ASSESSING THE ECONOMIC EFFECTS OF PRIVATE INVESTMENT INITIATIVES IN RURAL AREAS OF SOUTHERN EUROPE: A REGIONAL SAM APPROACH IN GREECE

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Abstract

This paper presents an empirical investigation into the economic effects of private investment initiatives provided to secondary and tertiary SMEs, in the poor, remote, agriculturally-dependent rural area of Aitoloakarnania in Greece. First, the socio-economic profile of the area is presented, followed by a description of the implementation of the related policy-incentives during the 1982-97 period. Subsequently, a regional Social Accounting Matrix (SAM) is used to portray the structural characteristics of the local economy, followed by the estimation of the economic impacts of private investment initiatives, distinguished into investment effects and capacity-adjustment effects. Impact analysis results indicate a moderate impact in terms of the creation of local jobs. On the contrary, capacity-adjustment effects seem to be substantial, however a clear descending trend is observed in terms of job-creation per monetary-unit of private investment. The effectiveness of the regional development policy in terms of the gross cost per job is moderate when only the jobs created on site are taken into account. However, if the jobs created to the whole regional economy are estimated the gross cost per job is significantly lower and this may be a useful measure for policy makers and regional planners.

1. Introduction

Rural regions in the EU are currently undergoing significant economic and social changes, mostly induced by agricultural policy reform, international trade liberalization and the enhancement of the role of rural development policies. These changes are not expected to affect all EU rural areas in an equal manner. Rural areas in the 'centre', characterised by higher population densities, greater proximity to main

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markets, low dependence on farming and a diversified economic base, are expected to face a smoother adjustment process, as their economic and social fabric do not concentrate heavily on farming. On the other hand, rural areas of the 'periphery', characterised by severe remoteness, depopulation, infrastructural inadequacies and high dependence on agriculture, are expected to face a significant structural adjustment process.

Agricultural adjustment in these areas is expected to create a significant influence, as job opportunities in farming are expected to decline and the likely increase of their dependence in welfare transfers will likely create more pressure for them in terms of the maintenance of their fragile social fabric. As already indicated in several fora, the answer to these problems lies on economic diversification and the promotion of an integrated development process, which can be facilitated through (amongst others) the creation and maintenance of viable Small and Medium Enterprises (SMEs) in the secondary and tertiary sectors, respectively.

In Greece (a country dominated by remote rural areas, most of which still depend heavily on agriculture), the first coherent framework of regional development policy incentives to SMEs was introduced by Law 1262/82, later amended and reoriented by Laws 1892/90 and 2234/90. These frameworks funded by both the ERDF and national funds, have provided incentives such as capital subsidies, interest rate subsidies on investment bank loans, tax waivers on profits and increased depreciation rates.

Within this framework, the objective of this paper is to estimate the economic effects of the provision of incentives for (secondary and tertiary sector) private investment, in a Greek peripheral rural area (Aitoloakarnania in Greece) during the period 1982-1997. Research on the effects of regional policy incentives has primarily focused on regional output, employment, capital formation and on aspects of policy efficiency such as additionality, displacement and deadweight, the cost per job created, etc. Shift-share analysis, Keynesian multiplier models and input-output analysis are only a few of the methods used for assessing the efficiency of regional policy incentives on regional economic growth. In this work there is an attempt to assess the relevant economic effects using the regional Social Accounting Matrix methodological framework. The SAM technique is preferred for this particular impact-analysis, as it can comprehensively trace both the growth-generating effects of every single programme/project on the local economy and the importance of the implications arising from links between rural sectors and the macro-economy (i.e. income distribution amongst production factors, firms, households and the public sector).

The next section of the paper presents the main socio-economic characteristics of the study area and describes the implementation of policy-incentives to SMEs in Aitoloakarnania during the last two decades. Section 3 briefly presents the applied methodology, while the following Section deals with the structure of the constructed

regional SAM and the applied regionalisation process. Section 5 presents the results of this research, namely the structural characteristics of the local economy, the investment effects (i.e effects strictly related to investment action) and the capacity-adjustment effects (i.e. related to economic activity generated through the utilization of the generated productive resources). The paper ends with the relevant conclusions.

2. Background to the Study

2.1 Socio-economic Profile of Aitoloakarnania

The prefecture of Aitoloakarnania is located in the mid-western part of Greece, it is a Nuts III area and is characterised as Objective 1 (as the entire country). Aitoloakarnania is located at an average distance of 250 Km north-west of Athens. Its land area of 5,460 sq. Km (4.1 per cent of Greece) is classified as predominantly mountainous (45 per cent of total), while fertile level areas cover around 20 per cent of its land and provide a valuable resource to this agriculturally-dependent economy. Its population amounts to 228,180 people (2.2 per cent of total), and despite a decline during the 1970s, it increased during the 1980s, however at lower rates than the country's population growth. Moreover, population increase at the same time was associated with its urban centres, while rural population continued to decline.

