

Pubblico e privato nell'offerta di servizi ospedalieri nelle regioni italiane

Giacomo PIGNATARO e Ilde RIZZO

Università di Catania

Il sistema dell'offerta di servizi ospedalieri in Italia è caratterizzato dalla presenza di soggetti pubblici e privati, con differenti assetti istituzionali (aziende ospedaliere, presidi ospedalieri, case di cura private convenzionate e non, ecc.). Il fenomeno è presente in altri Paesi, seppur con caratteristiche diverse, in linea con l'assetto normativo esistente. Un aspetto interessante del caso italiano, che sarà oggetto di attenzione in questo lavoro, riguarda la constatazione che il mix pubblico-privato dell'offerta sanitaria nel settore ospedaliero varia, all'interno del Paese, tra le diverse regioni.

Come è noto, il fenomeno dell'offerta privata di servizi pubblici è oggetto di un'analisi approfondita nella letteratura, sotto molteplici profili, tra i quali i più rilevanti riguardano l'analisi comparativa dell'efficienza dei settori pubblico e privato, così come gli strumenti di regolazione più appropriati per disciplinare l'offerta di tali servizi. In questo lavoro, invece, saranno analizzate le ragioni per l'esistenza di tale fenomeno e della sua variabilità a livello regionale. Peraltro, il fenomeno della variabilità della composizione dell'offerta ospedaliera presenta motivi di interesse anche alla luce del vivace dibattito sul federalismo e delle linee di tendenza presenti nell'evoluzione della spesa sanitaria a livello regionale.

L'obiettivo principale del lavoro è studiare questo fenomeno, descrivendone le caratteristiche quantitative e qualitative essenziali, approfondendone, sotto il profilo metodologico, i problemi di misurazione, ed esaminando le questioni teoriche più rilevanti formulate sul tema, con argomentazioni correlate sia alle caratteristiche della domanda che a quelle dell'offerta. Sotto quest'ultimo profilo, attenzione sarà rivolta alle diversità istituzionali esistenti nelle diverse regioni.

Lo studio, secondo le linee prima descritte, sarà condotto accompagnando la riflessione teorica con l'analisi empirica dell'attività assistenziale delle strutture pubbliche e private.

1. Introduction

The hospital market is served by public and private providers with different institutional arrangements. The same phenomenon characterises other countries, though with different features, in line with the existing laws in each country.

One interesting feature of the Italian system is that the public-private mix in the hospital services supply varies all over the country, among the different regions. This is a relevant issue, when one thinks of the recent debate on federalism in Italy as well as of the evolution of health expenditure at regional level. Moreover, private hospitals may differ from public ones as far as cost and quality are concerned and, therefore, a system that is more/less private is likely to provide different health services with a different distribution, from one that is more/less public.

In this paper we shall try to investigate the reasons for such a diversity, combining the theoretical analysis with the empirical investigation of the health services produced by public and private hospitals as well as to point out its policy implications for the design of the health market at regional level.

The phenomenon of the public-private mix in Italian health services will be analysed describing its features, both from the quantitative and qualitative point of view, investigating the methodological issues underlying its measurement and addressing some theoretical questions raised in the literature with respect to health demand and supply. To do so attention will be also paid to the institutional differences characterising Italian regions.

The paper is organised as follows. Section 2 outlines some institutional features of the organisation of the National Health Service (NHS) in Italy, to understand the role that in principle is assigned to private production of health. A statistical analysis of the public-private mix in the hospital sector in the Italian regions, along different possible dimensions, is carried out in section 3. The data show a significant degree of variability of the public-private mix across regions. Section 4 refers to general models of product differentiation to provide the basis for the identification of the main determinants of this variability, to be used in a future empirical work. Some concluding remarks are presented in section 5.

2. Some Institutional Features of the Italian Health System

2.1 The institutional arrangements of the National Health Service (NHS) is a highly debated issue at the moment in Italy. Very recently, for the third time in two decades¹, relevant features of the system have been reformed, with the aim of improving its *value for money*. A detailed analysis of the Italian NHS is outside the scope of this paper and, therefore, attention will be concentrated on the rules governing the provision of services by private and public hospitals within the NHS², and on the implementation of contracting-out in the Italian health system. It is relevant to assess whether the existing set of rules is designed to favour such an organizational arrangement and, consequently, the creation of a competitive environment for public and private hospitals. Such an analysis must, of course, take account of the regional variation in the implementation of these rules.

Broadly speaking, regardless the existing rules, public and private hospitals are likely to exhibit relevant differences, since their objectives can be rather different. Public hospitals are supposed to be impartial towards their patients, to provide their services to everybody and to apply transparency rules in expenditure procedures, with the constraint of balancing the budget. Private hospitals, at least the profit-oriented ones, tend to be characterised by more discretion (in fixing prices³ and choosing their suppliers) and selectivity in the choice of their clients. Moreover, according with their for-profit or non profit nature, private hospital will be aimed at maximising profits or social aims. However, each health system establishes rules which affect the spontaneous behaviour of different institutions and, as a consequence, the private-public mix will be affected, too. In this section, we shall try to describe some of the institutional features of the Italian NHS from such a perspective.

