# Revisiting the Use of Financial Incentives As an Instrument of Regional Economic Development Policy: The Case of Greece

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### **Abstract**

This study investigates the degree of relevance and effectiveness of government location policy to the locational criteria used by manufacturing firms in Greece, by identifying and describing the relevant and important factor's for establishing an industrial location in Greece; assessing each location factor's relative importance; and finally, comparing and contrasting the importance of financial incentives relative to other location factors.

### Introduction

Since the inception of regional development policy in Greece, every effort has been made to make economically weak regions more attractive to manufacturing industry attempting thus, to modify the pattern of industrial location. In fact, regional policy was in effect a location policy. (Center of Planning and Economic Research, 1987.)

Over the last 40 years, a vast number of development laws has been passed in Greece providing significant incentives to manufacturing firms to locate in economically weak regions. (Hellenic Industrial Development Bank, 1987). These development laws have been used extensively to alter the balance of the relative degree of attractiveness of various regions for industrial location decisions. The Greek location policy there-

fore, works principally by attempting to influence the decisions of individual firms, and consequently its form and substance must be relevant and important to the locational criteria used by manufacturing firms.

This article attempts to determine the degree of relevance of location policy to the locational criteria used by manufacturing firms operating in Greece. Specifically we will attempt to determine: (1) The identification and description of the relevant and important factors for establishing an industrial location in Greece; (2) The assessment of the relative importance of each location factor, and finally; (3) The importance of the financial incentives relative to that of the other location factors.

# **Economic Development and Government Programs**

Increasing global competition has caused nations and regions to accelerate their activities to develop and maintain favorable business climates. Achieving industrial diversity appears to be a common objective among economic development programs. Some of the governments in the USA for example, are offering the business community such benefits as: favorable tax structures, infrastructure improvements, and underwritten training programs. (Dutton, 1987).

The government perceives gains in economic development when constituents are provided with jobs and income, thereby reducing demand on social welfare programs and thus expanding its tax base. Similarly, community development projects, such as the development of new and improved infrastructure, can improve development prospects in areas with limited financial resources. Over time, such efforts would also raise standards of living and improve the tax base. These gains can be shared with a private developer by providing resources on such as infrastructure improvements or worker training, or at a below-market price -- subsidized loans, for example. Government also faces the problem of how to structure the development assistance program to maximize its rate of return. Keeping in mind that a firm's primary goal is to maximize the net present value of its cash flows from the project, government somehow has to encourage private investment that will maximize the investing firm's gains while minimizing its cost of providing development assistance. (Tschinkel and Wall, 1994.)

State and local policy makers typically have three targets for their economic development policies: outside businesses, existing businesses, and start-up businesses. Attracting outside businesses -- especially large manufacturing plants -- has long been a popular economic development activity, but increasingly this approach has come under fire. As policy makers reexamine the effectiveness and appropriateness of economic development policy, an understanding of how resources are currently allocated among the three main tar-

gets is essential. Unfortunately, little is known about how much emphasis and local economic development policy places on each of the three main targets. (Smith and Ferguson, 1995).

Industrial recruitment has also been criticized for being ineffective in boosting economic growth in individual states and communities and for creating high-stakes bidding wars to attract relocating businesses or branch operations also. (Smith and Fox, 1990.)

Infrastructure policy occurs de facto as the result of many decisions being made by many people. No one seems to have a single policy that encompasses the many entities involved in infrastructure -- governors, legislatures, appointed commissions, state and local politicians and bureaucrats, special governmental districts, economic development boards, budget officials, and so forth. Perhaps a broader role in managing infrastructure development should be undertaken, possibly even creating a separate "shadow" budget that sets priorities and helps determine who would pay for (Bahl and Gramlich, 1995.) Bahl and Gramlich further argued that the new direction should be toward user fees and they outlined their advantages:

- User fees generate lots of revenue.
- People show what services they are willing to pay for.
- Politicians are willing to take stronger stands when public sentiment is apparent.
- Tax wars can be avoided.
- Use of facilities can be rationed and therefore better preserved.
- Fees can be higher for peak-use times, easing congestion.
- Outsiders pay in proportion to the amount they use local or state facilities. (ibid.)

