
The Long-term Role of EU Structural Funds in the Accessibility of Peripheral Regions: The Case of Galicia in the Period 1989-2013

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Abstract:

Purpose: The main aim of this research is to analyze the role of the European structural funds in the region of Galicia, Spain. In 1980's, Galicia was a peripheral region with poor external accessibility and internal connectivity with a lacked efficient transport infrastructure.

Design/Methodology/Approach: The evaluation methodology used integrates documentary sources depending on the availability in each programme period (official documents, evaluation reports, basic statistics and papers).

Findings: One of the most important lessons learned by the Structural Funds from the Galician experience relates to the effect of accessibility in peripheral lagging regions.

Practical Implications: Enhanced accessibility to a large integrated market is a good way to boost structural adjustment and productivity.

Originality/Value: The combination of the strong investment policy and increased competition in the single European market has been demonstrated as a powerful vehicle for economic development and convergence.

Keywords: Regional development, infrastructures, European Regional Development Fund, cohesion Fund, Spain, total factor productivity.

JEL code: R10, R11, R12, R13, R14.

Paper type : Study research.

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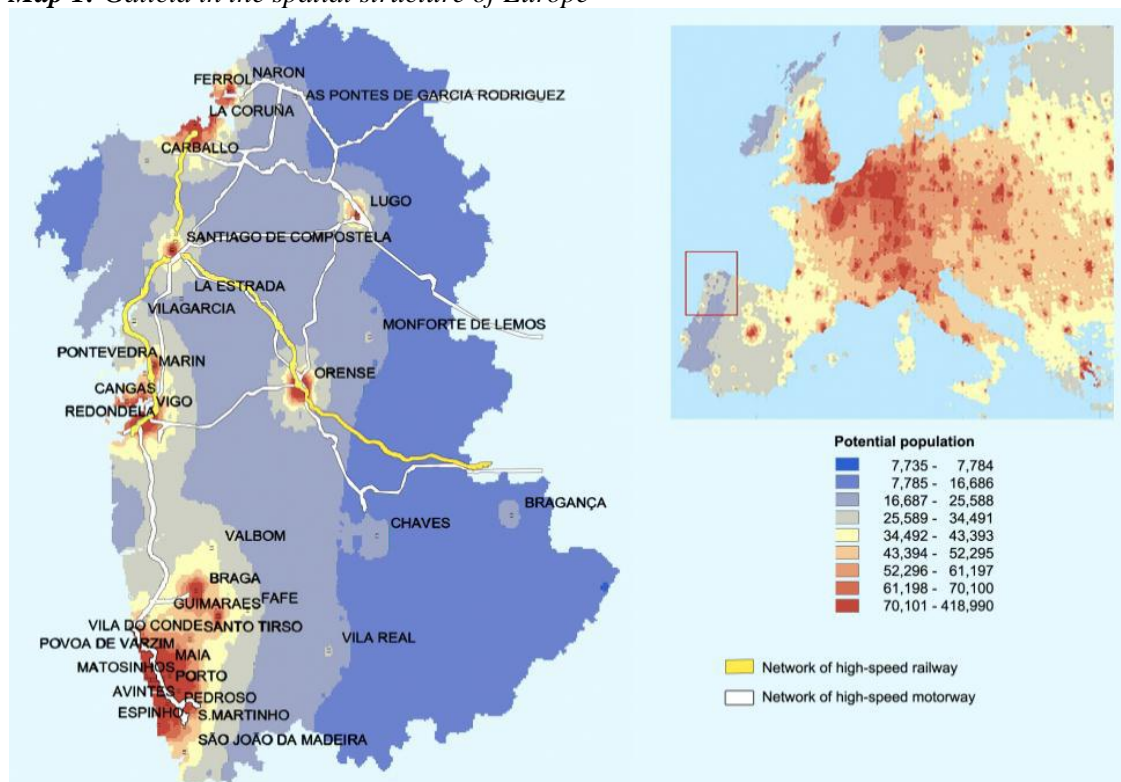
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1. Introduction

Three decades ago, Galicia was a peripheral region with a poor external accessibility and a very low internal connectivity, strongly dependence on low productivity primary sectors (agriculture at the mountains and fish and shellfish at the river valleys) and was one of the poorest regions in Spain. A large proportion of the population lived scattered in rural areas without basic services (communications, phone lines, etc.).

