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CENTRAL PLACES AND DEVELOPMENT: AN ECONOMIC APPRAISAL OF THE PORTUGUESE REGIONAL DECENTRALISATION

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1 — Introduction

The purpose of this paper is to appraise the Regionalisation of Portugal from the economic point of view. With a population of about 10 million people, Portugal only has Central Government and Local Government administrative levels and now seeks to introduce an intermediate regional level. The creation of administrative regions is included in the Constitution and has been regulated by a law approved by the Assembleia da República (Law 56/91 of 13th August). But, the regions have not been established yet and there is no wide consensus on the matter.

Regionalisation is mainly a *political* problem which involves the balance of the distribution of power (and financial resources) between the capital and the regional urban centres. Here it is treated instead as an *economic* problem: how to efficiently allocate a set of administrative functions in space to maximize scale economies and minimize transport and communication costs?

Economic *efficiency* is dealt with here, e. g., the location of administrative functions which minimize the sum of production and transport costs. Pontes (1987) argues that in spatial economy, efficiency and maximisation of social welfare (measured by the aggregate surplus of consumers and productive units) are only in harmony in the specific case where demand for the administrative function is inelastic in relation to transport and communication cost. Otherwise the maximisation of social welfare entails a further decentralisation with relation to the level which follows from efficiency. In this paper, for the sake of simplicity, it is assumed that the inelasticity of demand with relation to transport cost holds. A second preliminary question is the rationality of administrative decentralisation at a time when transport and communication costs drop so sharply. Traffic speed on motorways has increased by about 30 % as a result of recent investment in infrastructure in Europe (Bruinsma and Rietveld, 1993). In Portugal more than 2200 km of high speed roads were built during the period between 1985 and 1995 (see, among others, Brito,1994, and Porto, 1996). The number of telephones has doubled during the last decade, and the pricing of telephone calls has recently been changed to allow a decrease of the price of inter-urban calls in relation to local calls. In spite of the importance of this kind of progress, I do not believe that the improvement of the Transport and Telecommunication systems is a substitute for the decentralisation of administrative functions, although it behaves in this way in the model presented below. The reason is that the decrease of transport costs is matched by an increase in the elasticity of demand in relation to transport cost, that is, for a «quest for

proximity». Proximity not only means low travel time but also entails properties of «flexibility» and «adjustment» which are expressed by the statement that «near is beautiful» (see Alves, 1996; Porto,1996, and Lopes,1995).

The comment that Tocqueville (1856) made about the French Revolution may be applied to the Portuguese Regionalisation. In both cases, a major political change only made a preexisting de facto change explicit. In the French case administrative centralisation was already achieved before the Revolution, while in Portugal the decentralisation of administrative functions was accomplished long before the Administrative Regions were set up.

In mainland Portugal ([1]), a *de facto* regional decentralisation took place which was mainly due to three factors (see Barreto, 1995; Lopes, 1996; Reis,1995).

The per capita GDP of Portugal evolved from 53,9 % in 1986 of the Community average to 67,9 % in 1995 (Porto,1996).

Firstly, local governments gained a considerable amount of both political and economic power, in relation to the Central Government. Then, the economic environment changed toward a more extensive decentralisation of decision-taking due to the growth of per capita income ([2]), the liberalisation of the economic system and the opening of the frontiers with full membership of the European Community in 1986, which additionally increased the amount of regional funds. Finally, There was much administrative decentralisation at regional level with the creation of Planning Regions (North, Centre, Lisbon and Tagus Valley, Alentejo, Algarve) with Regional Coordinating Commissions. Furthermore, many of the services of Central Government Ministries have been regionalised. Reis summarises this evolution:

> [...] there is already a *de facto* regionalisation (which is obviously different from effective regionalisation) and that it neither generated new frontiers nor cut the country in pieces. [Reis 1996.]

The realisation that regionalisation has already taken place *de facto* (a view which is shared by almost every specialist in the field) may lead to two opposing policies. Opponents of the election of regional decision boards say that it is «unnecessary» because an effective decentralisation has already taken place. On the other hand, the supporters of regionalisation will say that it is necessary to make the recent decentralising trends explicit.

In this paper, an attempt is made to obtain an upper bound to the decentralisation of functions in terms of economic efficiency. A closed economy with two regions is assumed: a «core» (with a larger population) and a «periphery» (with a smaller population) connected by a transport line involving a positive cost. It is assumed that the economy produces three goods: *A* (for «agricultural good»); *L* (for «low admnistrative function») and *H* (for «high admnistrative function»).

([1]) The islands of Azores and Madeira have autonomous regional governments long time ago.

([2]) The per capita GDP of Portugal evolved from 53,9 % in 1986 of the Community average to 67,9 % in 1995 (Porto, 1996).