# **Economic Development and Regional Economic Models**

The rapid pace of urban growth during this century, along with the challenge it has presented for planners trying to anticipate and influence this growth, has ensured a healthy demand for regional economic models, particularly since 1945. At the beginning of the postwar period, the economic base model was probably the only such instrument generally available for regional economic analysis. For this reason, coupled with the fact that it is based on one of the oldest and most durable theories of regional growth with origins extending at least as far back as the early 1900s, the economic base model has been used extensively by planners and policymakers. The model focuses on regional export activity, that is, sales of goods and services to consumers outside the immediate area—as the primary determinant of local growth. (Regional Update, 1992.)

The most popular method for targeting industries is called a screening approach. It eliminates the candidate industries which do not fit the region's capabilities through a series of screening tests and identifies the residual target industries that do fit. For example, if an industry requires skilled labor and the regional labor force is unskilled, then, that industry will be eliminated from the target industries list.

Sweet's pioneer work (1970 and 1971) laid the foundation for target industries research. Sweet (1970) notes that the traditional "shotgun" approach to industrial development has been proved ineffective and expensive for most organizations. A critical first step in his program is the identification of objectives for area industrial development. Some of the targeted objectives have included higher wages and employment, greater employment stability, effective use of existing lapool, increased tax receipts, reduced out-migration, effective use of industrial linkages, and upgrading of types of industries in the region. After the goals have been pinpointed, resources available to new or expanding industries can be evaluated. Resources are the major factor in an area's comparative advantage; those resources can include natural resources, human resources, institutional resources, the existing industrial structure, industrial financing, transportation, services, etc. Industrial linkage -- the flowing of materials between establishments and markets -- must also be included in this process. After this analysis has identified the area's comparative advantages, the development organization may begin to list industries which match those advantages. The results of input-output studies can be used in an industrial development program to forecast output, evaluate exports, determine import substitutions, identify intermediate exports, and identify linkages. Each industry identified as a candidate for development in the region must be screened on the basis of projected industry growth rates, wage levels, labor intensity, markets served, industrial linkages, labor skill level required, materials required, and port orientation.

Thornton's (1984) study on target industries offers another method to identify and rank industries appropriate to an area. Good prospects for target marketing include industries that show strong historical growth in employment, number of establishments, and value of shipments or that possess other characteristics which make them obvious candidates for future industrial development. A database to identify growth industries can be built using statistical databases already put together by consulting or research companies, and then by using statistical series industry growth trends are compared. Specifically, Thornton's study suggests that industries be considered potential target industries only if growth rates in employment, establishments, and shipments/sales are at least one standard deviation above the mean. She further suggests that after growth industries have been defined, they are reviewed in the "locational fit analysis." In that analysis, the developer must define locational factors in the industry, assess the community's comparative resource advantages and disadvantages, and conduct a fit analysis blending those two components. mation needed for the locational fit analysis may include such items as labor costs and availability, transportation, proximity to markets and suppliers, energy costs, water supply, lifestyle, urbanization, tax climates, industry size, and intuitive appeal. The second portion of Thornton's fit analysis involves assessing the community's comparative resource advantages and disadvantages for each of the factors listed above. This assessment can be completed by conducting a survey of industries in the region that have recently expanded in or relocated to the area. Matching the industry's requirements with the community's strengths will result in a list of industries most appropriate to the area. (ibid.)

