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## **The Effects of EU Cohesion Policy on Transport Infrastructures: Evidence for Andalusia in 1989-2013**

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### **Abstract:**

**Purpose:** In the late 1980s, Andalusia had serious gaps in infrastructure. Road communications with the rest of Spain were poor. The region itself was deeply disjointed internally and lacked reasonable road communication in its transverse axis (east-central-west). This situation caused the 'geographical disconnection' between important areas (Cádiz-Seville-Córdoba) with the western and eastern Andalusia. The aim of this study is to evaluate the EU Cohesion policy and its effect in this region.

**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) to determine possible gaps or misuses of funds in transport infrastructures.

**Findings:** One of the most important lessons learned from the Andalusian experience of the late 1980s early 2000s is the effect of the territorial articulation policy and the way in which it connected the regional market and increased inner and external accessibility.

**Practical Implications:** Today, a large part of these needs have been met whereby Andalusia possesses highways and road endowments comparable to those in many regions of the most developed European countries, is satisfying the main regional needs.

**Originality/Value:** A great part of the achievements is attributable to ERDF investments which have led to the capitalisation and upgrading of the Andalusian economy and society in a relatively short amount of time.

**Keywords:** Regional development, infrastructures, ERDE, cohesion funds, Spain.

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

**Paper type :** Study research.

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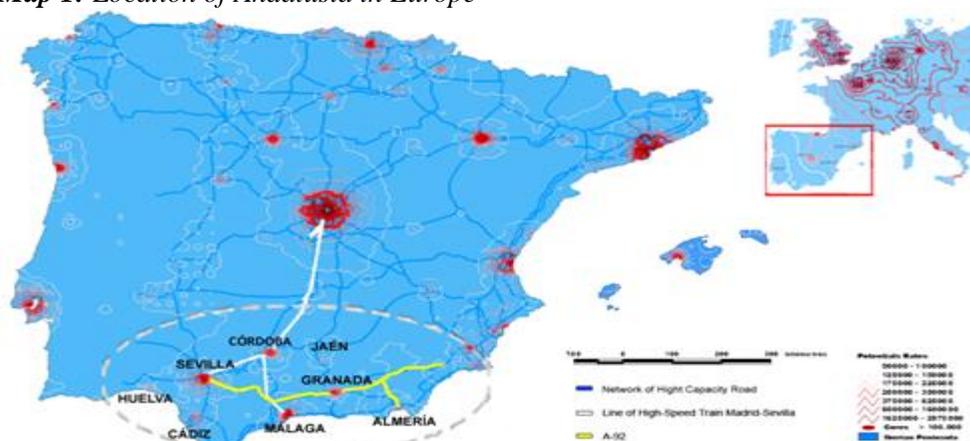
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## 1. Introduction

In the 1980s, Andalusia was one of the poorest regions in Europe. Peripherality (remoteness) and territorial disarticulation (lack of connectivity) were a major geographical hindrance at that time. At present, these problems are less important due to improvements in the transport infrastructure (highways, roads and railways). The population and economic activities are concentrated in major urban centres around the three cities of Seville, Málaga, and Cádiz and in some coastal areas. However, despite this geographic concentration, income and living standard disparities are not particularly remarkable in the other major cities and towns in the intermediate system, or in sparsely populated inland areas.

The entry of Spain into the European Community (EC) in 1986 coincided with the process of the unification of the Single Market and the implementation of the new Cohesion policy. The EC entry signified opportunities, but also large challenges for Andalusia. The regional economy had to integrate into a wide common market, exploiting the competitive advantages associated with its traditional specialisations (agriculture, agroindustry, tourism). However, at the same time, Andalusia needed to diversify its production system and to develop new competitive advantages in other high value-added activities. This transformation had to be accompanied by an increase in foreign trade, and also by a complete integration of the regional market through a better connection of the western and the eastern parts of the region. In order to achieve these goals, weaknesses in transport infrastructure and entrepreneurial and human capital were the main bottlenecks.

