

# European Journal of Communication

## *Editorial*

*History as a Communication Event: The Example  
of the French Revolution*

Jürgen Wilke

*Research into International Television Flows — A  
Methodological Contribution*

Preben Sepstrup

*Aids, Moral Panics and Opinion Polls*

Yvette Rocheron and Olga Linné

*Answers Without Questions: A Comparative  
Analysis of Television News Interviews*

Akiba A. Cohen

*Television News and the 'Third Force' in British  
Politics: A Case Study of Election Communication*

Holli A. Semetko

## *Research Note*

*The Supply of Programmes by Public Television  
in Europe: An Econometric Analysis*

Pierre Kopp

## *Letter*

*A Reply to Brian Emmett*

Steven Barnett

## *Reviews*

*Abstracts, Résumés, Zusammenfassungen*

*Index to Volume 4*

## Research Note

# The Supply of Programmes by Public Television in Europe: An Econometric Analysis

*Pierre Kopp\**

This article demonstrates that the cost of public service broadcasting is dependent on the wealth and size of the country, and that, whatever its social and political environment public service broadcasting companies show identical characteristics. The supply of programmes is determined by such variables as the number of TV receivers, the number of channels and the existence of advertising as a source of finance. The introduction of advertising is shown to increase the length of programmes without providing new resources, with the consequence that the quality of programming decreases.

The financing of European television has been in flux since the mid-1970s. Some countries with little market competition have allowed commercial and public service television to co-exist on an equal basis. Others have increased the reliance of public service broadcasting organizations on advertising finance in addition to licence fee revenues.

This article aims to demonstrate that public broadcasting companies have certain characteristics that induce them to operate identically, regardless of social, ideological and political factors. Substantiation of this hypothesis would invalidate the current view, which claims that the similarities in public broadcasting systems are outweighed by the differences. The technique used relies on the following hypothesis: if the existence of a stable link can be demonstrated between the level of spending for public broadcasting and the wealth and the size of the country, it is reasonable to claim that these variables determine this level.

The task is to verify the existence of a relation that describes the formation of public broadcasting resources and the determination of the supply of programmes in a way that is statistically and

---

\*Pierre Kopp is a Doctor of Economics and Assistant Professor at the University of Paris XII.

Kopp: *Supply of Programmes by Public TV in Europe* 483

conceptually adequate. The purpose is not to argue that public service broadcasting is determined by an unwritten law, but rather to underline the fact that objective constraints on resources narrow the field of operation.

Of course, the forecasting power of the relationship between spending on public service broadcasting and the wealth of a country can be erroneous because a nation can choose a broadcasting policy which allows it to depart from the norm. Despite this restriction, the econometric method used in this paper usually refers to these relations as 'empirical laws', which can be applied in the restrictive manner mentioned earlier. The wide sample and the statistical quality of the established relations give real explanatory power to the empirical laws obtained. The implication of these laws deserves to be highlighted, because they suggest that our traditional views of spending on public service broadcasting may be erroneous.

The first part of this article will demonstrate that spending for public broadcasting and spending for television follow a law that constitutes a theoretical norm for per capita spending. The second part of the article deals with the effect of introducing advertising as a means of financing public service TV. This measure appears to be a simple substitute for licence fees because it does not lead to an increase in television's resources. Advertising has nevertheless had a significant effect on the length of programmes.

It is thus possible to make an important observation: because different sets of variables affect public service television's resources and its supply of programmes respectively, countries can choose to move away from the theoretical norm, and this allows them to regulate the quantity of programmes as they so desire. Hence, the balance between the cost of programmes and the number of programmes constitutes the degree of liberty, which, depending on how the balance is constructed, reflects a country's political culture. Large cultural differences are particularly reflected between Scandinavian and Mediterranean countries.

Having established the general applicability of these laws, the article moves to a consideration of how well France conforms to each law. In order to ensure the objectivity of the test, France was excluded from the country sample when the laws were calculated. The results are surprising in that they are contrary to the traditional description of the French broadcasting sector, which is often depicted as being wasteful and overextended. In fact, its

484 *European Journal of Communication*

spending on broadcasting and television, as well as the supply of programmes, follows the European theoretical norm. In other words, there are no fundamental differences between, say, the French and English systems.