2.2. The Italian NHS system seems oriented to the idea of implementing "quasi markets", where the health care services provided by NHS remain largely publicly

¹ The Italian NHS was created in 1978, with the aim of providing universal, comprehensive health services to all citizens; with the Legislative Decrees 502/1992 and 517/1993 "the reform of the reform" has been launched to introduce efficiency and reducing public spending; in 1999 the Legislative Decree 229/99 has enlarged the autonomy of accredited public hospitals and, among the other things, constraints and incentives for physicians working in public hospitals.

² Hospital care represents a quite large share of health expenditures in Italy (46,7%), as well as in other European countries (the OECD European countries' average is 46,1%). On the relevance of hospital care, and on the features of the Italian NHS, see Dirindin-Vineis (1999).

³ In Italy the existing rules do not allow for such a discretionary behaviour.

financed⁴, developing at the same time competition among public and private accredited producers leaving the citizens free to choose between them. This organisation corresponds to different objectives, among which the need to control costs and decrease the supply of unnecessary services⁵. Contracting out is one of the tools chosen for maintaining the competition in the system⁶. Wide responsibilities are assigned to Regional governments for the definition of accreditation rules, the system of payment⁷ and the contractual arrangements.

From the theoretical point of view, however, the impact of the Italian institutional design on efficiency is not unambiguous⁸: because of asymmetrical information, providers might be able to induce private demand with the effect of increasing prices rather than lowering them, unless a managed care scheme is adopted, i.e., if demand is exerted at an aggregate level, rather than at the level of individual patients⁹. In Italy, however, unlike other countries¹⁰, the limited extent of private insurance schemes¹¹ weakens competition and, as a consequence, private schemes only complement the public ones at the margin¹². Therefore, it does not look appropriate to take them into account when analysing the reasons underlying the private-public mix in hospital services.

Even among the accredited hospitals the forms of competition originated by contracting-out are rather peculiar. In fact, the separation between providers and

⁴ There is a form of cost sharing, as a means of reducing patients' demand, by making patients more "cost conscious". According to Mapelli (1999), among the OECD countries, the Italian system exhibits the highest percentage of private financing (30%).

⁵ To pursue such an objective, the 1999 reform has introduced a new payment system for providers, based on the negotiation of volumes of services. An analysis of specific regional experience, in Emilia Romagna, has been carried out by Fiorentini and Ugolini (2000).

⁶ This is in line with the reforms carried out by many OECD countries (see, among others, Kalish, Aman and Buchele, 1998).

⁷ The 1992 Reform has introduced a system of payment per case for hospitals, where fees are set prospectively according to diagnosed medical conditions and standardised treatment costs, on the basis of "Diagnosis Related Groups" (DRG): within such a framework differences do exist among Regions (see below).

⁸ On this issue, see Cellini, Pignataro and Rizzo (2000).

⁹ This allows for insurance companies and/or public purchasers to select providers that offer a good range of services at an affordable price, and effectively sets up competition amongst providers.

¹⁰ In other countries, in fact, opting out for private insurance is allowed: for instance, Germany and the Netherlands offer some freedom of choice for consumers; in Germany, people may change funds if the contribution rate is increased; in the Netherlands, people may change funds once every six months. The possibility of opting out can be different for different social groups.

¹¹ According to some empirical evidence, private insurance companies are not yet specialised in the field, do not offer specific products, most of them provide coverage mainly for hospital benefits and only very few contract on a general basis with private hospitals. Altogether, 133 insurance companies operate in the health sector and 20% of them raise the 80% of the overall amount of premia. Only 5 contract on a general basis with private hospitals (Nuti, 1998). Given the lack of any risk-pooling system, the market is highly segmented and cream skinning is likely to arise.

¹² The "pure" private health sector is still small, financed partly by direct payments and partly by private insurance under the reimbursement model. Supplementary insurance is available from private insurers for better physical surroundings (private rooms) and for care of private providers.

purchasers is only partially enacted¹³. From this point of view, the system is an hybrid because two models –integrated and contractual- coexist. Moreover, private accredited hospitals may be able to practice *cream skimming* on a different extent. Finally, public hospitals are subject to many administrative constraints (personnel careers, procurement procedures) which distort competition in favour of private hospitals which can operate under less constraints.

Indeed, it is interesting to point out that the system allows for a considerable variety of financial as well as organizational arrangements among regions: within the guidelines offered by central government, regional health systems, in fact, can differ as far as fees are concerned¹⁴ as well as for the capability of monitoring expenditure¹⁵, contracting the volume of services and, to some extent, with respect to accreditation rules. Contracting out, therefore, can be arranged in various ways and, according with its specific features in each region, will exert different effects on the degree of competition and on the performance of the system as a whole.

Different systems has evolved at the regional level. Within what is known as a planning framework¹⁶, an “integration” philosophy is generally adopted. Private producers are asked to provide those services which are not sufficiently produced by the public sector, so as to integrate the public supply. As a consequence, only a very limited degree of competition occurs within the system, given that the overall amount of private and public services is defined *ex ante*, rather than being the outcome of a competitive process. In such a situation rents are likely to be assigned to private as well as public producers, according with the planned budgets. Moreover, the accessibility to the market is reduced by the fact the entry of any private hospital has to be made compatible with the reduction of the activity of the others already operating.

There are, however, regions like Lombardia, where competition is, in principle, much more diffused because there is a complete split between producers and purchaser, fees are the same for all the producers and the limitations to control spending are not imposed on each producer but on an overall basis¹⁷.

¹³ The ASLs still manage minor hospitals and provide services.