Aitoloakarnania is considered as a remote rural area, lagging behind in development. Historically it has been one of the poorest departments in Greece, associated with low levels of economic development. In more detail, its level of development, expressed by a composite development indicator (Athanasiou et. al., 1995) is 54 per cent (national average = 100) and the prefecture is ranked as penultimate amongst the 51 prefectures of the country. Furthermore, the area has significant inadequacies in its road networks, health and educational infrastructure, compared to the national average standards. In 1991, GDP per capita in Aitoloakarnania represented about 70 per cent of the relevant national average, compared to 83 per cent in 1981. This unfavourable development is mostly due to the disappointing performance of the local economy, rather than to the increase in population (Table 1).

Table 1: Evolution of Population and GDP, Aitoloakarnania, Greece, 1981-91.

Year	Population Aitoloaka-rnania	Population Greece	Density Aitoloa-karnania (persons/ Km2)	Density Greece (persons/ Km2)	% change of population Aitoloaka-rnania	% change of population Greece	GDP Aito-loakarn ania*	GDP Greece*
1981	219,764	9,740,417	40	74	-4.0	10.6	7,876	418,271
1991	228,180	10,259,900	42	78	3.8	5.3	7,864	504,250

* Million Drs, 1970 prices
Source: National Statistical Service of Greece, Population Census Data

In terms of economic activity, Aitoloakarnania is an area with a high dependence on agriculture. Almost half of its labour force is still engaged in farming (Table 2), despite the significant exodus from this particular industry (30 per cent decline in agricultural employment between 1981 and 1991). During the same period, the employment share of the secondary sector has remained stable, while that of the tertiary sector has increased from 21 per cent in 1981 to over 36 per cent in 1991. As in the case of employment structures, the sectoral structure of GDP (Table 2) in Aitoloakarnania differs considerably from other Greek rural areas, as the local economy heavily depends on agriculture. Finally, it is worth mentioning the particularly important farm sector of Aitoloakarnania is mostly concentrated on the production of highly-supported crops (such as tobacco and cotton). However, recent CAP reforms have created pressure on farm incomes in the area, and are likely to contribute into a further exodus from farming. Based on past trends, this could lead into the further decline of local employment.

Table 2: Distribution of Employment and GDP (%), Aitoloakarnania, Greece, 1991

	Primary	Secondary	Tertiary	TOTAL
EMPLOYMENT				
Aitoloakarnania	48	16	36	100
"Rural Greece"	34	22	44	100
Greece	20	25	55	100
GDP				
Aitoloakarnania	33	21	46	100
Greece	12	29	59	100

Source: National Statistical Service of Greece

2.2 Policy Incentives to SMEs in Aitoloakarnania

In 1982, the first integrated and coherent framework for regional development was introduced by Law 1262/82. Law 1262/82 provided grant aid (free capital) and interest rate subsidization to businesses, together with several fiscal incentives. Law 1262/82 assisted a total of 18,290 investment projects in the period 1982-90 of which 10,348 or 56.6% of assisted projects concerns projects in 17 sectors of the manufacturing industry. Assisted projects claimed the creation of 164,642 new jobs of which 102,729 or 62.4% of all created jobs were in the 17 sectors of the manufacturing industry. The Food, Beverages and Tobacco sector accounted for the largest share of investment plans followed by Clothing and Footwear. In the manufacturing sector, firm establishment concerns about 35.9% of all assisted projects as opposed to 73% in all other sectors of the economy.

Table 3: Private Investment Induced by Development Law 1262/82 in Aitoloakarnania, 1982-1990 (million GDR, 1988 prices)

Sector	No. of Projects	Jobs Created	Own Capital	Capital Allowance	Subsidized Loans	Foreign Capital	TOTAL
01 Agriculture	137	586	936.06	873.52	1025.57	19.82	2854.94
02 Forestry	1	1	1.10	1.01	2.30		4.41
05 Fishing	10	47	119.69	257.54	364.33	18.30	759.87
14 Mining	1	2	9.55	16.08	6.19		31.82
15 Food Processing	71	491	1078.53	781.78	1024.56	47.43	2932.30
16 Tobacco Prod.	2	9	6.21	3.85	14.78		24.83
17 Textiles	14	31	72.57	100.15	88.04	8.43	269.20
18 Clothing	4	24	66.02	45.18	135.25		246.45
19 Leather Manuf.	1	1	0.90	0.55			1.45
20 Timber Proces.	4	4	4.04	5.70	8.89		18.63
22 Publishing & Printing	1	0	3.66	0.88	1.64		6.18
23 Petroleum Prod.	2	186	97.88	73.15	220.48		391.51
24 Chemicals	3	5	5.16	4.30	11.17		20.62
25 Plastics	2	5	3.14	2.37	2.94		8.45
26 Other Minerals	17	127	614.19	865.80	645.38	2.23	2127.60
27 Basic Metals	2	4	1.45	1.13	2.02		4.60
28 Metal Products	6	9	22.22	25.99	45.42		93.63
31 Electr. Machinery	2	0	6.36	3.63	8.87		18.86
34 Vehicles	2	31	40.80	23.89	2.62		67.31
36 Furniture	8	169	386.26	458.16	439.79	155.91	1440.11
38 Other Manuf.	1	1	5.14	3.42			8.56
40 Electricity, Gas, Water	1	3	7.37	6.14	15.73		29.24
45 Construction	8	47	233.59	210.75	228.56	107.14	780.03
51 Trade	2	18	34.24	20.59	21.17		76.00
55 Hotels & Restaurants	123	728	1592.49	2328.54	2360.48	71.41	6352.92
60 Land Transport	12	64	160.23	263.41	211.24		634.88
63 Supporting Transp. Activit.	12	39	74.99	89.58	67.34	2.6	234.52
92 Recreation	2	3	11.07	32.37	23.41		66.85
TOTAL	451	2635	5594.88	6499.47	6978.15	433.28	19,505.79

Source: Author's calculations on raw data provided by the Ministry of National Economy.