**Broadcasting Spending**

The following table presents the average per capita spending (in francs, from 1980-4) needed to provide the resources for public broadcasting companies in seventeen European countries.

In order to standardize the data and allow for comparison, while avoiding distortion caused by population size, the total broadcasting budget was converted into a table describing per capita spending. Per capita spending can thus be compared with a homogeneous standard measurement.

Two indicators will be used to make this comparison. The first, the wealth indicator ( $I_{\text{pib}}$ ) is based on OECD data about the GNP in price and current exchange rate. It indicates different countries' wealth relative to that of France. The second is the dimension

**TABLE 2**  
Relation between a Country's Public Service Broadcasting per capita Spending and its Wealth and Population Size

| Country       | Spending/Capita<br>(francs, 1982) | $I_{\text{pib}}^*$ | $I_p^\dagger$ | Theoretical<br>result |
|---------------|-----------------------------------|--------------------|---------------|-----------------------|
| Norway        | 290                               | 141.6              | 24.0          | 264.139               |
| Switzerland   | 281                               | 154.6              | 15.6          | 189.036               |
| Finland       | 275                               | 110.0              | 20.0          | 229.809               |
| Austria       | 262                               | 92.7               | 13.15         | 172.941               |
| Germany       | 251                               | 110.6              | 1.62          | 127.701               |
| Denmark       | 247                               | 115.5              | 19.6          | 222.296               |
| Sweden        | 191                               | 121.0              | 12.0          | 165.428               |
| Netherlands   | 173                               | 96.8               | 6.99          | 120.349               |
| Ireland       | 170                               | 55.0               | 28.5          | 297.400               |
| Belgium       | 152                               | 86.2               | 10.0          | 149.332               |
| Great Britain | 133                               | 85.0               | 1.792         | 121.284               |
| Italy         | 110                               | 65.4               | 1.77          | 122.354               |
| Spain         | 74                                | 48.2               | 2.63          | 110.617               |
| Greece        | 46                                | 38.1               | 10.2          | 149.332               |
| Yugoslavia    | 10                                | 24.6               | 4.42          | 111.740               |
| Turkey        | 9                                 | 11.3               | 2.1           | 120.242               |

\* Indicator of wealth.

† Indicator of population size.

### Kopp: *Supply of Programmes by Public TV in Europe* 485

indicator ( $I_a = 100/\text{population in millions}$ ), which takes the size of a country's population into account.

An empirical law was tested using two variables that describe the spending for public radio and television ( $D_a$ ).<sup>1</sup> The equation is as follows:  $D_a = \mu I_{pib} + I_a + K$ .

The following relation is obtained:

$$D_a = 1.91 I_{pib} + 2.52 I_a - 21$$

$$r = 0.94, tI_{pib} = 7.8, tI_a = 2.18$$

The statistical quality of this relation confirms the hypothesis: per capita spending on public broadcasting follows a strict law, thereby forming a theoretical spending norm. Per capita spending declines as a country's population increases, because fixed costs are absorbed by a larger population.

For the country that represents the average, the effect of the size of the population explains 15 percent of the spending, and the effect of the wealth 85 percent. In diseconomies of scale, as shown in the case of Ireland, the population size explains 40 percent of the spending.

The empirical law also provides an estimation of fixed costs. (These must be met before funds, which will vary according to the wealth of the country, are spent on quality.) The fixed costs required to implement a public broadcasting system amount to 252 French francs per head of population (1983). This initial spending would amount to 45 francs per head for the United Kingdom and 72 francs per head for Ireland.

The French case shows that calculated theoretical spending according to  $D_a$  would total 159 francs per person (1982). The 1986 Cluzel report<sup>2</sup> indicates that real spending was 151 francs per inhabitant. The theoretical implication of this result is clear. Per capita spending seems to be completely normal<sup>3</sup> — it adheres more or less to the empirical law. The 4 percent deviation of total spending (330 million francs in 1982) from the European norm is an insignificant deficit for French broadcasting.