¹⁴ These differences have been recently analysed: Benigni, et al. (2000) point out that only five regions (Lombardia, Veneto, Emilia Romagna, Toscana e Sicilia) have determined their fees taking into account the production costs, so that fees are tailored to regional health reality. The others have adopted the national fee system.

¹⁵ Four of the five regions previously identified have also been able to maintain the increase of admissions within 10%.

¹⁶ An analysis of a specific regional experience going in this direction, Emilia Romagna, has been carried out by Fiorentini and Ugolini (2000).

¹⁷ On these differences, see Ce.R.G.A.S. (1999).

3. Empirical analysis

3.1 When examining the private-public mix an issue to be dealt with is its measurement. Different indicators could be used, focusing on specific dimensions and, therefore, in order to analyse this phenomenon, various measures can be proposed, according to the specific aspect under investigation.

The most straightforward indicator measures the structural composition of supply, in terms of the relative share of private and public hospitals with respect to the total number of hospitals in a region. Such an indicator, being limited to the number of institutions (possibly normalised with respect to population), does not provide any information on the impact of contracting out on the market and on the competition it eventually generates.

To reach this objective, indicators describing the structure of health care markets, at the regional level, are needed. The share of the market belonging to private hospitals can be measured looking at the size of the private supply. Two groups of indicators can be used:

- one refers again to structural elements, measuring the relative shares of the two classes of hospitals in terms of production factors, like the number of beds or the number of personnel (physicians-nurses);
- the other one refers to the output both in terms of the number of in-patient days and the number of discharged patients.

The above indicators, while giving a broad idea of how effective contracting-out has been in creating competition in the market, offer an imprecise picture of the type of competition, since they do not provide any information on its features (which segment of the market is interested) and whether non competitive behaviour is put in practice (for instance cream-skimming). To obtain such a kind of information, it is possible to differentiate the treatments provided by hospitals according to their DRG classification, considering both the degree of differentiation of supply and its “quality”.

Summing up, the measurement of the private-public mix should allow to offer a picture as much precise as possible of the relative role of each type of hospitals in terms of the share of the market and of their features (degree of specialisation) in order to understand the direction contracting out is taking in each region and its likely effects on the market.

3.2. The analysis of public and private hospital data was performed on data from the Ministry of health¹⁸. Table 1 shows percent proportions of accredited public and private hospitals. Public hospitals set includes hospital trusts and local hospitals, teaching hospitals and other public-sector health institutions. The private-to-public ratio of 1/3 (33% vs. 67%) in 1995 increases up to 39% vs. 61% in 1998. This is mainly due to a reduction of public hospitals from 1086 to 846, whereas private hospitals slightly increase from 529 in 1995 to 535 in 1998 (detailed data not shown). Percentage of public hospitals is above average in Liguria and Basilicata, and well below national mean levels in Lazio, Campania and Calabria. These differences appear to remain relatively stable in the years considered¹⁹.

Table 1. Number of public and private hospitals (in percentage)

REGION	1995		1996		1997		1998	
	Public	Private	Public	Private	Public	Private	Public	Private
PIEMONTE	67%	33%	62%	38%	61%	39%	60%	40%
VALLE D'AOSTA	100%		100%		100%		100%	
LOMBARDIA	75%	25%	71%	29%	73%	27%	58%	42%
P.A. BOLZANO	63%	38%	50%	50%	53%	47%	57%	43%
P.A. TRENTO	74%	26%	74%	26%	74%	26%	74%	26%
VENETO	83%	17%	82%	18%	84%	16%	82%	18%
FRIULI V. GIULIA	79%	21%	81%	19%	80%	20%	80%	20%
LIGURIA	88%	12%	68%	32%	94%	6%	88%	12%
EMILIA ROMAGNA	67%	33%	53%	47%	56%	44%	54%	46%
TOSCANA	59%	41%	56%	44%	57%	43%	58%	42%
UMBRIA	81%	19%	81%	19%	73%	27%	73%	27%
MARCHE	77%	23%	76%	24%	74%	26%	75%	25%
LAZIO	48%	52%	39%	61%	47%	53%	47%	53%
ABRUZZO	68%	32%	68%	32%	69%	31%	68%	32%
MOLISE	78%	22%	78%	22%	70%	30%	78%	22%
CAMPANIA	51%	49%	49%	51%	49%	51%	48%	52%
PUGLIA	71%	29%	71%	29%	69%	31%	70%	30%
BASILICATA	93%	7%	93%	7%	93%	7%	93%	7%
CALABRIA	52%	48%	52%	48%	51%	49%	51%	49%
SICILIA	68%	32%	60%	40%	63%	37%	61%	39%
SARDEGNA	76%	24%	76%	24%	75%	25%	73%	27%
Italy	67%	33%	62%	38%	64%	36%	61%	39%

¹⁸ Data derive from two sources: one set of structural data was obtained from Ministry of health statistics summaries for years from 1995 to 1998, 1996 excluded (Attività Gestionali ed Economiche delle USL e delle Aziende Ospedaliere 1995, 1997, 1998); while the other set consisted of raw statistical data kindly provided by the Dipartimento della Programmazione of the Ministry of health to the authors, containing detailed structural data, and individual patient discharge data – without personal information –, including the DRG assigned by the Grouper software.

¹⁹ Data for 1996 show some remarkable differences, for a few regions. Unfortunately, the summaries for 1996 were not available on the Ministry of health web site. They are, therefore, derived from the dataset provided to the authors. The possibility is that the two sets of data may use different groupings.

