

## **Impact assessment of the European Structural Funds in Andalusia: 2000 to 2006**

**M. Alejandro Cardenete**

*European Commission (JRC-IPTS)  
Department of Economics, Quantitative Methods and Economic History  
University of Pablo de Olavide*

Email: macardenete@upo.es

**María del Carmen Delgado**

*Department of Economics, Quantitative Methods and Economic History  
University of Pablo de Olavide, Spain*

Email: mcdellop@upo.es

**Abstract:** After two decades during which the region of Andalusia has been receiving financing from the European Structural Funds with the objective of developing, through these investments, the economic sectors that can boost economic growth in the region, this paper proposes an analysis that reveals the economic impact of the European funds obtained by Andalusia during the period 2000 to 2006. With this purpose, the Social Accounting Matrix for Andalusia in year 2005 and a linear multipliers model are used. This model helps identify the sectors that benefit the most from the transfer of income provided by these funds, and to show how these exogenous injections bring about an impact on the endogenous accounts. The results underscore the significant contribution of the European funds to the growth of the region during the period analysed (2000 to 2006).

**Keywords:** Social Accounting Matrix, Multipliers Model, European Regional Policy, Impact Analysis

**JEL Classification Number:** C67

### **1. Introduction**

Ever since the accession of Spain to the European Union (EU), Andalusia has been the recipient of European Funds. Classified as an Objective 1 Region, it was included from the beginning among the beneficiaries of the actions of the European Regional Policy, due to its structural weaknesses caused by a lack of basic infrastructures.

According to the Dirección General de Fondos Comunitarios (Directorate General of Community Funds) of the Spanish Ministry of Economy, Objective 1 of the Structural Funds is the main priority of the EU cohesion policy. This is the reason why two thirds of the credits granted as Structural

Funds (more than 135 000 million euros) are devoted to the recovery of the most disadvantaged regions, those called “Objective 1 Regions”, which have a gross domestic product (GDP) below 75 % of the European average.

This work presents an analysis that is framed within general equilibrium models, namely within SAM linear models<sup>1</sup>. It implements a linear multipliers model that allows revealing the economic impact of the European funds received by the region of Andalusia between 2000 and 2006. This model is an extension of the Leontief Model, which applies the same methodology as the input-output models and is based on the accounting identities of the matrix that allow putting in relation the exogenous injections of income with the accounts that are considered endogenous. This way, it is possible to analyse the impact of the Community aid on all the sectors of the Andalusian economy. The Social Accounting Matrix for Andalusia in 2005<sup>2</sup> is used with this purpose.

## **2. Estimation of the Impact of the Structural Funds on the Andalusian Economy in the Period 2000 to 2006**

In order to calculate the impact of the Structural Funds on the Andalusian economy during the seven-year period under study, a variation of the work by Cámara and Marcos (2009) is developed in which to alternative scenarios are considered:

- 1) The basic or reference scenario<sup>3</sup>, which emerges from eliminating all the Structural Funds received in the period 2000 to 2006 from the database, so as to start from a situation without funds.<sup>4</sup>
- 2) A second scenario in which all the Structural Funds received in the period 2000 to 2006 are injected into the Andalusian economy without funds in order to analyse each fund’s contribution to it. These Funds are: European Regional Development Fund (ERDF), the Guidance Section of the European Agricultural Guidance and Guarantee Fund (EAGGF-G) and the European Social Fund (ESF).

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<sup>1</sup> See, among other works applying this model, Lima and Cardenete (2007) and Cardenete, Fuentes and Mainar (2012).

<sup>2</sup> Cardenete, Fuentes and Polo (2010)

<sup>3</sup> Data obtained from Programa Operativo Integrado de Andalucía (POIA, Integrated Operative Programme of Andalusia) in 2001.

<sup>4</sup> In the case studied by Cámara and Marcos (2009), the funds received by the region of Madrid were subtracted from the Social Accounting Matrix for Madrid in 2000.

**Table 1: Variation of the Total Output of the Endogenous Accounts (thousand euros)**

	Productive sectors	Variation Total Output without Funds (%)	Variation Total Output with ERDF (%)	Variation Total Output with EAGGF-G (%)	Variation Total Output with ESF (%)
1	Agriculture	-6.26	1.59	4.33	0.54
2	Stockbreeding	-28.26	5.55	23.78	2.27
3	Fishing	-14.54	9.87	2.99	2.9
4	Extraction of energy product	-4.24	3.21	0.34	0.77
5	Other extractive industries	-8.83	8.08	0.16	0.73
6	Oil refining and nuclear waste treatment	-3.43	2.65	0.3	0.52
7	Production and distribution of electric energy	-5.65	4.2	0.57	1.02
8	Production and distribution of gas, water steam and warm water	-8.72	6.56	0.51	1.98
9	Water capture, treatment and distribution	-4.78	3.15	1.19	0.56
10	Food	-2.57	1.19	1.14	0.28
11	Textiles and leather	-1.85	1.3	0.07	0.5
12	Wood manufactures	-5.8	4.72	0.41	0.79
13	Chemical industry	-3.53	2.59	0.42	0.57
14	Mining and iron and steel industry	-5.47	4.71	0.15	0.69
15	Metal manufactures	-8.58	7.6	0.42	0.72
16	Machinery	-14	13.49	0.22	0.46
17	Vehicles	-2.05	1.45	0.11	0.51
18	Construction materials	-11.2	10.64	0.18	0.52
19	Transport	-4.41	3.08	0.16	1.26
20	Other manufactures	-3.44	2.77	0.19	0.52
21	Construction	-13.24	12.96	0.08	0.29
22	Trade	-4.07	2.86	0.84	0.44
23	Transport and Communications	-4.71	3.81	0.42	0.56
24	Other services	-3.6	2.77	0.36	0.52
25	Sale-oriented services	-5.48	2.43	0.15	3.06
26	Non-sale oriented services	-11.82	9.91	0.01	2.34
	<b>Total</b>	<b>-6.63</b>	<b>5.12</b>	<b>1.52</b>	<b>0.97</b>