#### **Public Television Spending**

In this section an attempt will be made to determine whether the empirical law that is valid for total broadcasting spending is also valid exclusively for television.

Table 3 indicates what percentage of each broadcasting company's budget costs is allocated to radio, television and non-

□

486 *European Journal of Communication*

TABLE 3  
Allocation of budgets between Public Service TV and Radio

| Country        | % of Budget Costs Allocated to Radio | % of Budget Costs Allocated to TV | % of Non-allocated Budget Costs | % of TV Costs in Allocated Costs | Number of Channels | I <sub>pr</sub> * |
|----------------|--------------------------------------|-----------------------------------|---------------------------------|----------------------------------|--------------------|-------------------|
| Norway         | 10.2                                 | 24.4                              | 65.4                            | 70.2                             | 1                  | 32.1              |
| Switzerland    | 31.5                                 | 61.0                              | 7.0                             | 66.0                             | 1                  | 21.1              |
| Finland        | 20.0                                 | 34.3                              | 45.7                            | 62.5                             | 2                  | 28.0              |
| Austria        | 28.1                                 | 65.5                              | 6.4                             | 70.0                             | 2                  | 28.2              |
| Denmark        | 26.3                                 | 37.7                              | 36.0                            | 58.8                             | 1                  | 17.0              |
| Sweden         | 27.0                                 | 70.8                              | 2.0                             | 74.0                             | 2                  | 24.1              |
| Netherlands    | 33.3                                 | 57.7                              | 9.0                             | 64.3                             | 2                  | 18.2              |
| Ireland        | 15.0                                 | 39.5                              | 45.5                            | 72.7                             | 3                  | 40.9              |
| Belgium (BRT)  | 11.9                                 | 28.5                              | 59.6                            | 70.6                             | 2                  | 28.2              |
| Belgium (RTBF) | 31.5                                 | 61.5                              | 7.0                             | 65.9                             | 2                  | 18.0              |
| Great Britain  | 22.7                                 | 60.7                              | 16.6                            | 72.6                             | 2                  | 24.5              |
| Italy          | 12.1                                 | 52.3                              | 35.6                            | 81.2                             | 2                  | 45.4              |
| Spain          | 27.6                                 | 53.4                              | 19.0                            | 66.1                             | 2                  | 23.2              |
| Greece         | 23.3                                 | 34.0                              | 42.7                            | 59.3                             | 1                  | 24.0              |
| Yugoslavia     | 37.0                                 | 54.0                              | 9.0                             | 59.3                             | 1                  | 26.0              |
| Turkey         | 36.0                                 | 53.6                              | 10.4                            | 60.6                             | 1                  | 7.3               |

\* Ratio of hours of TV programmes to hours of radio programmes.

Kopp: *Supply of Programmes by Public TV in Europe* 487

allocated costs. For the purpose of calculating that part of the national budget allocated to television, the amount spent will be considered as actual spending on TV activities. This calculation is based on the hypothesis that non-allocated costs do not affect television and radio costs. After verification,<sup>4</sup> it is established that the percentage of TV costs in allocated costs is indicative of television's real part of the total budget.

This hypothesis is open to challenge, however, because it is possible to claim that the percentage of television costs depends on the degree of accuracy of the broadcasting company's analytical accounting. If this were the case, a correlation would exist between the percentage of television costs in the total allocated costs ( $C_{TV}$ ) and the degree of precision in the accounting, expressed by the percentage of allocated costs ( $C_r$ ). Tests were conducted to discover if such a correlation existed without success.

$$C_{TV} = -0.36 C_r + 98$$

$$r = 0.11.$$

There are two items of information that are important to these calculations. First, radio and television schedules are made up of national and regional programmes. In order to calculate the relative supply indicator, a common unit must be used to measure the programme. The analysis of the French regional network FR3's accounts reveals that a regional programme costs about three times less to produce than a national programme. This conversion rate was used to obtain a homogeneous quantity of television and radio programmes, which are expressed in national hours.<sup>5</sup>

Secondly, West Germany was excluded from the sample. In this country there are two public broadcasting companies, ARD and ZDF, but only ZDF is a member of the EBU. Consequently, it is not possible to collect sufficient statistics except those already used for ARD's budget.<sup>6</sup>

In the second column of Table 4, public service television per capita spending is given in francs (1982) for fifteen European countries.