The proportion of hospital beds for ordinary patients, available in public and private hospitals (see Table 2), does not show a similar trend: percentages of beds in private hospitals slightly increases, from 16% in 1995 to 18% in 1998²⁰. Looking at individual regions, percentages of beds in public hospitals are higher than the national average in Liguria, Basilicata and also in Umbria and Molise. The values for beds in public hospitals are well below national levels in Lazio, Campania and Calabria, as well as in Abruzzo²¹.

Table 2. Number of beds in public and private hospitals (in percentage)

REGION	1995		1996		1997		1998	
	Public	Private	Public	Private	Public	Private	Public	Private
PIEMONTE	85%	15%	83%	17%	85%	15%	84%	16%
VALLE D'AOSTA	100%	0%	100%	0%	100%	0%	100%	0%
LOMBARDIA	88%	12%	81%	19%	83%	17%	83%	17%
P.A. BOLZANO	91%	9%	87%	13%	92%	8%	92%	8%
P.A. TRENTO	87%	13%	80%	20%	86%	14%	86%	14%
VENETO	94%	6%	94%	6%	95%	5%	95%	5%
FRIULI V. GIULIA	92%	8%	91%	9%	91%	9%	91%	9%
LIGURIA	98%	2%	95%	5%	99%	1%	97%	3%
EMILIA ROMAGNA	85%	15%	79%	21%	81%	19%	77%	23%
TOSCANA	88%	12%	86%	14%	85%	15%	87%	13%
UMBRIA	95%	5%	93%	7%	95%	5%	94%	6%
MARCHE	88%	12%	85%	15%	87%	13%	87%	13%
LAZIO	64%	36%	62%	38%	63%	37%	64%	36%
ABRUZZO	77%	23%	78%	22%	80%	20%	79%	21%
MOLISE	95%	5%	91%	9%	95%	5%	94%	6%
CAMPANIA	75%	25%	74%	26%	75%	25%	72%	28%
PUGLIA	90%	10%	90%	10%	91%	9%	91%	9%
BASILICATA	98%	2%	73%	27%	98%	2%	98%	2%
CALABRIA	70%	30%	70%	30%	68%	32%	66%	34%
SICILIA	83%	17%	86%	14%	84%	16%	84%	16%
SARDEGNA	84%	16%	85%	15%	83%	17%	79%	21%
Italy	84%	16%	81%	19%	83%	17%	82%	18%

The relative percentages of employees in public and private hospitals were obtained from the raw statistical data for year 1996²² and are shown in Table 3. In public hospitals the percent of doctors, nurses and other employees is relatively even among regions and ranges between 13% in Trento and Bolzano and 21% in Molise and

²⁰ However, the overall number of available beds decreases, from over 320.000 in 1995 to 288.000 in 1998. The average number of beds per hospital increases, in public hospitals, from 253 in 1995 to 279 in 1998; the average is 98 beds per private hospital both in 1995 and 1998.

²¹ In Calabria a substantial decrease in percentage of public hospital beds occurs, from 70% in 1995 to 66% in 1998, due both to a reduction of over 800 public hospital beds and to an increase of over 150 beds in private hospitals (data not shown).

Campania. Higher differences do exist as far as nurses are concerned: the percentage ranges between 36% in Sardinia and 48% in Veneto. In private hospitals variations are larger: percent values range between 4% of doctors in Basilicata and 17% in Calabria and Sicily (a 13% range), nurses between 24% in Umbria and 44% in Bolzano and Basilicata, a 20% variation. Overall, data indicate a larger percentage of doctors and nurses in public hospitals compared to private hospitals.

Table 3. Composition of personnel in public and private hospitals

REGION	Public hospitals			Private hospitals		
	Doctors	Nurses	other	Doctors	Nurse	other
PIEMONTE	17%	40%	43%	10%	32%	58%
VALLE D'AOSTA	19%	41%	40%			
LOMBARDIA	16%	41%	43%	10%	30%	60%
P.A. BOLZANO	13%	44%	43%	10%	44%	45%
P.A. TRENTO	13%	46%	41%	8%	39%	52%
VENETO	16%	48%	36%	10%	31%	59%
FRIULI V. GIULIA	15%	44%	41%	12%	27%	62%
LIGURIA	17%	44%	39%	8%	29%	62%
EMILIA ROMAGNA	18%	45%	38%	12%	35%	53%
TOSCANA	18%	47%	35%	14%	36%	50%
UMBRIA	20%	43%	36%	14%	24%	62%
MARCHE	18%	45%	37%	12%	34%	54%
LAZIO	19%	44%	36%	11%	29%	60%
ABRUZZO	18%	47%	35%	14%	39%	47%
MOLISE	21%	43%	36%	15%	29%	56%
CAMPANIA	21%	44%	35%	14%	33%	52%
PUGLIA	17%	44%	39%	14%	32%	54%
BASILICATA	16%	44%	40%	4%	44%	52%
CALABRIA	19%	40%	42%	17%	38%	45%
SICILIA	19%	42%	39%	17%	38%	45%
SARDEGNA	16%	36%	49%	12%	30%	58%
Italy	17%	43%	39%	12%	32%	56%

These data simply refer to the fact that among regions there are different combinations of labour inputs in the production process, both in the public and private sector and that on average the labour input combination in the public sector is more oriented toward the employment of qualified labour force than in the private sector.