*Map 1: Location of Andalusia in Europe*



region in Spain as well as in Europe and occupies most of the south of the Iberian Peninsula. Its east-west axis extends from the Atlantic to the Mediterranean: from the border with Portugal and the Atlantic coast in the western provinces of Huelva and Cádiz, through Seville, Córdoba and Jaen in the Guadalquivir valley, to the eastern provinces of Málaga, Granada and Almería in the Mediterranean.

The geography and climate are natural advantages that allowed Andalusia to develop an important agriculture sector and, more recently, a large tourism industry. However, the mountain ranges, which are a feature of its rugged geography, hinder external communications with the rest of Spain as well as internal communications within the region. Regional development has been constrained by the limited external accessibility and the internal disconnection between west and east Andalusia and between the interior and the east coast.

## 2. Uses of Structural Funds in Andalusia: The role of ERDF and Cohesion Funds

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.

**Table 1.** Funds in Andalusia (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	912.5	58%	2,674.2	64%	4,219.1	51%	6,628.2	50%	5,678.8	43%	20,115.0	50%
ERDF NOPS					497.0	6%	1,616.5	12%	1,351.1	10%	3,464.7	9%
Cohesion fund	-	-	-	-	1,112.7	13%	876.3	7%	1,300.5	10%	3,289.7	8%
ERDF CSF+CF	912.5	58%	2,674.2	64%	5,828.8	71%	9,121.0	69%	8,330.5	64%	26,869.4	67%
Com. initiatives	106.5	7%	179.0	4%	93.3	1%	127.8	1%	108.0	1%	614.8	2%
ESF	427.1	27%	375.8	9%	959.6	12%	913.1	7%	2,720.2	21%	5,396.4	13%
EAGGF/EARDF	93.2	6%	841.2	20%	1,214.0	15%	1,052.1	8%	1,768.8	14%	4,969.8	12%
FIFG/EFF	36.0	2%	139.3	3%	170.4	2%	201.8	2%	166.1	1%	713.8	2%
ESF/EAGGF/ FIG	-	-	-	-	-	-	1,717.5	13%	-	-	1,717.5	4%
GF National												
<b>TOTAL</b>	<b>1,575.3</b>		<b>4,209.4</b>		<b>8,266.1</b>		<b>13,133.3</b>		<b>13,093.5</b>		<b>40,281.7</b>	

(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 Andalusia.

Due to the lack of original programming 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 ERDF Andalusia Report (1989-1993) produced by the

Directorate-General for Economic Planning and Community Funds of the Government of Andalusia (1994). In the second programme period (1994-1999), the Andalusia Global Grant (1994-1999), the Doñana Phase II Operational Programme (1994-1999) and the report to the Monitoring Committee Andalusia (1999) were used in order to complete the information provided by the Operational Programme of Andalusia (1994-1999).

The Community Support Framework (CSF) included a wide range of individual annual or multi-year projects, whereby 47% of the funding was allocated to infrastructure mainly for transport and the environment. In this period, the CSF played a leading role in the allocation of projects, according to its strategic guidelines, and in determining the lines of action to be supported by the ERDF. However, the large ROPs undertook this role in the following programme periods. The full amount of EU financial aid raised the real GDP of Andalusía by an average more of 3.7% versus the scenario without EU support (Sosvilla and García, 2009).

Table 2 shows initial financial allocations. Information on initial allocations in most of the CSF programmes is not available, only for the first programming period of 1989-1993. It merely provides a point of reference and consequently, final figures are not included in total 1994-2013 ROP initial allocations.