A relation similar to that found for total broadcasting spending can be verified. Or,

$$D_{TV} = 1.179 I_{pib} + 2.225 I_a - 12.125$$

$$r = 0.93, tI_{pib} = 6, tI_a = 2.3$$

The coefficient of correlation of this relation is good. It establishes clearly that spending for public service television companies

**TABLE 4**  
**Relation between Public Service Television per capita Spending and the Country's**  
**Wealth and Dimension**

| Country       | Public TV<br>per capita spending<br>(francs, 1982) | $I_{pib}^*$ | $I_a^\dagger$ | Theoretical<br>Result |
|---------------|--|-------------|---------------|-----------------------|
| Norway        | 204.0  | 141.6       | 24.0          | 207.490               |
| Austria       | 199.8  | 92.7        | 13.15         | 125.253               |
| Switzerland   | 185.15   | 154.6       | 15.6          | 202.793               |
| Finland       | 172.0  | 110.0       | 20.0          | 162.046               |
| Denmark       | 145.2  | 115.5       | 19.6          | 165.716               |
| Sweden        | 141.9  | 121.0       | 12.0          | 157.216               |
| Ireland       | 123.0  | 55.0        | 28.5          | 115.006               |
| Netherlands   | 111.0  | 96.8        | 6.99          | 114.396               |
| Belgium       | 103.7  | 86.2        | 10.0          | 111.506               |
| Great Britain | 96.8   | 85.0        | 1.792         | 90.304                |
| Italy         | 89.2   | 65.4        | 1.77          | 66.727                |
| Spain         | 49.3   | 48.2        | 2.63          | 48.911                |
| Greece        | 27.0   | 38.1        | 10.2          | 54.919                |
| Yugoslavia    | 6.0  | 26.0        | 4.42          | 27.425                |
| Turkey        | 5.5  | 11.3        | 2.1           | 5.292                 |

\* Indicator of wealth.

† Indicator of dimension.

follows an empirical law at mid-term.<sup>7</sup> For the average company, the wealth indicator ( $I_{pib}$ ) determines 79 percent of this sum and the size of the population  $I_a$  21 percent. Moreover, it is possible to estimate the television sector's fixed costs: 222 million francs or 4 francs per inhabitant in the United Kingdom and 44 francs in Finland. The importance of the population size indicator increases with the country's exiguity: 4 percent for Great Britain and 24 percent for Norway.

The French case verifies the hypothesis which claims that France would sacrifice radio entertainment for television. The application of the theoretical law to France's situation results in an average theoretical spending during 1982-4 of 100 francs per head (1982). Real spending in 1982 was 106 francs, which is a difference of +5.6 percent when compared to the theoretical spending of 330 million francs. When this figure is compared with the small deficit of 330 million francs (1982) for the total audiovisual budget (TV and radio), it is apparent that this deficit, and more, comes from the radio budget.



Kopp: *Supply of Programmes by Public TV in Europe* 489

### The Supply of Programmes

Table 5 presents the average annual supply of television programmes in national hours.

A law similar to the one that treats television spending as a function of a country's wealth and population size was tested. The coefficient of correlation was insufficient. Hence, the supply of programmes follows a more specific law.

The dependent variables were chosen according to the hypothesis that the birth of television in Europe, and the scarcity of television receivers, prevented private operators from obtaining access to the potential market. As a result, it was the state that supplied a television service. The supply of programmes stimulated the demand for receivers. Once television activity was under way, the growth of the number of TV receivers led to an increase in the supply of programmes.

The number of television channels determines the supply of programmes because when the number of television receivers is held constant the proliferation of channels creates a further supply.

