METHODOLOGICAL APPROACH TO THE QUALITY OF THE REGIONAL PRODUCTIVE STRUCTURE: THE CASE OF ANDALUSIA

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1. - Introduction: economic development and entrepreneurial activity.

Until the Second World War, the economists had always worried about the problems of economic growth, elaborating diverse models to explain it. For the Classical economists, except for Adam Smith, the really important thing was capital accumulation, disregarding technical change (Hagen 1971). Neoclassical economists, on their part, worried, in principle, only for the allocation of resources and the distribution of income. However, they realised later, due to the periodic crises that hit the planet, that the economies were not always in equilibrium and they began to elaborate theories of a dynamic character, as that of J.E. Meade, for instance (Meade 1976), or theories that did take into account technical change, like it was the case of professor R. Solow's theory (Solow 1976).

The new development economy that arises after the Second World War, begins to introduce other aspects in its theories of the development processes, among which references appear to the entrepreneur and the type of entrepreneurial activity. In fact, it starts to be thought that one of the factors that influences the economic backwardness of less developed regions is the absence of entrepreneurial spirit, leading to a weak and disjointed entrepreneurial network that implies the configuration of a dependent economy. This new focus will be used in many occasions to justify the fact that countries with similar endowments in basic factors of production in some moment of their history have not evolved in a same way. Thus, It is necessary to mention, in this sense, the theory of “The Stages of Economic Growth” (Rostow, 1960), the approaches that put the emphasis in

[1] We wish to thank J. E. Romero García and E. M. Hernández Salmerón for their helpful collaboration.

industrialisation, either from the perspective of an “Unbalanced development” (Hirschman, 1961), or from a “balanced development” (Nurkse 1953) and the estructuralist approaches (Prebisch 1971), as well.

Nevertheless, all the contributions of this new approaches, in spite of considering to a certain extent the entrepreneur's role and the type of entrepreneurial activity, followed a model that we could denominate “top-down” in which the absence of capital and qualified labour is considered as the basic problem that hinders the development of backward areas, and they propose as solution both external financial help to large enterprises and the mobility of the labour force. This approach started to change in the eighties, as the measures it proposes do not give an answer to economic backwardness in an increasingly competitive environment. It is then when models of endogenous or “bottom-up” development begin to be elaborated. Theses models consider as the main obstacle to development the under-utilisation of the autochthonous resources, specially the local entrepreneurs, because they are the economic agents that carry out the innovations and they can contribute to the creation of an entrepreneurial network that is not dependent on other economic areas.

The models of endogenous development point out -as solution to the economic backwardness- to the incentivation of economic efficiency, following a less interventionist attitude, offering services to the local entrepreneurs and stimulating their cooperation, so that they become the true actors of the development process, and not the external economic help exclusively. They are models that take a more active strategy, as their purpose is to reduce the technological and organisational gap between the strongest and weakest regions, emphasising the concept of dynamic competitiveness, based on the capacity to adopt innovations and to promote the internationalisation of enterprises (Cappellin 1991).

From this point of view, the models of endogenous development grant special importance to the dynamism of the local enterprises, generally of small and medium size, marked by innovative entrepreneurs with initiative capability. In this sense,

endogenous development is also intimately related with the local economic potential that arises from local socio-economic institutions and actors, because the public and private local actors are those responsible for the investment actions and for the control of processes (Vázquez 1997).

Nevertheless, to determine the degree of endogenous development of a region and to implement the recipes of these new models, it is necessary to have a previous diagnosis to allow for an accurate knowledge of the profile of entrepreneurs and activity sectors that contribute most to the development process from an endogenous perspective. This typology has to be elaborated based on certain variables that gather essential aspects of endogenous development, such as the forward and backward intersectoral linkages, the degree of internationalisation, the productivity level of the different activities, the average size of enterprises in each activity, etc.

In this sense, the question we specifically outline in this work is the explanation of a methodology that may be valid to identify the quality of the regional productive structure from the endogenous development perspective and that may be used to achieve a greater effectiveness from local and regional economic policy. This task, in a theoretical sense, will be carried out taking the input-output analysis as the basis, and then, as an empirical demonstration, using specific data from Andalusia, one of the most backward Spanish regions.