**Table 2.** *Andalusia ROP 89-13, initial financial allocations (M€ const 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	40.29	0.8%	73.86	1.4%	408.03	4.8%	138.20	1.7%	620.09	2.8%
2	454.56	9.0%	255.53	4.9%	474.91	5.6%	1,711.39	20.9%	2,441.83	11.2%
3	88.18	1.8%	200.90	3.9%	273.80	3.2%	363.40	4.4%	838.10	3.8%
4	636.42	12.6%	1,370.61	26.5%	2,449.40	28.9%	2,404.98	29.4%	6,224.99	28.5%
5	70.40	1.4%	185.92	3.6%	268.84	3.2%	264.82	3.2%	719.58	3.3%
6	53.60	1.1%	150.32	2.9%	239.62	2.8%	711.40	8.7%	1,101.34	5.0%
7	3,682.40	73.1%	2,911.92	56.4%	4,351.43	51.3%	2,535.41	31.0%	9,798.75	44.9%
8	9.34	0.2%	17.82	0.3%	23.10	0.3%	46.34	0.6%	87.26	0.4%
<b>TOTAL</b>	<b>5,035.2</b>	<b>100%</b>	<b>5,166.9</b>	<b>100%</b>	<b>8,489.1</b>	<b>100%</b>	<b>8,175.9</b>	<b>100%</b>	<b>21,831.9</b>	<b>100%</b>

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.

For the most part, the central government was responsible for the NOPs, managing 23 individual projects, whereas the remaining 100 individual projects fell into the jurisdiction of the regional government. The individual projects, which were significant in size, mostly focused on infrastructure in the areas of transport and environment as well as on education and business services. Although the regional programmes were the shared responsibility of both the central and the regional

governments, the majority of these actions were undertaken by the regional government. This confusing situation was resolved by differentiating between two sections in the CSF, the regional (CSF-R) and the multiregional (CSF-MR) sections, which defined the actions in the remits of the regional and central governments.

The 1989-1993 CSF was divided into six priority axes. The largest priority, Priority 1 (Axis 7 in Table 2), Transport infrastructure, was allocated funding of €3.7 billion (73.1% of the total). The fundamental strategic priority was to improve accessibility within the region as well as to the rest of Spain and Europe through the construction of new motorways and road and rail infrastructure. The second largest priority, Priority 5 (Axis 4 in Table 2), was allocated funding of €0.6 billion and mainly concentrated on the creation of infrastructure for the environment (water supply and sanitation) and to a lesser extent, on energy networks, scientific-technological infrastructure and health. The last largest priority, Priority 2 (Axis 2 in Table 2) was dedicated to supporting business activities, crafts and industry with €0.4 billion through investment grants, the provision of industrial sites and enabling access to financial instruments for SMEs (mutual guarantee societies). It also invested in tourism infrastructure and in education.

The structure of the 1994-1999 CSF contained seven priority axes. The largest priority, Priority 1 (Axis 7 in Table 2), Territorial Integration, focused on transport and telecommunications infrastructure being the main priority despite a slight reduction in resources allocated to the priority (€2.9 billion and 56.4% of the total). The second largest priority, Priority 6 (Axis 4 in Table 2) with €1.3 billion financial allocation, included the environmental infrastructure (water and sanitation) and the conservation and protection of nature, as well as healthcare, information society and research and development (mainly for universities and research centres). The third important area in terms of the size of allocations was Priority 2 (Axis 2 in Table 2), with up to €0.2 billion dedicated to actions related to regional incentives and investment aid for the creation, expansion and modernisation of enterprises, SMEs and urban development projects.

The 2000-2006 CSF was structured into six priority axes. Priority 6 (Axis 7 in Table 2) was again allocated the largest volume of funding (€4.3 billion and 51.3%) and focused on transport and energy networks, comprised of major motorways and roads (€2.0 billion) and railways (€1.8 billion). With the second largest volume of funding at €2.5 billion (28.9% of the total), Priority 3 (Axis 4 in table 2) focused on the environment, natural habitats, water supply and wastewater management. The last main priority, Priority 1 (Axis 1 in Table 2), which concentrated on improving competitiveness and employment, had a total funding of €0.5 billion (5.6% of the total) from the Andalusia ROP.