Table 4: Private Investment Induced by Development Law 1892/90 in Aitoloakarnania, 1991-1997 (million GDR, 1988 prices)

Sector	No. of Projects	Jobs Created	Own Capital	Capital Allowance	Subsidized Loans	Other Capital	TOTAL
01 Agriculture	22	37	626.20	584.27	518.96	54.17	1783.59
05 Fishing	8	67	617.81	597.91	447.49		1663.21
14 Mining	2	6	300.16	100.05			400.21
15 Food Processing	44	141	2344.65	1459.29	1473.05	1.83	5278.82
17 Textiles	3	64	1612.68	622.56	12.23		2247.48
18 Clothing	3	5	48.70	23.07			71.77
20 Timber Proces.	8	19	277.17	132.37	91.25		500.79
21 Pulp & Paper	1	0	4.26	2.66	3.72		10.64
22 Publishing & Printing	4	3	92.55	36.92	8.32		137.80
23 Petroleum Prod.	1	3	33.22	11.07			44.30
24 Chemicals	1	22	214.18	71.40			285.58
25 Plastics	1	40	1083.80	1083.80	541.90		2709.50
26 Other Minerals	20	108	1026.97	766.87	479.75	24.61	2298.20
28 Metal Products	8	30	418.59	166.93	86.35	10.14	682.02
29 Machinery	1	1	31.91	10.64			42.55
36 Furniture	2	1	63.63	31.24	8.23		103.11
45 Construction	2	10	130.01	61.73	55.20		246.94
50 Sales of Vehicles & Petrol	1	0	20.01	10.77			30.78
55 Hotels & Restaurants	11	55	1504.89	542.02	323.32	23.62	2393.88
63 Supporting Transp. Activit.	2	5	138.30	130.32	103.72		372.34
92 Recreation	2	79	672.53	354.08	36.70		1063.32
93 Other Services	1	0	3.08	3.59	3.59		10.26
TOTAL	148	696	11265.29	6803.61	4193.80	114.37	22377.07

Source: Author's calculations on raw data provided by the Ministry of National Economy.

In 1990 the regional development Law 1892/90 as amended by Law 2234/90 corrected and completed the regional development framework held up to 1998. Under these frameworks, four types of incentives were provided to all industries: Capital subsidies in the form of free capital provision differentiated among the different regions of the country; interest rate subsidy on the bank loans received for servicing the investment; tax free discounts on the firm's net profits, if new investments are realised; increased depreciation on the firm's fixed assets. For the investment plans approved under the regional development framework, our data end to year 1997. In the period 1990-97, a

total of 7,166 projects were approved under Law 1892/90 of which 5,028 or 70.2% concerns with sectors in the manufacturing industry, indicating a stronger trend to the assistance of manufacturing industry as opposed to the previous regional development framework. Establishment of new plans concerns 25.4% of all projects financed in the manufacturing sector, a figure well below the corresponding figure (35.9%) of the previous regional development framework. Until now, very few researchers have attempted to examine the effects of Greek regional development policy and assess whether the aims and objectives of the policy were met.

Tables 3 and 4 present a summary of the application of the two regional development frameworks in the prefecture of Aitoloakarnania.

3. Methodology

The use of the SAM analytical framework for evaluating the impacts of investment policy-incentives in a regional context has been a popular issue in rural and regional economic analysis. Reviewing research in this field is far beyond the scope of this paper; however, some of the most indicative recent studies include Marcouiller *et al.* (1995), who analyse the differential impact of natural resource management programmes and policies on timber development on three groups of households by income level. Also, Leatherman and Marcouiller (1996) use a SAM to analyse a small rural region in Wisconsin, and conclude that local policy could influence distributional patterns, through targeting specific economic sectors for growth. Finally, in another indicative study, Roberts (1998) constructs a rural-urban interregional SAM model in Scotland, in order to investigate financial flows and relations with the rest of the world.

In this study a regional SAM was generated for the study area for year 1988, through a two-stage process. First, the hybrid Generation of Regional I-O Tables (GRIT) technique (Jensen *et al.*, 1979) was used to construct a regional I-O table, via the use of mechanical adjustment procedures (employment location-quotients) and primary data (through a business survey plus other primary and/or secondary information). GRIT was chosen as the regionalisation method for this study, as the cost of using a survey-method to generate the regional table was prohibitive, while regional I-O tables constructed via non-survey techniques are 'not free from significant error' (Mattas *et al.*, 1984). Then, by using various data sources, a regional SAM was constructed for Aitoloakarnania.