2. - Methodological proposal for the analysis of the quality of the regional productive structure

As it has been pointed out, the methodology we propose in this paper consists essentially on the construction of a typology of production sectors according to their importance for the endogenous development of a region, this will help us to know which is the quality of the regional productive structure. To do that, we will start from a certain disaggregation of the regional productive activity in

sectors and from the information provided by six variables that, in our opinion, are relevant for such a purpose.

The considered variables are described below, classifying them in three groups, and their incorporation to the analysis is justified. The information regarding all the included variables can be obtained from the regional input-output tables, requiring in some cases the elementary application of certain developments of the input-output model.

2.1. - Description of the variables

A. - Productive articulation

From an endogenous development perspective, it is of special interest the degree of productive articulation of a regional economy, as the solidity of the growth pattern is conditioned by the density of that "tissue" of intersector linkages that conforms the regional productive structure. In a more particular sense, the strategic character of a sector crucially depends on the extent to which it is integrated in the regional productive structure. To approach the intensity of those intersector relationships we use as indicators two multipliers of generalised use in the field of the input-output analysis.

1. Regional Output Multipliers.

The Output Multipliers estimate the total effect, direct and indirect, that the increase in a monetary unit of the final demand of a specific sector has on the production of all the other sectors jointly. We are specifically considering the *Regional* Output Multipliers, obtained by summing up the columns of the inverse matrix of regional technical coefficients[2].

[2] The inverse matrix of regional technical coefficients gathers the part of the intermediate consumptions supplied within the region, therefore, excluding the imports. In the whole paper, we will understand as imports or exports the purchases or sales with origin or destination external to the region, including trade with other regions within the same state.

This variable allows the quantification of the pulling capacity of each sector on the whole of the regional economy. Obviously, those sectors that present a highest value of the multiplier will be strategic from an endogenous development perspective, due to their capacity to increase the dynamism of the regional productive apparatus.

2. Uniform Demand Expansion Multipliers

This variable, obtained summing up the rows of the regional inverse matrix of technical coefficients, shows the increase in the production of a specific sector due to an unitary increment in the final demand of all sectors.

For the purpose of our analyses, this indicator reflects the sensibility of the different sectors to the general evolution of the regional economy, so that a higher value of the multiplier reflects a greater integration of that sector in the regional economy.

Nevertheless, for a correct interpretation of the value of this multiplier it will be necessary to keep in mind the situation of the sector within the value chain, distinguishing the basic sectors from those others whose production is basically addressed to the final demand. While the former, given their paper as input suppliers to other activities, generally present a high value of the multiplier, the latter will probably present a low value.

B. - Productivity

The inclusion in the analysis of productivity indicators is equally necessary, as the sectors with higher capacity to estimulate economic growth are precisely those with higher levels of productivity.

3. Apparent labour productivity

We take as basic indicator of labour force productivity the apparent productivity, defined as the quotient between the sectoral Gross Value Added at market prices (GVAmp) and the number of employees in the sector.

4. Ratio GVA / Effective Production.

Another indicator that we include in the analysis is the relationship between the GVA at market prices and the Effective Production (EP), indicator that represents the value added generation capability for each sector[3]. This variable can be equally interpreted as an indicator of the productivity of the variable capital[4].

C. – External Trade

5. Export Ratio

We incorporate to the analysis, as an indicator of export dynamism for each sector, the quotient between the value of the exports and the Effective Production, which reflects the proportion of the sectoral production devoted to exportation.

In general terms, it will be necessary to value positively a high Export Ratio as revealing a strong competitive capability of the sector. Besides, we have to keep in mind that a sector carrying out an intense export activity avoids the limitation of its expansion possibilities by the growth of the regional market. Nevertheless, one has also to be conscious that certain sectors have a residential character, and they devote their production almost exclusively to the local market, by their own nature; this would be the case, basically, of certain activities of the service sector, such as Personal Services, Education, Health, etc.

[3] The value of the Effective Production (EP) corresponding to any activity is obtained, based on the information provided by the input-output framework, through the addition of gross value added at market prices in each sector and the value of the necessary intermediate consumptions to obtain the sectoral production.