Recently, Lee and Ranck (1988) provided a theoretical structure for a dynamic approach to regional economic development analysis in which a Markowitz optimal portfolio of industrial diversification was adopted as the policy objective and optimal economic development policy over time was analyzed. They used state and local government fiscal policies -- such as taxes, expenditures for education, economic development, and research and development -- as policy variables and employment, income, or value added as state variables. Although the focus of their research is on regional industrial development, diversification, and policy alternatives, the research does suggest an optimal economic structure, particularly as it relates to industry mix. Therefore, this kind of dynamic model could indicate which are the target industries and how they change over time for a specific region. One way to determine the validation of the model would be by investigating gaps between target industries and existing industries in the area since the majority of the existing industries currently in the area appear to have located there in part because of locational advantages. Another direction of the validation issue would be comparing the industrial location studies, which are analyzed by econometric models, with target industry studies. (Lee, 1990.)

# **Conceptual Framework**

A literature search on location considerations and their corresponding factors and associated subfactors, yielded twenty-nine empirical location studies. Based on the findings of these studies, the content and nature of the locational factors and subfactors were defined as accurately and meaningfully as possible so that they could be evaluated consistently in terms of their comparative relative importance. Table 1 presents a list of factors and associated subfactors, that resulted from the literature review with the focus being on the entire range of criteria involved in the location

# Table 1 **Location Factors and Associated Subfactors for Industrial Location Decisions**

	<u>Factors</u>	Subfactors
1.	Labor	Availability, skills, wages, unionization and productivity
2.	Raw materials	Availability, cost, quality and reliability of supply
3.	Financial incentives	Special grants, availability of government financing, local taxes, amortization rate
4.	Industrial infrastructure	Availability and quality of communication network and public utilities
5.	Proximity to markets	Delivery speed, adaptability to demand, changes, contact with customers, stock levels
6.	Land	Availability, suitability, cost
7.	Facilities and services	Utilities, emergency services, public transportation
8.	Marketing costs	Distribution costs, administrative costs
9.	Pollution control	Environmental protection laws and regulations, cost
10.	Freight	In-bound cost of raw materials and/or components
11.	Growth potential	Rate of market growth, penetration of new markets
12.	Industrial linkages	Special services, external economies Complementary industries
13.	Plant	Cost of construction/rent of equipment, gestation period, insurance
14.	Compatibility with company strategies	Impact on short and long-term strategies, control
15.	Planning	Design cost, space utilization, planning regulation, layout
16.	Community characteristics	Housing, entertainment, sports facilities, cultural activities, quality of life

decisions instead of arbitrarily selecting a limited number of them. Subfactors were selected based on whether they were representative of the locational forces present in a plant location decision of national perspective, and whether they embodied conceptual integrity and applicability in identifying location factors of importance in Greece.

# Methodology

The selection of a method for evaluating the relative importance of the various location factors became necessary. Weight rating becomes indispensable for plant location decisions because direct evaluation of factors in monetary units, as well as, the substitutability of factors renders mere ranking unsatisfactory, since it does not provide information on the degree of difference in relative importance in either monetary value or substitutability. Among the various rating methods that have been developed, this study adopted a point allocation system which allocates a given number of points (in our case 1,000 points), among a set of factors in accordance with their relative importance, with more points allocated to the more important factors. (Reed, 1967.) This system can be combined with any location rating system, because it provides some indication of the degree of the relative difference of importance for each factor which is a prerequisite for arriving at a decision. The present research data was collected with a mail questionnaire ensuring geographical spread and a large number of sample firms. (Helmer and Brescher, 1959.)

After the identification and description of the relevant factors for establishing an industrial location in Greece, it was felt that no assumption could be made as to who, in terms of functional responsibility, was involved in the plant location decisions because this would imply uniformity of the decision processes in the various responding companies. (Madge, 1965.) To confirm this notion, three firms from the sample which had experienced the highest rate of investment over the last five years were contacted by the authors. They suggested that indeed no assumption should be made as to whom and at what level or business function the questionnaires should be addressed, because

the difference in the structural and operational characteristics of the various firms also imply differences in their decision-making processes. Instead, it was suggested that the questionnaire should be directed to senior management who, in turn, would pass it, if necessary, to the individual with the appropriate responsibility, authority and knowledge to make the locational decision.

