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

JOSÉ PEDRO PONTES

DEPARTAMENTO DE ECONOMIA

R. Miguel Lúpi, 20 - 1200 Lisboa - Fax: 01.396 64 07 - Telf. 01.607099/609867

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José Pedro Pontes

Abstract: A dynamic central place model due to BECKMANN (1995) is used to evaluate the efficiency of the regional decentralisation in Portugal. The location of administrative functions depends on the interplay of economies of scale (which promote spatial concentration) and transport costs (which lead to decentralisation). Therefore it is shown that the efficient rate of decentralisation has an upper bound which depends directly on the rate of increase of aggregate product in the peripheral regions and depends inversely on the rise of fixed costs of establishing new public services there. The problem associated with regional decentralisation lies in that the institutional format is quite uniform across regions , although the demographic and economic growth rates vary considerably. Any common level of decentralisation which fits a region will be inadequate for the others. In order to overcome this flaw, regional administrative structures should be flexible and the regional division of the country should lead to the minimisation of interregional asymmetries.

Mailing Address: Instituto Superior de Economia e Gestão, Rua Miguel Lupi, 20, 1200 Lisboa Portugal.
Tel. 351-1- 607099
Fax 351-1-3966407
E mail ppontes@iseg.utl.pt

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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 has only the Central Government and the Local Government administrative levels and seeks now to introduce an intermediate regional level. The creation of administrative regions is contained in the Constitution and has been regulated by a law approved by the Assembleia da República (Law 56/91 of 13 August). However, the regions have not been established yet and there is no wide consensus on that matter.

Regionalisation is mainly a political problem which has to do the balance in the distribution of power (and financial resources) among the capital and the regional urban centres. Instead we treat it here as an economic problem: how to allocate efficiently a set of administrative functions in space in order to maximize scale economies and minimize transport and communication costs?

We deal here with economic efficiency, e.g., the location of administrative functions that minimize the sum of production and transport costs. PONTES (1987) argues that in a spatial economy efficiency and social optimality (in the sense of the maximization of the aggregate surplus of consumers and productive units) only agree with each other in the specific case where demand for the administrative function is inelastic with relation to transport and communication cost. Otherwise social optimality entails a further decentralisation with relation to the level which follows from efficiency. In this paper, for the sake of simplicity, we assume 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 decrease so sharply. The traffic speed in motorways has increased about 30% as a consequence 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 1985-1995 (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 been recently changed in order allow a decrease of the price of inter-urban calls with relation to local calls.

In spite of the importance of this kind of progress , we don't believe that the improvement of the Transport and Telecommunication systems is a substitute for the decentralisation of administrative functions although it behaves as such in the model presented below. The reason is that the decrease of transport costs is matched by an increase in the elasticity of demand with relation to transport cost , that is, for a "quest for proximity" . Proximity means not only a 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).

One may apply to the Portuguese Regionalisation the comment that TOCQUEVILLE (1856) made about the French Revolution. In both cases, a major political change only made explicit a preexistent de facto change. In the French case the administrative centralisation was already achieved before the Revolution, while in Portugal the decentralisation of administrative functions has been accomplished long before the formal set up of Administrative Regions.

In Mainland Portugal,[1] a de facto regional decentralisation occurred mainly due to three factors (see BARRETO, 1995; LOPES, 1995; REIS,1996).

First, Local Governments gained a considerable amount of power, both political and economic with relation to the Central Government. Then, the economic environment changed toward a wider decentralisation of decision-taking on account of the growth of per capita income,[2] the liberalisation of the economic system and the opening of the frontiers with full membership

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

of the European Community in 1986, which additionally increased the amount of regional funds. Finally, a lot of administrative decentralisation at the regional level with the creation of Planning Regions (North, Centre, Lisbon and Tagus Valley,Alentejo, Algarve) endowed with Regional Coordinating Commissions. Furthermore, a lot of services of Central Government Ministries have been regionalised. Reis summarises this evolution:

> I mean that there is already a de facto regionalisation (which is obviously different from an effective regionalisation) and that it did neither generate new frontiers nor cut off the country in pieces. [Reis, 1996]

The verification that regionalisation has already taken place de facto (which is shared by almost every specialist in the field) may lead to two opposed policies. Opponents to the election of regional decision boards say that it is "unnecessary" because an effective decentralisation has already taken place. On the opposite side, the supporters of regionalisation will say that it is necessary to make explicit the recent decentralising trends.