Regarding the impact analysis this was distinguished into two stages, namely the conventional Leontief modeling procedure which estimates the economic effects of investment, and the 'capacity-adjustment analysis'.

More analytically, the estimation of investment effects was performed by partitioning the regional SAM into endogenous and exogenous (government, capital and the rest of the world) accounts. Then, private investment on secondary and tertiary SMEs induced by Development Laws 1262/82 and 1892/90 implemented in period 1982-97 in the study area was identified and a systematic database was built. The next step involved the conversion of these flows into base-year prices and the estimation (via the SAM-linkages) for the period 1982-1997 of the regional economy-wide effects, associated with this investment. Related investment flows were treated as exogenous 'injections' in the local economy and, through multiplier analysis, their growth-generating impacts were assessed, in terms of annual average output and employment effects.

The procedure to estimate capacity-adjustment effects of private investment incentives followed the 'mixed exogenous/endogenous variable version of the Leontied model' method devised by Miller and Blair (1986) for I-O analysis, and extended to a SAM context by Roberts (1992) who estimated the (UK) economy-wide effects of milk quotas, which are an upper limit on the level of gross output of a particular sector. In the same way, certain investment expenditures may have the effect of raising a constraint on the level of certain activities in study area economies, by increasing the capacity of a resource such as a transport facility or visitor centre. Such expenditures have economy-wide effects not only through the immediate effects (direct, indirect and induced) of the investment activity thus stimulated, but also by loosening a binding capacity constraint so that other activities which utilise that capacity can expand to meet demand which was not hitherto satisfied. Usually, such expenditure will be applied through the construction of additional roads, buildings or other works, but the supply of an additional island ferry or other crucial equipment, or staff training so that more tourists can be handled could be other forms of capacity adjustment. Of course, expenditures which do not have this effect - either because they do not raise capacity, or do so but this extra capacity is not used - can be ignored in the present context.

Calculations following the above method are carried out for the Development Laws associated expenditures implemented in the 1982-97 period, all in base-year prices, through (first) the gathering of information with regard to the expected direct (i.e. sectoral) change in output generated by projects implemented. This information should normally be available in each project's feasibility report or/and its Environmental Impact Assessment, or can be traced in regional authorities and perhaps in central government. In some cases, there was information available on the expected or actual project-specific change in employment. In this case, using the sector-specific Direct Employment Coefficient, this estimate may be converted into an estimate for change in the level of direct output. Another possibility, if no information is available on future changes of output in monetary terms or employment, is to acquire information on the change of physical output. If the aim of the project is to

increase the capacity of an existing industry (e.g. development of agri-tourism establishments), then the procedure is straightforward: the magnitude of increased capacity should be estimated linearly (i.e. proportionately to the output levels specified in the base-SAM) and feed it into the model.

4. Regional Application

4.1 Regional SAM Structure

Since, no particular SAM's classification and disaggregation could fit the wide range of possible policies, projects (the impacts of which are investigated in this paper) and study area conditions, the scheme presented indicates the structure of the SAM constructed for the study area and is partly determined by factors such as study area conditions, data availability and modelling purposes. As known, a SAM consists of the production activities and factor (labour and capital) accounts, the current accounts of the domestic institutions (households, firms and government), the capital account and the rest of the world account. Regarding the structure of the above-mentioned accounts and their components and taking account of the extensive data requirements in the case of the construction of regional SAM (R-SAM), the following points should be referred to:

- The economic agents whose incomes and expenditures are given in a R-SAM are strictly those who are residents in the case study region and their activities in this region (i.e. a GDP view of the regional economy);
- the R-SAM constructed does not separate production industries from commodities, due to data availability constraints. Instead, the interindustry matrix constructed is a symmetrical industry by industry one;
- the number of industrial sectors to be included in the interindustry matrix depends on issues such as the classification of available National I/O tables, the structure of the economy under investigation, and the type of projects implemented in the study area; in the case of the study area of Aitoloakarnania, the interindustry matrix includes 18 sectors;
- the regional SAM includes one category of labour (factor account) and only one household (institutions account), as investigated policies do not specify different target-groups;
- the Government component of the Institutions account can be (at maximum) distinguished into 3 components (national government, regional government, EU). However, in the case of the R-SAM, the separation of government seems an impossible task, taking account of the central role of the national government in terms of administration functions; finally
- the Aitoloakarnania SAM includes only one (Rest of the World) External account.

4.2 Regionalisation Process

The construction of a regional SAM for Aitoloakarnania was carried out in two steps, namely the regionalisation of the national I-O tables and the estimation of the relevant non-I-O parts.