Five copies of the questionnaire accompanied by a cover letter to the chief executive was sent to each of the sample firms whose name appears in the ICAP Directory, which is a detailed annual listing of Greek firms published by ICAP S.A., Athens, a member of the European Association of Directory Publishers. The sample firms were amongst the 400 largest manufacturing firms in Greece ranked by net profit and by total assets. Also, participant firms must have had some experience in undertaking new investment since they were asked to decide on the process of evaluating investment projects. Using the information from the ICAP Directory, 259 firms were found to satisfy both conditions. (ICAP Directory, 1994.) These firms were classified in 6 industries as follows: 64 firms in metal industry, 52 in food, 48 in clothing, 35 in chemical, 30 in plastics and rubber, and 30 in electrical and electronic. The respondents were invited to mark any location factor that they considered important, and include any additional factor they deemed significant. Thus, the final version of the list of factors of Table 1 and the determination of their relative importance was decided by the respondents. It is worth noting that none of the 259 respondents thought of any additional location factors other than those in the questionnaire.

Validity was tested along four dimensions. First, it appeared appropriate to examine whether there was a widely accepted as generally applicable list and pattern of relative importance of location factors. To this end, the coefficient of variation was used to compare any number of location considerations according to the respondents' agreement regardless of the size of their respective means. The coefficients of variation did not show any significant difference among the various location factors, confirming that the respondents

agreed on the relative importance of the 16 location factors of relevance and importance to Greece. Second, it appeared appropriate to test whether the respondents were influenced by their functional responsibilities. To that end, the 259 respondents to the questionnaire were grouped into four groups according to functional responsibility: management, production, marketing, and finance. The Kolmogorov-Smirnov two sample test and the Mann-Whitney test were applied for each location factor and for all combinations of functional responsibilities, and it was found that there were no differences in respondents' opinions, (i.e. points allocated to each factor), due to their differences in functional responsibility. Third, to test whether the respondents were influenced by the geographical areas where their firms are based, the 259 respondents were grouped in three clusters according to geographical area corresponding to the three regions, A, B, and C of the latest Development Law #1892/1990 and the Kolmogorov-Smirnov and Mann-Whitney tests were also applied for each geographical region. No differences in respondent opinions due to the differences in the geographical areas where their firms are based were found. A fourth validity test examined whether the respondents were influenced by their type of business and industry and to that end, the same tests were also performed for each location factor and for all combinations of the six industries with no differences in respondents' opinions or the points allocated to each factor, due to the type of business or industry.

## **Results**

The simple arithmetic mean of the points allocated to a given location factor by the respondents was employed to indicate the relative importance of that location factor in the location decision, as shown in Table 2.

The results of this research provide an interesting insight into the differences in the relative importance attached to location factors by large manufacturing firms, and they represent an important informational input into the regional policy formulation process for government policy makers. However, any regional policy strategy aimed at influencing location patterns can only be effective in

so far as government action can control and manipulate the factors determining industrial location. For example, labor, the most important locational factor for all industries in the sample with the exception of food industry, is to some extent a variable outside of direct governmental control. While the government can influence its price through subsidies and taxes and its skill type and level in the longer term through training programs, there is little it can do in the short term to change a region's labor content, skill level, and relations with management.

Given the significance of labor relations in the location decision of many manufacturing firms, this clearly imposes limitations to the degree to which governmental policies can become effective other than offering direct grants, subsidies and other financial incentives to offset the potential labor disadvantage of a region in attracting industrial prospects. It is therefore worthwhile to measure the importance of these financial incentives and compare them against the other locational factors to determine if the financial incentives offered are sufficient to offset any regional disadvantage.

