Structural Funds. Light and Shadow from Andalusia

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Abstract

The authors' main objective in this paper is the evaluation, by means of Input-Output Analysis, of the impact Structural Funds have on relevant indicators from the region of Andalusia (Spain). They also inquire into the following fact: investments that should, in theory, generate a positive discriminatory effect in growth of the target region, instead produce an induced stimulus on the rest of the national economy - especially in the most industrialized regions- greatly impairing the intended results. To this end, the effects produced in Andalusia have been compared with those generated elsewhere in Spain. Should this hypothesis be confirmed, the concepts on which these EU instruments are based, regarding regional and cohesion policies, might have to be reviewed for achieving convergence among regions that show high dependence on the national economy.

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1. Introduction

The main objective of EU Regional Policy is clearly set down in Article 130A of the Treaty establishing the European Union: "*the reduction of economic disparities among the regions of the Community and the need for a development policy of the least favoured regions*". In other words, the strengthening of social and economic cohesion among European regions. The strategy traditionally followed by Regional Policies has been fostering development by means of investments ('push effect') that will produce structural changes in key sectors which then could pull the economic growth of the region ('pull effect'). From the analysis of the different regional production structures, the endogenous potential of each region is encouraged by means of investment efforts (Structural Funds) focused on those sectors or projects favouring ongoing and balanced development in less favoured regions.

In the last decade, there has been a significant increase in the number of impact analyses concerning to EU Regional Policy, especially in the North European regions, United Kingdom and Germany.[1] However, in the southern countries, these evaluations have been poorly carried out or have not even been made (Wadley, 1986). Even today, the evaluation methods for studying the impact of Structural Funds are very heterogeneous and subjective. There is a complete lack of systematisation in spite of the great impetus undertaken by the D.G. XXII (currently D.G. XVI) since the 1988 reform, to co-ordinate and implement a yearly evaluation of the use of Structural Funds.

This paper presents an evaluation of the Community Support Framework's (CSF) 1989/1993 effects on Andalusia, the main target 1 region in Spain. The effects on macroeconomic indicators such as product, added value, employment, etc., are quantified by input-output simulations. First, a verification of the theoretical effect of investment is carried out. Community Regional Policy is based on the hypothesis of compensatory effects on the target regions. However, we try to find out whether financial support produces an incentive to national growth rather than a structural change in the region, that would favour the convergence of Andalusia towards central European regions. Second, we inquire whether Andalusian growth is in fact making the old economic structure problems worse . In this case it might well be that the concept of regional policy, which is the basis for instruments such as the CSF for the allocation of Structural Funds, does not produce the most favourable results regarding the convergence of the less favoured regions.

2. Community Regional Policy. Structural Funds

In orthodox economics, there has always been some consensus on the idea that unregulated markets generate inequality. Okun (1975) points out a *trade-off* between efficiency (perfect markets) and equity (equitable distribution of resources) that must be managed properly to achieve a fair balance between them.

[1] For an insight into the criteria followed by the European Commission for the evaluation of Structural Funds, see Bachtler & Michie (1995) and Mc Eldowney (1991).

When this idea is applied within the European Union context, it becomes obvious that the purpose of establishing the Single Market is none other than encouraging economic 'efficiency' and fostering growth through the integration of markets and production factors. However, this process generates a series of structural changes in the economies (reallocation of factors, changes in the composition of sectorial activities, etc.) which involve undesirable effects from the perspective of 'equality.' As several authors show, Molle (1990) amongst others, these negative effects are concentrated, on the one hand, in certain regions or countries (spatial dimension) and, on the other, in social areas or specific sectors of the labour market (social dimension).

As regards the regional dimension, the process of opening and merging economies based on the formation of a single market can lead to the creation -or perpetuation- of 'economic deserts' in the less-developed regions because of the trends towards localisation of investments[2]. One cannot refrain from thinking that, like looking into a curved mirror, market forces are distorted by legal, administrative and fiscal differences between member States. This fact necessitates the intervention of the European Commission with co-ordinating and supervisory actions for improving the criteria of competitiveness and quality. The disparity between the economies of different regions, as well as the different levels of development and income, constitute the main obstacle to the achievement of a single market free of tension.

Hence, from the very beginning, the need to justify EU action regarding structural policy is evident. The pursuit of cohesion between European regions has promoted a series of normative and financial instruments that have evolved considerably, both in content as well as size, when compared to the initial tariff agreements and tax compensations.

Although social policy has played an important role from the start in the redistribution policies of the European Union, regional policies have not always occupied an important place within the EU activities. Despite the existence in the preamble of the Treaty of Rome of the need to "*reduce the differences existing between regions*" and, specifically, reduce the disadvantages of the less favoured regions, a proper regional policy, with funds intended for this purpose, was not established.

It was not until the first expansion of the Community in 1972 that, in the Conference of Paris, vigorous Community action was demanded to reduce regional and social differences, and the need was acknowledged to increase the items in the Social European Fund and create a Regional Fund. In 1992, redistribution became an obligation as pointed out in Article 130 A of the Treaty Establishing the European Community: "*In order to promote its overall harmonious development, the Community shall develop and pursue its actions leading to the strengthening of its economic and social cohesion. In particular, the Community shall aim at reducing disparities between the levels of development of the various regions and the backwardness of the least favoured regions, including rural areas.*"

[2] This trend has been observed since the beginning of Community action. Several studies highlight the differentiation between North and South in terms of the distribution of the positive and negative effects of Community action, as pointed out in "Regional Impact of Community Policies in Europe" (Molle & Cappelin, 1988).

With the creation of the Single European Market, the term 'economic and social cohesion' is consolidated in the acquis communautaire (established Community law and practice). It is necessary to establish policies to reduce the negative effects stemming from the single market over regions located on the economic periphery. This fact is even clearer with the inclusion of new members such as Spain, Portugal and Greece, countries with serious structural problems whose solution requires an integrated and co-ordinated regional policy. Faced with the existing great regional diversity,[3] the Community's approach to regional policy has enabled it to adopt microeconomic policies and to differentiate between various levels of development and regional specialisation as well as to take into account the spatial and population characteristics of the regions.

2.1. ERDF, EAGGF (Guidance Section) and ESF

The principal instrument of Community Regional Policy is composed of the set of Structural Funds, of which the main one is the European Regional Development Fund (ERDF). Its goal is the correction of regional inequalities and imbalances. From its creation in 1975[4] its regulation has gone through several reforms. The main one was carried out in 1988, with the creation of a single regulation for the various funds. The aim of this process was to take advantage of synergy between funds, preventing any possible problems in the reduction of regional disparities, caused by the enlargement of the Single Market.

The evolution of the budget allocated to the ERDF underlines the increasing importance of this fund after the mentioned reforms. The amount stood at 257.7 million ecu in 1975 and in 1984 it was already 2,140 million ecu. The Maastricht Treaty gives greater weight to the present CSF (1994-1999). The so-called 'Delors II package' involves an increment of about 50% as compensation for the loss of autonomy in agricultural, industrial and trade policies deriving from the adoption of community rules.

The European Social Fund (ESF), the first of the Structural Funds, was created in 1958 and quickly became the backbone of social policy. Within the initial objective of minimising the negative social effects of a single market, the ESF includes action directed at the training and reorganization of certain worker groups such as youth and long-time unemployed.

Since 1964, the European Agricultural Guarantee and Guidance Fund (EAGGF) has served agricultural policy, which takes up most of the resources of the Community budget. Its two main objectives are:

Guaranteeing minimal income levels to agricultural producers by purchasing their products at special prices. The EAGGF (Guarantee Section) carries out these functions.

Improving agrarian structures. This is done through the EAGGF (Guidance Section).

The financial means of the three Structural Funds have grown considerably in the period

[3] For example, the relationship between the most developed region (Paris) and the poorest one (Northern Portugal), in terms of GNP per capita, is 8 to 1.

[4] EEC Regulation 724/75.

under study. From 7,000 million ecu (19%) of the Community budget in 1987 to 14,000 million ecu (in real terms) in 1993. This is a fourth of the 1993 budget (the objective-one regions take up 9,200 million).

Community Initiatives are measures taken to complement Community action in certain fields. These initiatives improve the regional implementation of policies, contributing to minimizing regional problems such as: border cooperation, economic and social reorganization of the regions affected by a sectorial crisis, assistance for peripheral regions, professional training and the creation of employment, insertion of excluded social groups, modernization of the fishing sector in coastal regions, etc. Community Initiative programs are co-financed with Structural Funds and are implemented by the beneficiary states and regions. Since 1989 to 1993 the budget of these initiatives has been about 5,500 million ecu.