Galicia has traditionally been organised in a different way to the rest of Spain with its own clearly-defined culture and language and strong links to the north of Portugal. With a population density of 93.8 inhabitants per square kilometre, it contains many small centres of population, with a very large rural population. It occupies only 5.8% of Spain's surface area and has 6.13% of its population, but it contains 50% of the country's centres of population. The isolation and remote position of Galicia in the westernmost of the continent is combined with an ancient European cultural tradition between Galicia and the rest of Europe, the Way of Saint James.

Map 1: Galicia in the spatial structure of Europe



Source: Lopez-Rodriguez and Faiña (2006).

The spatial structure of Galicia (Map 1) is relatively clearly divided in two, with its population concentrated along its Atlantic axis between the metropolitan areas of Coruña and Ferrol in the north and Vigo and Pontevedra in the south. The interior cities of Lugo and Ourense, in the north and south respectively, are connected to these metropolitan areas. The city of Santiago de Compostela, the region's capital, sits in the middle of the Atlantic axis, connecting these main cities. In the 1990's, the region lacked efficient transport infrastructure and a fragmented entrepreneurial system based on small family-owned companies. On top of this, a process of adjustment in traditional activities such as shipbuilding and the chemical industry raised serious concerns about the future. Overall, Galicia and north of Portugal clearly comprise a Euro-region on Europe's Atlantic periphery. Since their entry into the European Union, the two countries have forged close cooperation links and have jointly coordinated investment projects and strategies.

2. Uses of Structural Funds in Galicia

In this paper we combine and integrate different information from documentary sources depending on the availability in each programme period (Operational Programmes, annual progress reports and final reports). The evaluation methodology used official documents, evaluation reports and basic statistics as resources.

2.1 Cooperation Funds between Galicia and North of Portugal

The European Union's regional policy for Objective 1 regions (regions whose GDP is less than 75% of EU average) allocates a high percentage of the Structural Funds to the economic development policy through multiannual planning. For Objective 1 regions, such as Galicia and the North of Portugal, community support frameworks (CSF) of five to seven years, complemented by operational programs (OP), are approved by the Commission in consultation with the Member State based on the regional development plans previously presented by the national states (Beutel, 1993). Galicia and the North of Portugal were both eligible for Objective 1 status within the different Community Support Frameworks of Spain and Portugal.

2.2 The ERDF and Cohesion Fund in Galicia

Due to the lack of original programme documents in the early stages, other sources of information were used. Thus, in the first programme period (1989-1993) the information was completed with the Community Support Framework (1989-1993) for the Objective 1 regions in Spain, the Regional Development Plan (RDP, 1989) of Spain (1989-1993) and the report on the ERDF Galicia (1989-1993) produced by the Directorate-General for Economic Planning and Community Funds of the Government of Galicia. This report was included in the edition of the 1994-1999 ERDF Galicia Regional Operational Programme, Xunta de Galicia.

The ERDF programmes in Galicia focused on infrastructures and accessibility, and structural adjustments and the efficiency of the productive sector of the economy as a way of stimulating development and the creation of employment. The explicit objectives of the programmes generally coincided with implicit objectives. However, satisfying a wide range of different local interests (without suitable coordination) and supporting existing companies to halt Galicia's industrial decline in the 1980s and 1990s were implicit goals that influenced the selection of projects.

Table 1: Funds in Galicia (M€ in constant 2000 prices)

EUROPEAN AIDS	1986-1988		1989-1993		1994-1999		2000-2006		2007-2013 (p)		TOTAL	
	M€	%	M€	%	M€	%	M€	%	M€	%	M€	%
ERDF ROPs					1,733	36%	2,457	38%	1,791	37%	6,923	39%
ERDF NOPs	117	39%	822	71%	145	3%	578	9%	501	10%	1,225	7%
COHESION FUND	-	-	-	-	675	14%	773	12%	493	10%	1,942	11%
Subtotal ERDF CSF+CF	117	39%	822	71%	2,554	53%	3,809	58%	2,785	57%	10,089	57%
Community Initiatives	-	-	73	6%	136	3%	226	3%	54	1%	489	3%
ESF	102	34%	41	4%	202	4%	385	6%	298	6%	1,028	6%
EAGGF / EARDF	80	27%	216	19%	333	7%	689	11%	738	15%	2,056	12%
FIFG / EFF	-	-	-	-	370	8%	559	9%	356	7%	1,285	7%
ESF / EAGGF / FIG GF National	-	-	-	-	1,214	25%	852	13%	618	13%	2,684	15%
TOTAL	300	100%	1,152	100%	4,809	100%	6,520	100%	4,847	100%	17,632	100%

(p) Initial allocations. CF amount was computed from the indicative project list in the initial version of the ERDF Cohesion Fund OP.