[4] An approximation to the variable capital incorporated to the sectoral production processes could be the value of the intermediate consumptions from other activities; so the quotient between the gross value added at market prices (GVAmp) and the value of the intermediate consumptions (IC) could be used as an indicator of the variable capital productivity. And it can be easily shown that there exists a simple arithmetic relationship between this indicator and the proposed relationship GVA/EP:

$$\frac{GVA}{IC} = \frac{GVA/EP}{1 - GVA/EP}$$

6. - Need for indirect imports

We also include as a relevant variable the value of the intermediate imports for unit of final demand of each sector[5]. A high need for imports is negative from a point of view of endogenous development because it implies external dependence and it conditions a scarce productive articulation of the regional economy. Imports act, therefore, as an escape channel within the whole of the sectoral interrelations that conform the regional productive structure.

2.2. - Cluster analysis

Based on the information provided by the chosen variables, we try to classify the different activity sectors that conform the regional productive apparatus in different groups. For this aim, the application of some technique of cluster analysis is required, and the method of the k-averages has been adopted. This procedure assigns each element (in our case each sector) to a cluster so that the distance with regard to the centre of the same one is minimum. The centres of the clusters, in turn, can be known or unknown a priori; in our case we start from unknown centres (Visauta, B. ;1998).

Previously to the application of the cluster analysis, it will be necessary to check for the absence of correlation among the considered variables and to proceed to their normalisation (typifycation). In case correlation exists among any of the variables, it will be necessary to exclude some of them from the analysis, until having a group of uncorrelated ones. This operation is necessary, as the inclusion

[5] This indicator is obtained from the information provided by the input-output table in the following way (Delgado Cabeza, M. ;1995): start building a matrix C of coefficients of import needs, its generic element is given by the expression:

$$Cij = Xij / Xj$$

where Xij represents the value of the imports of good i needed to obtain the production of the sector j (Xj). Starting from the matrix C, the matrix M of total import needs (direct and indirect) is obtained as:

$$M = C(I-A)^{-1}$$

where A is the matrix of technical coefficients of production. The sum by columns of the elements of the matrix M provides the value of the intermediate imports for unit of final demand of each sector.

of correlated variables would have the effect of granting a larger importance to the information they provide for the determination of the groups.

This technique of multivariate analysis leaves the decision on the number of clusters to the researcher's will, pondering the clarity in the interpretation of the resulting groups as well as the homogeneity of the activities assigned to each one of them. In this sense, once carried out the classification and the assignment of each sector to a group, it is necessary to check that the groups are sufficiently separate to each other. It would also be convenient to apply the discriminant analysis to confirm that the different sectors are assigned correctly to the groups formed by virtue of the cluster analysis.

Then, we will proceed to the interpretation of each one of the groups, evaluating their importance from the viewpoint of endogenous development according to the characteristics that identify them.

2.3. - Characteristic of the entrepreneurial network

From an endogenous development standpoint, it is basic in the proposed methodology to consider the characteristics of the entrepreneurial network. Although the strength of a regional economy is conditioned by the existence of large enterprises, these may in many cases act independently from the rest of the economy without carrying out, therefore, an important role as articulating agents of the regional productive structure. On the contrary, an entrepreneurial structure characterised by the preponderance of microenterprises implies an atomised entrepreneurial network, insufficient to initiate a continuous process of productive investments that promote regional development. Microenterprises generally maintain a dependent relationship with respect to large enterprises or, alternatively, they are guided to internal demand, supplying local markets protected from national and international competition. In any case, whether they are a type of microenterprises or the other, the result will be the same: a weak and vulnerable entrepreneurial network (Guzmán J., Santos, J. and Cáceres, R.; 1998).

The importance of the entrepreneurial structure for endogenous development, justified above, takes us to consider this aspect as relevant in order to complete the analysis of the quality of the regional productive structure. Thus, the last phase of the methodology would consist on approaching the study of the entrepreneurial composition of the sectors of each cluster, with the purpose of capturing possible distinctive features among them. In this sense, it will be necessary to consider variables as the average size of enterprises in the sectors of each group, or the relative presence of micro-, small, medium and large enterprises (measured by the percentages of enterprises included in each category).