The I-O regionalisation process applied in this study involved the application of the GRIT (Jensen *et al.*, 1979) technique to the construction of the study-area specific tables. The development of regional Leontief models dates from the early 1950s. The various approaches to determine the necessary regional information can be broadly categorised as 'survey' and 'non-survey' (Richardson, 1972). The time-consuming and expensive 'survey' approach attempts to determine the regional table by collecting primary data through various surveys. On the other hand, the 'non-survey' approach involves the representation of the regional economy through the modification (reduction) of national technical coefficients. However, so far, none of the existing 'non-survey' methods, provide satisfactory substitutes for the 'survey' approach as the constructed regional tables are not free from significant error. In response to these problems, a hybrid approach can be developed, involving the application of 'non-survey' techniques to estimate an initial regional transactions table. Then, survey-based estimates or other 'superior' data replace some of the entries. Today, GRIT is probable the most popular and efficient hybrid regionalisation technique (Psaltopoulos and Thomson, 1993), based on the concepts of 'variable-interference' and 'holistic accuracy (see Jensen *et al.*, 1979) and is therefore applied for the needs of this work.

According to the technique, national tables are regionalised on the basis of a regional vector of employment and 'superior' information from surveys or other sources on the input and output structure of relatively important regional sectors.

Thus, the base of our analysis was the 1988 I-O table for Greece (National Statistical Service of Greece, 1992), which contained 123 sectors. The choice of this base-year was justified in terms of the fact that the objective was to investigate the economic effects of private investment initiatives for period 1982-97; therefore, the use of a model constructed approximately in the middle of that period could 'prohibit' the danger of 'depending' on structural information which could be either out-of-date or (in the case of recent I-O table) would have 'embodied' a considerable part of these impacts.

Next, and in order to achieve compatibility between the sectors of the national table and the available sectoral employment data, the national table was aggregated to 32 sectors. Then, the mechanical GRIT procedure was applied and subsequently, the table was further aggregated to 18 sectors (see Appendix 1), in order to represent the most important regional economic sectors. As a next step, the mechanically derived

input purchasing and output sales patterns of economic sectors were modified by the insertion of relevant superior data, derived from a study-area-specific business survey on input-purchasing and sales-direction patterns of regional sectors for year 1988. This survey (170 questionnaires) corresponded to 5 sectors, namely Agriculture, Fishing, Food Processing, Construction, Hotels and Catering. The criteria of the selection of those sectors for survey were mainly their importance to the local economy (in terms of output and employment), and secondarily, their influence by development policy implemenation.

The next step involved the estimation of the non-I-O parts of the SAM. This procedure has been reported in detail elsewhere (Efstratoglou and Psaltopoulos, 1998), however main data sources included:

- the 1988 Household Income and Expenditure Survey
- the GRIT business surveys
- National Statistical Service data on Taxes and Government Transfers
- regional information on Property Incomes, and Government Transfers from and to the rest of the world.

5. Results

5.1 The Structure of the Local Economy

The 1988 SAM for Aitoloakarnania (Table 5) provides useful quantitative information on economic interdependence among production activities, and income distribution among production factors, institutions (firms and government) and households in the prefecture. In more detail:

- Factor payments to Households in Aitoloakarnania (43 per cent of total factor payments) are considerably high compared to those of the national average of 41 per cent (Zografakis, 1997);
- Sixty-five per cent of household income in Aitoloakarnania derives from labour, compared to 49 per cent nationally;
- The share of firm transfers on household income is comparatively low (16,3 per cent, compared to 28 per cent nationally);
- The share of government transfers on household incomes is almost identical with that of the national average (17,7 per cent in Aitoloakarnania, 19 per cent nationally);
- The average propensity to consume is 56 per cent, compared to 64 per cent nationally, while the average propensity to save is quite high (31 per cent);
- Firms in Aitoloakarnania transfer only 19 per cent of their incomes to households;
- The share of taxation in firm income is considerably low (2 per cent), possibly attributed to the high share of low-taxed local farms;

- The share of government in total consumption is 17 per cent, compared to 9 per cent in the national level, this being a reflection of the importance of public support in the area;
- Investment in Aitoloakarnania represents 32 per cent of local GDP;
- Finally, Aitoloakarnania is a net exporter, with exports accounting for over 32 per cent of total output, this being an indication of the comparatively high level of integration of the region with the rest of the world.

The above findings show that the 'traditional' (in terms of dependence on farming), but more integrated economy of Aitoloakarnania is characterised by considerably 'modern' economic structures, something also indicated in a Socio-economic Description of the area (Daouli and Daskalopoulou, 1997), indicated by a higher average propensity to save, a lower average propensity to consume, considerably high returns to capital, etc. This again, can be justified in terms of the high farm-support that this agriculturally-based economy has enjoyed over the years.

5.2 Impact Analysis

In order to carry out the impact analysis of private investment initiatives for secondary and tertiary SMEs (Development Laws 1262/82 and 1892/90) in Aitoloakarnania during the period 1982-97, first the sectors for the product of which every project represented increase in final demand and the relevant flows were specified (in 1988 prices). Then, the estimation of the impacts on local (average annual) output and employment took place via the traditional Leontief procedures.

Table 6 presents the results of the impact analysis for Development Law 1262/82. Annual average real (i.e. in 1988 prices) investment expenditure amounted to 992.92 million Drs, or 0.69 per cent of the 1988 GDP of study area. At the sectoral level, the majority of investment was pursued by Hotels and Catering (32.6 per cent of total), Other Manufacturing (15.6 per cent) and Food Processing (15 per cent). Average annual output increased by 0.50 per cent (compared to the 1988 level), while average annual employment increased by 1.39 per cent (i.e. 1073 new jobs were created at the 'construction' stage).

