%, corresponding to areas that can be considered outside its effective sphere of influence. These results suggest that the port faces substantial competition from other French and Northern European gateways in serving inland markets.

The export hinterland presents a different spatial configuration. Market shares are generally higher and extend over a larger geographical area, particularly towards central France. This pattern indicates a stronger ability of Le Havre to attract export flows from inland territories. Nevertheless, a significant number of departments remain characterized by weak market shares, highlighting that large portions of the national territory cannot be considered firmly controlled by the port.

Another noteworthy result is the very limited influence of Le Havre beyond French borders. Despite its status as France's leading container port, its market penetration in neighbouring countries remains marginal, suggesting that its hinterland remains predominantly national in scope.

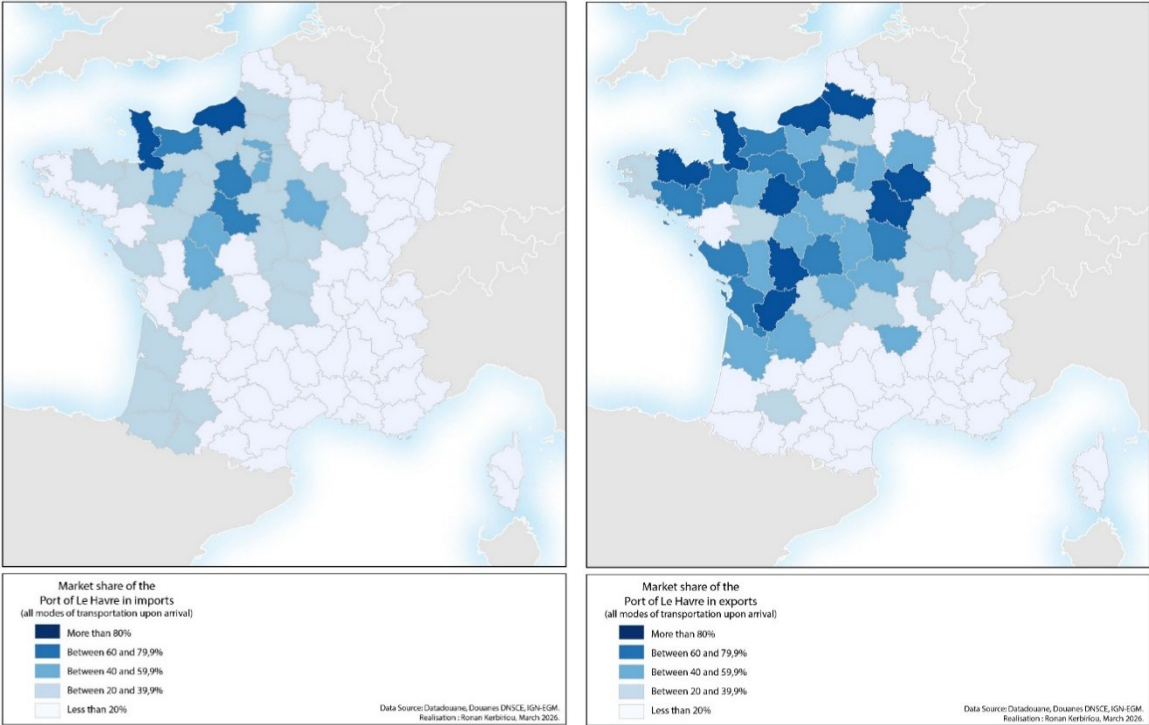


Fig. 1 and 2. Mapping the Le Havre hinterland, spatial variations in market shares for imports and exports

To further investigate the structure of the hinterland, a bivariate typology was developed by combining the direction of trade flows (imports and exports) with three levels of territorial control: captive, competitive, and uncontrolled. The resulting classification provides a more comprehensive assessment of the port's position within the French territory (Figure 4). Several findings emerge from this analysis. First, nearly half of French departments are classified as uncontrolled for both imports and exports, revealing the limited geographical depth of Le Havre's hinterland. Second, only two departments, Seine-Maritime and Manche, can be considered captive territories for both import and export flows. This finding highlights the difficulty for the port to establish dominant positions even within its broader regional environment.

Most of Le Havre's hinterland falls into intermediate situations, either characterized by competitive conditions for both imports and exports or by competitive export markets combined with uncontrolled import markets. These configurations reflect the coexistence of strong inter-port competition and differentiated market positions according to the direction of trade flows.

Overall, the results reveal a hinterland that remains relatively fragmented and contested. Contrary to the traditional representation of Le Havre as the natural maritime gateway of the Seine corridor and a large portion of the French territory, the analysis demonstrates that its effective territorial control is geographically limited. One possible explanation lies in the relative weakness of multimodal inland transport connections, particularly when compared with competing Northern European ports. As a consequence, Le Havre faces significant competitive pressure even within territories commonly perceived as belonging to its natural hinterland.