Source: ERDF expenditure table and complementary information from DG for Planning and Community Funds of Galicia.

During the first programming period of 1989-1993, transport infrastructures (internal connectivity and external accessibility), environmental infrastructures (water supplies and purification plants) and basic services (electricity and telecommunications) were improved with the help of ERDF funds, and investments by companies in tangible assets (installations, machinery and industrial land) were also promoted to facilitate competitiveness and structural adjustment.

In the next programming period between 1994-1999, these measures were further expanded, and a business policy was introduced to reinforce managerial skills and business competitiveness.

During the programming period of 2000-2006, motorway access to central Spain and Europe was finally completed, and R&D&I policy measures were implemented reinforcing research and fostering the transfer of knowledge to the business sector. Galicia suffered an ecological catastrophe, when 70,000 tons of highly sulphurous fuel was spilled by the tanker Prestige on Galicia's coast in 2002. However, a major reprogramming of ERDF and CF helped to support cleaning and environmental restoration projects in a very effective way.

In the last period of this work, 2007-2013, the EU changed the support strategy, focusing on providing support to the knowledge economy and business innovation, as well as to environmental issues. Nonetheless, the infrastructures investments have lost weight, focusing in the external connexion through the high-speed rail link with Atlantic axis and Madrid.

Table 2: Galicia ROP 89-13, initial financial allocations (M€ constant 2000 prices)

AXIS	1989-1993		1994-1999		2000-2006		2007-2013		TOTAL 1994-2013	
	CSF Expenditure		ROP Allocation		ROP Allocation		ROP Allocation		ROP Allocation	
	M€	%.	M€	%.	M€	%.	M€	%.	M€	%.
1	14.71	1.0%	105.62	4.1%	9.93	0.3%	110.19	4.3%	225.73	2.6%
2	146.19	9.8%	67.06	2.6%	281.83	8.1%	406.91	15.7%	755.81	8.7%
3	24.41	1.6%	14.67	0.6%	140.56	4.0%	193.88	7.5%	349.10	4.0%
4	202.83	13.6%	189.05	7.3%	445.19	12.7%	668.98	25.8%	1,303.22	15.0%
5	50.16	3.4%	55.21	2.1%	77.78	2.2%	19.60	0.8%	152.59	1.8%
6	104.14	7.0%	92.85	3.6%	71.64	2.1%	188.15	7.3%	352.63	4.1%
7	943.70	63.2%	2,045.86	79.4%	2,463.01	70.5%	996.66	38.5%	5,505.53	63.6%
8	6.37	0.4%	5.77	0.2%	4.29	0.1%	5.29	0.2%	15.35	0.2%
TOTAL	1,492.5	100.0%	2,576.1	100.0%	3,494.2	100.0%	2,589.7	100.0%	8,660.0	100.0%

1.- Enterprise; 2.- Structural Adjustment; 3.- Innovation; 4.- Environmental sustainability; 5.- Labour market; 6.- Social Cohesion; 7.- Infrastructure and Spatial distribution of economic activity; 8.- Unspecified

Source: CSF Expenditure and ROPs Allocations.

3. Infrastructures investments as a means to improve the internal connection and the external accessibility in Galicia

Since ends 1980s, with the incorporation of infrastructures as a new production factor in economic growth (Aschauer, 1989; Munnell, 1990), a debate was opened about the influence of public investment in infrastructures on economic growth. The conclusion was that investments made when infrastructure stocks are lower are more profitable for economic growth than when infrastructure stocks are higher.