In this paper, we try to obtain an upper bound to the decentralisation of functions in terms of economic efficiency. We assume a closed economy with two regions: "core" (with a larger population) and "periphery" (with a lesser population) connected by a transport line entailing a positive cost. We assume that the economy produces three goods, namely A (for "agricultural good"), L (for "low admnistrative function") and H (for "high admnistrative function").

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

[2]The per capita GDP of Portugal evolved from 53.9% in 1986 of the Community average to 67.9% in 1995 (PORTO,1966).

scale, so 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 a smaller number of trips per unit of time than L does. A function is decentralised to the "periphery" if the transport cost implied by the concentration overcomes the additional fixed cost that follows from decentralisation. We assume 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 already been decentralised. The likelihood to decentralise further the high-order function in period 1 is bounded from above by the rate of increase of the aggregate income . As this rate varies considerably among 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 states a certain degree of uniformity, any common degree of regionalisation will be inefficient for some regions.

This kind of inefficiency can be minimized if the establishment of regions is made as flexible as it is possible inside the present legal framework. If this goal can not 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.

We assume a closed economy with the following assumptions:

H1) It is a spatial economy made by two regions, namely "core" (with larger population) and "periphery" (with lesser population). The regions are connected by a road which entails a positive travel cost t in the distance between them. We assume that intraregional transport costs are zero.

H2) Technology is described by a cost function of the kind

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

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

H3) The economy produces three goods which we name: A (for "agricultural good"); L (for "low order admnistrative good"); and H (for "high order admnistrative good"). Therefore, we define fixed costs (F_A,F_L,F_H) for each kind of good. We also define for each kind of good 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

$$t \cdot n \qquad 2$$

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

H4) 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, we assume henceforth that the economy's product is made only by goods L and H.

H5) Good H is more central than good L in the sense that it is more transportable so that

$$n_H < n_L \qquad 3$$

In order to have an example of the relation 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 20000 contos. The later subsidy is more difficult to obtain because it is decided at a higher level of the public administration. However, if one wishes to get 20000 contos by demanding function L, he or she must apply four times and make the same number of trips, while he must travel only once if he decides to use function H.

H6)The demand function for each good is similar to the Keynesian consumption function. Quantity demanded of a good in a region is a share of the aggregate income in that region.[3] This share increases with per capita income. The demand for the high-order good is strictly smaller than the demand for the low-order good.[4]

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

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[3]For the sake of the calculation of aggregate income we assume 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.

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

$$F + w(D_c + D_p) + (t.n)D_p \qquad 4$$

where D_c Demand for the good at the "core"
D_p Demand for the good at the "periphery"

The total cost of providing the good with decentralisation is

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

Therefore, the condition of efficiency of decentralisation given 4 and 5 is

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

which simplifies to

$$F \leq t \cdot n \cdot D_p \qquad 7$$

that is, decentralisation allows a saving of transport cost on the amount of good demanded by the peripherical consumers but incurs in an additional fixed cost.

Economic progress exerts two contradictory influences upon the incentive to decentralise (as measured by the right hand side of 7). On the one hand, the improvement of Transport decreases the benefits of decentralisation. On the other hand, economic growth increases the demand

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Concentration in the "periphery" is obviously never efficient.