In the time-period we are studying, Structural Funds are aimed at five high-priority objectives, which define a Community map based on the assignment of each region to some of them. The objectives are:

1. Promoting the development and structural adjustment of the less- developed regions.
2. Reestructuring the industry of the regions severely threatened by industrial decline.
3. Fighting long-term unemployment. Facilitating theinsertion of youth into the professional sector.
4. Facilitating worker adaptation to industrial transformation and the evolution of production systems.
5. Concerning the Common Agricultural Policy:
    a) Accelerating the adaptation of agrarian structures.
    b) Promoting the development of rural areas.

Each Structural Fund deals with certain objectives: the RDEF is focused on objectives 1, 2 and 5b; the ESF mainly on 3 and 4; and finally, the EAGGF (guidance section) on 5a.

Objective 1 is aimed at regions with a GDP per capita of less than 75% of the Community average in the last three years. In the case of Spain, Andalusia is clearly one of the many objective 1 regions.

The 'Delors I Package' modifies the distribution of Structural Funds, giving priority to regional cohesion through the creation of a new instrument for regional policy: the Community Support Framework[5] (CSF) 1989-1993. As many authors point out (Bradley et al., 1995) the basic objective of the CSF is not to cause demand *stimuli* or to create policies aimed at guaranteeing stable incomes , but to help toward self-sustained development in the less-developed regions. It is an opportunity for these regions to rectify economic problems associated with low per capita income, low productivity, high unemployment and under-employment, a rigid public sector, and trade imbalances.

[5] Based on European Commission guidelines, each member state creates a Regional Development Plan. This Plan must be approved by the Commission, which ranks the development areas.

Several principles guide the implementation of the Structural Fund (ECC, 1989):

a) Association between public and private agents involved in the action.
b) Addition of the credits granted by the Structural Fund regarding the total public expenditure ('additionality principle').
c) Programming its implementation, formulating a global strategy that will be carried out for the required period of time.
d) Focusing of financial support (budget by programmes).
e) Coherence with the national economic policies of the member States.
f) Simplification, monitoring, and flexibility of the implementations.

Based on these principles, member states produce plans for each one of the objectives, specified by region, which we now address to.

2.2. Regional policy evaluation in the European Union

Before the Structural Fund reform in 1988, given the short experience in regional policy, as well as the relatively small budget for any action , the evaluation of the effects of the Funds on the regions was very deficient. The non-existence of effective monitoring by the Commission, together with the plurality and subjectivity of methodologies did not help the situation.

Since 1988, the importance of establishing evaluation methods and monitoring practices regarding investments has grown together with the significance of the Community's regional policy. The 1988 regulation required the *ex ante* appraisal and the *ex post* evaluation for the CSF of the different regions regarding the five high-priority objectives. The evaluation of impact is developed at three levels: Community, regional, and project. Also, the Commission requires an annual evaluation of the global implementation of the Fund.

Currently, three factors give a new direction regarding Fund evaluation:

a) Criticisms about the excessive bureaucracy and rigidity concerning the annual evaluation documents mentioned above;
b) The growth of Structural Funds, deriving in part from the next point;
c) Priority in terms of economic and social cohesion stemming from the Maastricht Treaty. New guidelines about evaluation issues are included in the new Structural Funds Regulation for the period 1994-1999[6], especially for the Objective 1 regions. The Monitoring Committees' *ex ante* appraisal and *ex post* evaluation are reinforced after this norm in order to assure more flexibility and efficiency regarding Community assistance (art. 6).

As the new Regulation shows, objectivity and homogeneity of information are requested from the very moment the Regional Development Plans (RDP) began to be drawn up. There is an obligation for the member states and regions to provide the Commission with sufficient

[6] Council regulation (EEC) N° 2081/93 of 20 July 1993 amending Regulation (EEC) Nº 2052/88 on the tasks of the Structural Funds and their effectiveness and on coordination of their activities between themselves and with the operations of the European Investment Bank and the other existing financial instruments.

information on the current state of development of the region and the impact of actions carried out within the frame of the Community Regional Policy (art.8).

D.G. XVI has assumed the monitoring and evaluation role for the regions included in Objectives 1 and 2. The efforts to quantify statistics in terms of cohesion or convergence aim at strengthing the design of regional statistics in EUROSTAT. In this sense, the works deriving from the pilot program for 1993-1994, MEANS[7] (Methods for Actions of a Structural Nature), are very important.

In spite of the existence of different approaches, the problems regarding how to deal with the evaluation of Community financial assistance continue to be substantial (Bachtler & Michie, 1995):

> Multiplicity and conceptual differences of methods and measures; lack of data.
> Confluence of several financial instruments from different performance (national, regional, local) and evaluation levels (projects, programs, global CSF). Similarly, the different spatial scale does not facilitate the process.
> *Principle of additionality* in Community Funds. This principle produces political and technical problems in calculating the exact share that the EU must contribute, because it depends on national expenditure.
> The short life-span of the CSF. The first CSF finished in 1993. The non existence of a historical series to analyze trends does not facilitate the analysis of medium- and long-term effects.

2.3. Community Regional Policy in reference to Andalusia.

2.3.1. Spanish Regional Development Plan 1989-1993

The RDP 1989-1993 represented the global Regional Development Plan for the group of Spanish regions included as objective 1 for the period 1989-1993. This document became the testing ground for Spanish regional policy, specifically directed at the less developed regions. This plan, based on the Community guidelines, finally approved by the European Commission as a guiding instrument for the investment of Structural Funds to these regions during a fixed period of time, in the form of Community Support Framework (CSF) or Single Programming Documents (SPDOC).

The basic objectives of the RDP 1989-1993 were:

- Growth of the GDP per capita and convergence toward values close to the national average by the end of the period.
- Annual increment in employment following an average rate of 2.4% during the period 1989-1993.
- Concerning productivity, the RDP aimed at obtaining average values around 90% of the national productivity rate. This growth would be supported by the transformation of the

[7] The MEANS objective is to promote an appraisal and evaluation community culture to establish and improve the efficiency of these kinds of processes applied to Regional and Cohesion Policies.

agrarian structures and greater industrial growth, as well as productive diversification and modernisation.

Reduction of the primary sector's weight in the production structure of the regional economy to obtain greater diversification.

Production diversification in relation to the industrial sector to avoid situations of industrial decline.

Providing economic and social infrastructures and facilities, mainly in transport, telecommunications, energy and hydraulic sectors, given their influence on economic development.

Promotion of new production activities and the development of the endogenous potential of these regions.

Stimulation of regional endogenous potential based on a stronger presence of public action supporting local initiatives and promoting favourable conditions for development (technological innovation, diffusion of innovations, new technologies, etc.).

Among its objectives the RDP 1989-1993 aimed at giving a strong impulse to Andalusia in order to incorporate it into the self-sustained development group by the year 2000.

In a specific section centred on Andalusia, the RDP objectives were:

Creation of employment.
Income growth and redistribution.
Integration of production structures.
Improvement of the quality of life and correction of inequalities.
Protection of the environment.

A development strategy was designed following these guidelines:

Speeding up production structures by establishing sectorial priorities based on endogenous potential.
Solving a serious lack of production infrastructures.
Using production factors efficiently.
Investing in technological development.
Promoting dynamic management.
Correcting the lack of social facilities .
Improving efficiency in the territorial system.

Given the importance of the primary sector in Andalusia, one of the proposed key development areas axes stands out: " *making full use of the agricultural and fishing potential, as well as improvement of the capacity and level of penetration of the Andalusian industry to supply the primary sectors*". Other key areas are related to the tourism sector and to the development of transport infrastructures, and social and sanitary facilities.

2.3.2. The Community Support Framework 1989-93 for the objective 1 Spanish regions. The Regional Sub-framework for Andalusia.

As we pointed out previously, the Community Support Framework (CSF) was created in the 1988 Reform of the Structural Fund. The CSF is a set of multi-annual strategic planning

instruments that translate the guidelines described by the national RDP to the regional level. It is financed mainly with Structural Funds plus the corresponding co-finance from the member State as stated by the Additionality principle.

Each CSF is negotiated by the member State and the Commission, in order to establish the development priorities on which the Community support will focus. The application of the Additionality and Cooperation principles (between regional and local agents, as well as Commission and national authorities) are explicitly addressed.

The specific principles of the CSF 1989-1993[8] for objective 1 Spanish regions are:

a) Territorial Strategy: Integrating these regions with Europe, and with the most developed ones in Spain.
b) Structural Strategy: Implementation of the necessary infrastructures for development; modernization of production structures; cooperation with Portugal in the border regions.