The 2007-2013 NSRF has six Priorities in which the initial allocations for Andalusia are 14% lower than 2000-2006 period (€9.7 billion at 2000 prices). Priority 4, Transport Infrastructure, retains the largest proportion of allocated funds (€4.1

billion). However, at 35% of the NSRF, its relative weight is considerably lower than in previous periods and is closely followed by Priority 3, representing the environment, water and natural environment and risk prevention, endowed with a €2.4 billion expenditure allowance (21.5% of NSRF). Priority 1, Knowledge Economy, has experienced a large increase in funding to €2.1 billion (18.5% of NSRF) coming from the Knowledge Economy (€772 million) and the Technology Fund (€1,015 million). The Andalusia ROP schedules spending of up to €363.4 million on innovation, providing major support to the transfer of knowledge with an emphasis on fostering cooperation between companies and research and technology centres in order to strengthen the regional innovation system.

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

Since the end of 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.

To analyse the impact of infrastructure investments, we resort on the one hand to the literature and reports from well-known Spanish institutions (Lázaro Araujo, 1988; Draper and Herce, 1994; Alvarez-Ayuso *et al.*, 2003; Lopez-Rodríguez, Faiña and López Rodríguez, 2007; La Caixa 2007; De la Fuente, 2010; Escribá and Murgui, 2010). On the other hand, the regional database of the Spanish economy BD.MORES of the State Secretary for Budget and Expenditure (Minister of Finance and Public Administration, 2011) has been also used. Moreover, separate databases have been built using financial amounts, achievements and results indicators collected from the final implementation reports of the Andalusia Regional Operational Programme (ROP).

In the area of transport infrastructure, efforts were aimed at improving the accessibility, connectivity and productivity of the region. Two main challenges were identified, namely the development of the longitudinal axis for east-west connections and the north-south axis for accessibility.

#### **a. Road transport connection and accessibility infrastructures**

In the first programming periods of 1989-1993 and 1994-1999, the priority was articulate and 'unlock' the territory. In the 1989-1993 period, the backwardness of Andalusia was perceived to be a consequence of the serious lack of infrastructure and investment into the region, and therefore most actions aimed at creating infrastructure were seen as synergy-generating actions that would lead to the release of endogenous economic growth potential. For this reason, programmes in Andalusia were developed from a supply side perspective instead of being driven by

demand side considerations. The programmed interventions were expected to trigger later expansions of the demand side of the market.

The adopted strategic option concentrated on breaking the isolation and dislocation of the region. The foremost priority, in terms of the financial volume as well as other resources including labour and materials, was transport infrastructure. The CSF's second strategic priority throughout the 1989-1992 programme period was the environmental supply, regulation and sanitation of water, another area that was severely lacking in Andalusia throughout the early 1990s. Less relevance, but far from negligible importance, was given to structural adjustment and, to a lesser extent, to other needs in the fields of enterprise, innovation, education and social cohesion. The evolution of the programme strategies over successive periods has followed a consistent pattern with the initial programmes focusing heavily on transport infrastructure, with an increasing focus on enterprise and innovation to directly address the low level of competitiveness in the region, with transport infrastructure remaining an important priority all the way.

In the 1994-1999 period, the system of planning and programming in Spain was consolidated, and therefore the CSF for Objective 1 regions was adopted without encountering the problems experienced in the previous period. Moreover, the need to implement individual projects outside of the regular Operational Programmes was eliminated. A novelty in this programme period was the Cohesion Fund (CF), the purpose of which was to support investment in the trans-European transport networks (TENs). The CF is not included in the CSF for Objective 1 regions, as it is active in large projects throughout the whole of Spain. An important objective supported by the ERDF was trans-border cooperation Spain-Portugal, through which important transport and environmental infrastructures were executed in this period.