Literature and reports from well-known Spanish institutions have also been used (Lázaro Araujo, 1988; Draper and Herce, 1994; Lopez-Rodríguez, Faiña and López Rodríguez, 2007; La Caixa 2007; De la Fuente, 2010; Escribá and Murgui, 2010), as well as the regional database of the Spanish economy BD.MORES of the State Secretary for Budget and Expenditure (Minister of Finance and Public Administration, 2011) prepared by the International Economics Institute, University of Valencia. Separate databases have been built using information obtained from the documents and reports, and financial amounts have been allocated to various measures implemented in different programme periods. In addition, a database has been compiled on the achievements and results indicators collected from the final implementation reports of the Galicia Regional Operational Programme (ROP). Regional needs were met with different levels of intensity. In the 1989-1993, 1994-1999 and 2000-2006 programme periods, the degree of external accessibility and

internal connectivity of Galicia was increased with the reduction in travel times and number of accidents due to an increase in road assets of over 105 percent. In a different manner, rail assets in Galicia have only seen a substantial increase in the 2000-2006 period (98 percent). These improvements are clearly attributable to ERDF investments.

The ERDF programmes reviewed in this study, regional and multi-regional, invested €7,223.1 million in the theme of regional infrastructure endowment and spatial distribution activity up until the end of 2011, equivalent to approximately 61% of overall expenditure across the study period. This amount fluctuated over the periods, from 63% of expenditure in 1989-1993 to 70% of expenditure in 1994-1999, to 54% and 62% in the 2000-2006 and 2007-2013 programmes respectively.

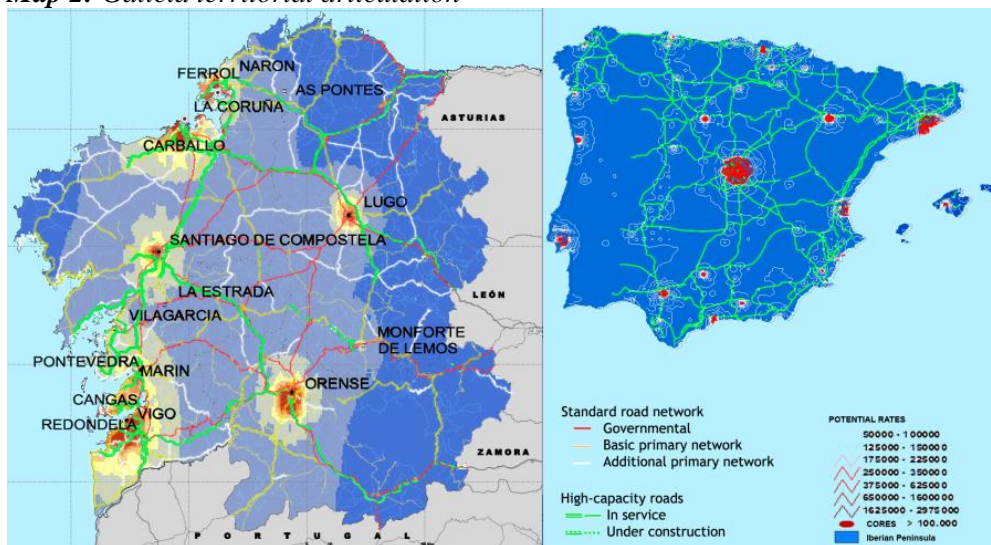
3.1 Road transport connection and accessibility infrastructures

In the axis of transport infrastructure, the main goal in the first programme period (1989-1993) was to improve internal connections and networks within the region. To do so, a series of communication networks were established between different areas to create a main grid with two main axes running from north to south and from east to west. This involved improving the accessibility of the roads, in accordance with the need to improve communications with surrounding areas and connecting with Spanish and European road networks, as well as establishing a smooth communications network inside Galicia.

These goals were achieved through two actions. The first focused on the interior north-south and east-west axes, and the other on improving road infrastructure along the coast. Both sought to achieve a range of socio-economic effects, such as improving road safety, reducing driving times between areas, connecting the coast with the interior, improving the tourism and services sector, and connecting markets. In the second period, 1994-1999, four main actions were carried out: the first focused on national highways (10 sections of the N-6 Northwest Highway), the second on national roads (several sections of the N-525, N-640 and N-6 national roads), the third focused on connections in rural areas (10 sections close to the main cities), and the fourth focused on improving connections with the main north-south and east-west roads and with Portugal.

During the 2000-2006 period, work continued to focus on roads and motorways, aimed at connecting the high-capacity roads with metropolitan areas and the interior of the region and improving the network of conventional roads. In this case, two main measures were carried out: firstly, on conventional roads and highways (between Madrid-A Coruña and the Cantabrian highway) and secondly on motorways (the Santiago-Dozón section of the Santiago-Ourense motorway, and the major AP-53 motorway project from Santiago to Alto de Santo Domingo in Ourense).