The core areas of the CSF 1989-1993 for the Objective 1 regions are as follows:

1. Integration and territorial articulation. Infrastructure.
2. Industry, handcraft sector, and business services.
3. Tourism.
4. Agriculture and rural development.
5. Infrastructures to support economic activity.
6. Revaluation of human resources.
7. Technical assistance, follow-up and information.

The CSF can be divided into two main blocks:

a) The Pluri-regional Sub-framework. This part is managed by the national administration (which are projects from Government Ministries and the local and national public corporations).
b) The Regional Sub-framework. The co-financed support from the regional government is included in this block.

The total public expenditure set aside for this CSF is 18,408 million ecu, of which 9,779 million come from Community Funds. In Table 1 public expenditure coming from the Structural Fund in Andalusia is shown, classified by axes and source of finance.

In order to study the investment made by the ERDF in Andalusia during the CSF 1989-1993 period , it is necessary to take into account, besides the investments arising from the different Sub-frameworks, investments coming from other Community Initiatives[9].

As Table 1 shows, the total investment in Andalusia can be estimated at 864,699 millions of pesetas (1990 ptas.) for the period. Associated private sector investment is not included

[8] CSF for spanish regions objective 1 was ratified by the Commision on 31/12/1989. Its term was from 1/1/1989 to 31/12/1993.

[9] These initiatives are financed by the ERDF (15%) and other undefined quantities come from other Funds. During this period, several initiatives were approved, among others: LEADER, ENVIREG, INTERREG, PRISMA, STRIDE, NOW, HORIZONT.

because of the lack of official data. We will limit our analysis to evaluating the effects of public Funds. According to the Spanish Regional Accounting from the Spanish Institute of Statistics INE), this figure was slightly more than 28% of total public investment, and 2% of the gross added value (GAV) accounted for Andalusia during the period 1989-93. Also, these five years were really excellent for public investment, due to the events that took place in 1992 (Seville). From a purely quantitative point of view, it is obvious that the CSF was a very important investment in the context of the Andalusian economy.

TABLE 1
Structural Funds in Andalusia 1989-1993.
(1990 millions pesetas)

AXIS			***ERDF***			***EAGGF***	***ESF***	***TOTAL***
			CSF		***TOTAL***			
			Multi-reg.	***Regional***		***Guidance***		
AXIS 1	*Infrastructure*	*Own F.*	*141.050,9*	*34.913,7*	*175.964,6*	-	-	*175.964,6*
		Comm. F.	*147.673,4*	*43.797,4*	*191.470,8*	-	-	*191.470,8*
		Total P.E.	*288.724,3*	*78.711,1*	*367.435,4*	-	-	*367.435,4*
AXIS 2	*Industry, Grafts Sector And Business Services*	*Own F.*	*14.380,6*	*13.262,5*	*27.643,1*	-	-	*27.643,1*
		Comm. F.	*15.018,7*	*15.502,1*	*30.520,8*	-	-	*30.520,8*
		Total P.E.	*29.399,3*	*28.764,6*	*58.163,9*	-	-	*58.163,9*
AXIS 3	*Tourism*	*Own F.*	*9,3*	*5.363,1*	*5.372,4*	-	-	*5.372,4*
		Comm. F.	*9,3*	*5.717,8*	*5.727,1*	-	-	*5.727,1*
		Total P.E.	*18,6*	*11.080,9*	*11.099,5*	-	-	*11.099,5*
AXIS 4	*Agriculture And Rural Development*	*Own F.*	-	*7.224,8*	*7.224,8*	*37.223,6*	-	*44.448,4*
		Comm. F.	-	*8.830,3*	*8.830,3*	*41.739,2*	-	*50.569,5*
		Total P.E.	-	*16.055,1*	*16.055,1*	*78.962,9*	-	*95.017,9*
AXIS 5	*Infrastructure To Support Economic Activity*	*Own F.*	*23.380,7*	*21.702,0*	*45.082,7*	-	-	*45.082,7*
		Comm. F.	*24.595,9*	*25.720,0*	*50.315,9*	-	-	*50.315,9*
		Total P.E.	*47.976,6*	*47.422,0*	*95.398,6*	-	-	*95.398,6*
AXIS 6	*Human Resources*	*Own F.*	*61,5*	*3.596,4*	*3.657,9*	-	*91.839,2*	*95.497,1*
		Comm. F.	*75,1*	*4.395,6*	*4.470,8*	-	*102.980,2*	*107.450,9*
		Total P.E.	*136,6*	*7.992,0*	*8.128,7*	-	*194.819,4*	*202.948,0*
AXIS 7	*Technical assistance, follow-up and information*	*Own F.*	-	*265,0*	*265,0*	-	-	*265,0*
		Comm. F.	-	*795,9*	*795,9*	-	-	*795,9*
		Total P.E.	-	*1.060,9*	*1.060,9*	-	-	*1.060,9*
Miscellaneous Community initiatives		***Public Expenditure***	***10.863,8***	***22.711,2***	***33.575,0***	-	-	***33.575,0***
TOTAL		***Own F.***	***178.883,0***	***86.327,5***	***278.463,5***	***37.223,6***	***91.839,2***	***407.526,4***
		Comm. F.	***187.372,5***	***104.759,1***	***312.453,1***	***41.739,2***	***102.980,2***	***457.172,5***
		Total P.E.	***377.119,2***	***213.797,8***	***590.917,0***	***78.962,9***	***194.819,4***	***864.699,2***

Source: Own elaboration from Junta de Andalucía (1994) and Ministerio de Economía (1995).

Axis 1 (Integration and Territorial Articulation) is the most important target of the CSF in Andalusia, and is basically dedicated to transport infrastructures, taking up 42.5% of the total public expenditure. Axis 6 (human resources) takes up 23.5% of total expenditure, mainly covering ESF support. If we only consider ERDF investment, the second place would be

taken by Axis 5 (Investments in support infrastructures) with 17.1% of the ERDF, with investments fundamentally aimed at environment and supply facilities.

3. Methodology and Results

Input-output analysis is one of the most commonly-used techniques for assessing regional impacts and the effects of policies on regions. It is a conditional forecasting method with the assumption, among others, that the economy is in equilibrium before the economic stimulus takes place, the impact of which is to be assessed.

Input-output analysis provides some advantages (Davis, 1990) over other techniques traditionally used for the same purposes (for instance, the economic base and cost-benefit analysis):

a) The unit of measurement used is "sales", while in the economic base analysis this is "employment" and in the revenue-expenditure analysis this is "revenue".
b) The stimulus to be assessed can be originated by changes in patterns of consumption, investment, public expenditure, or trade balance of payment.
c) Direct and indirect components of the impacts can be estimated.
d) It enables the estimation of the multiplier for each sector and makes possible inter-sectorial relationship analysis.
e) Finally, it is more suitable for large- scale regional economies, while the other methods are more effective for small-scale analysis as well as for isolated and specific regional economic effects.

However, there are some limitations inherent to the input-output analysis[10] as well, such as:

a) While it enables sectorial analysis, given its simplicity, other econometric models are more suitable for the study of the basic equilibrium of the economy.
b) It is necessary to work under the hypothesis of the stability of technical coefficients[11], stressing the mechanical character of the estimation and questioning the validity of long-term results.

In this paper the multipliers used are obtained from a Leontief simple model, underestimating the effects of household consumption, which are accounted for in type II multipliers.

Our intention is to assess just the effects of the investment of Structural Funds on output, added value and employment using input-output analysis[12], without taking into account external economies[13] deriving from such Funds in the long run.

[10] For a more extended description of these limitations see Morillas (1982) and Herce (1995)
[11] However, this determining factor does not only affect input-output analysis, since the stability of coefficients also affects the methodologies previously referred to (base multiplier in the economic base theory and propensity in expenditure model).
[12] This repercussion can be estimated from direct effects (induced by the investment) and from indirect effects (taking into account the inter-relationship and sectorial induced effects).
[13] External economies: added and induced effects, as a consequence of infrastructure, equipment and human welfare improvement derived from the investment.

4. Input-output tables of Andalusia and Spain as instruments for the evaluation of the impact of Structural Funds 1989-1993.

An important requirement for the correct assessment of the investment impact of Structural Funds would be the availability of annual technical coefficient matrices for the years covering the CSF and Miscellaneous Community initiatives operations. In this case, it would be possible to convert the investment into an annual vector of demand in order to simulate its effects on input, added value, imports, and employment for each year.