The introduction of advertising has an effect on the supply of programmes. Essentially, the presence of television commercials extends the television day in mechanical fashion simply by adding additional advertising time. More importantly, advertising incites television companies to prolong the length of programmes in order to offer more air time for commercials. A regression analysis establishes an empirical law of exceptional precision<sup>8</sup> between the following variables: the indicator of the number of TV channels ( $I_{ch}$ ),<sup>9</sup> the indicator of the number of television receivers in a country ( $I_{tv}$ ) and the indicator of the existence of financing by advertising ( $I_{pub}$ ). (The latter takes the value of 1 when positive and 2 when negative.)

$$y \text{ (supply of TV programmes)} = 292 I_{tv} + 2007 I_{ch} + 1054 I_{pub}$$

$$r = 0.98, tI_{tv} = 9.9, tI_{ch} = 10.6, tI_{pub} = 2.5$$

For the average case, the most important factor in determining the supply is the number of channels (58 percent). This is conceptually logical because marginal demand resulting from the increase in the number of television receivers is less than the demand caused by an increase in the number of television channels. The number of television receivers and the existence of advertising as a means of financing have respectively a 32 percent and 10 percent degree of importance.

490 *European Journal of Communication*

TABLE 5  
Supply of Programmes by Public Service Broadcasting

| Country        | Public service budget for TV and radio (francs, 1983) | Percentage of budget dedicated to TV | Budget for public service TV | Supply of programmes (hours) | Number of public service channels | Average cost of programmes (per hour, francs, 1982) | Per capita spending for public service TV |
|----------------|---|--------------------------------------|------------------------------|------------------------------|-----------------------------------|---|---|
| France         | 9096  | 6405                                 | 70.4                         | 18831                        | 3                                 | 500,000   | 116.4                                     |
| Great Britain  | 7445  | 5405                                 | 72.6                         | 11255                        | 2                                 | 480,000   | 96.8                                      |
| Italy          | 6186  | 5023                                 | 81.2                         | 14337                        | 3                                 | 350,000   | 89.2                                      |
| Norway         | 1191  | 836                                  | 70.2                         | 2602                         | 1                                 | 321,000   | 204.0                                     |
| Switzerland    | 1796  | 1185                                 | 66.0                         | 3813                         | 1                                 | 310,000   | 185.15                                    |
| Netherlands    | 2471  | 1588                                 | 64.3                         | 5291                         | 2                                 | 300,000   | 111.0                                     |
| Denmark        | 1261  | 741                                  | 58.8                         | 2788                         | 1                                 | 265,000   | 145.2                                     |
| Spain          | 2806  | 1871                                 | 66.1                         | 7325                         | 2                                 | 255,000   | 49.3                                      |
| Sweden         | 1593  | 1178                                 | 74.0                         | 4755                         | 2                                 | 247,000   | 141.9                                     |
| Belgium        | 1510  | 1027                                 | 68.2                         | 8813                         | 4                                 | 232,000   | 103.7                                     |
| Austria        | 2171  | 1519                                 | 70.0                         | 7141                         | 2                                 | 212,000   | 199.8                                     |
| Finland        | 1322  | 826                                  | 62.5                         | 4245                         | 2                                 | 194,000   | 172.0                                     |
| Turkey         | 425   | 257                                  | 60.6                         | 2075                         | 1                                 | 123,000   | 5.5                                       |
| Belgium (RTBF) | 814   | 536                                  | 65.9                         | 4446                         | 2                                 | 120,000   | -   |
| Belgium (BRT)  | 696   | 491                                  | 70.6                         | 4367                         | 2                                 | 112,000   | -   |
| Greece         | 450   | 266                                  | 59.3                         | 3661                         | 1                                 | 72,000  | 27.0                                      |
| Ireland        | 595   | 432                                  | 72.7                         | 5969                         | 2                                 | 72,000  | 123.0                                     |
| Yugoslavia     | 236   | 139                                  | 59.3                         | 3642                         | 1                                 | 38,000  | 6.0                                       |

### **The Influence of Advertising on Public Service Television**

The supply of programmes is explained by a combination of three variables: the number of television receivers, the number of channels, and the existence of advertising as a means of financing public service television provision. Given that the supply of programmes increases when advertising is used for financing, an attempt has been made to determine whether advertising has provided new resources for additional programmes, or even whether it has created a surplus of resources. It is safe to conclude that there is no correlation between the level of resources allocated to a public broadcasting company and the existence, or non-existence, of advertising as a source of finance. Therefore advertising does not increase television's resources.