3.3. The availability of individual discharge data for 1996, including the assigned DRG, allowed further analyses to be performed. These analyses, and the computation of several indicators, were aimed to underline possible subtler differences between public and private hospitals. However, it must be noted that available data

²² 1996 data have been used instead of 1997 because in the latter Valle d'Aosta was missing.

were not complete for some hospitals and regions, so that the total number of hospitals that were included in this analysis was reduced from over 1700 to 1182, and discharge data for Sicily were almost totally missing, and therefore Sicily was excluded.

The tables report data concerning structure, usage and case-mix. Table 4 below summarizes the degree of specialisation of public and private hospitals in terms of:

- no. specialties: the number of different medical and surgical specialties available in each hospital was counted, regardless of the number of possibly separate wards for the same specialty. These data were averaged within region; the overall mean was weighted according to the total number of available beds in the region. The data show a larger variety of specialties in public hospitals;

- “different” DRG index: this index corresponds to the mean number of patients, out of 100 patients, that “fall” within each of the 489 DRG’s. Therefore, this number is smaller (and close to 0,2%) when discharged patients are spread over a large number of different DRG’s; the index is higher when the “variety” of DRG groups used in a hospital is limited, corresponding to a relative “focusing” of the diagnostical and therapeutic”experties” being offered. The regional average is everywhere higher for private hospitals, with a maximum at 3,7% in Veneto.

Table 4. Specialisation of hospitals

REGION	No. of specialties		diff. DRG index	
	Public	Private	Public	Private
PIEMONTE	11,1	2,9	0,6%	2,5%
VALLE D'AOSTA	24,0		0,2%	
LOMBARDIA	11,0	6,2	0,5%	0,9%
P.A. BOLZANO	9,1	3,2	0,4%	2,1%
P.A. TRENTO	8,7	1,8	0,7%	1,0%
VENETO	11,6	4,6	0,6%	3,7%
FRIULI V. GIULIA	10,6	6,2	0,4%	0,6%
LIGURIA	14,9		0,3%	
EMILIA ROMAGNA	17,3	4,7	0,4%	1,5%
TOSCANA	18,4	3,3	0,5%	1,8%
UMBRIA	10,9	4,3	0,8%	2,5%
MARCHE	11,2	3,5	0,5%	2,1%
LAZIO	14,1	3,2	0,6%	2,5%
ABRUZZO	12,4	3,9	0,6%	1,1%
MOLISE	11,6	3,5	0,4%	0,5%
CAMPANIA	15,2	3,8	0,4%	1,5%
PUGLIA	9,5	2,6	0,5%	2,3%
BASILICATA	9,3	2,0	0,4%	0,8%
CALABRIA	7,7	3,1	0,4%	2,9%
SARDEGNA	11,6		0,4%	
Italy	12,7	4,05	0,5%	1,9%
Italy, overall	9,6		1,3%	

Table 5 shows data on patient usage of hospitals in terms of:

- % no. Patients: the relative percentages of patients discharged from public and private hospitals is between 82% and 100%, excepting Calabria, where a much lower percentage corresponds to the lower percentage of available beds²³;
- % usage of beds: Occupancy ratios widely vary compared to national mean of about 68% (63% for private hospitals, 70% for public hospitals), between extreme values of 43% in Bolzano and 88% of Val d'Aosta for public hospitals, and between 50% in Friuli and 77% in Trento for private hospitals.

Table 5. Activity indicators

REGION	% No. patients		% usage of beds	
	Public	Private	Public	Private
PIEMONTE	92,8%	7,2%	75%	73%
VALLE D'AOSTA	100,0%		89%	
LOMBARDIA	86,8%	13,2%	71%	68%
P.A. BOLZANO	91,3%	8,7%	44%	53%
P.A. TRENTO	91,3%	8,7%	71%	77%
VENETO	96,3%	3,7%	71%	51%
FRIULI V. GIULIA	91,1%	8,9%	67%	50%
LIGURIA	100,0%		84%	
EMILIA ROMAGNA	85,6%	14,4%	77%	61%
TOSCANA	94,2%	5,8%	72%	56%
UMBRIA	96,7%	3,3%	66%	55%
MARCHE	90,2%	9,8%	65%	66%
LAZIO	83,8%	16,2%	68%	51%
ABRUZZO	87,3%	12,7%	61%	69%
MOLISE	95,9%	4,1%	66%	47%
CAMPANIA	82,1%	17,9%	66%	59%
PUGLIA	92,2%	7,8%	56%	61%
BASILICATA	98,7%	1,3%	63%	75%
CALABRIA	68,5%	31,5%	55%	64%
SARDEGNA	100,0%		67%	
Italy	88,7%	11,3%	70%	63%
Italy, overall			68%	

Table 6 reports data concerning usage of resources and “complexity” of care:

- mean LOS: the average length of stay in days was computed within public and private hospitals in each region, and national mean were computed by weighting for the total number of discharges. LOS for private hospitals appear to be always longer than in public hospitals. This is unexpected, since private hospitals should be wary of excessive days of stay within the hospital, that are not reimbursed per se. However, it may be that in 1996 the new DRG-based reimbursement system was not fully understood, or that an higher rate of usage of beds in public hospitals favoured early discharges, or that “chronic” patients were admitted to private hospitals;

²³ Data from some public hospitals might be missing.

- mean weight: the average of weights associated to DRGs indicate the “mean complexity” of cases treated within a hospital, and is averaged for each region. The overall mean is weighted for number of patients.