In this context, the importance of location for efficiency depends on the existence of *both* positive fixed costs (scale economies) and transport costs. In order to simplify the analysis, good *A* can be excluded from the aggregate output because it is produced under constant returns to scale, meaning that its production takes place in both regions.

Function *H* is more central than function *L*, in the sense that the purchase of one unit of *H* implies fewer trips per unit of time than *L* does. A function is decentralised to the «periphery» if the transport cost involved in the concentration overcomes the additional fixed cost that follows from decentralisation. It is assumed that the demand of each good in any region is an increasing function of its aggregate income.

In period 0 (the present), function *L* has alteady been decentralised. The likelihood of decentralising the high-order function in period 1 further is bounded from above by the rate of increase of the aggregate income. As this rate varies considerably between regions, the degree of feasible regionalisation is very heterogeneous.

Were the legal framework of regionalisation completely flexible, this kind of heterogeneity would not constitute a problem. However as the regulatory law (Law 56/91 of 13 August) of regions lays down a certain degree of uniformity, the same degree of regionalisation will be inefficient for some regions.

This kind of inefficiency can be minimised if the establishment of regions is made as flexible as possible within the present legal framework. If this goal cannot be fully achieved it is preferable to create large regions instead of small slow-growth regions which would be burdened (rather than helped) by the regional institutions.

2 — An economic model for regionalisation

A closed economy with the following assumptions is assumed:

*H*1) It is a spatial economy made up of two regions: the «core» (with a larger population) and the «periphery» (with a smaller population). The regions are connected by a road which involves a positive travel cost t in the distance between them. It is assumed that intraregional transport costs are zero.

*H*2) Technology is described by a linear cost function:

$$C(Q) = F + wQ \qquad (1)$$

where $F \geq 0$ is a fixed cost and w is a (constant) marginal cost. If the fixed cost is positive, this cost function involves increasing returns;

*H*3) The economy produces three goods which are named: *A* (for «agricultural good»); *L* (for «low order admnistrative good»); and *H* (for «high order admnistrative good»). Therefore, fixed costs (F_A,F_L,F_H) are defined for each kind of good. For each kind of

good, we also define a parameter n which is an inverse product-specific measure of transportability. Parameter *n* can be defined as the number of trips per unit of time that a consumer located in a region has to make in order to be able to buy one unit of a good which is supplied in the other region. The transport cost of a good can be expressed in a multiplicative way as:

$$t \cdot n \qquad \textbf{(2)}$$

where *t* measures road quality and *n* measures (inversely) product transportability;

*H*4) Production of good *A* entails constant returns to scale (that is, F_A is zero). Therefore, its location remains fixed in time, so that good *A* is produced in both regions. For the purpose of locational analysis good *A* can be excluded from the aggregate product of both regions. Therefore, it is assumed henceforth that the economy's product is only made by goods *L* and *H*;

*H*5) Good *H* is more central that good *L* in the sense in the sense that it is more transportable, therefore:

$$^{n}H < {}^{n}L \qquad \textbf{(3)}$$

To obtain an example of the relationship between goods *H* and *L*, assume that function *L* consists of the decision on a subsidy of 5000 contos and that *H* consists of a decision on a subsidy of 20 000 contos. The later subsidy is more difficult to obtain because it is decided at a higher level of public administration. However, if if the intention is to obtain 20 000 contos by demand function *L*, an application must be made four times and the same number of trips must be made, while it is only necessary to travel once if the use of function *H* is chosen;

*H*6) The demand function for each good is similar to the Keynesian consumption function. The quantity demanded of a good in a region is an increasing function of the aggregate income in that region ([3]). The share of the more central good (*H*) increases with per capita income. The demand for the high-order good (*H*) is strictly lower than the demand for the low-order good (*L*) ([4]).

It is easy to conclude that the location of a function involves a trade-off. Its concentration in the «core» maximizes scale economies while decentralisation to the «periphery» minimizes transport costs ([5]).

([3]) For the sake of the calculation of aggregate income it is assumed that the goods are equally priced at the constant marginal cost. This implies that fixed costs are covered by a subsidy.

([4]) These assumptions are common in central place literature.

([5]) Concentration in the «periphery» is obviously never efficient.

The total cost (production plus transport) of providing a good with production being concentrated at the «core» is:

$$F + w(D_c + D_p) + (t \cdot n)D_p \qquad \textbf{(4)}$$

where:

$D_c \equiv$ Demand for the good at the «core»;
$D_p \equiv$ Demand for the good at the «periphery».