In order to prove this claim, the relation which describes per capita spending on public service television ( $D_{tv}$ ) combined with an additional variable that describes the eventual presence of advertising revenue ( $I_{pub}$ ) needs to be tested. The following new relation is obtained:

$$D_{tv} = 1.071 I_{pib} + 2.11 I_a + 0.86 I_{pub}$$

$$r = 0.93, t_{1.07} = 0.8, t_{2.11} = 2, t_{0.86} = 0.014$$

This relation is statistically sufficient. However, the finance structure indicator is of no importance.

The implication of this result must be emphasized. It clearly shows the interdependence between the financial structure of public service television on the one hand, and the amount of resources that public television organizations have, on the other. The introduction of advertising simply stimulates a transfer of resources from licence fees to advertising within the public service sector.

It has been demonstrated, a contrario, that financing by advertisement prolongs the television day. Obviously, when television has already been financed by advertising for a long period, the brutal interruption of such a resource will lead to a deficit. Our purpose is limited to showing that a constant level of resources accompanied by the increasing length of programmes necessarily implies a decline in the resources dedicated to each unit of programmes.

### **The Balance between the Quantity of Programmes and the Resources Dedicated to each Unit of Programmes**

In the previous sections of this article, mid-term empirical laws that describe public broadcasting and constitute an empirical model of function were established.<sup>10</sup>

Kopp: *Supply of Programmes by Public TV in Europe* 493

$$(1) D_a = 1.91 I_{pib} + 2.51 I_a - 21$$

$$(2) D_{tv} = 1.179 I_{pib} + 2.225 I_a - 12.25$$

$$(3) D_a = D_{tv} + D_r$$

$$(4) y = 292 I_{tv} + 2007 I_{ch} + 1054 I_{pub}$$

$D_a$ : spending for public broadcasting organizations (radio and TV);  $D_{tv}$ : spending for public television organizations;  $D_r$ : spending for public radio broadcasting organizations;  $I_a$ : indicator of population of the country;  $I_{pib}$ : indicator of wealth;  $I_{pub}$ : indicator of the existence of financing by advertising;  $y$ : supply of TV programmes.