Many authors agree in pointing out how it is particularly favourable, from an endogenous development perspective, the presence of small and medium-sized enterprises (SMEs), due to their flexibility and adaptation capability in dynamic environments, their capacity for employment generation, their integration in the regional productive structure and their narrow linkage to the territory. This type of enterprises will be called to assume a main role encouraging regional development (Wadley, D.; 1988).

Finally, the analysis of the characteristics of the productive structure would be completed with the number of enterprises that comprise each cluster and its contribution to the regional GVA. In this way, the quality of the regional productive structure would be determined from the endogenous development perspective.

3.- Application to the Andalusian Economy

3.1.- Typology of production activities

In this section we will carry out a practical application of the proposed methodology, in which its possible utility to identify the activities that contribute most to the endogenous development, as well as the characteristics of those activities, will be shown.

This analysis will be referred to the Andalusian economy, a region with a clear situation of relative backwardness with respect to its immediate economic environment. It is important, therefore, to identify the possible ways to overcome that situation, or at least, some of the weaknesses that may be contributing to its maintenance.

We will use the 1990 Input-Output Tables for Andalusia, elaborated by the Instituto de Estadística de Andalucía (Andalusian Statistics Institute), as these are the last available ones. Following the proposed methodology, we proceed in the first place, using the cluster analysis, to the classification of the 78 activity branches in which production has been divided, according to their greater or smaller contribution to the endogenous development.

For the case of Andalusia, when we study the six variables selected to carry out the cluster analysis, we meet in the first place with the existence of high correlation among some of them. Specifically, the Import Multiplier, the Ratio of Exports to Effective Production and the Ratio GVA / EP, they are highly correlated to each other, as can be observed in Table 1. Thus, the actibities in which the value added by unit production is smaller, are the largest exporters and also those that generate higher imports in the economy.

Table 1
Pearson Correlation. significance levels (bilateral)

	Export Ratio	UDE Multiplier	Import Multiplier	Output Multiplier	Productiv.	GVA / Eff.Prod.
Export to Effective Prod. Ratio	,	,035*	,000**	,106	,249	,000**
Uniform Demand Expan. Mult.	,035*	,	,821	,704	,021*	,517
Import Multiplier	,000**	,821	,	,268	,118	,000**
Output Multiplier	,106	,704	,268	,	,264	,000**
Productivity	,249	,021*	,118	,264	,	,678
Gross Value Added / Effect.Prod	,000**	,517	,000**	,000**	,678	,

* Correlation is significant at the 0,05 level (bilateral).
** Correlation is significant at the 0,01 level (bilateral).

Among those three variables, in our opinion, it is preferable to maintain the Export Ratio, since it probably is the most interesting variable from the viewpoint of

endogenous development, measuring –as it does- the level of competitiveness of the enterprises of each sector, and their capability to integrate and to compete in wider markets.

In second place, correlation exists at the 5% level of significance among the Uniform Demand Expansion (UDE) Multiplier, on one side, and the Export Ratio and the Productivity, on the other side. However, that correlation does not reach the 1% level of significance and, as they are fundamental variables for the analysis to be carried out, we decide to maintain the three of them.

Once the variables to be used have been selected, we proceed to normalise (typify) them and we carry out the cluster analysis in two stages. In the first one we only obtain information on the distribution of the activities, their greater or smaller closeness. There exist a great majority of them (69 sectors) that are relatively next to each other, while the nine remaining ones are considerably distanced from those and, within these, the “Petroleum Refineries” sector clearly differs from the rest for its high productivity.

With this information, in the second stage we force the existence of five groups, since a greater number of clusters makes the differences among them scarcely relevant. Of those clusters, the first two coincide with the nine furthest away sectors and the rest of the activities integrates the other three.

The final results of the analysis are presented in the annex, while in Table 2 a summary of them is shown. Next, the characteristics of each one of those clusters will be analysed.

Group 1.