Table 6. Complexity of care indicators

REGION	Mean LOS		Mean weight	
	Public	Private	Public	Private
PIEMONTE	9,2	22,3	0,89	0,79
VALLE D'AOSTA	8,9		0,87	
LOMBARDIA	8,1	9,6	0,89	0,89
P.A. BOLZANO	7,3	18,1	0,79	0,64
P.A. TRENTO	7,9	21,0	0,80	0,69
VENETO	8,5	13,3	0,87	0,79
FRIULI V. GIULIA	8,5	9,5	0,93	0,78
LIGURIA	9,4		0,91	
EMILIA ROMAGNA	7,9	11,2	0,91	0,86
TOSCANA	7,8	15,7	0,86	0,91
UMBRIA	6,8	7,5	0,84	0,76
MARCHE	7,9	9,6	0,88	0,72
LAZIO	8,8	17,1	0,82	0,83
ABRUZZO	8,0	10,2	0,85	0,75
MOLISE	7,6	8,8	0,79	0,79
CAMPANIA	6,7	7,6	0,79	0,67
PUGLIA	6,5	8,6	0,71	0,75
BASILICATA	6,9	11,7	0,76	0,65
CALABRIA	6,2	8,4	0,71	0,68
SARDEGNA	7,5		0,88	
Italy	7,9	11,4	0,85	0,79
Italy, overall	8,5		0,84	

Table 7 shows some data on access to hospitals from other regions, and on excess duration of stays:

- % pat. from other regions: the percentage of patients that come from other Regions is in general higher for private hospitals. However a wide variety occurs, probably also due to geographical reasons (close proximity and easy transportation between Bolzano and Trento, or for Abruzzo and Puglia at opposite sides of Molise). The percentage of patients for other regions is higher for private hospitals of Trento, Veneto, Friuli, Umbria, Marche and Lazio. Public hospitals in Bolzano, Molise, Basilicata and Calabria draw proportionally more patients than private hospitals in the same regions;

- % outlier LOS: percentage of patients discharged with a length of stay so much longer than average, that they are considered abnormal occurrences, “outliers” of the frequency distribution, so that a special reimbursement is provided for exceeding days. The national percentage is slightly higher for private hospitals, who might tend to “keep” complex cases (possibly in order to obtain further reimbursement?). It is worth noting that the percentage is lower in Lombardia, Umbria, Abruzzo and Molise, whereas it is higher, or even much higher,

in Piemonte, Bolzano, Trento, Toscana, Lazio and Basilicata, where chronic, long-term patients might be involved.

Table 7. Other indicators

REGION	% pat. from other Regions		% outlier LOS	
	Public	Private	Public	Private
PIEMONTE	6,6%	6,3%	3,0%	15,2%
VALLE D'AOSTA	11,9%		2,8%	
LOMBARDIA	7,3%	9,3%	2,3%	2,1%
P.A. BOLZANO	11,1%	2,3%	2,1%	8,3%
P.A. TRENTO	9,3%	49,1%	2,2%	9,9%
VENETO	8,9%	12,8%	2,6%	3,4%
FRIULI V. GIULIA	7,5%	9,5%	2,3%	3,0%
LIGURIA	10,5%		2,6%	
EMILIA ROMAGNA	10,8%	11,5%	1,9%	2,6%
TOSCANA	8,3%	8,9%	2,1%	7,9%
UMBRIA	14,2%	19,8%	1,6%	0,8%
MARCHE	7,5%	12,9%	2,0%	2,8%
LAZIO	7,4%	10,4%	3,6%	6,2%
ABRUZZO	8,6%	8,6%	2,9%	2,6%
MOLISE	22,1%	7,9%	2,9%	0,9%
CAMPANIA	2,8%	2,0%	2,4%	3,1%
PUGLIA	4,6%	4,0%	2,0%	2,5%
BASILICATA	9,8%	0,6%	3,0%	9,2%
CALABRIA	4,0%	3,1%	2,1%	2,6%
SARDEGNA	1,1%		2,3%	
Italy	7,6%	8,8%	2,5%	4,8%
Italy, overall	8,2%		3,5%	

What clearly emerges from the statistical analysis of the data on structure and activity of public and private hospitals, is the variability of the degree of participation of private suppliers in the provision of hospital services and also of their characteristics, across regions. It may then prove quite useful to provide some explanation of this variability, also because of the important policy implications that an analysis of the regional determinants of the public-private mix may have.

4. Some Reasons Underlying the variability of the public-private mix across regions

4.1. The features of the public-private mix in the supply of hospital services in the Italian regions have been outlined in the previous section. In this section, we make an attempt to discuss some of the determinants that could explain the regional variability. Indeed, the relevance attributed to the delegation of production processes carried out in the public sector to private producers, not to speak of its contribution to the

enhancement of competition, joined with the full responsibility for production borne by Regions, make quite important for the latter a better understanding of the factors affecting the composition and structure of the hospital market to improve the ability to control it. Any explanation of the various aspects of the private supply of hospital services, as described in the previous section, requires some empirical evidence to be operationally relevant. However, we believe that the empirical analysis must be based on sound theoretical grounds.