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 as treated by Beckmann (1995), we can describe this kind of evolution by means of a two-period model. In the present (in period 0), some decentralisation has already taken place so that the provision of good L in the periphery is marginally efficient. From 7 (with equality), we have

$$F_L = t_0 \cdot n_L \, (1-q_0) \, Y_0 \qquad 8$$

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

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

y_0 per capita income in the "periphery" in period 0

P_0 Population in the "periphery" in period 0

We assume that demand for good H increases between period 0 and period 1 so that the supply of H in the "periphery" breaks even

$$F_H = t_1 \, n_H \, q_1 \, P_1 \, y_1 \qquad 10$$

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

$$F_L > t_0 \; n_L \; (1-q_1) \; P_0 \; y_0 \qquad 11$$

Dividing 10 by 11 term by term, we get

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

As by assumption $q < \frac{1}{2}$, 11 can be written as

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

Define

$K \equiv \frac{n_L}{n_H}$ rate of increase of 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 (for instance, $r_t = \frac{t_1 - t_0}{t_0}$).

Then, 13 can be written as

$$K < \frac{(1+r_t)(1+r_p)(1+r_y)}{G} \qquad 14$$

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

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

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 increase of population and per capita income and negatively on the rate of increase on public expenditures.[6]

3. Regionalisation as an economic problem.

During the last decade, while population stagnated and even slightly decreased, per capita income in Portugal 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) Growth of per capita income in the country should be high enough in order to compensate for demographic decline.

2) This kind of growth should be homogeneously distributed across the regions of the country.

3) Public expenditures linked with 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.

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[6] Remark that the efficiency of regionalisation can not be appraised only according to its impact in public expenditure, in opposition to the advice recently expressed by the former Portuguese PM, Mr. Cavaco Silva.

Portugal's former PM, Mr Cavaco Silva, said that the legal creation of the regions will bring an escalation of public expenditures (that is, a high value of G in 15), thus reducing the scope for efficiency in regionalisation. This argument, while impressive, is not much founded, because a lot of public services have already been decentralized, namely a lot of branches of Ministries and the admnistrative structures that support the already existent Comissões de Coordenação Regional. It can be argued (REIS,1996; LOPES,1995) that regionalisation will allow an integration and rationalisation of these structures, thus arising economies that will enable 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).[7]

The other objection to decentralisation, the one concerning the differences of demographic and regional growth, is more serious and has been put forward by BARRETO (1995) among others. The following table contains the rates of growth of population , per capita income and aggregate income in the five planning Portuguese regions and is based on data contained in PORTO (1996).

[7] 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	$1+r_y$	$1+r_p$	$(1+r_y)(1+r_p)$	Difference to national average
North	1.4297	1.012	1.4468	0.0398
Centre	1.1818	0.976	1.1534	-0.2536
Lisbon and Tagus Valley	1.3874	1.014	1.4068	-0.002
Alentejo	0.8924	0.936	0.8352	-0.5718
Algarve	1.2727	1.051	1.3376	-0.0694
Portugal (Mainland)	1.3529	1.04	1.4070	0

For a given G (in 15), the differences in the rates of population growth and per capita income growth determine large 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 that regulates regionalisation (Law 56/91 of 13 August) is quite rigid: the Regions are created simultaneously by a law of the Assembleia da República, and they have identical boards (an executive named 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 among regions which is introduced by the law concerns only the number of members of the regional boards and is based only in static criteria (namely the population of the region) rather than on dynamic criteria (e.g., the rate of growth of the population). 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 be efficient only for one region, thus leading to undesirable outcomes for the other regions. If the level of decentralisation that fits high growth regions (namely the North region)

is chosen, regressive 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 toward Lisbon.

4. Policy solutions to the dilemmas of regionalisation.

The solution to the problem which is outlined above lies in a flexibilisation of the regional administration, which makes each one suited to the specific economies of scale/transport cost trade-off that each region faces. 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 procured either to a local or to a central (based in Lisbon or Oporto) private consultant, 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 don't find 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 a 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 economies of scale (which lead to spatial concentration) and transport costs (which lead to decentralisation). We conclude 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 has to to with the contrast between, on the one hand, the institutional projected uniformity of regions and, on the other hand, the deep asymmetries in economic and demographic growth among them during the recent past.

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

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