Table 7 presents the relevant results for Development Law 1892/90. Annual average real (i.e. in 1988 prices) investment expenditure amounted to 1,183.14 million Drs, or 0.83 per cent of the 1988 GDP of study area. The sectoral distribution was quite different compared to that of L. 1262/82, with Other Manufacturing attracting 35.3 per cent of total investment, followed by Food Processing (27.9 per cent), Hotels (12.6 per cent), Textiles (11.9 per cent) and Recreation (5.6 per cent). Similarly, average annual effects were higher, as output increased by 0.65 per cent (compared to the 1988 level), and average annual employment by 1.71 per cent (i.e. 1315 new jobs were created at the 'construction' stage).

Table 6: Economic Impacts of Development Law 1262/82 in Aitoloakarnania, Annual Average Effect

Sectors	Annual Average Expenditure (ml Drs, 1988 prices)	Annual Average Output Effects (ml Drs, 1988 prices)	Annual Average Output Effects (%)	Annual Average Employment Effects (jobs created)	Annual Average Employment Effects (%)
1. Food Processing	183.27	282.01	0.10	196	0.25
2. Textiles	16.83	26.03	0.01	19	0.02
3. Timber Processing	1.16	1.81	0.00	1	0.00
4. Furniture	90.01	13.11	0.01	100	0.13
5. Other Manufacturing	190.74	294.90	0.10	211	0.27
6. Construction	48.75	76.60	0.03	47	0.05
7. Energy	1.83	2.90	0.00	2	0.00
8. Trade	4.75	7.34	0.00	5	0.00
9. Hotels and Catering	397.06	613.65	0.22	441	0.57
10. Transport	54.34	86.51	0.03	46	0.06
11. Post and Telecom					
12. Banking and Insurance					
13. Public Admin, Health, Education					
14. Recreation	4.18	6.46	0.00	5	0.00
15. Other Services					
TOTAL	**992.92**	**1411.32**	**0.50**	**1073**	**1.39**

Source: Authors' Calculations

5.3 Capacity-adjustment Analysis

Following the methodology as already specified above, capacity-adjustment effects (i.e. economic effects derived from the full-utilization of the productive capacity of new investment) were estimated for the contexts of both Development Laws.

In terms of Development Law 1262/82 (Table 8), output effects were estimated at 31,445.43 million Drs (at 1988 prices), which represent an 11.12 per cent increase of the 1988 gross output levels. Compared to the sectoral targeting of investment, the distribution of output effects is quite different, with sectors characterized by high linkages (Food Processing, Other Manufacturing) being associated with significant impacts. In terms of employment, effects seem to be even more significant (a 17.12 per cent increase is estimated), mostly attributed to the same sectors.

Table 7: Economic Impacts of Development Law 1892/90 in Aitoloakarnania, Annual Average Effect

Sectors	Annual Average Expenditure (ml Drs, 1988 prices)	Annual Average Output Effects (ml Drs, 1988 prices)	Annual Average Output Effects (%)	Annual Average Employment Effects (jobs created)	Annual Average Employment Effects (%)
1. Food Processing	329.93	509.90	0.18	367	0.48
2. Textiles	140.47	217.09	0.08	156	0.20
3. Timber Processing	31.30	48.37	0.02	35	0.05
4. Furniture	6.44	9.96	0.00	7	0.01
5. Other Manufacturing	417.66	645.50	0.23	464	0.60
6. Construction	15.43	23.85	0.01	17	0.02
7. Energy					
8. Trade	1.92	2.97	0.00	2	0.00
9. Hotels and Catering	149.62	231.23	0.08	166	0.22
10. Transport	23.27	35.97	0.01	26	0.03
11. Post and Telecom					
12. Banking and Insurance					
13. Public Admin, Health, Education					
14. Recreation	66.46	102.71	0.04	74	0.10
15. Other Services	0.64	1.03	0.00	1	0.00
TOTAL	**1183.14**	**1828.58**	**0.65**	**1315**	**1.71**

Source: Authors' Calculations

In terms of Development Law 1892/90 (Table 9), the analysis shows that despite the fact that it involved a higher (compared to that of Development Law 1262/82) level of investment flows and economic effects at the investment stage, capacity-adjustment effects were estimated as significantly lower. In more detail, output effects were estimated at 10,517.80 million Drs (at 1988 prices), which represent a 3.72 per cent increase of the 1988 gross output levels, with Other Manufacturing (1.79 per cent) and Food Processing (1.33 per cent) being associated with significant impacts. In terms of employment, effects seem to be a bit higher (a 5.58 per cent increase is estimated), most of which is (almost) equally attributed to the above two sectors.