However, the existing limitations would still be relevant and it is necessary to highlight them:

a) For the operating years of the Funds only the 1990 Andalusian and Spanish Input-Output Tables are available[14] from which inter-industry, added value import and gross capital formation coefficients as well as employment multipliers are to be obtained. However, 1990 was a middle year within the Structural Fund operation period, and, for this reason it can be considered as a representative year. The results from the calculations of the effects can be understood as if the whole investment was accomplished during such a year, regardless of the hypothesis of coefficient and multiplier stability during the period 1989-1993.
b) Complete information about the distribution among the regions of Structural Funds does not exist for the period 1989-1993[15]. For EAGGF (Guidance Section) and ESF estimations made by the Andalusian Economy and Estate Board have been used (Correa et al. 1995), on the contrary, there is a very detailed material for ERDF investments in Andalusia.
c) The classification of the proceedings of the CSF and Miscellaneous Community initiatives into eight concepts is not entirely equivalent to the classification provided in input-output tables. In addition, it is essential to distribute Structural Funds investment between the different economic activity sectors (Fontela and Morillas, 1991) which, despite being an important issue, has not been taken into account in much research work. We have used the DGXXII proposal (BIPE conseil, 1991)16 and clustered the investment funds into eight areas, related to the activity sectors of the R44 NACE-CLIO, which are different from those chosen by the CSF. The classification proposed in the CSF and in the cited BIPE Conseil document is detailed in Annex 1.

[14] Therefore, for Andalusia and Spain there is only information for 1990. Furthermore,, for the region denominated in this paper as the "Rest of Spain" such information is not available.

[15] In order to assess the impact of CSF and Community Initiatives, it is necessary to consider Spanish public investment as they are complementary. Therefore, when referring to investment in Structural Funds it will include those investments made by the EU and those by the Spanish public sector. The present paper uses 1990 million pesetas using a gross capital formation deflator (GCF) in order to work in constant pesetas, since the funds are considered to have a more equivalent meaning to GCF than to other final demand components.

[16] This methodological document allows the conversion of the investments from the different projects collected in the CSF into a sectorial aggregation structured by sectors. This is done by distributing a percentage of the total amount of the fund investment in each one of the eight sections from the different action sectors of the R44. The problem of the aggregation of the investment between 44 action sectors is solved, therefore, by classifying each one of the Structural Funds projects and actions in a specific sector among the eight proposed in this document.

d) It seems obvious that the foregoing obliges us to carry out a new classification in which the matrices from the original tables (TIOAN and TIOE, both divided into 56 branches sectors) are added to the 44 branches. It is necessary to note that the results obtained from Leontief model multipliers are not independent of the number of branches sectors used in the classification. In addition, three of the 44 branches sectors (specifically Coal mining (3), Radioactive material (6), and Transport related activities (32)) do not present movement in the 1990 Andalusian input-output table. Therefore, the classification used in this paper is composed of 41 branches, as shown in Annex 2.
e) Annual aggregation is not complete for the totality of Structural Funds, given that there is no annual estimation of public investment originated by those Funds, and therefore, these facts makes the annual assessment of its possible effects impossible.
f) Finally, an input-output table for the rest of Spain is not available nor a disaggregation of its relationship with Andalusia, which would allow a multiregional approach capable of revealing "linkage" and "feedback" effects among regions.

3.2. The assessment of the impact of Structural Funds in Andalusia and its repercussions in the rest of Spain.

As stated above, the definition of development axis and the distribution of investments among the different productive sectors have been carried out based on BIPE intermediate typology. The classification used in Table 1 following these criteria yields the results obtained in Table 2 and the distribution by area as shown in Annex 3, where a territorial distribution of the funds has been undertaken as well, according to the criteria that will be presented below.

TABLE 2

Distribution of Structural Funds by BIPE Axis (1989-1993)

(1990 millions pesetas)

BIPE AXIS	***ERDF***	***EAGGF Guidance***	***ESF***	***Total Axis***
A.1. Office-supply material, computer equipment and precision equipment	*5.623*	*0*	*0*	*5.623*
A.2. Other industrial equipment	*1.815*	*0*	*0*	*1.815*
A.3. Construction	*15.112*	*0*	*0*	*15.112*
A.4. Infrastructure	*496.948*	*0*	*0*	*496.948*
A.5. Education and research	*18.926*	*0*	*194.819*	*213.745*
A.6. Studies, advice and communication	*16.232*		*0*	*16.232*
A.7. Aids to enterprises (except primary sector)	*36.262*	*0*	*0*	*36.262*
A.8. Aids to primary sector enterprises	*0*	*78.963*	*0*	*78.963*
TOTAL	***590.917***	***78.963***	***194.819***	***864.699***

Source: Junta de Andalucía (1994), Consejeria de Economía y Hacienda.

As can be observed, Infrastructure, with almost half a billion pesetas (57.5% of the total amount), and Education and Research with more than 200,000 million pesetas (24.7%), mainly coming from ESF, are those development axis which bring in a greater amount of investment. Figure 1 shows the distribution of each of the funds regarding total public expenditure, as well as their implementation by development area. To a large extent, ERDF funds are the most important and represent 68% of total investments. The European Social Fund, which is highly significant because of its concentration in Area 5, Education and Research, takes up 23% and, finally, EAGGF (Guidance Section), focussed on Area 8, Aid to primary sector enterprises, contributes the remaining 9%. Area 4, Infrastructure, is the one that consumes a greater proportion of the funds from the ERDF (84.1%). As known, this concerns, large investments devoted to infrastructure, basically highways (such as the A92) and railways (the high-speed train, AVE). This concept, together with SEF training courses, account for more than 82% of the total amount of government expenditure.

3.2.1. Evaluation of the impact on Andalusia.

Although basic formulations of the input-output model are widely known, we will briefly review the procedure used in order to obtain these results. The starting point is the accounting demand equation, in which total production is the sum of intermediate and final demand:

$$x^T = X^T i + y^T$$

Where x^T is the total production vector, X^T is the total intermediate consumption matrix, i is a unitary column vector (as we are working with 41 activity sectors, the range of this vector is 41*1) and, finally, y^T is the final demand vector.

Identifying the equation components and differentiating global resources utilisation, regional production and demand from those originating in the rest of Spain and the rest of the world, the following equation is obtained:

$$x^R + m^{RE} + m^{RM} = (X^R + X^{RE} + X^{RM})i + y^R + y_m^{RE} + y_m^{RM}$$

The basic hypothesis of the model is the linearity and homogeneity of the production function, with constant input coefficients indicating the minimum quantity of the goods i needed to produce one unit of the goods j, which, in practice, means the following definition of the technical coefficient:

$$x_j^R = \frac{X_{ij}^T}{a_{ij}^T} \Rightarrow a_{ij}^T = \frac{X_{ij}^T}{x_j^R} = \frac{X_{ij}^R}{x_j^R} + \frac{X_{ij}^{RE}}{x_j^R} + \frac{X_{ij}^{RM}}{x_j^R} = a_{ij}^R + m_{ij}^{RE} + m_{ij}^{RM}$$

In this expression, $a_{ij}^R \in A^R$; $a_{ij}^{RE} \in M^{RE}$ y $a_{ij}^{RM} \in M^{RM}$, A^R being the domestic inputs coefficients matrix, M^{RE} the rest of Spain intermediate import coefficients matrix, and M^{RM} the rest of the world intermediate import coefficients matrix.

Hence:

$$x^R + m^{RE} + m^{RM} = A^R x^R + M^{RE} x^R + M^{RM} x^R + y^R + y_m^{RE} + y_m^{RM} =$$
$$= (A^R x^R + y^R) + (M^{RE} x^R + y_m^{RE}) + (M^{RM} x^R + y_m^{RM})$$

This equation is fulfilled, also, for each of the three addends: local production, imports from the rest of Spain, and imports from the rest of the world, respectively.

For regional production $x^R = A^R x^R + y^R$, that is to say, $\left(I - A^R\right)^{-1} x^R = y^R$ and finally, $x^R = \left(I - A^R\right)^{-1} y^R$, with $x^R > 0$; $\forall y^R \geq 0$. An increase in final demand will cause a change in regional demand of the magnitude given in the following expression: $\Delta x^R = \left(I - A^R\right)^{-1} \Delta y^R$.

From this open Leontief model basic equation, the following applications are possible:

1. Calculation of regional gross added value increase (current market price): taking gross added value coefficients at current market prices from TIOAN 90 (v_j^R) and applying those coefficients to the calculated regional production increase.

$$\Delta VAB^R = \hat{v}^R \Delta x^R = \hat{v}^R (I - A^R)^{-1} \Delta y^R, \text{ for } \quad v_j^R = \frac{VAB_j^R}{x_j^R}$$

Where ΔVAB^R is the gross added value increase vector, VAB_j^R are added values from TIOAN90 for sector *j* and, finally, $\hat{v}^R$ is the diagonal matrix composed of added value coefficients from TIOAN90. It is assumed that added value coefficients remain constant.