### **Financial Incentives**

Since the number of location factors is too large to allow an extensive analysis of each, this study proceeded to investigate only the factor of financial incentives in greater depth. The choice of the financial incentives for further investigation is based on their overall importance in plant location decisions in Greece. Since 1953, a number of financial incentive legal provisions have been introduced in Greece with the intention of promoting regional economic development.

In comparing the importance of the financial incentives, which appear in the questionnaire as the Tax Structure and Incentives factor, with that of the remaining 15 factors, the Wilcoxon Matched-Pairs Signed Ranks Test was used. (Hollander and Wolfe, 1973.) This test compares the differences between two matched variables and gives more weight to a pair of values with a large difference between the two variables than to a pair with a small difference. Stated otherwise:

Table 2
Points Allocated to Location Factors by Industry

	Industries					
Factors	Food	Clothing	Chemical	Electrical/ Electronic	Plastics/ Rubber	Metal
Labor	131.61	107.06	194.65	115.34	152.49	147.87
Raw materials	171.42	75.89	85.09	96.36	57.51	51.07
Financial Incentives	41.63	53.61	66.48	77.02	60.70	109.78
Industrial infrastructure	42.44	88.72	54.55	55.80	80.57	82.64
Proximity to markets	53.88	54.82	47.50	71.29	75.54	81.24
Land	80.00	77.41	42.85	36.00	80.54	106.24
Facilities and services	66.11	50.71	67.20	47.40	51.11	61.38
Marketing costs	45.31	51.59	52.54	74.20	53.33	64.58
Pollution control	70.41	67.57	67.03	39.42	37.50	43.75
Freight	55.11	56.50	65.75	40.88	52.50	51.04
Growth potential	35.50	70.94	43.34	82.96	57.78	35.41
Industrial linkages	34.28	57.95	54.92	67.54	44.71	18.19
Plant	57.14	66.09	40.62	48.60	36.25	42.52
Compatibility with company strategies	36.75	48.36	35.07	62.56	80.00	27.08
Planning	48.98	32.11	40.07	39.60	44.32	51.93
Community characteristics	29.43	40.57	42.64	45.03	35.15	25.28

Table 3
Relative Ranked Importance of Location Factors by Industry and Their Comparison with "Financial Incentives"

	Industries					
Factors	Food	Clothing	Chemical	Electrical/ Electronic	Plastics/ Rubber	Metal
Labor	2	1*	1*	1	1*	1
Raw materials	1*	4	2	2	8	9
Financial incentives	12	11	5	4	6	2
Industrial infrastructure	11	2	8*	9	2	4
Proximity to markets	8	10	10	6	5	5
Land	3	3	12	16*	3	3
Facilities and services	5	13	3	11	11	7
Marketing costs	10	12	9	5	9	6
Pollution control	4	6	4	15	14*	11
Freight	7	9	6	13	10	10
Growth potential	14	5	11	3	7	13
Industrial linkages	15	8	7	7	12	16
Plant	6	7	14*	10	15	12
Compatibility w/company strategies	13	14	16*	8	4	14
Planning	9	16	15	14*	13	8
Community characteristics	16	15	13*	12	16	15

Ho: There is no difference in importance for industrial location decisions between the financial incentives and the remaining factors.

H1: There is a difference in importance for industrial location decisions between the financial incentives and the remaining factors.

Two tail tests were used and Z-values were calculated with 5 per cent level of significance by using the Non-Parametric tests section of the SPSS computer program. Specifically, for the food industry only for raw materials the difference in importance with financial incentives was statistically significant. For the clothing industry only for labor; for the chemical industry labor only for industrial infrastructure, plant compatibility with company strategies, and community characteristics; for the electrical and electronics industry only for land and planning; for the plastics and the rubber industry, only for labor, and pollution control; and finally, for the metal industry, there was no statistically significant difference in importance between the financial incentives and any other location factor. Table 3 shows the ranked relative importance of the 16 industrial location factors on the basis of the average number of points allocated by the respondents in the six industries, as well as those factors that had a statistically significant difference in importance when compared with the factor of financial incentives.