Table 8: Capacity-Adjustment Effects of Development Law 1262/82 in Aitoloakarnania

Sectors	Output Effects (ml Drs, 1988 prices)	Output Effects (%)	Employment Effects (jobs created)	Employment Effects (%)
1. Food Processing	13107.78	4.64	6307	8.20
2. Textiles	346.68	0.12	135	0.18
3. Timber Processing	21.86	0.01	8	0.01
4. Furniture	1948.87	0.69	716	0.93
5. Other Manufacturing	9360.14	3.31	3379	4.39
6. Construction	460.16	0.16	157	0.20
7. Energy	34.10	0.01	13	0.02
8. Trade	121.59	0.04	51	0.07
9. Hotels and Catering	5586.05	1.98	2238	2.91
10. Transport	445.66	0.16	165	0.21
14. Recreation	12.54	0.00	5	0.01
TOTAL	**31445.43**	**11.12**	**13174**	**17.12**

Source: Authors' Calculations

Table 9: Capacity-Adjustment Effects of Development Law 1892/90 in Aitoloakarnania

Sectors	Output Effects (ml Drs, 1988 prices)	Output Effects (%)	Employment Effects (jobs created)	Employment Effects (%)
1. Food Processing	3764.15	1.33	1811	2.35
2. Textiles	715.75	0.25	278	0.36
3. Timber Processing	103.82	0.04	39	0.05
4. Furniture	11.52	0.00	4	0.01
5. Other Manufacturing	5050.77	1.79	1824	2.37
6. Construction	97.91	0.03	33	0.04
9. Hotels and Catering	422.02	0.15	169	0.22
10. Transport	21.64	0.01	8	0.02
14. Recreation	330.22	0.12	126	0.16
TOTAL	**10517.80**	**3.72**	**4292**	**5.58**

Source: Authors' Calculations

6. Cost Effectiveness of Regional Development Assistance

A number of studies have attempted to measure the effectiveness of regional policy calculating several cost per job measures. Munday et al., (1999), provide a thorough review of the methodologies and results obtained by various studies concerning the effectiveness of U.K regional policy schemes. The most frequently used measures are the gross cost per job and net cost per job. In this work we calculate the gross cost per job and compare it with the cost per total number of jobs created in the whole economy including those created in the construction phase and under the capacity building process. These figures are then compared to previous findings on the effectiveness of job creation policies in Greece.

Tables 10 and 11 present the gross cost per job calculated on the number of new jobs declared by firms and on the number of jobs created in the whole economy taking into account the preceding impact and capacity building analysis of the R-SAM for Aitoloakarnania. The gross cost per job estimated simply on jobs created on site is much higher than the respective measure when all jobs created in the regional economy are taken into account. The latter, is a more realistic figure as it takes into account the intelinkages of the economic activities in the area and allows for the regional variation of those links.

Table 10. Cost Effectiveness Measures of Development Law 1262/82.

	Total Investment (million Drachmas)	Jobs Created:				Cost Effectiveness	
		On Site	Impact Analysis	Capacity Building	Total Jobs		
	1	2	3	4	5=3+4	1/2	1/5
4. Food Processing	2932.3	491	3138	6307	9445	6.0	0.3
5. Textiles	269.2	31	297	135	432	8.7	0.6
6. Timber Processing	18.63	4	20	8	28	4.7	0.7
7. Furniture	1440.11	169	1600	716	2316	8.5	0.6
8. Other Manufacturing	3051.87	404	3382	3379	6761	7.6	0.5
9. Construction	780.03	47	753	157	910	16.6	0.9
10. Energy	29.24	3	25	13	38	9.7	0.8
11. Trade	76	18	84	51	135	4.2	0.6
12. Hotels and Catering	6352.92	728	7060	2238	9298	8.7	0.7
13. Transport	869.4	103	736	165	901	8.4	1.0
17. Recreational Services	66.85	3	74	5	79	22.3	0.8

Source: Authors' Calculations

The gross cost per job created on site in Aitoloakarnania compares well with the figures found for the respective industrial classes in the whole of Greece (Georgiou, 1991;Daskalopoulou et al., 2000) or in other special case studies (Skuras and Tzamarias, 2000). The estimation of the effectiveness of regional development policy as total investment cost per total gross jobs created in the whole economy provides a new perspective on cost effectiveness measures and it is worth pursuing further research in this area. The estimation of such measures should be refined with the introduction of firm and job survival considerations. Evidence show that assisted firms have a longer survival time than non-assisted firms and thus, the gross cost per job may be even lower if extended to a longer time period.

Table 11. Cost Effectiveness Measures of Development Law 1892/90.

	Total Investment (million Drachmas)	Jobs Created:				Cost Effectiveness	
		On Site	Impact Analysis	Capacity Building	Total Jobs		
	1	2	3	4	5=3+4	1/2	1/5
4. Food Processing	5278.82	141	5866	1811	7677	37.4	0.7
5. Textiles	2247.48	64	2498	278	2776	35.1	0.8
6. Timber Processing	500.79	19	557	39	596	26.4	0.8
7. Furniture	103.11	1	115	4	119	103.1	0.9
8. Other Manufacturing	6682.57	218	7426	1824	9250	30.7	0.7
9. Construction	246.94	10	274	33	307	24.7	0.8
12. Hotels and Catering	2393.88	55	2660	169	2829	43.5	0.8
13. Transport	372.34	5	414	8	422	74.5	0.9
17. Recreational Services	1063.32	79	1182	126	1308	13.5	0.8

Source: Authors' Calculations

7. Conclusions

The present paper derives very useful conclusions drawn on the aforementioned analysis. The impact of the two regional development frameworks (Law 1262/82 and Law 1892/90) on the regional product and employment is very significant. The impact differs among the two regional development frameworks. Law 1892/90 seems to have a smaller impact on both the created output and employment. This may be attributed to three possible factors:

- Targeting of 1892/90 investment into sectoral segments, which create less jobs per unit than the average sectoral coefficient

- Targetting of 1892/90 investment into sectors which create less jobs per unit (compared to the targeting of 1262/82)
- Targetting of 1892/90 investment into projects which modify the technology-mix and production function of sectors (i.e. modernization, capital-intensity, etc.)