Only the sector “Petroleum Refineries” is found in this group, due to its very high productivity. In the values of the multipliers, its behaviour is quite similar to that of the activities in group 2, for which the comments on those sectors can be applied to this one.

Table 2
Cluster Analysis, centroids

Cluster	Output Multiplier	Uniform Dem. Expans Mult.	Export Ratio	Productivity	No. of sectors
1	1.147	2.641	0.527	104.955	1
2	1.357	2.899	0.095	5.942	8
3	1.304	1.237	0.066	4.435	30
4	1.772	1.378	0.402	6.187	18
5	1.342	1.117	0.600	5.724	21
Total	**1.426**	**1.426**	**0.296**	**6.630**	**78**

This activity is made up in Andalusia of only two companies that, in spite of their location in the region, guide their production to the whole Spanish market. That is why the Export Ratio is so high, contrary to what happens with the activities of the group 2.

Group 2.

These sectors are characterised by their very high Uniform Demand Expansion (UDE) Multiplier and, in general, by a reduced export level. Corresponding with their localisation at the start of the productive process, their Output Multiplier is relatively low, therefore we can say that they are not “locomotive” sectors of the Andalusian economy, since they do not present any appreciable pulling effect on other activities. Rather, they are basic suppliers of other sectors, so their role is important to facilitate the efficiency of other productions, but not to lead a development process. To this group belong, for instance, Electricity, Road Transport or Business Services.

Group 3.

This cluster, the most numerous one, groups together very diverse sectors, from agrarian to service activities. Their common characteristic is the low level of their Multipliers, both the Output and the Uniform Demand Expansion (UDE) ones. This indicates us that they are sectors scarcely integrated within the regional productive network. Besides, they are not very competitive –generally-, since only

one of the thirty activities exports slightly above the global average. With regard to productivity, in this cluster it is the lowest, manifesting once again the weakness of the sectors that comprise it.

Within this group, it is necessary to distinguish two types of activities. On the one hand, the majority of agrarian and industrial activities are located far away from the final consumption, since they sell to other production sectors. However, their UDE Multiplier is relatively low, which shows that they are not very competitive sectors. This forces their clients to import a considerable proportion of the inputs they need from outside the region. In this group we find, among others, Forestry, Glass production, or Rubber and Plastic Products.

On the other hand, the construction and services activities of this third group do sell mainly to final consumption. In general, by their own nature, these activities are relatively intensive in labour factor. The proportion the Value Added represents in the final value of their productions is larger, for what they tend to need proportionally less Interindustry inputs. Traditionally it has been considered that the construction sector has a great pulling capacity on the economy. In Andalusia, the Output Multiplier of this activity is close to the average, with a rate of imports greater than that of the service sector, which seems to indicate that other regional economies are taking advantage of that pulling effect.

The service activities in this group 3, on their part, present both a low Output Multiplier and a low Productivity (except Communications and Financial Institutions), which reflects the weakness of these activities. For that reason, its pulling effect on other regional sectors is considerably low. Thus, although they can play an important role from another point of view (for example, the public services), they are not activities that can serve as “locomotive” for regional development, due to their scarce relationships with the rest of the productive structure.

Group 4.

This group consists of the sectors which have a higher Output Multiplier, indicating the existence of an important pulling effect. However, the relatively low UDE Multiplier suggests that these sectors present –as a whole- not very much forward articulation. However, contrary to the previous group (where the articulation is clearly smaller), here this is counteracted by its larger Export Ratio, what would be indicating a greater level of external competitiveness. Besides, these activities are also those that present a higher average Productivity (not taking into account Petroleum Refineries).

Within this group, the UDE Multiplier oscillates considerably, ranging from a minimum of little more than 1.00, to maximum values above 2.00. In general, in this group, a relationship exists between the level of this multiplier and the position in the productive process. The activities whose outputs are basically devoted to inputs of other sectors have a UDE Multiplier above the mean, for which it can be said that they are quite integrated in the Andalusian production structure. This is the case of the Cattle Raising, the Extractive Industry, or the Basic Chemicals.