4.2. The identification of the factors influencing the variability of the public-private mix in the hospital production along the different regions could be established recalling the general analysis of markets for differentiated products. Even if hospital care is always provided to “produce” health for individuals, the demand for health of different individuals can be differentiated not only with respect to their willingness to pay to improve their health conditions, but also on the basis of some “qualitative” characteristics. This is almost trivially true when we think of treatments for different diseases. However, differentiation may also arise even for treatments of the same disease, both for the intrinsic features of a treatment (different surgical procedures, different severity of the same disease, different diagnostic procedures, etc.) and for the comfort and assistance levels required during the stay in hospital. Therefore, looking at the supply side of the hospital market, a producer, either public or private, must make different choices when entering this market. The first and obvious one regards the decision to enter. If it enters, the following decision regards the specific segments of demand that will be satisfied. Finally, each hospital makes current choices as for the level and composition of its activity (number and type of admissions, etc.). All these decision steps are reflected in the different elements we have considered for the description of the composition of hospital services supply. We have in fact regarded this composition in terms of the number of hospitals and other structural elements, like the number of beds, but also in terms of their activity levels and of some characteristics of the treatments provided.

The so-called localisation models (a la Salop, Hotelling, etc.) can provide useful insights in the problem we are dealing with in this paper, since they encompass all the different decisions outlined above. Before analysing the elements necessary to build up a theoretical model of the determinants of the public-private mix in the supply of hospital services, we need to discuss the nature of the producers operating in this market

and the way it may influence the different decisions they have to make. We know that in fact public and private hospitals are asymmetric actors in the health care market, within the Italian context. As already discussed in section 2, the organisation of the health sector in Italy has the features of a National Health Service, with a central role assigned to the public sector, not only for the finance and provision of health care but also for its production. Even if the recent reforms have made room for competition and therefore for the role of private producers in the supply of health care, still the public sector controls the entry of private hospitals in the market for the services provided by NHS. Then, when the public sector makes its choices on the production side it can be regarded as a *leader*, since its decisions have a pre-eminence with respect to those of private suppliers²⁴.

4.3. Looking first at the decision to enter the market, two main variables have been considered as relevant in this decision by this class of models. The first one is the amount of fixed costs, that is the minimum amount of money a producer has to invest to enter and to be active in a market. The general result is that the higher these costs, the lower the number of firms entering a market. To refer this result to the hospital sector, one has to think about the nature of its fixed costs. Surely, they reflect some structural variables like the number of beds, the number and types of specialities, the medical and surgical equipment, etc²⁵. Besides, there are other production factors that can be surely regarded, in the health sector, at least as quasi-fixed. The most important one is personnel, especially doctors and nurses. The costs arising from investing in these factors may well vary across regions. First of all, if there are differences in the regional regulations for the access of private producers to the hospital market, this may change, at least in principle, the costs a private producer has to bear to enter this market. The different regulations could be relevant not only in terms of requirements to be fulfilled to start working for the NHS, but also for the time and difficulties in getting such a permission. There are also other directions in which the amount of fixed costs can condition the decision to enter a market in different ways in the different regions, and they are related to the role of the public sector as a producer. Since the public sector is

²⁴ This is not to say that there is a sort of temporal sequence of decisions by public and private suppliers, but that, in a system “dominated” by the public sector, any private supplier “follows” the public counterpart, in the sense that it has to take as given the public sector’s supply choices, while the converse is not true.

²⁵ It is possible to separate the analysis of fixed costs from the evaluation of other choices, which can be properly characterised as differentiation decisions. For instance, what is relevant in the entry decision is the cost of basic furniture, while the extra-money needed to provide luxurious accommodation is important in the differentiation decision.

the dominant supplier of hospital services, its purchases of these factors can be decisive for their prices. The influence exerted by the public sector can go, in principle, either way. Being the public sector the dominant purchaser in the market, this may have the effect of depressing prices, even if this benefit does not need to be transferred to private producers. However, it is also true that the purchasing mechanisms within the public sector may suffer from a “natural” lack of incentives to keep down costs, mainly because of the absence of any profit motivation, and by the potential existence of collusion between the purchasing authorities and the sellers. The ability of the public sector to keep under control these inefficiencies may be different in each region²⁶, and the existence of regional markets can too contribute to differentiate the fixed costs required to access the market in each region. The higher costs due to the public sector inefficiency may then be moved on to private competitors²⁷. Moreover, given the leader role played by public hospitals, the private entrants could suffer from regional inelasticities in the supply of some factors. This is a possibility as far as personnel are concerned. What could happen, in other words, is that the public hospitals’ employment of doctors and nurses, for instance, may create a shortage for the private entrants, limiting their possibility of accessing the market, or some of its segments. Even if this problem is not so strong in the country as a whole, at least as far as doctors are concerned²⁸, there could exist concentrated shortages in some regions. Mobility is, of course, available to remedy these shortages, but surely the salaries paid to personnel will rise and, therefore, the costs of entry will increase too, reducing the number of actual entrants. Finally, if public hospitals set their capacity before a similar decision is taken by private entrants, this may have effects on the residual demand that is left for the latter reducing, beforehand, their profitability prospects. This fact will have a negative impact on the number of entrants in the market.

The other variable that is regarded as relevant in the decision to enter the market reflects the cost that each individual has to suffer when his demand is satisfied by a product with characteristics different from the ones he prefers most. Here again, the general result predicts that the higher this cost the higher the number of firms entering the market. The basic intuition is that as long as consumers suffer from consuming something even slightly different from what they prefer, there is room for more differentiation and, therefore, for more producers specialising in each segment of the

²⁶ The phenomenon of the variability of public investment costs is well known in Italy.