Source: Own elaboration from Lima, Cardenete and Usabiaga (2010).

### 3. Results

After the simulation, we are going to explain the results. Table 1 shows the branches of activity that are most affected by the removal of the funds. Those are: Stockbreeding (2), with a negative variation of 28.26 %; Fishing (3), with a 14.54 % reduction of its output; Machinery (16), with a decrease of 14 % and Construction (21), where the negative variation amounts to 13.24 %. On the contrary, the branches of activity that are least affected by the removal of the funds are: Textiles and leather (11), with a reduction of 1.85 %; Vehicles (17), with a negative variation of 2.05 %; Food (10), where the negative variation reaches 2.57 %, and Other manufactures (20), with a 3.44 % reduction of the output.

In addition, this table describes the second scenario, in which the Structural Funds received in the period 2000 to 2006 are injected into the Andalusian economy without funds, with the aim of analysing the contribution made by each fund. So:

- 1) With the injection of ERDF Funds, the total output is increased by 16 738 329 thousand euros, an amount that represents approximately a 5 % increment. The activity branches with a greater output increase are: Machinery (16), with a 1.49 % variation; Construction (21), with an increase of 12.96 %; Construction materials (18), where the %age reaches 10.64; Non-sale-oriented services (26), with a 9.91 % increment, and Fishing (3), with a 9.87 % variation. On the contrary, the branches of activity that are least affected by the injection of ERDF are: Food (10), with a 1.19 % increment; Textiles and leather (11), with a 1.30 % variation; Vehicles (17), with a 1.45 % increase; Agriculture (1), with 1.59 %, and Sale-oriented services (25), with a 2.43 % variation. Some accounts increased their output in a greater degree than others that nevertheless receive more financing from the ERDF. This is, for example, the case of the Construction Materials sector (18), the output of which increases to a greater extent than that of the Non-sale oriented services (26), despite its receiving less funding from that source.
- 2) With the injection of EAGGF-G Funds, the total output increases by 2 110 049 thousand euros, with an average increase of approximately 1.5 %. The branches of activity that experience a higher increase of their output are: Stockbreeding (2), with a 23.78 % variation; Agriculture (1), with a 4.33 % increase; Fishing (3), which reaches a 2.99 %; Water capture, treatment and distribution (9), with a 1.19 % increase, and Food (10), with a 1.14 % variation. On the contrary, the branches of activity that are least affected by the injection of EAGGF-G are: Non-sale-oriented services (26), with a 0.01 variation; Textiles and leather (11), with a 0.07 % increase; Construction (21), with a close 0.08 % increase; Vehicles (17), with a 0.11 % variation, and Sale-oriented services (25), with a 0.15 % increment of the output. It is also worth remarking that certain accounts that do not directly receive an injection of EAGGF-G, such as Water capture, treatment and distribution (9), are

nevertheless benefited from that injection to a greater extent than other accounts receiving direct funds from this source.

- 3) With the injection of ESF Funds, the total output is increased by 2 335 990 thousand euros, an increment of approximately 1 %. The branches of activity in which the output increases the most are: Sale-oriented services (25), with a 3.06 % increase; Fishing (3), with a 2.90 % variation; Non-sale-oriented services (26), where the increase reaches 2.34; Stockbreeding (2), with a 2.27 % increment, and Production and distribution of gas, water steam and warm water (8), with a 1.98 % increase. On the contrary, the branches of activity that are least affected by the injection of ESF are: Food (10), with a 0.28 % variation; Construction (21), with a 0.29 % increase; Trade (22) with a 0.44 % increase; Machinery (16) with 0.46 %, and Textiles and leather (11), with a 0.5 % increase of the output.

The increment in the output of Stockbreeding (2) is very similar to that of the Sale-oriented services (25), but the ESF destined to the latter are comparatively larger than the ones received by the former.

#### **4. Concluding Remarks**

This work aims at identifying the Andalusian productive sectors that are most benefited by the reception of European Structural Funds. With this purpose, the Social Accounting Matrix for Andalusia in 2005 has been used and a linear multipliers model has been applied. The results obtained allow classifying the sectors of the Andalusian economy according to their capacity to absorb the exogenous injections of income derived from these funds and to experience structural changes that may boost the growth of the regional economy. These results reveal the region's need to receive those funds. They demonstrate that the output variations in every sector, once the injections of income associated to the funds are introduced, are quite significant.

It is therefore possible to conclude that the European Structural Funds clearly help promoting the development of Andalusia through the investments made in this region by the European Regional Policy, which, as it was underlined above, not only affect those sectors that are the direct recipients of the funds, but also influence all the other economic sectors.

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