2. Regional employment increase calculation: By multiplying employment coefficients (e_j^R) from TIOAN90 and regional production increase.

$$\Delta E^R = \hat{e}^R \Delta x^R = \hat{e}^R (I - A^R)^{-1} \Delta y^R \text{ for } \quad e_j^R = \frac{E_j^R}{x_j^R}$$

ΔE^R being the employment sectorial increase vector produced by Structural Funds, and E_j^R sector j regional employment from TIOAN90, and $\hat{e}^R$, sectorial coefficients employment/product in the Andalusian diagonal matrix. It is assumed that employment coefficients remain constant, and therefore, if those of the year 1990 compiled in TIOAN are not representative for the whole period 1989-93, the employment figures obtained would diminish its reliability, which is already diminished in the field of employment.

3. Imports increase calculation, from the rest of Spain as well as from the rest of the world:

The former are obtained by adding up intermediate imports from the rest of Spain and from equivalent imports, Δy_m^{RE} :

$$\Delta m^{RE} = M^{RE}\Delta x^R + \Delta y_m^{RE} \Rightarrow \Delta m^{RE} = M^{RE}\left(I - A^R\right)^{-1}\Delta y^R + \Delta y_m^{RE}$$

The constancy of the intermediate imports matrix from the rest of Spain is assumed.

The latter, imports from the rest of the world, are defined as the sum of intermediate imports from the rest of Spain and equivalent imports, Δy_m^{RM} :

$$\Delta m^{RM} = M^{RM}\Delta x^R + \Delta y_m^{RM} \Rightarrow \Delta m^{RM} = M^{RM}\left(I - A^R\right)^{-1}\Delta y^R + \Delta y_m^{RM}$$

The constancy of the intermediate imports matrix from the rest of the world is assumed.

Therefore, total imports are determined as follows:

$$\Delta m^R = M^{RE}\Delta x^R + M^{RM}\Delta x^R + \Delta y_m^{RE} + \Delta y_m^{RM} = \left[\left(M^{RE} + M^{RM}\right)\left(I - A^R\right)^{-1}\right]\Delta y^R + \left(y_m^{RE} + y_m^{RM}\right)$$

Final demand imports, $\left(y_m^{RE}, y_m^{RM}\right)$, are obtained by applying the relevant coefficient from the Gross Capital Formation (GCF) table (for which constancy is assumed) to the total amount of investment funds.

TABLE 3

Structural Funds impact assessment in Andalusia, by sectors

(Increase in 1990 millions pesetas)

	Branches Sectors	***Prod.***	***G.A.V.***	***Empl.***	***Import***
1	*Agriculture, hunting, forestry and fishing.*	*35.150*	*20.971*	*11.470*	*8.660*
2	*Coal mining, other mining and radioactive material*	*1.345*	*846*	*257*	*6.372*
3	*Crude petroleum*	*43.903*	*17.646*	*445*	*11.298*
4	*Electricity, gas and water.*	*52.968*	*19.005*	*2.370*	*17.704*
5	*Basic metal industries*	*2.489*	*927*	*36*	*22.577*
6	*non-metallic industries.*	*86.775*	*36.224*	*8.074*	*90.306*
7	*Chemicals.*	*17.521*	*5.436*	*722*	*19.124*
8	*Manufactures of fabricated metal products.*	*46.065*	*20.730*	*7.827*	*28.402*
9	*Non-electrical machinery*	*9.472*	*3.816*	*975*	*17.866*
10	*Office-supply and information treatment machinery.*	*7.106*	*3.872*	*873*	*11.829*
11	*Electrical material and accessories*	*2.093*	*1.003*	*208*	*6.261*
12	*Cars and motors.*	*608*	*233*	*49*	*6.855*
13	*Other transport material.*	*41.033*	*18.716*	*3.901*	*12.048*
14	*Meat industries*	*1.533*	*371*	*81*	*396*
15	*Milky industries*	*499*	*149*	*27*	*116*
16	*Others food industries*	*3.341*	*854*	*231*	*890*
17	*Beverage industries*	*2.812*	*1.525*	*181*	*2.071*

18	*Tobacco*	*0*	*0*	*0*	*0*
19	*Textile and textile confection.*	*456*	*159*	*89*	*520*
20	*Leather industries.*	*20*	*9*	*4*	*43*
21	*Wood and wood products, including furniture*	*2.472*	*840*	*463*	*879*
22	*Paper and paper products, printing and publishing*	*6.694*	*3.070*	*665*	*9.476*
23	*Rubber and plastic products*	*1.821*	*916*	*188*	*5.435*
24	*Other manufacturing industries*	*533*	*203*	*82*	*885*
25	*Construction*	*115.997*	*63.306*	*21.025*	*0*
26	*Recovery and repairing*	*13.137*	*5.380*	*2.016*	*583*
27	*Whole sale and retail trade*	*15.814*	*11.784*	*3.514*	*10.441*
28	*Restaurants and hotels*	*26.527*	*12.133*	*4.627*	*0*
29	*Land transportation*	*43.489*	*27.954*	*4.613*	*3.700*
30	*Maritime and air transportation and storage*	*1.605*	*1.126*	*243*	*2.804*
31	*Communication*	*41.879*	*37.481*	*3.245*	*0*
32	*Financial institution and insurance*	*14.560*	*7.970*	*4.229*	*1.499*
33	*Business services*	*124.168*	*93.704*	*12.379*	*15.885*
34	*Real estate renting services*	*23.476*	*10.630*	*0*	*0*
35	*Educational services*	*92.539*	*53.027*	*75.215*	*4.257*
36	*Sanitary and similar services*	*185*	*134*	*17*	*0*
37	*Recreational and cultural services*	*17.367*	*14.080*	*1.630*	*29*
38	*Producers of Government Services.*	*0*	*0*	*0*	*0*
39	*Not for sale education and research services*	*52.909*	*49.161*	*17.155*	*0*
40	*Not for sale health services*	*0*	*0*	*0*	*0*
41	*Personal and household services*	*148*	*100*	*57*	*0*
	TOTAL	***950.509***	***545.491***	***189.183***	***319.209***

Source: Own elaboration from Junta de Andalucía (1994) and Ministerio de Economía (1995).

Under territorial implementation of the investment hypothesis, as detailed in Annex 3 and following the TIOAN90 structure, the allocation is the following: 80.3% to the Andalusia region, 11.8% to the rest of Spain, and the remaining 7.9% to overseas. Table 3 summarises the effects on production, added value and employment within Andalusia, as well as the needs of imports produced by theinvestment of 694,215 1990 millions of pesetas, which are supposed to be directly used in Andalusia. The total growth of production and added value is 9%. Assuming a lineal distribution for this figure, the annual average growth generated by the funds can be valued at 1.8% during the 1989–1993 period for both magnitudes. Employment generated by the total investment is almost of 190,000 for the five-year period, which means an approximate figure of 38,000 annual jobs, of which almost 40% would be created in sector 35 (Educational services), from ESF local investments. As has been previously noted, this figure, resulting from the application of the employment-product coefficient, should be assumed with caution.

TABLE 4

Structural Funds impact assessment in Andalusia, by axis

(Increase in 1990 million pesetas)

AXIS		***Prod.***	***%***	***GAV***	***%***	***Empl.***	***%***	***Import***	***%***
A1	*Office-supply material computer equipment and precision equipment*	*3.467*	*0,36%*	*2.087*	*0,38%*	*525*	*0,28%*	*3.536*	*1,11%*

A2	*Other industrial equipment*	*1.291*	*0,14%*	*637*	*0,12%*	*156*	*0,08%*	*1.178*	*0,37%*
A3	*Construction*	*18.627*	*1,96%*	*10.598*	*1,94%*	*3.228*	*1,71%*	*4.514*	*1,41%*
A4	*Infrastructure*	*521.514*	*54,87%*	*272.300*	*49,92%*	*60.884*	*32,18%*	*224.648*	*70,38%*
A5	*Education and research*	*24.540*	*2,58%*	*16.233*	*2,98%*	*8.509*	*4,50%*	*2.693*	*0,84%*
A6	*Studies, advice and communication*	*17.180*	*1,81%*	*12.155*	*2,23%*	*3.679*	*1,94%*	*4.077*	*1,28%*
A7	*Aids to enterprises (except primary sector)*	*33.482*	*3,52%*	*20.294*	*3,72%*	*6.211*	*3,28%*	*15.968*	*5,00%*
	Total ERDF	***620.101***	***65,24%***	***334.304***	***61,28%***	***83.193***	***43,97%***	***256.614***	***80,39%***
A8	*Aids to primary sector enterprises.*	*77.800*	*8,19%*	*44.089*	*8,08%*	*18.400*	*9,73%*	*34.874*	*10,93%*
	Total EAGGF-Guidance	***77.800***	***8,19%***	***44.089***	***8,08%***	***18.400***	***9,73%***	***34.874***	***10,93%***
A5	*Education and research*	*252.607*	*26,58%*	*167.098*	*30,63%*	*87.591*	*46,30%*	*27.721*	*8,68%*
	Total ESF	***252.607***	***26,58%***	***167.098***	***30,63%***	***87.591***	***46,30%***	***27.721***	***8,68%***
	TOTAL	***950.509***	***100%***	***545.491***	***100%***	***189.183***	***100%***	***319.209***	***100%***

Source: Own elaboration from Junta de Andalucía (1994) and Ministerio de Economía (1995).