**Map 2: Andalusia territorial articulation**



*Source: Own elaboration.*

The construction of the A-92 highway, Seville-Granada-Baza (395 km), in the 1989-1993 period, was followed in the following period (1994-1999) by the extended to the southern stretch to Almería (209 km) and the connection to the Trans-European Transport Network with the Seville-Huelva highway (99 km) leading to Portugal in the west. Also, in 1989-1993 period, the Madrid-Seville highway, linking Cádiz, Seville and Córdoba to Madrid through the mountainous areas in the north of Andalusía was completed. Also, the Algeciras to Málaga connexion (139 km) of the Mediterranean highway and developing the stretch of highway by Almería. The realisation of these projects involved an investment of up to €226.2 million (€113.1 million ERDF funds). In 1994-1999, the access from Cádiz to Seville highway (previously constructed without ERDF funding) leading to Madrid was constructed.

The 2000-2006 programme period had the highest level of funding of up to €11.3 billion to completing and consolidating the transport infrastructures network. The weight of investment in transport infrastructure was significantly high in this period, due to the much-needed improvement and consolidation of some of the roads that faced significant geographic and geological challenges. Special attention was paid to road safety, as well as repair and conservation needs, which were of substantial size due to the scope and complexity of the network of motorways and roads in Andalusia. Throughout this process, the dimension of nature protection was taken into account with the inclusion of compensatory measures such as building sound screens and other protective measures for wildlife.

These two groups of measures together used over 90% of the funding of the priority and 42% of the total CSF funding. In this period, the construction of highways and roads was concluded, ending the focus on high-capacity internal links and on external access. In addition, improvement was made to provincial roads (enhancing accessibility to many remote places). The final section of the A-92 highway linking Huelva with Portugal was completed in the 2000-2006 period, and additional 446.44 km of highways has been completed, as well as, 103.40 kilometres improved.

In 2007-2013 period, the Objective 1 regions were renamed as Convergence regions. The NSRF, replaces the CSF, includes the Andalusía's regional OP and the ERDF-Cohesion Fund, which is mainly directed at large projects for the trans-European transport infrastructure network (TEN). Despite the reduction in funds in this period, infrastructure still remains an important element to finish the motorway network with great emphasis on the renovation of motorways and roads improving the accessibility of different towns and areas to the high-capacity transport network (actions planned at more than 2000 km). Further actions included the construction of the A-32 Linares-Úbeda section leading to Albacete (237 km) with an eligible investment of €105.7 million. There was a substantial improvement of external accessibility and internal connectivity of Andalusia evidenced by the reduction in travel times and number of accidents. These positive results were due to an increase in road infrastructure (65%) that was clearly attributable to ERDF investments.

Detailed information has been gathered regarding the effects of the A-92 on the speed and comfort of trips, congestion levels and number of accidents. Table 3 illustrates the reduction in distances and travel times:

**Table 3. Distances and travel times\***

Routes	Distance (km)	Time without A-92	Time with A-92	Reduction (%)
Huelva-Málaga	292.80	191.88	161.93	-15.61
Huelva-Almería	487.29	347.11	268.24	-22.72
Huelva-Granada	337.06	235.02	187.02	-20.42
Málaga-Jaén	198.59	128.06	115.40	-9.89
Málaga-Granada	120.34	86.56	73.90	-14.63
Seville-Almería	391.19	295.65	216.66	-26.72
Seville-Granada	240.95	183.54	135.54	-26.15
Seville-Málaga	197.19	141.03	111.08	-21.24
Cádiz-Granada	325.47	229.45	189.32	-17.49

\* Average speed considered: 100 km/h on the highway and 80 km/h on national and local roads.

Source: Economic Analysts Andalucía

The statistics show that the volume of traffic on the A-92 has been increasing since the beginning (Table 4). That increase is observed both for light vehicles (with high importance given to job commuting, as well as for heavy vehicles (representing around 13%-14% of total vehicles), as over one-third of Andalucía companies use the A-92 for logistical reasons.

**Table 4. A-92 Traffic volume**

Year	Vehicles km year*	% increasement
1994	1,639,088,564	-
2000	2,388,212,286	31.4%
2005	3,326,414,809	28.2%
2007	3,513,657,393	5.3%
2011	3,075,575,801	-14.2%

\* Does not include A-92 North.