On the other hand, the agroindustrial productions, in which the main destination of their output is final consumption, present a smaller UDE Multiplier. However, they are sectors that also contribute positively to the Andalusian economy, since their Export Ratio is very high, what would be indicating their important level of external competitiveness.

In consequence, and but for some exception, as the construction materials, it can be said that it is in this group 4 where the activities that contribute most to the Andalusian endogenous development are. Basically, these activities are supplied within the region, having an important pulling effect on other sectors. As for their production, either it is a basic supply for other Andalusian activities (high Uniform Demand Expansion Multiplier), or it presents a high level of international competitiveness, as shown by their Export Ratio, which is higher than the regional average.

Group 5

This group is the less integrated, since –besides its reduced pulling effect, and to present the lowest forward articulation-, it has a high export rate. If we also remember the existent correlation between exports and imports, we can conclude that they are basically activities with strong presence of branches of national and international business groups, or with enterprises that –although formally independent- act as subordinates of external enterprises. Their location in Andalusia would be owed, rather, to the existence of cheaper manpower, or to the attraction of them by means of subsidies.

Lastly, although the average productivity is relatively high, this fact is distorted by two sectors (First Transformation of Metals, and Tobacco) that present a productivity level above Pesetas 20 million per employee. Taking this into account, the average productivity of the other nineteen sectors in this group is only Pesetas 3.861 million per employee, becoming the lowest of among the different groups, specially with regard to group 4.

3.2. Sectoral structure and entrepreneurial composition of the Andalusian economy.

Once we have studied the different types of activities of the Andalusian economy and their salient features, we will analyse the distribution of the enterprises that compose them. To do that, we will use the database of the Social Security System corresponding, as with the Input-Output data analysed, to the year 1990.

We have preferred to use this listing of enterprises since it is the most complete one that we have been able to access, it gathers in a reliable way the whole of the enterprises of the different activity sectors and dimensions within the

region. This listing has been purified eliminating those establishments that do not have the consideration of enterprises, such as public bodies, neighbours' associations, political and religious organisations, trade unions, public schools and hospitals, etc.. On the other hand, the establishments belonging to the same company have been added up, to avoid duplicities. Likewise, from that listing we have excluded enterprises without any salaried employee (self-employed workers, basically), because we consider necessary to start from a minimum level of consistency and dimension of the productive unit.

The small and medium-sized enterprises (SMEs), as we have exposed in the second section, play a very important role in the process of endogenous regional development. In contrast, when large enterprises -although they undoubtedly also contribute in a positive way to economic growth- are not autochthonous, their activity may contribute to increase the dependence on other areas of a regional economy. Therefore, the study of the entrepreneurial composition of the five clusters considered allows us to analyse the presence of different categories of enterprises in each one of them.

Table 3
Distribution of enterprises by clusters

Group	No. enterprises	Average size	Size distribution (No. workers)[1]			
			Microent (1-9)	Small (10-99)	Medium (100-499)	Large (+ 500)
1	2	817.00	0.00%	0.00%	0.00%	100.00%
2	20371	8.37	81.56%	17.67%	0.69%	0.08%
3	31819	11.54	75.62%	23.27%	0.96%	0.15%
4	3418	17.26	66.35%	31.25%	2.14%	0.26%
5	6059	17.56	66.78%	31.28%	1.58%	0.36%
TOTAL	**61669**	**11.43**	**76.20%**	**22.65%**	**1.00%**	**0.16%**

[1] According to European Observatory for SMEs (1995)

Group 1 is made up of only two oil refineries with more than 500 employees each one. It is a clear example of how large enterprises can maintain scarce relationships with the productive structure of the region where they are located. In spite of the importance of this sector as an energy source, it does not contribute in any remarkable way to the regional development, for their little integration within the local economy.

Group 2, on the contrary, presents a very high percentage of microenterprises, above 80% (see Table 3), and the lowest in all the other sizes. They are very atomised activities, with enterprises of low dimension -the average size is only 8.4 workers-. In logical correspondence, the Regional Employment Multiplier is the lowest in the four groups, with a value of 0.176 (without considering group 1)[6]. This group contains one-third of enterprises, but it represents only 25% of total production. It shows, therefore, that these activities that are basic suppliers of the rest of the economy, present an important weakness in their entrepreneurial composition.