From a sectorial perspective, the sectors most affected in absolute terms are Business services and Construction, followed by Educational services (ESF), non-metallic industries, and Water, Gas and Electricity. These five sectors account for 50% of the total. It can be noted that the impacts fall strongly on sectors linked to regional specialisation: for example, on construction and its materials (included in the non-metallic industry) and on water and electricity production.

The total amount of imports needed accounts for something like more than a third (33.6%) of the effect on production taking place in Andalusia. Therefore, it can be asserted that one out of every three pesetas invested in Andalusia produces effects outside the region. More accurately, the growth induced by the funds produces an intermediate import need of 148,724 millions of pesetas and an equivalent import need of 170,485 millions of pesetas. As detailed in Table 3, these imports are concentrated in sectors 3 to 10, which are products from basic, metallic and machinery industries produced in the more industrialised regions of Spain and, to a lesser degree, overseas. These sectors alone account for 68.6% of the imports generated by the investment of funds in Andalusia.

Summarising, it can be asserted that the quantitative effect of the funds is important in relation to their weight in the Andalusian economy. However, two issues appear to be of importance:

Their effects lead to specialisation in construction and, as a consequence, increased natural resources consumption linked to this activity. Therefore, it does not contribute to mitigating the lack of integration of the regional productive network.

This excessive specialisation causes a strong 'linkage' towards industrial sectors located in more industrialised regions, and therefore, the assumed compensatory effect of the funds may be strongly distorted.

From the development area perspective (Table 4), the most important effects, are those stemming from the actions carried out in Infrastructures which, accounting for 54.9% of production and for 49.9% of gross added value, generate 32.2% of employment. At the same time, and this fact is especially relevant, those actions also generate, the highest import needs: something like more than 70% of the total. On the other hand, European Social Fund aid generates more employment in the region (46.3%) than the whole set of ERDF actions (43.97%) when the latter accounts for just 26.6% of the total production and 30.6% of the Gross Added Value generated. This fact is probably determined by the high employment/product relationship for the sectors in which ESF activities are concentrated (basically, education and training).

3.2. Evaluation of the impact in the rest of Spain.

One way of estimating the effects of Community funds on convergence, as applied in other papers, is a comparative assessment of the progress of some macroeconomic indicators in Andalusia and in the whole country, as well as the quantification of the effects of these funds on regional economic growth. However, we think that, using these criteria, it cannot seriously be asserted that the relative gains and losses in the convergence process are directly due to the investment of funds when there are so many uncontrolled factors that can intervene in the process.

If it were possible to determine a relationship between the effects of Structural Funds on the region and those caused by this same investment on the rest of Spain, there would be more definite knowledge about whether the positive discrimination effect, which is supposed to be produced by investment, is not just beneficial for Andalusia in development terms but is also relevant in terms of convergence.

An approach to this issue is made possible by applying a final demand impulse to TIOE90 equal to the aggregation of demand in Andalusia and the one located in the rest of Spain $\left(y^R + y_m^{RE}\right)$. An estimation of the effects produced in the rest of Spain can be obtained by subtracting the effects in Andalusia from the former figure (applying y^R to TIOAN90). However, in addition to methodological and reliability differences, it is not possible to assert that national and regional models are going to be nested and produce coherent and comparable results. Rather, looking at regional and national accounting figures, they show exactly the opposite scenario. The scientific community increasingly feels the need for national – regional model coherence (Eding, E. et al., 1997).

Continuing in this line, we have approached this issue by estimating, with the RAS technique, the coefficient matrix for the "Rest of Spain" (RE) region, to which, from now on, we have applied a final demand impulse equal to $(y_m^{RE} + \Delta m^{RE})$, which is the same as the Gross Capital Formation direct imports from the Rest of Spain plus the increased intermediate import need induced by the increase in Andalusian output. The subsequent increase of the Rest of Spain output is, therefore,

$$\Delta x^{RE} = (I - A^{RE})^{-1}(y_m^{RE} + \Delta m^{RE}).$$

The conceptual basis for the calculation of the input-output table for the Rest of Spain[17] is a two-region model (Blair and Miller, 1981) in which national (Spanish) output is considered to be composed of Andalusian plus Rest of Spain output. The RAS technique is applied starting from the Spanish input-output table coefficients structure. The production of the fictitious region "Rest of Spain" and the total intermediate consumption by rows and columns are calculated by subtracting Andalusian figures from those of the Spanish table.

An estimation of the Spanish input-output coefficient table, A^E, to those totals is presented below. This has been done by an iterative RAS procedure (Pulido and Fontela, 1993) in such a way that the obtained matrix, A^{RE}, is coherent with the figures calculated for the Rest of Spain.

It seems evident that, using this procedure, the results of the matrix of the estimated coefficient can be questioned. However, the assumption is much less restrictive than considering that coefficients from the Rest of Spain table are simple differences between the Spanish and Andalusian coefficients. The latter procedure imposes a more specific structure on the table than the methodology first mentioned. As in all other procedures mentioned above, feedback effects among regions have been ignored, given the empirical evidence that demonstrate their minor importance, never higher than 14% (Isard, 1971; pp.245-250), when assuming that exports from Andalusia to the "Rest of Spain" region are scarce in this context. Finally, we have to recall the existence of an added methodological weakness in obtaining the most important addend, $\left(\Delta m^{RE}\right)$. This weakness is due not only to the year-to-year instability of the M^{RE} matrix from which this addend is calculated but also to the difficulty of its statistical "estimation" for a region, which brings into question the validity of the results. In any case, this solution seems more acceptable than the one previously outlined, which uses the differences between regional and national tables. The results obtained are presented in Table 5.

TABLE 5

Structural Funds impact assessment in the rest of Spain, by sectors

(Increase in 1990 million pesetas)

Branches Sectors	*Prod.*	*G.A.V.*	*Empl.*
1 Agriculture, hunting, forestry and fishing.	*10.705*	*5.307*	*103*
2 Coal mining, other mining and radioactive material	*4.407*	*2.638*	*1.526*
3 Crude petroleum	*12.512*	*6.856*	*1.124*

[17] The first work on the creation of a regional table from a national one was accomplished by Czamanski and Malizia (1969) and developed in a more complete way by McMernamin and Maring (1974).

4 Electricity, gas and water.	*28.748*	*19.563*	*5.850*
5 Basic metal industries	*27.964*	*6.995*	*2.339*
6 non-metallic industries.	*29.565*	*16.459*	*6.674*
7 Chemicals.	*20.570*	*8.243*	*1.159*
8 Manufactures of fabricated metal products.	*30.878*	*14.958*	*2.891*
9 Non-electrical machinery	*13.485*	*5.521*	*1.609*
10 Office-supply and information treatment machinery.	*10.965*	*4.678*	*510*
11 Electrical material and accessories	*8.351*	*4.471*	*230*
12 Cars and motors.	*8.421*	*1.994*	*66*
13 Other transport material.	*6.823*	*3.349*	*998*
14 Meat industries	*690*	*164*	*1*
15 Milky industries	*178*	*49*	*0*
16 Others food industries	*3.294*	*1.134*	*15*
17 Beverage industries	*2.352*	*1.155*	*13*
18 Tobacco	*0*	*0*	*0*
19 Textile and textile confection.	*1.418*	*715*	*9*
20 Leather industries.	*126*	*51*	*0*
21 Wood and wood products, including furniture	*1.636*	*734*	*37*
22 Paper and paper products, printing and publishing	*14.805*	*6.598*	*805*
23 Rubber and plastic products	*8.113*	*3.661*	*325*
24 Other manufacturing industries	*1.294*	*589*	*21*
25 Construction	*2.858*	*1.653*	*89*
26 Recovery and repairing	*4.702*	*2.815*	*234*
27 Whole sale and retail trade	*16.659*	*13.751*	*296*
28 Restaurants and hotels	*2.402*	*1.319*	*20*
29 Land transportation	*7.788*	*3.692*	*465*
30 Maritime and air transportation and storage	*5.650*	*3.051*	*318*
31 Communication	*2.409*	*2.137*	*184*
32 Financial institution and insurance	*5.215*	*0*	*333*
33 Business services	*25.396*	*19.659*	*2.499*
34 Real estate renting services	*3.174*	*2.577*	*37*
35 Educational services	*4.971*	*3.560*	*301*
36 Sanitary and similar services	*38*	*30*	*0*
37 Recreational and cultural services	*544*	*436*	*4*
38 Producers of Government Services.	*0*	*0*	*0*
39 Not for sale education and research services	*0*	*0*	*0*
40 Not for sale health services	*0*	*0*	*0*
41 Personal and household services	*0*	*0*	*0*
TOTAL	***329.106***	***170.563***	***31.085***

Source: Own elaboration from Junta de Andalucía (1994) and Ministerio de Economía (1995).