However, more research is needed to identify the factors influencing the observed discrepancies between the two regional development frameworks.

Cost effectiveness of regional development policy in terms of the cost per gross job created may be calculated on the total number of jobs created by the regional economy in the construction (impact analysis) and operation (capacity building) phases of the assisted investments. The thus calculated cost effectiveness is significantly lower than the conventional measure of gross cost per job. The estimation of such measures allows policy makers and regional planners to take into account the structure of the regional economy and employ a discretionary policy delivery mechanism in order to maximize the number of created jobs. This issue, however, needs more research before safe conclusions are drawn and policy guidelines are proposed.

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APPENDIX: Industrial Classification of the Input-Output Table for Aitoloakarnania, 1988

Industry Group	NACE Code
1. Agriculture	01
2. Forestry	02
3. Fishing	05
4. Food Processing	15
5. Textiles	17
6. Timber Processing	20
7. Furniture	36
8. Other Manufacturing	14, 16, 18, 19, 22, 23, 24, 25, 26, 27, 28, 29, 31, 34, 38
9. Construction	45
10. Energy	40, 41
11. Trade	50, 51, 52
12. Hotels and Catering	55
13. Transport	60, 63
14. Post and Telecom	64
15. Banking and Insurance	65, 66
16. Public Admin., Health, Education	75, 80, 90
17. Recreational Services	92
18. Other Services	70, 71, 73, 74, 85, 91, 93

					E X P E N D I T U R E S										
					Current Account						Capital Account				
							Institutions				Institutions				
					Production Activities	Factors Labour, Capital	HHS	Firms	Govern.	Rest of the World	HHS	Firms	Govern.	Change in Stocks	*Total*
					A	B	C	D	E	F	G	H	I	J	K
					18	1+1	1	1	1	1	1	1	1	1	
R E C E I P T S	C U R R E N T A C C O U N T		Production Activities	1	18	A1 Intermediate Consumption **69,479.4**	B1	C1 Consumption **52,863.5**	D1 Consumption **0**	E1 Consumption **25,456.3**	F1 Exports **90,924.5**	G1 Investment **10,207.0**	H1 Investment **11,956.3**	I1 Investment **20,163.3**	J1 Stocks **1,522.9**	***K1 Demand 282,573.0***
			Production Factors	2	1 + 1	A2 Distribution of Value Added **129,150.8**	B2	C2	D2	E2 Subsidies **14,271.20**	F2 Factor Inc from the ROW **0.0**	G2	H2	I2	J2	***K2 Income of Factors 143422.0***
		I N S T I T U T I O N S	Households	3	1	A3	B3 Factor Payments to Households **61,830.4**	C3 Current Transfers fron HHS **0.0**	D3 Current Transfers from Firms **15,317.4**	E3 Current Transfers from Govern. **16,816.2**	F3 Curren Transfers fron est of the Wo **11.7**	G3	H3	I3	J3	***K3 Income of HHS 93,975.7***
			Firms	4	1	A4	B4 Factor Payments to Firms **81,494.7**	C4	D4	E4	F4	G4	H4	I4	J4	***K4 Income of Firms 81,494.7***
			Government	5	1	A5 Taxes (Vat, Duties) **5,885.9**	B5 Factor payr to Governmen **96.9**	C5 HHS payr to Governmen **11,890.7**	D5 Direct Taxes **1632.0**	E5	F5 Curren Transf. to Govern. **0.0**	G5	H5	I5	J5	***K5 Income of Governm. 19,505.5***
			Rest of the World	6	1	A6 Imports **78,056.9**	B6 Factor Payments to ROW **0.0**	C6 Current Transfers to ROW **0.0**	D6 Current Transfers to ROW **0.0**	E6 Current Transf. to ROW **0.0**	F6	G6	H6	I6	J6	***K6 Income of Rest the World 78,056.9***
			Savings	7	1	A7	B7	C7 Gross Savings Institutions **29,221.6**	**64,545.3**	**-37,038**	**-12,879**	G7				***K7 Savings 43,849***
			TOTAL	*8*		***A8 Gross Value of Production 282573.0***	***B8 Total Fac Payments 143422.0***	***C8 Expenditures of Institutions 93,975.7***	***81494.7***	***19,505.5***	***F8 Expend of ROW 78,056.9***	**G8** *Aggregate Investment* ***10207.0***	***11956.3***	***20163.3***	***1522.9***	