Map 2: Galicia territorial articulation



Source: Own elaboration with the Master Road Plan of Galicia, 2012.

During this period, 2000-2006, another large-scale project was carried out through the Cohesion Fund on the southern access to the centre of Spain with the Rias Baixas (A-52), which apart from connecting Vigo and Ourense, completed the access to Benavente and the centre of Spain, through the southern exit via Portillas del Padornelo and the tunnel of La Canda.

Table 3: Reported achievements of roads and motorways

Reported achievements *	1994-1999	2000-2006	Total 1994-2006
New Highway (kms) ERDF+CF	232	393	625
Renewed road (kms)	869	605	1474
Roads and fast tracks (kms)	78	25	103

* Reported achievements for central government actions in 1989-1993 are unavailable.

Source: Own elaboration-based Galicia OP data.

According to data from EUROSTAT, Galicia’s highway network grew between 1994 and 2009 (the last year used for certification for the period 2000–2006) by 722 kilometres, with reported achievements showing that 87% were co-funded by the ERDF and CF (Caride Estévez et al, 1999). Consequently, from the beginning of the 1990s until 2010, Galicia went from being a region with serious communications deficiencies to having infrastructure slightly above the national average, with its number of motorways rising from 47.5% of the Spanish average in 1990 to 116% in 2010, although it is important to note that a peripheral region (Redding and Schott, 2003) with a dispersed population such as Galicia has a greater need for these types of communications.

Regarding the next programming period, 2007-2013, according to data from the Galician Institute of Statistics (IGE), the amount of traffic on Galicia's highways rose by 52.3%. This effect of rising traffic on the new highways (from 755 vehicles per km to 1,150 vehicles per km) has been accompanied by a relative stagnancy of conventional roads (from 5,587 vehicles per km to 5,376 vehicles per km). This change has had a beneficial effect on road safety (since the accident rate is greater on roads than on highways), leading to a reduction in accidents with fatalities: statistically speaking, road deaths in Galicia fell from 366 in 2004 to 237 in 2010, a decrease of 64 percent. Although in Galicia this reduction is mainly attributable to improvements in the road network, several other factors have also been implied as having led to the reduction in accidents including improvements in driving regulations and improved vehicle standards.

Galicia's highways connect the region's interior urban areas, creating relatively uniform and high-quality access routes, as practically all its towns and cities are within one hour of Santiago de Compostela (see triangle 1 on Map B). The reduction in travelling times in Galicia has led to the increased closeness and improved connectivity between the most distant areas, traditionally found in the south of Galicia (Ourense-Verín).

Map 3: Isochrones from Santiago

Map A: Isochrones from Santiago (1993)



Map B: Isochrones from Santiago (2006)



Source: *The economic effects of the highways in Galicia* (Pérez Touriño, 1998).

Improved access in the region has led to a reduction in travelling times (map 3), and the shrinking of the map of Spain. Previously, it took two and a half hours just to reach the neighbouring region of Castile-León. Map B shows how Madrid is now situated between isochrones 4 and 5, compared to its previous position in isochrone 6 (Map A) and that the frontier with France and Andalusia is now situated between isochrones 8 and 9 (Map B), compared to its previous location between isochrones 11 and 12 (Map A).

The effects are extremely positive, especially for distances of up to 5 hours from Santiago, with isochrones reaching as far as the south of the Region of Madrid which previously, without the highways, barely reached the border between Zamora and Salamanca.

The result has been a reduction in travelling times and regional imbalances, connecting previously remote regions such as the south of Galicia. The new high-capacity road networks have meant that the peninsula, and Galicia in particular, now has relatively uniform levels of accessibility, with a high technical quality. The accessibility of the more remote areas has been increased. In 2006, 71% of the population had an access time to any motorway under 15 minutes, while only 0.9% of the Galician population had an access time higher than one hour. The decrease in travel time and the improvement of the connections has positively influenced the economic activity in many small towns in inner Galicia.