The production generated in the Rest of Spain, as a consequence of ERDF funds in Andalusia, is worth 330,000 million pesetas, which is almost 35% of the production generated in Andalusia, and also originates an added value figure of 31% of the one generated in this region. The effect on employment is of less relevance in the Rest of Spain, given the character of ESF investment that, as mentioned above, has great importance for this question. It is relevant to stress that industrial sectors, from 3 to 13, have a greater pull (60.2%) on the Rest of Spain, as a consequence of investments from EU funds in Andalusia,

followed by Business and wholesale services which, given their level of specialisation, are located in the most developed regions of Spain. This implies that the linkage of activity is quite localised in specific places and not thoroughly distributed throughout the whole of the Rest of Spain. The real multiplier effect for these more developed regions is, therefore, much higher than those obtained here for the Rest of Spain. In addition, industrial, commercial and service sectors are promoted in these regions while in Andalusia the main effects are on the construction sector and the consumption of natural resources.

4. CONCLUSIONS.

The concern for an efficient regional policy is of great interest in the present context of the progressive implementation of the Single Market and of the natural trend toward the enlargement of the European Union.

In order to determine if the target is being achieved , it is necessary to start from an agreed definition of the concept of cohesion. The European Union considers GDP per capita to be the main evaluation indicator. However, regional differences must also be studied by taking into account other issues (Cordero, 1992), such as differences in production structure, efficiency in such structures, labour market disparities, as well as differences in infrastructure and the available social facilities. In addition, it is useful to take into account that the extent to which the objective of cohesion is attained will vary, depending on the variables and sources used to measure the convergence. However, the majority of the research carried out on this topic, not only verifies that the convergence process is taking place very slowly, but also brings into question current EU regional policy.

Traditional critiques of European Union distributive policy have been addressed to the direction and intensity of its regional policy, specifically to the effects of the market on the spatial, social and sectorial concentration of wealth (Cuadrado and Suarez-Villa, 1992). Structural funds are the main instrument of the European Union to reduce development inequalities among regions; however, their effects are offset by the implementation of the rest of EU policies, especially ACP. Another general critique is the shortage of resources assigned to reduce regional inequalities as compared with the amount employed for other EU policies. On the other hand, the duty of co-financing investment requires a substantial effort on the part of objective 1 regions, which often prevents attaining the desired minimal profitability threshold.

Other studies are focussed on the degree of mobility of the factors. Under a neo-classical hypothesis, fully assumed by regional policy, the free movement of factors eventually leads to the achievement of regional convergence. According to this process, labour is displaced toward those places where employment is created, enabling an efficient adjustment between demand and supply in regional labour markets. Nevertheless, the reality differs from this scenario, since factors mobility is not so high as it is in other countries (such as in the USA), neither does it depend so strongly on strictly economic factors such as salary or qualifications.

Investment in transport infrastructures, one of the main destinations of the funds, has a double effect that has been widely studied. Even though its push effect on local economies is undeniable (in terms of the creation of necessary conditions for the location of industries and commodities export) it also implies an important benefit for those more developed regions, due to the widening and creation of new markets, as well as facilitating the exploitation of production resources.

In this paper, we note other possible external effects that may cast doubt on the efficiency of the regional policy pursued , occurring to a greater degree in those recently incorporated regions , which are in the first stages of the processes of integration and development. Upon trying to promote economic development in a region which is strongly dependent on the national economy, an important linkage of activity toward the national economy is produced. Therefore, a balance must be struck between the investment that actually has an impact on the driving sectors of the regional economy and that investment which addresses economic centres outside the region in order to "import" development. The effect of the Single Market allows this linkage to occur, in a more flexible way, toward those more developed regions outside the country.

Nevertheless, the reality is slightly different from the one that inspired the Structural Funds reform in 1988 when the Single Market was mooted. The new changes that have been introduced in regional policy are once again backing the regional sphere, but directed toward specialisation in transport, environment and urban sectors. In addition to the increase in the budget intended for the Structural Funds, which is already a quantitative improvement, greater importance is given in the new regulations to projects related to environmental infrastructures. There is also a group of proposals intended to diversify the means of expenditure that could improve convergence.

On the other hand, for the four less developed countries, the Cohesion Fund is intended to finance projects related to the environment, transport and water resources, focussing action on the redistribution of wealth in those less well-endowed regions in terms of infrastructure and equipment, and in those regions with an endangered environment .

Moreover, cities are recognised as the principal focal points of the impacts in the region, becoming decision, training and diffusion centres for the development of new technologies and telecommunications. Likewise, urban questions in terms of environmental resources, mobility and socio-economic issues are taken into account in some initiatives promoted by the European Union (URBAN standing out among others).

Considering the limitations of data and input – output analysis, noted in section 3, there is no doubt about the quantitative importance and real weight that European funds have on the Andalusian economy and on some of its main macroeconomic variables. On the other hand, thanks to European funds, despite their manifest deficiencies, it has been possible to improve some aspects, e.g., communication infrastructures, and to provide an substantial quantity of resources for social and environmental policies in Andalusia. However, certain aspects cast shadows on the situation, which should concern us seriously, from a local perspective as well as from a national and European viewpoint. These shadows are confirmed by the data published by EUROSTAT (March, 1998) on European convergence indexes in terms of per

capita GDP. According to this indicator, Andalusian convergence (which increased 3 points from 1986 to 1995) is below the Spanish average (which increased by 5.6 points).

In the first place, the concentration of investment on civil engineering infrastructures reproduces and deepens Andalusian non-integrated production structure, which is dependent on the construction sector and a consumer of natural resources (Delgado, 1995; Morillas, 1995). In addition, designed infrastructure has had a more positive effect on Andalusia's external connections than on integration within the Andalusian area and economy (Márquez, 1991). Going deeper into this question, it is widely known in the field of Regional Economy that the development of an appropriate transport infrastructure is a necessary, but not sufficient condition, for economic development (*Mezzogiorno* effect). Furthermore, it can sometimes act as an invasive and dominant element in the regional market by incorporating products from abroad, because the new infrastructure increases opportunities for competition with local producers.

In the second place, it does not seriously contribute to the development of balanced and interdependent industrial and service sectors, which would help solve the serious problems of excessive regional specialisation, non-integrated production structures and hence, high unemployment rates.

In the third place, with Andalusia playing the role of a peripheral region in the Spanish productive system, regional economic growth produced by European Funds generates industry and service sector development in the most industrialised regions of the Rest of Spain, reproducing and reinforcing the classical picture of a dependent Andalusian production structure (Delgado, 1981; Morillas, 1982b; Morillas, 1983). Consequently, with the results obtained for Andalusia plus those produced in the rest of the Objective 1 regions, there are enough indications to believe that the positive discrimination pursued with European Funds is diminished by indirect effects produced in the most developed regions of the country.

This situation, together with the inevitably unfavourable starting conditions and the funds received from other sources, may well be causing real effects on the convergence of cohesion policies implemented in Andalusia such that they are practically void or producing opposite effects to those sought. However, different researchers (Corridor, 1992; Cuadrado et al., 1996) seem to suggest that this is not the case. Therefore, it is necessary to implement more imaginative cohesion policies in order to fulfil the Regional Development Plan's (1989 – 1993) objectives. For income and employment, CSF investments have not succeeded in obtaining serious gains in reaching the development level of the rest of EU regions and, in addition, for specific aspects (productive integration and environment) the above mentioned Development Plan objectives have not been achieved.