## **Implications**

The use of the financial incentives as an instrument of regional policy seems to be in need of re-examination by Greek policy makers, in the light of the research findings which indicate that financial incentives are not of primary importance in the selection of industry location. It should be emphasized that 60 percent of all Greek manufacturing firms are located in the greater Athens area, despite the plethora of financial incentives to promote regional economic development offered by many development laws which have been introduced in Greece since the end of World War II. It should also be noted that not a single firm of the 259 firms who participated in this research, is located in region D which, according to the Development Law of #1892 of 1990, is considered to be the most underdeveloped region in Greece. In certain industries there can be little justification for continued offering of financial incentives on the basis of their supposed contributions to regional economic development. While financial incentives may be a valuable condition for development, they are by no means a sine qua non condition, since in

spite of generous financial incentives there still are many industrially depressed regions in Greece.

Soon after the completion of the research study a number of participating firms were contacted to discuss the results. They strongly agreed with the research findings and additionally expressed their strong opinions that, not only the role of financial incentives as an instrument of regional economic policy is in need of reevaluation, but also that the government's whole approach to regional economic development and the solution to regional problems requires a fundamental reappraisal, and placing more emphasis on operating rather than capital costs may be a partial solution. Certainly the evidence suggests that businessmen are more interested in direct and indirect labor-related incentives rather than other forms of government assistance. It was also emphasized that the basic failing of Greek economic development policy lies essentially in the fact that policies are largely conceived and wholly administered on a national rather than a regional level. This has created an inflexible system offering "band-aid" approaches to the treatment of the symptoms of regional problems, rather than analyzing and curing their causes.

Additionally, the effectiveness of regional policy might also be enhanced by greater co-ordination among government departments. At present, the responsibility for regional planning and development is dispersed among the Ministries of National Economy, Agriculture, Industry, Trade, Interior, Labor, Treasury, and Environment! Some sort of permanent, integrated unit should be created with the task of implementing a unified government policy on regional development based on information and feedback from the regional authorities.

Finally, another major criticism of regional policy relates to the uncertainty and confusion created by constant changes in the timing, type, and level of incentives offered to industry. Predictability and stability of the type and level of existing incentives would help end a situation in which firms are forced to heavily discount the future value of incentives since experience has shown that they

cannot rely upon their continued existence, type or level. Therefore an explicit contractual agreement between government and industry is needed concerning the offering, type, value, and timing of financial incentives.

### Conclusion

In attempting to determine the degree of relevance of industrial location policy to the locational criteria used by manufacturing firms, this study identified 16 location factors which are of importance in Greece, regardless of geographical area, type of business or the respondents' functional responsibility. The relative importance of these factors varied significantly among the six industries under consideration, and more specifically, the difference in importance between financial incentives and the majority of the remaining fifteen factors was not statistically significant. It was also found that government financial incentives are not of particular importance in the selection of the location for a plant in Greece. Consequently, the government needs to reevaluate its approach toward regional economic development beyond merely emphasizing financial incentives.

# **Suggestions for Future Research**

Using financial incentives to influence location decision making by manufacturing firms has been taken for granted by government policy makers as the panacea for the economic development of underdeveloped regions. However, based on this study's findings, direct and indirect labor and training related incentives need to be evaluated by future studies, especially as they relate to various industries (labor intensive vs. capital intensive, for example) at the introductory, growth and mature stages of life cycle development. Additionally, a systematic and rigorous examination of the effectiveness of business incentive packages needs to be undertaken, especially in terms of economic impact on job creation, additional output generated, environmental impacts, and any other additional direct and indirect spillover effects. This type of assessment is essential for a true cost-benefit analysis of the economic impact and effectiveness of any industrial location policy.

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