The total cost of providing the good with decentralisation is:

$$2F + w(D_c + D_p) \qquad \textbf{(5)}$$

Therefore, the condition of efficiency of decentralisation given **(4)** and **(5)** is:

$$F + w(D_c + D_p) + (t \cdot n)D_p \geq 2F + w(D_c + D_p) \qquad \textbf{(6)}$$

which simplifies to:

$$F \leq t \cdot n \cdot D_p \qquad \textbf{(7)}$$

that is, decentralisation allows a saving of transport costs on the amount of goods demanded by the peripherical consumers, but involves an additional fixed cost.

Economic progress exerts two contradictory influences upon the incentive to decentralise (as measured by the right of 7). On the one hand, the improvement of Transport decreases the benefits od decentralisation. On the other hand, economic growth increases the demand for the goods supplied in the core regions by consumers in the periphery thereby creating an incentive for «import substitution».

Following the dynamic central place model according to Beckmann (1995), this kind of evolution can be described using a two-period model. At the present time (in period 0), some decentralisation has already taken place, therefore the provision of good L in the periphery is marginally efficient. From **(7)** (with equality), we have:

$$F_L = t_0 \cdot n_L (1 - q_0) Y_0 \qquad \textbf{(8)}$$

where:

Y_0 is the aggregate income of the «periphery» in period 0;
q_0 is the share of good H in aggregate income in period 0.

By desegregating income **(8)** becomes:

$$F_L = t_0 \cdot n_L (1 - q_0) P_0 y_0 \qquad \textbf{(9)}$$

where:

y_0 — per capita income in the «periphery» in period 0;
P_0 — population in the «periphery» in period 0.

It is assumed that demand for good H increases between period 0 and period 1 so that the supply of H in the «periphery» breaks even:

$$F_H = t_1\, n_H\, q_1 P_1\, y_1 \tag{10}$$

If $y_1 > y_0$ (a similar reasoning with $y_0 > y_1$ leads to the same result), then $q_1 > q_0$. Then **(9)** becomes:

$$F_L > t_0 \cdot n_L\, (1 - q_1) P_0\, y_0 \tag{11}$$

Dividing **(10)** by **(11)** term by term, the result is:

$$\frac{F_H}{F_L} < \left(\frac{t_1}{t_0}\right)\left(\frac{n_H}{n_L}\right)\left(\frac{q_1}{1-q_1}\right)\left(\frac{P_1}{P_0}\right)\left(\frac{y_1}{y_0}\right) \tag{12}$$

As by assumption $q_1 < \frac{1}{2}$, **(11)** can be written as:

$$\frac{F_H}{F_L} < \left(\frac{t_1}{t_0}\right)\left(\frac{n_H}{n_L}\right)\left(\frac{P_1}{P_0}\right)\left(\frac{y_1}{y_0}\right) \tag{13}$$

Define:

$K \equiv \frac{n_H}{n_L}$ rate of increase in centrality by the «periphery» during periods 0 and 1;

$G \equiv \frac{F_H}{F_L}$ rate of increase of public expenditure in indivisibilities in the «periphery» between periods 0 and 1;

$r_t, r_p, r_y \equiv$ rates of increase of transport cost, population and per capita income $\left(\text{for instance, } r_t = \frac{t_1 - t_0}{t_0}\right)$.

Then **(13)** can be written as ([6]):

$$K < \frac{(1 + r_t)(1 + r_p)(1 + r_y)}{1 - q_0} \tag{14}$$

As the improvement of Transport and Communication systems means that r_t is negative (14) can be further be simplified:

$$K < \frac{(1 + r_p)(1 + r_y)}{G} \tag{15}$$

([6]) The central place literature, which is followed here, assumes that goods have a private nature, so that the supply of a good in a region depends on the demand associated with the size of population. On the other hand, in a model with local public goods, the provision of the goods would determine (rather than being explained) the regional population (I am indebted to Brandão Alves for this remark).

Expression **(15)** means that in order to be efficient the increase of centrality in the «periphery» has an upper bound which depends positively on the rates of the increase of population and per capita income, and negatively on the rate of increase of public expenditure ([7]).

3 — Regionalisation as an economic problem

During the last decade, while the population has stagnated and even slightly decreased, per capita income in Portugal has increased sharply as was remarked above. According to the upper bound to the rise of centrality in the «periphery» in r. h. s. of **(15)**, regionalisation is efficient provided that three conditions are met:

1) The growth of per capita income in the country should be high enough to compensate for demographic decline;
2) This kind of growth should be homogeneously distributed across the regions of the country;
3) Public expenditure linked to the financing of fixed costs which are incurred due to the decentralisation of public services should not rise beyond control.

While no one questions assumption 1) (although its fulfillment is not granted), questioning 2) and 3) lies in the root of the criticism of regionalisation.