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ANNEX 1

BIPE and CSF axis

	BIPE AXIS	CSF AXIS	
A1	*Office-supply material Computer equipment And precision equipment*	*E1*	*Infrastructure*
A2	*Other industrial equipment*	*E2*	*Industry, Grafts Sector and Business Services*
A3	*Construction*	*E3*	*Tourism*
A4	*Infrastructure.*	*E4*	*Agriculture And Rural Development*
A5	*Education and research*	*E5*	*Infrastructure To Support Economic Activity*
A6	*Studies, advice and communication*	*E6*	*Human Resources*
A7	*Aids to enterprises (except primary sector)*	*E7*	*Technical assistance, follow-up and information*
A8	*Aids to primary sector enterprises.*		

Relationship between BIPE axis and CSF sub-axis

BIPE Axis	***CSF Sub-Axis***
A.1. Office-supply material, computer equipment and precision equipment	*2.1. Aids to industry and craft* *2.2. Aids and services to the enterprise.*
A.2. Other industrial equipment	*2.1. Aids to industry and craft* *2.2. Aids and services to enterprises*
A.3. Construction	*5.5. Training equipment* *5.6. Sanitary equipment* *6. ERDF.*
A.4. Infrastructure	*1. Integration and ranking of the territory* *2.4. Industrial and craft Zones* *3.2. Cultural heritage and tourism equipment.* *5.1. Water* *5.2. Energy* *5.3. Environment*
A.5. Education and research	*5.4. Research and development (R&D)* *8. Objective 3-4 (except Axis 3)*
A.6. Studies, advice and communication	*2.2. Aid and service to enterprises* *7. Assistance, follow-up and information*
A.7. Aid to enterprises (except primary sector)	*2.1. Aid to industry and craft* *2.3. Local Development* *3.1. Aid to investments in tourism* *8. Objective 3-4 (Axis 3)*

ANNEX 2

R44 NACE-CLIO	***R41***	***BRANCHES SECTORS***
1	1	*Agriculture, hunting, forestry and fishing.*
2,3 and 6	2	*Coal mining, other mining and radioactive material*
4	3	*Crude petroleum*
5	4	*Electricity, gas and water.*
7	5	*Basic metal industries*
8	6	*non-metallic industries.*
9	7	*Chemicals.*
10	8	*Manufactures of fabricated metal products.*
11	9	*Non-electrical machinery*
12	10	*Office-supply and information treatment machinery.*
13	11	*Electrical material and accessories*
14	12	*Cars and motors.*
15	13	*Other transport material.*
16	14	*Meat industries*
17	15	*Milky industries*
18	16	*Others food industries*
19	17	*Beverage industries*
20	18	*Tobacco*
21	19	*Textile and textile confection.*
22	20	*Leather industries.*
23	21	*Wood and wood products, including furniture*
24	22	*Paper and paper products, printing and publishing*
25	23	*Rubber and plastic products*
26	24	*Other manufacturing industries*
27	25	*Construction*
28	26	*Recovery and repairing*
29	27	*Whole sale and retail trade*
30	28	*Restaurants and hotels*
31	29	*Land transportation*
32, 33	30	*Maritime and air transportation and storage*
34	31	*Communication*
35	32	*Financial institution and insurance*
36	33	*Business services*
37	34	*Real estate renting services*
38	35	*Educational services*
39	36	*Sanitary and similar services*
40	37	*Recreational and cultural services*
41	38	*Producers of Government Services.*
42	39	*Not for sale education and research services*
43	40	*Not for sale health services*
44	41	*Personal and household services*

ANNEX 3

Territorial implementation of the funds, by sectors

(1990 millions pesetas)

	Branches Sectors	***Andalusia***	***%***	***Rest of Spain***	***%***	***Rest of the World***	***%***	***Total Branch***	***%***
1	*Agriculture, hunting, forestry and fishing.*	*28.332*	*4,08%*	*4.504*	*4,40%*	*1.548*	*2,27%*	*34.383*	*3,98%*
2	*Coal mining, other mining and radioactive material*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*
3	*Crude petroleum*	*30.127*	*4,34%*	*3.460*	*3,38%*	*1.199*	*1,76%*	*34.786*	*4,02%*
4	*Electricity, gas and water.*	*30.262*	*4,36%*	*9.263*	*9,06%*	*232*	*0,34%*	*39.756*	*4,60%*
5	*Basic metal industries*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*
6	*non-metallic industries.*	*61.323*	*8,83%*	*15.669*	*15,32%*	*47.245*	*69,26%*	*124.237*	*14,37%*
7	*Chemicals.*	*10.567*	*1,52%*	*9.796*	*9,58%*	*1.420*	*2,08%*	*21.783*	*2,52%*
8	*Manufactures of fabricated metal products.*	*42.084*	*6,06%*	*19.889*	*19,45%*	*2.630*	*3,86%*	*64.603*	*7,47%*
9	*Non-electrical machinery*	*8.141*	*1,17%*	*5.797*	*5,67%*	*6.065*	*8,89%*	*20.004*	*2,31%*
10	*Office-supply and information treatment machinery.*	*6.817*	*0,98%*	*7.953*	*7,78%*	*1.939*	*2,84%*	*16.709*	*1,93%*
11	*Electrical material and accessories*	*633*	*0,09%*	*478*	*0,47%*	*104*	*0,15%*	*1.215*	*0,14%*
12	*Cars and motors.*	*41*	*0,01%*	*135*	*0,13%*	*6*	*0,01%*	*182*	*0,02%*
13	*Other transport material.*	*36.689*	*5,28%*	*4.039*	*3,95%*	*5.556*	*8,14%*	*46.283*	*5,35%*
14	*Meat industries*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*
15	*Milky industries*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*
16	*Others food industries*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*
17	*Beverage industries*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*
18	*Tobacco*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*
19	*Textile and textile confection.*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*
20	*Leather industries.*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*
21	*Wood and wood products, including furniture*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*
22	*Paper and paper products, printing and publishing*	*2.261*	*0,33%*	*1.560*	*1,53%*	*124*	*0,18%*	*3.946*	*0,46%*
23	*Rubber and plastic products*	*156*	*0,02%*	*282*	*0,28%*	*15*	*0,02%*	*453*	*0,05%*
24	*Other manufacturing industries*	*317*	*0,05%*	*469*	*0,46%*	*25*	*0,04%*	*812*	*0,09%*
25	*Construction*	*105.518*	*15,20%*	*0*	*0,00%*	*0*	*0,00%*	*105.518*	*12,20%*
26	*Recovery and repairing*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*
27	*Whole sale and retail trade*	*2.035*	*0,29%*	*881*	*0,86%*	*0*	*0,00%*	*2.917*	*0,34%*
28	*Restaurants and hotels*	*10.687*	*1,54%*	*0*	*0,00%*	*0*	*0,00%*	*10.687*	*1,24%*
29	*Land transportation*	*18.424*	*2,65%*	*1.454*	*1,42%*	*0*	*0,00%*	*19.878*	*2,30%*
30	*Maritime and air transportation and storage*	*952*	*0,14%*	*861*	*0,84%*	*0*	*0,00%*	*1.813*	*0,21%*
31	*Communication*	*33.385*	*4,81%*	*0*	*0,00%*	*0*	*0,00%*	*33.385*	*3,86%*
32	*Financial institution and insurance*	*4.827*	*0,70%*	*179*	*0,17%*	*0*	*0,00%*	*5.006*	*0,58%*
33	*Business services*	*94.954*	*13,68%*	*11.491*	*11,24%*	*107*	*0,16%*	*106.552*	*12,32%*
34	*Real estate renting services*	*21.375*	*3,08%*	*0*	*0,00%*	*0*	*0,00%*	*21.375*	*2,47%*
35	*Educational services*	*91.397*	*13,17%*	*4.109*	*4,02%*	*0*	*0,00%*	*95.507*	*11,05%*
36	*Sanitary and similar services*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*
37	*Recreational and cultural services*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*
38	*Producers of Government Services.*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*
39	*Not for sale education and research services*	*52.909*	*7,62%*	*0*	*0,00%*	*0*	*0,00%*	*52.909*	*6,12%*
40	*Not for sale health services*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*
41	*Personal and household services*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*	*0*	*0,00%*
	TOTAL	***694.215***	***100,00%***	***102.268***	***100,00%***	***68.217***	***100,00%***	***864.700***	***100,00%***

% s/ total funds	***80,28%***	***11,83%***	***7,89%***	***100,00%***

Source: Own elaboration from Junta de Andalucía (1994) and Ministerio de Economía (1995).