The social benefits brought about by transport infrastructure include those derived from reductions in terms of time, accidents and vehicle operating costs (Table 4). Benefits are mostly made in cost savings due to the reduction in the number of accidents and the direct benefits resulting from reductions achieved in travel times. Naturally, the total amount of benefits depends on the traffic flows captured by the new motorway. The motorways connecting Galicia with the central Spanish network (Coruña-Lugo-Benavente and Porriño-Ourense-Benevente) generated a present value (time savings multiplied for road traffic with discount rates between 4-6 percent) of approximately €738.69 million and €1,217.3 million for the north and south Galician access motorways respectively.

Table 4: Motorways in Galicia

Highway	Time saving (min.)		Time saving (m€)	Saving of accidents (m€)
	Light vehicles	Heavy vehicles		
Rías Baixas				
Porriño-Ourense	63	49	3,751	149
Ourense-Benavente	88	49	983	214
North-West				
A Coruña-Lugo	31	16	1,450	166
Lugo-Benavente	82	40	1,125	150
TOTAL	-	-	2,574	315

Source: "The economic effects of the highways in Galicia" (Pérez Touriño, 1998).

However, the transport system in Galicia still presents significant problems in relation to the lack of interconnection between and within modes. The lack of intermodal logistics centres, as well as connections between modes, results in an inefficient freight distribution network. This inefficiency leads to the dominance of road transport in freight haulage, associated with severe problems caused by the transit of heavy goods vehicles (EC, DG Regional Policy, 2009).

During the period of 2007-2013, the aim has been to complete the connection with trans-European networks, to promote intermodality, and to improve transport communications within the region and road safety.

3.2 Railways connection infrastructures

Rather unsubstantial projects were carried out in the periods of 1989-1993 (renewing tracks, improving tunnels and safety, etc.) and 1994-1999 (improvement and renovation work, as well as work on passenger and goods terminals).

In the 2000-2006 period, modernisation and construction work on tracks for high-speed trains (De Rus and Inglada, 1993; Gutiérrez Puebla, 2004) in the Atlantic axis Coruña-Santiago-Vigo (Trans-European Network) commenced. During the period 2007-2013, work has continued on the high-speed line Coruña-Santiago-Vigo and the high-speed train line Coruña-Santiago-Ourense for a connection with the rest of Spain.

3.3 Airport accessibility infrastructures

The aim has been to improve and adapt airport structures in the region (A Coruña, Santiago and Vigo). During the 1994-1999 period, work was undertaken in the three Galician airports, including refurbishment of the runway and remodelling of the control tower in Coruña, remodelling of the control tower, runway and landing strip in Santiago and the refurbishment of the electrical control system and extension of the runways in Vigo.

During the 2000-2006 period, further work was carried out in the three airports, including the extension of the terminal in A Coruña, a new control tower and emergency power system in Santiago and the extension of the car park in Vigo.

During the last period, 2007-2013, work has been undertaken in all three airports with the car parking facilities and a new electricity supply system in Coruña, the extension of the terminal in Vigo and the new airport terminal building in Santiago.

Santiago is a regional airport whilst the Coruña and Vigo airports fall into the local category. These three cities are located close to each other, with Santiago in the centre of the most populated metropolitan areas, Coruña and Ferrol in the north and Vigo-Pontevedra in the south. The Galician airport dynamism has resulted in strong growth in the number of passengers over the past years from 1,421,621 in 1991 to 3,744,783 passengers in 2005. This represents a cumulative increase of 163.4% (133.8% above the Spanish average). Santiago is the main airport in Galicia, both in the number of passengers (48.1% in 2005) and in the number of operated flights and companies. However, due to the major push of the other two airports of Vigo and A Coruña (211.3 and 370.1% of accumulated increase, respectively), there is a clear tendency towards a reduction in its regional share. The problem lies in defining the

role corresponding to the airports and the access systems from the major metropolitan areas of Galicia. The improved air accessibility has a positive effect on business clusters (tourism, textiles, automotive, construction, shipbuilding, telecommunications, etc.) and even on citizens' quality of life.

3.4 Port accessibility infrastructures

The main aim of the 1989-1993 CSF was to carry out refurbishment work on ports and their associated commercial facilities in order to facilitate the transportation of goods of fishing and tourism activities in order to improve the economy of small coastal towns.