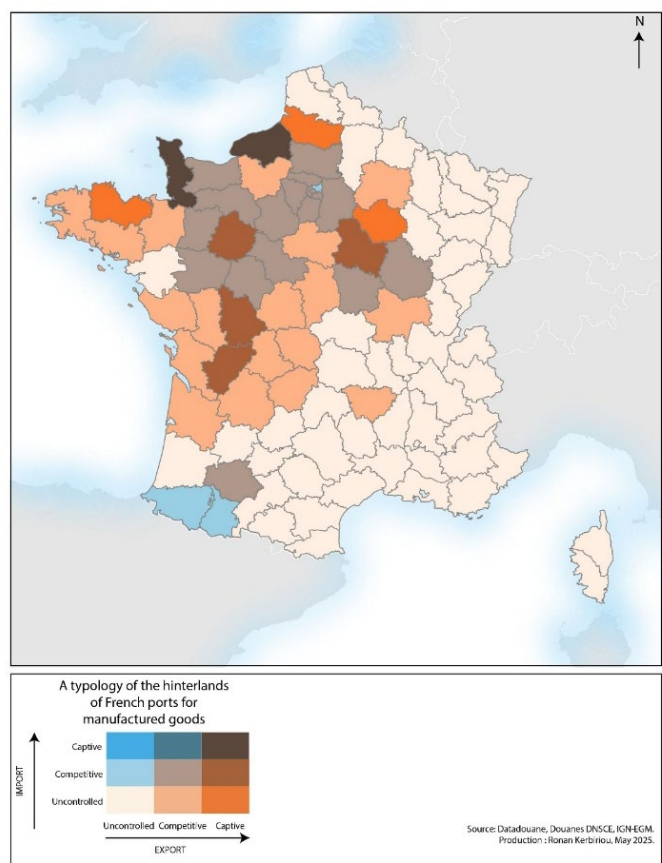


Fig. 3. Bivariate typology of the Le Havre hinterland

5 Conclusion and strategic outlook: the future of HAROPA’s hinterland competitiveness

This paper examined the hinterland of HAROPA – Port of Le Havre through the analysis of highly disaggregated French customs data, making it possible to identify the territorial distribution of import and export flows at the departmental level. Beyond the case of Le Havre itself, the results contribute to broader debates on the evolution of port hinterlands and the nature of contemporary port competition.

First, the findings provide empirical support for the argument that port hinterlands can no longer be considered fixed and captive spaces. While the traditional conception of the hinterland was based on geographical proximity and exclusive spheres of influence (Vigarié, 1979), the analysis reveals that most French departments are characterised by competitive or uncontrolled relationships with Le Havre. Only a limited number of departments remain genuinely captive for both imports and exports. These results therefore reinforce the perspective developed by Hayuth (1982), Slack (1984), and Debie and Guerrero (2008), according to which hinterlands should be understood as contested spaces shared by multiple gateways.

Second, the study highlights the declining explanatory power of geographical proximity in determining port choice. Although Le Havre retains strong positions within its immediate regional environment, its influence decreases rapidly beyond the Norman estuary. The existence of large competitive areas, including territories traditionally considered part of its natural hinterland, suggests that accessibility and logistics performance now outweigh simple distance effects. In this regard, the results support the literature emphasizing the transformative effects of containerisation, multimodality, and port regionalisation on the geography of freight transport (Notteboom and Rodrigue, 2005; Frémont, 2018).

Third, the analysis provides quantitative evidence of the growing penetration of Northern European gateways into the French market. Previous studies have repeatedly suggested the importance of ports such as Antwerp and Rotterdam in serving French inland regions, particularly the Paris Basin. However, the lack of detailed origin–destination data has generally prevented a precise measurement of this phenomenon. By exploiting confidential customs data, this research demonstrates that a substantial share of French territory lies outside the effective control of Le Havre, particularly for import flows, thereby confirming the increasing integration of French supply chains within wider Northern European logistics networks.

More broadly, the results suggest that contemporary port competition is no longer primarily fought at the maritime interface. The ability of a port to attract and retain cargo increasingly depends on its capacity to organize efficient inland transport systems and to integrate itself within high-performance logistics corridors. In this context, hinterland connectivity emerges as a central determinant of competitiveness. The strategic challenge for HAROPA is therefore not only to maintain its maritime attractiveness but also to strengthen its inland accessibility through the development of massified multimodal transport solutions capable of competing with the logistics systems offered by Northern European gateways.

Finally, the study demonstrates the value of detailed customs data for the analysis of port hinterlands. Future research could extend this approach to other French and European ports, examine specific commodity sectors, or investigate the evolution of hinterland structures over longer periods. Such work would contribute to a better understanding of how logistics networks, transport infrastructures, and port strategies continue to reshape the geography of freight flows in Europe.

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