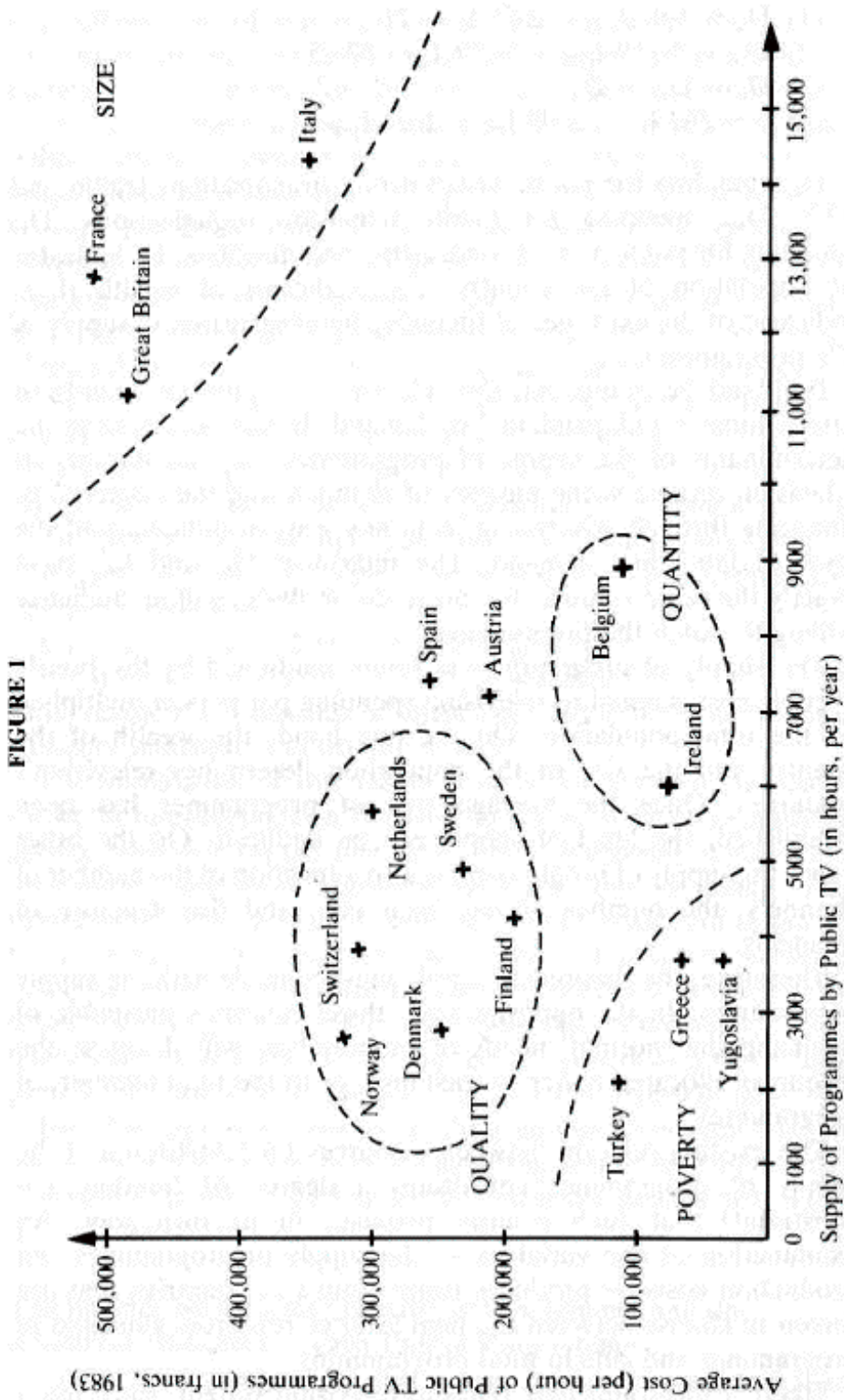
It should be noted that the relation describing the supply of programmes is independent<sup>11</sup> of demand. In essence, none of the determinants of the supply of programmes, i.e. the number of television receivers, the number of channels and the existence of financing through advertising, is in any way an indication of the level of individual demand. The indicators ( $I_{tv}$  and  $I_{ch}$ ) have exactly the same value as the presence or absence of an audience willing to watch the programmes.

The supply of programmes in hours multiplied by the hourly average cost is equal to television spending per person multiplied by the total population. On the one hand, the wealth of the country and the size of the population determines television's resources. Once the average cost of programmes has been established, the level of supply can be deduced. On the other hand, the supply of programmes is also a function of the number of channels, the number of television sets, and the structure of financing.

Therefore, the theoretical supply must coincide with the supply of resources. In the opposite case, those countries incapable of financing the 'normal' needs of programmes will decrease the resources allocated either to each unit, or to the total number, of programmes.

The existing relation between resources for television and the supply of programmes constitutes a degree of freedom (or constraint) that each country manages in its own way. An examination of two variables — the supply of programmes and production costs — produces three groups of countries that are forced to choose between the high level of resources allocated to programmes and cuts in total programming.

Figure 1 illustrates four types of television system. Each has a specific dominant characteristic.



Kopp: *Supply of Programmes by Public TV in Europe* 495

TABLE 7  
Cost and Quantity of Public Television Programmes

| Country       | Cost per hour<br>(francs, 1982) | Supply of programmes<br>(hrs over one year) |
|---------------|---------------------------------|---|
| France        | 500,000                         | 18,831                                      |
| Great Britain | 480,000                         | 11,255                                      |
| Italy         | 350,000                         | 14,337                                      |
| Norway        | 321,000                         | 2602  |
| Switzerland   | 310,000                         | 3813  |
| Netherlands   | 300,000                         | 5291  |
| Denmark       | 265,000                         | 2788  |
| Spain         | 255,000                         | 7325  |
| Sweden        | 247,000                         | 4755  |
| Austria       | 212,000                         | 7141  |
| Finland       | 194,000                         | 4245  |
| Turkey        | 123,000                         | 2075  |
| Belgium       | 116,000                         | 8813  |
| Greece        | 72,000                          | 3661  |
| Ireland       | 72,000                          | 5969  |
| Yugoslavia    | 38,000                          | 3642  |

1. *Dominant Characteristic of Poverty.* This group is composed of Turkey, Greece and Yugoslavia. The supply of programmes is 50 percent less than the average of 6258 annual hours. The programmes are carried out with less resources. The cost of television programmes is less than the average. For this group, it is poverty that simultaneously limits quality and quantity.