During the 1994-1999 period, the Xunta de Galicia carried out two types of actions: the first consisted of improving port infrastructure (building and extending quays and sea walls, building new shore ramps, and improving operating conditions on quaysides by increasing draughts); and the second consisted of the specialisation of ports for unloading products of aquaculture (building and extending quays and new unloading ramps for fishing and improving the areas around ports to facilitate their integration in urban centres). In the ports of general interest, the State Port Authority carried out improvement work on infrastructure of different Galician port authorities (extending docks, develop and repairing commercial areas).

During the 2000-2006 period, actions focused on promoting functional diversification. The Ports of Galicia public company carried out work in 66 ports belonging to the regional network, with 1,745 lineal metres of sea walls, dredging 407,000 cubic metres to increase draughts, carrying out improvement and development work on 570,673 square metres of port areas and creating 5,698 new moorings. These actions helped to improve the region's port infrastructure, enhancing their connections and access.

In turn, the State Port Authority carried out actions in different port authorities (Ferrol, A Coruña, Marín-Pontevedra, Vigo and Vilagarcía de Arousa), but the largest projects have been financed through the Cohesion Fund.

The inner harbour of Coruña contains Galicia's petrol terminal, on the edge of the city and with an oil pipeline close to the urban area. Tanker accidents and the possibility of fires, similar to that which occurred with the 'Aegean Sea' in 1992, pose a serious risk to the city. Following the Prestige disaster in 2002, it was considered necessary to move potentially hazardous and polluting maritime traffic from the centre of the bay of Coruña, by building an outer harbour at a distance from the city centre. The main purpose of the outer harbour is to solve safety problems in the maritime corridor in front of the Galician coastline, which carries a large number of goods vessels into Central Europe and the English Channel (Sánchez Pombo, 2003).

The outer harbour (Map 4) has opened for goods vessels and it may be the site of the new petrol products terminal for Galicia, although the company in charge has still not made the decision to relocate. However, there are still some problems to be solved, as revealed by the 2012 report from the European Court of Auditors for the 2000-2006 period, which highlights the absence of suitable highway or train access from the dock.

The 2000-2006 Cohesion Fund financed Stage 1 (construction of a seawall measuring 3,360 m, a breakwater measuring 215 m, a quay measuring 900 m, a port esplanade covering 150 hectares and road access to Sabón industrial estate) with aid of €257.54 million. For Stage II (involving the construction of an additional seawall measuring 391 m), the 2007-2013 Cohesion Fund has provided additional aid.

Map 4: Coruña outer port future expansion



Source: Coruña outer port (2011).

The outer harbour of Ferrol, in Cape Poriño, specialises in supplying coal to the As Pontes power station, and has a biodiesel, plant oil and methanol plant. It also has a multi-purpose terminal and container terminal, allowing it to specialise and service container vessels due to its maximum draught of 20 metres. It is still not competitive in this area, as it needs rail connections (currently in construction) to improve the operation and communications of this terminal. Following the completion of Stage 1 in 2005 (involving the construction of a quay measuring 858 m and the improvement of adjacent areas) to extend the port with a subsidy of €38.5 million from the 2000-

2006 Cohesion Fund, Stage II was requested and awarded in 2008 (involving the construction of a quay measuring 657 m, the construction of a wharf measuring 145 m, new control buildings, multiple-use buildings and the construction of access roads and railway connections) with aid from the 2007-2013 Cohesion Fund of €26.2 million.

4. Conclusions and policy measures

The framework of the Structural Funds facilitated strategic planning to improve the internal connection and the external accessibility in Galicia. In this respect, the Structural Funds have had positive effects on public decision-making to bring closer Galicia to the European market.

One of the most important lessons learned from the Galician experience relates to the effect of accessibility in peripheral lagging regions. Enhanced accessibility to a large integrated market is a good way to boost structural adjustment and productivity. The combination of the strong investment policy supported by ERDF and increased competition in the single European market has been demonstrated as a powerful vehicle for economic development and convergence.

The initial deficiencies from 80's have been reduced over the last thirty years. Galicia has converged with the EU-15, reducing its GDP per capita gap by 8.7 percentage points from 50 to 59.5 per cent (73.8 per cent if compensating for the differences in prices between countries with purchasing power standards).

Essentially, the Galician development experience illustrates the effect of enhanced accessibility in a peripheral region that has traditionally lagged behind. Improving access to a large, integrated market was the way to boost structural adjustment and productivity. The combination of the strong investment policy supported by the ERDF and increased competition in the single European market has proved to be a powerful vehicle for economic development and convergence in Galicia.

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