The distribution by sizes in group 3 nearly coincides with the global average. We have already considered, in the previous section, the weaknesses of the productive activities of this cluster. The fact that the global distribution of enterprises coincides with that of this group should make us meditate about the general weakness of the whole of the Andalusian economy, specially when this group 3 represents more than half of the regional production and of the considered enterprises.

However, within this group there exist remarkable differences with respect to the activity type. In the industry, the medium and large enterprises present a greater relative abundance. This is coherent with that exposed in section 3.1, where we indicated that these are activities far from the final consumption (intermediate or capital-good productions) that tend to require a larger plant size.

The service activities in this group are the most atomised ones and where there is, with difference, smaller presence of medium and large enterprises. In general terms, these activities are characterised by their intensive use of manpower, but in very small production units, which reduces their competitiveness. The demand

[6] The employment multiplier measures, using the inverse matrix, and the vector of employment to production ratios, the total employment that is generated in the economy due to an increase in the sales of the activity sector being considered. In this case, it means that an increase of Pesetas 1 million in the sales of any sector of the group 2 causes a growth in employment of 0.176 work positions. Or, to say it in a different way, that the

of these service sectors depends on the regional rent, as they are very much linked to final consumption. Therefore, their demand growth is derived from that of other sectors, through the effect that these other activities generate in the Andalusian rent and wealth. Therefore, these service activities cannot be constituted in locomotives of the regional development.

In any event, the high Employment Multiplier of this group 3 (0.252, the highest in the five groups), in spite of the reduced value of the Output Multiplier, confirms the high intensity of employment, especially in the service activities that comprise it.

The Group 4, that we have identified as the one that presents a greater endogenous development potential, also presents a more favourable entrepreneurial composition. The average size of enterprises is notably higher, with a percentage of small, medium and large enterprises also very superior to the general average. Thus, these activities are not only more integrated within the rest of the regional activity, but they are also made up of larger enterprises that can compete under better conditions in the external markets.

However, that better relative position is somewhat counteracted by the reduced size of the group. These activities represent only 5.5% of the enterprises and hardly reach 6.3% of the regional production. We should conclude, therefore that the potentially most interesting activities in Andalusia represent a very small part of the productive network, what undoubtedly constitutes an obstacle of first order in the process of regional development.

Lastly, in the Group 5 we meet with an entrepreneurial structure very similar to that of group 4, with a slightly lower percentage of medium-sized enterprises, and a proportion of micro-, small and large enterprises slightly higher. The high average size of the enterprises of this group may have relationship with the lower integration in the regional productive structure and with the situation of dependence of these

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sales of the activities of this group has to grow in Pesetas 5.682 million to generate an additional employment in Andalusia.

enterprises with respect to others located outside the region, as they would have to operate guided towards much wider markets that those strictly Andalusian. It seems that the enterprises of up to 100 employees could be working as subordinates of other larger enterprises from outside of the region, while the large ones would be located in Andalusia, to a considerable extent, to take advantage of subsidies and/or cheaper manpower. However, the data on entrepreneurial distribution are not sufficiently conclusive in this respect.

The activities of the last two groups are not only very similar in their distribution of enterprises, but also in the Regional Employment Multiplier (lower to that of group 3, but higher to that of groups 1 and 2), although this is higher in group 4 (0.199 jobs per Pesetas 1 million in front of 0.188 in group 5). This would be explained by the greater regional integration in that group 4. In spite of the average size of the enterprises being approximately the same in the two groups, enterprises in group 4 not only generate employment in its own sector, but they also have a greater pulling effect on other regional activities, creating employment in them.