Source: Regional Department of public works and Transport.

The data for road accidents on the A-92 South was 142, between 1998 and 2001, with a total of 24 dead and 248 wounded, with the implementation of the various sections of the highway, the number of accidents was reduced to 90, with a balance of 13 dead and 110 injured (46% less). These achievements have improved accessibility and enabled an increase in commerce and business activities by 'unlocking' large areas of Andalucía. Furthermore, this experience illustrates the rationale of the strategy adopted in the region. The initial investment push from the supply side generated a latter expansion of demand regarding the new infrastructure, unveiling some previously hidden productive forces.

The first cost-benefit analysis for the A-92 motorway was not favourable (CSF 1989-1993 evaluation, Ministerio de Economía y Hacienda, 1994). However, further

studies (Junta de Andalucía, 2002) demonstrated the high social economic profitability of the A-92, because this highway facilitated the connections with the Atlantic and Mediterranean axis, generating lower access costs for all Andalusian regions. The cost-benefit ratio is approximately 3.4 percent, which is considered to be a high ratio for this type of infrastructure. Recent figures allow an estimate that shows the total saved travel time and the reduction of accidents to be significantly above initial estimates. The travel time saved translated to a saving of €2,039 million and moreover, the social benefits related to car accidents amounted to over €454 million. It should be mentioned that the A-92 motorway affected the central and the northern part of Andalusía as well as the Mediterranean area to a lesser extent.

However, in terms of opportunity costs, the A-92 must be compared with other feasible alternatives. The main alternative that was postponed until later programme periods was the completion of the Mediterranean motorway linking Almería-Málaga-Algeciras, one of the most populated areas in Andalusía. At present, most of this motorway has been constructed, but it has yet to be completed as the stretch near Motril (the coast of Granada) is still under construction in the current programme period. Mediterranean areas have gained accessibility to inland Andalusía, Madrid and other parts of Spain, but the motorway network had a comb structure for a long time with the A-92 as the main axis and the Mediterranean cities as the ends of the comb tips

#### **b. Railways connection infrastructures**

In the case of railway infrastructure, there were also important deficiencies in the 1980s regarding both the internal connections within the region and the external connections with the rest of Spain.

The first high-speed line (AVE) connecting Seville-Córdoba-Madrid entered into service with the Seville Expo in 1992 and was the first of its kind in Spain. It was one of the most important projects funded by the ERDF in the 1989-1993 CSF, and it was implemented by the central government. The sub-projects financed in Andalusía were the construction of the double-track line for speeds of 250 km/h to 300 km/h between Córdoba and Seville (€707.6 million) and other associated facilities (electrification, security, automatic train driving, telecommunications, environmental works and landscape recovery, etc.). The Madrid-Seville line was a large project that required the construction of 16,030 metres of tunnels and 31 viaducts of 9,845 metres. At that time, it would have been extremely difficult for such a large project to be undertaken without the support provided by the ERDF. The new route reduced the journey time of 500 km to 2.5 hours, directly connecting Seville, Córdoba and Madrid city centres. The duration of the journey is comparable to that of planes when airport transfers and boarding times are considered, whereby the new high-speed line (De Rus and Inglada, 1993; Sanchez Ollero et al., 2011) not only clearly outperformed travelling to Madrid by car but also provided a comfortable alternative to flying, providing additional advantages such as reliable timetables and

computer connections while travelling, so enabling work. The line has supported an annual traffic of close to 3 million passengers since 1999, peaking in 2000 and 2001 at 4 million. On average, over 6,000 users, of which 60% are business travellers, travel between Seville and Madrid each day, according to the railway observatory. Since the opening of the line, over 111 million customers have used the route.