2. *Dominant Characteristic of Quantity.* Ireland and Belgium are supplying a large quantity of programmes with an average cost sufficiently low not to exceed the budget of the public service.

3. *Dominant Characteristic of High Cost Programmes.* Made up of Norway, Switzerland, the Netherlands, Denmark, Sweden and Finland, this group constitutes a homogeneous model where the level of resources allows a more abundant supply. The programmes are relatively expensive and the supply voluntarily limited.

4. *Dominant Characteristic of a Large Population and High GNP.* France, Italy and Great Britain are the largest countries in the sample. The abundance of resources due to a high GNP allows a large quantity of expensive programmes to be produced.

496 *European Journal of Communication***Notes**

This article is an extension of previous work done with Jean Yves Caro. See Jean Yves Caro and Pierre Kopp (1988) 'Quelques reperes sur les services publics de radio et television en Europe', *Revue Economique*, 39(3): 573-85.

The confidential nature of EBU statistics is respected in this article. Only the empirical laws have been presented, together with data already published by the public broadcasting organizations. The empirical work is based on data from the European Broadcasting Union which covers 16 countries. The statistics used cover the period of 1980-4. In order to minimize the effects of budget cuts and the fluctuation of the dollar in this period, two series, 1980-3 and 1982-4, were created. The former is calculated in 1982 francs and the latter in 1983 francs; the averages were calculated from these two series.

Note that the conversion of the broadcasting companies' resources, while necessary for making comparisons, creates certain problems. In effect, the exchange rate does not necessarily correspond to the rate of conversion required to equalize the different purchasing powers. The purchasing power parity (PPP) method also has disadvantages, because there is no 'bundle of broadcasting goods' available to make a comparison among international broadcasting sectors. In order to simplify the presentation, only the results of the period of 1980-3 will be indicated in the text. The lack of significant divergence between the two series when the results were based on a common monetary base gives the series the characteristics of a mid-term law.

1. First an empirical law was tested using one variable:  $D_u = 2.15 I_{pib} - 14.3$ . It was statistically correct  $r = 0.91$ ,  $t = 8.6$ . Two groups of countries shared the regression line, Austria, Finland and Ireland made up one group and were located to the right of the line pulling the graphic representation upwards. A hypothesis was presented according to which the law can be improved by integrating a dependent variable that describes the common characteristic of the three countries: their small population. The indicator of dimension was calculated ( $I_u$ ), and a relation, which reduces the gap between the real average and the theoretical spending for small countries by approximately 30 percent, was tested.

2. Report by Senator Jean Cluzel, Loi des Finances 1986, document du Senat #67.

3. Real per capita spending is 183 francs (1983) for Great Britain and 115 francs for France. Given that French public television offers an additional channel, the two are comparable. In contrast, West Germany spends 215 francs (1983) per inhabitant, which is probably explained by the inefficiency of having decentralized structures in each region.

4. This hypothesis is confirmed by the existence of a correlation between the percentage of TV costs in the allocated costs and the relation between the number of television programme and radio programme hours given by the relative supply indicator ( $I_{or} = \text{hours of TV programmes/hours of radio programmes}$ ), which is listed in the last column of the table. The correlation is:  $C_{tv} = 0.48 I_{or} + 54.72$ .  $r = 0.678$  and  $t = 3.45$ .

5. This rule was not applied to Yugoslavia where the division between the Serbs and the Croats caused the YRT to broadcast two regional programmes for the two areas that are also available to the whole country. Therefore, YRT is considered to broadcast two national programmes.