4.- Conclusions

This paper has started outlining the importance that achieving development from an endogenous perspective represents within the current economic context. This means making better use of the own productive resources, among which the local entrepreneurs are included as a comprising part of the human resources. The local entrepreneurs and their innovation capacity can encourage economic development, preventing an excessive dependence of the region where they act with respect to other more developed regions, and also contributing to a more sustained and balanced development. In this sense, an indicator of the contribution of local entrepreneurs to the endogenous development is the existence of a high quality entrepreneurial network, that is to say, an entrepreneurial network comprised to a large extent of competitive enterprises of autochthonous capital. Nevertheless, keeping in mind that most of the large enterprises located in the backward areas usually are of foreign capital, the quality of the entrepreneurial network from the endogenous perspective would be basically conditioned by the kind of existing small

and medium-sized enterprises. Therefore, based on this premise, we have elaborated a methodology that allows the assessment of the degree of endogenous development of a certain region starting from the analysis of its productive structure, that assessment has also been considered a fundamental instrument to provide information to those responsible for applying regional and local economic policy measures.

The proposed methodology consists of three clearly differentiated phases. In first place, the variables that we consider as best explaining the qualities the regional productive structure should possess to contribute to an endogenous-like development have been described. Some of these variables are obtained directly from the input-output analysis, as those defining the degree of productive articulation: the Regional Output Multiplier and the Uniform Demand Expansion Multiplier. These two variables are basic to determine the intersector linkages among the productive activities. In this sense, the greater the intersector linkages of a certain activity are, the more it contributes to the endogenous development. With respect to the rest of the variables, both those measuring productivity (Apparent Labour Productivity or GVA / Effective Production Ratio) or the one defining the export dynamism (Export Ratio), they can also be obtained from the information provided by the input-output tables. Productivity as well as export dynamism are two elements that reflect the competitiveness of a productive activity. In this sense, it has been pointed out that the greater productivity and export dynamism of an activity are, the more they contribute to the endogenous development.

The second phase of the proposed methodology has consisted on elaborating a typology of productive activities based on the whole set of variables defining endogenous development. In this sense, the cluster analysis has been proposed, using the method of the k-averages, to allocate each productive activity to a certain cluster, so that the dominant type of activity can be determined in each case. Obviously, if the cluster contributing to a greater extent to the endogenous development is dominated by productive activities with low demand and low technological content, then the quality of the productive structure will not seem to be the most appropriate.

Lastly, to determine with greater precision the quality of the productive structure, a third phase has been proposed in the methodology to analyse some of the characteristics of the enterprises integrating each cluster, as for example, their average size, the number of enterprises comprising the cluster, or their final contribution to the regional GVA. Regarding the size of the enterprises, we start from the assumption that the cluster where small and medium-sized enterprises (SMEs) clearly dominate will include activities that may present a greater quality in relation to the endogenous development. Nevertheless, the presence of a high number of large enterprises in a certain cluster does not necessarily imply scarce connection with the endogenous development, provided a strong presence of SMEs exists, what would make the situation even more desirable. The study of the number of enterprises that comprise each cluster and their final contribution to the regional GVA completes the analysis, since –once the characteristics of each group are known- it shows the quality level of the regional productive structure.

To conclude this paper, the proposed methodology has been applied to the case of the Andalusian region, in Spain, one of the most backward areas in the European Union. In this sense, starting from the data provided by the last input-output table elaborated for the region, in the year 1990, the values of the four variables that have been considered as defining the endogenous development (Regional Output Multiplier, UDE Multiplier, Apparent Labour Productivity and Export Ratio) have been calculated for each activity and, then, the typology of activities has been elaborated through the cluster analysis, obtaining five types of sectors as a result. The activities of the group 4, those that turn out to contribute most to the endogenous development, are basically industrial activities of low demand and low technological content. Obviously, this result is in accordance with the low degree of both industrial and economic development of the region.

Finally, the third phase of the methodology has been carried out using the data on entrepreneurial size and number of enterprises of each activity provided by a database of Andalusian enterprises, for the year 1990 as well. The result has been that –with respect to entrepreneurial size- the group 4, again, is comprised of

the activities that contribute most to the endogenous development, as it contains a high proportion of SMEs and also a good number of large enterprises. Nevertheless, the weakness of this group of activities is clear, as shown by the reduced number of enterprises within it and its small contribution to the regional GVA. In conclusion, if we sum up this last information to the previously indicated fact that this group 4 gathers activities of low demand and low technological content, we come to the conclusion that the quality of the Andalusian productive structure is not the most suited to encourage endogenous development.

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