In the period of 2000-2006, the new high-speed line (AVE) connecting Málaga with Córdoba (and then to Madrid) was funded by the ERDF through the Andalucía ROP with a total expenditure of €1,734 million. The new line became operational in 2007, reaching an annual traffic of 2 million passengers. The Córdoba junction has also supported the Seville-Málaga connection and other railway communications in Andalucía through interchanges and new routes that connect to its path. A specific type of train of lesser speed (AVANT) serves the Seville-Córdoba-Málaga line, completing the route in a convenient time of two hours. Passenger numbers reached 0.95 million in 2008. These types of trains were designed to solve the problem of travelling along tracks with different gauges (the European and the traditional one). In that way, high-speed tracks can be used in combination with conventional ones for passenger routes along the railway system. Also, in this period, and in the 2007-2013 period, railway construction and renovation projects (Jaén and Seville-Cádiz) were carried out on the conventional railway in the transverse axis Seville-Granada.

Currently, due to the development of the high-speed lines with Madrid from Seville and Málaga, the connectivity with the rest of Spain has reached a satisfactory level. However, some needs still exist, mainly related to improvements in the transversal regional network and in the fields of intermodal connections and metropolitan-urban transport, all of which are heavily dependent on cars.

### **c. Airport and Ports infrastructures**

The main needs regarding airport and port infrastructure, as observed in the second part of the 1980s, have also been addressed. Most airports received funding for extensions and improvements, whereby investments in 1989-1993 focused on Seville, Almería and Málaga. Later, in the 2000-2006 period, investments were made in Jerez and Málaga with a new terminal building built in Málaga airport as well as other activities connected to urbanisation and access. Málaga airport has a large volume of airport traffic and numerous international connections associated with the tourist development of the Costa del Sol. It represents a large part (over 60%) of total air traffic in Andalucía, with the number of passengers reaching 9.4 million and increasing by 36% (up 12.8 million) in 2011. At present, six airports connect the region to cities in Spain, Europe and non-European destinations.

Investments in ports were made to improve their facilities and operational capacities in accordance with their specialisation. So, in the 1994-1999 period, a large number of small ports received investments aimed at improving their infrastructure for the fishing fleet and enlarging and renovating areas for nautical sports and tourism

activities. In the 2000-2006 period, the main investments were aimed at the creation of sports areas and improvements in facilities and docks. The traffic of containers grew from 1.4 million in 2000 to 2.3 million in 2009 with the number of ships increasing from 28,000 to 33,000 between those years. The 2007-2013 period includes investments to improve the facilities and operational capacity of the Port of Algeciras (€164.15 million expenditure), one of the most important in Spain, provides international trade services and moves a large proportion of container traffic in the Mediterranean, growing from 1.3 million tonnes in 2000 to 2.2 million in 2007. Other important port in Andalusia is the port of Málaga since it is the second most important in Spain for cruise ships only behind Barcelona.

#### **4. Conclusions and policy measures**

Programmes in Andalusía were mainly supply side interventions aiming at releasing the growth potential hidden by the deficiencies in infrastructure. This strategy implied a very marked leading role of the public sector and a minor role for demand analysis and private agents' participation in the design and implementation of programmes. This approach facilitated the development of a great programme of investment in infrastructure, to which the ERDF resources were channelled.

However, this strategy might have limited the efficiency of certain actions, since the opportunity costs resulting from the selection of projects might have been ignored or not sufficiently evaluated. A greater role for demand side considerations in the designing of the projects could have determined that the interventions triggered major market expansions. Moreover, a larger participation of the private agents could have particularly enriched the ERDF actions in the later programmes, when the regional development strategy turned towards the enterprise, innovation and competitiveness fields. Andalusia would possibly have taken more advantage of the Structural Funds, if more attention had been paid to the opportunity costs of investment projects and if companies and private bodies had played a more significant role in promoting innovation and internationalisation of small businesses. Despite the current financial and real estate crisis, Andalusia has undergone a significant modernisation of its infrastructure, environment and human and knowledge capital, as well as improvements in the quality of life. A large part of the achievements is attributable to ERDF investments which have led to the capitalisation and upgrading of the Andalusian economy and society in a relatively short amount of time. However, additional challenges remain to be solved with the desired increased participation of private actors.

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