Cavaco Silva said that the legal creation of the regions will cause an escalation in public expenditure [that is, a high value of G in **(15)**], thus reducing the scope for efficiency in regionalisation. This argument, while impressive, is not very well founded, because many public services have already been decentralised, particularly many departments of Ministries and the admnistrative structures which support the already existing Comissões de Coordenação Regional. It can be argued (Reis, 1996; Lopes, 1995) that regionalisation will allow an integration and rationalisation of these structures, economies thus appearing which permit the value of G in **(15)** to be even lower than the unity. This goal of cost efficiency can be achieved if an orientation of «light structure» is adopted for the regional boards (Porto, 1996). Concretely, this means that the region should decide the timing, location and general scope of investment projects rather than executing and managing them (and the infrastructure thereby resulting as well) ([8]).

The other objection to decentralisation, which concerns the differences between demographic and regional growth, is more serious and has been raised by Barreto (1996) among others. The following table gives the rates of population growth, per capita income and aggregate income in the five Portuguese planning regions and is based on data contained in Porto (1996).

([7]) Note that the efficiency of regionalisation can not only be appraised according to its impact in public expenditure, contrary to the advice recently given by the former Portuguese PM, Cavaco Silva.

([8]) I am indebted to Mendes Baptista for this specific point.

Regional demographic (r_p) and economic growth (r_y) rates in Portugal 1981/1991

Regions	r_y	r_p	$(1 + r_y)(1 + r_p)$	Difference to national average
North	0.4297	0.012	1.4468	0.0398
Centre	0.1818	– 0.024	1.1534	– 0.2536
Lisbon and Tagus Valley	0.3874	0.014	1.4068	– 0.002
Alentejo	– 0.1076	– 0.064	0.8352	– 0.5718
Algarve	0.2727	0.051	1.3376	– 0.0694
Portugal (Mainland)	0.3529	0.04	1.4070	0

Source: Porto (1996).

For a given *G* [in **(15)**], the differences between the rates of population growth and per capita income growth determine great differences in the economic feasibility of decentralisation. These differences would not be a problem if the institutional format of regionalisation were more flexible.

However, the Law which regulates regionalisation (Law 56/91 of 13th August) is quite rigid: the Regions are created *simultaneously* by a law from the Assembleia da República, and they have identical boards (an executive board called the Junta Regional and a legislative named Assembleia Regional). This rigidity is reinforced by the recent idea of a national referendum on regionalisation. The only differentiation between regions which is introduced by the law only concerns the number of members of the regional boards and is only based in static criteria (like the population of the region) rather than on dynamic criteria (e. g., the rate of population growth). According to our analysis this kind of differentiation is clearly unsuitable.

Therefore, condition 15 and the table above show that any unique (common) level of decentralisation can only be efficient for one region, thus leading to undesirable outcomes for the other regions. If the level of decentralisation that fits high growth regions (namely the Northen region) is chosen, low growth regions (Centre and Alentejo) will experience a dramatic rise in fixed costs. If the opposite position prevails, the North will remain burdened by its dependency on Lisbon.

4 — Policy solutions to the dilemmas of regionalisation

The solution to the problem outlined above lies in a flexibilisation of the regional administration, which adapts each one to the specific scale economies/transport cost trade-off faced by each region. The regional decision-makers would have the same power in every region, but the consulting and technical support functions would be outsourced to private enterprises as much as possible. Depending on the region and on the centrality of the function, the project that supports the decision could be outsourced either to a local or to a central private consultant (based in Lisbon or Porto), depending on market criteria.

If this kind of organisational flexibility is not achievable, the solution is to minimize the differentials in economic and demographic dynamics among regions

by means of an adequate regional division. An extreme «solution» would be to avoid regionalisation at all, which we do not consider advisable. An intermediate proposal would be to keep the present planning regions, which are large and internally heterogeneous, thus avoiding the formation of regions (such as Baixo Alentejo, Norte Interior and Centro Interior) with very low economic and demographic dynamics.

5 — Conclusion

The economic problem which is implicit in regionalisation is modeled according to central place theory in a dynamic framework, as introduced by Beckmann (1995). The economic opportunity for the decentralisation of the supply of a good results from the interplay of scale economies (which lead to spatial concentration) and transport costs (which lead to decentralisation). It is concluded that efficient decentralisation in a region has an upper bound which depends positively on regional economic and demographic growth and depends inversely on the increase of indivisibilities which it is associated with. Therefore, the major economic problem implicit in regionalisation involves the contrast between the institutional projected uniformity of regions on the one hand and the deep asymmetries in economic and demographic growth among them in the recent past on the other hand.

The real solution to this dilemma would to flexibilise the institutional format of the regions, with the maximisation of the outsourcing of technical support functions. If this is not completely possible, there should be a purposeful regional division that minimizes the extent of interregional asymmetries.

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