²⁷ This situation can be analogous to that observed for performing arts, with respect to the cost of the so-called “superstar” artists.

market. We have already mentioned the role of demand, discussing the capacity choices of hospitals. What is relevant here about demand is that the cost of “transporting” patients from the most preferred health services to something different can vary across regions. This is mainly due to the fact that this cost may increase when the range of the relevant determinants of demand across consumers tends to widen. There are probably demographic (gender, age, etc.) and socio-economic factors (income, education, habits, etc.), which affect the range of demand for hospital services, because they can influence the number of diseases of a population and also the demand for accessory services.

4.4. The other important decision discussed above is about the degree of differentiation of a hospital with respect to other producers. Differentiation is related to the fact that hospitals are “located” in different places in the space of consumers’ demand. Therefore, there will be little differentiation if hospitals tend to concentrate on the supply of the same services. The degree of differentiation has, then, implications for the specialisation of hospital supply. The more differentiated hospitals are the more each hospital will serve a limited segment of demand and, consequently, the more specialised it is. Looking at the determinants of differentiation, it must be observed that the objective of differentiation in the hospital sector, given the features of the Italian NHS, cannot be the softening of price competition as it is shown in the general models of product differentiation. However, even in the absence of price competition, there can still be space for strategic use of product differentiation. In principle, if we accept the hypothesis of *leadership* of public hospitals, they could be able to serve those segments of market which are more satisfactory from their point of view. This could leave other hospitals only the residual demand in the “product space” of health care, with potentially additional constraints arising from inelasticities in the labour supply. In practice, public hospitals motivations can be rather different and they will not necessarily lead to positioning the hospital in such a way to leave other competitors a residual role. Moreover, public hospitals are constrained by obligations to serve all the individuals in need of care. There can be, anyway, regional variations in the behaviour of public hospitals (also related to the way the regional authorities play their programming role) and in characteristics of demand and of supply of labour, not to speak of the tariff system, which may induce variations in the relative specialisation and composition of activities between public and private producers.

²⁸ It is not possible to exclude, however, that some limited shortage may occur for certain classes of specialists.

4.5. Finally, we can consider the decision regarding the levels of activity. The activity level and its composition may be influenced by different factors, which can present some variability across regions. An important role can be played by the regional payment system. Benigni et al. (2000) analyse how the regions have implemented the tariff system, showing the existence of significant differences. The direction of the effects produced by the payment system on the levels of activity cannot be generalised. There is probably a general inducement to increase the number of treatments, since this is one of the typical results of the implementation of tariffs. However, according to the relative values of tariffs, there could be hospitals that tend to concentrate on few patients, but quite remunerative. This is an option that can be played more easily by private producers rather than by public hospitals, because of the constraint to provide service to everybody characterising the public sector. Of course, the choices on the level and composition of activity are constrained by the decision on differentiation previously discussed. Therefore, the number of patients that a hospital can potentially treat depends on the segments of demand it has decided to serve. Finally, an important dimension is related to the quality differences among hospitals. Quality has many dimensions that can influence demand of patients: competence to treat difficult cases, length of stay, waiting time, quality of accessory services, etc. Indeed, demand can be oriented towards private supply both for quantitative and qualitative reasons: public supply could be insufficient to satisfy the demand in general (few beds overall) or a specific type of demand (few beds for specific treatments) or could be unsatisfactory from a qualitative point of view, both as far as the effectiveness is concerned (short life expectancy) and/or related services (ugly rooms, bad meals, etc.)²⁹. Of course, the impact of the above mentioned elements depends on the relative features of private and public supply, whether the former is specialised or provide a wide varieties of treatments.

Being the analysis limited to “accredited” hospitals, the role of differential preferences for quality is likely to play a less relevant role in this case than in cases when the privately financed production is taken into account (with the related willingness to pay high prices for high quality services). Moreover, the nature of health

²⁹ According to the analysis carried out by Salvioni and Garattini (1996) on data referring to the NHS before the 1992 reform, private supply of hospital services seemed to be mainly determined by the need for integrating the insufficient public supply.

services does not give the same room for differential in tastes, as determinant of the demand, as for other public services, such as for instance education³⁰.

The extent to which private supply merely integrates or can be considered alternative to public supply depends on the above mentioned institutional features. In regions where a form of managed competition is enacted, the integrative function is more likely to occur. The contrary happens in systems where the patient freedom of choice is complete and, therefore, it can be directed toward private supply without constraints.

5. Conclusions

Summing up, there are different classes of determinants that might be considered in the analysis of the regional variation of the public-private mix in the supply of hospital services. A group of determinants is connected with demand for health care and its structural components. Public regulation of hospital activity, especially determination of tariffs and accreditation rules, may also play an important role in determining the regional variation in the share of health production of private and public hospitals. Structural decisions of the public sector may be also relevant, above all for the choice of entry by private hospitals. The different factors may exercise their influence in many directions, which can be clarified only by the identification of a theoretical model, which analyses the complexity of choices underlined in the previous section. However, the determination of the actual relevance of the different elements discussed in this paper is eventually a matter of a proper empirical analysis, which we plan to carry out in a future work. We believe that this analysis may have important policy implications, above all for regional governments when they want to plan the development of the organisation of the hospital services supply. In fact, if the development of a private sector could bring benefits to social welfare through enhanced competition, it is also true that, because of some specific characteristics of population or the nature of regional regulation, private producers could also have levels and composition of supply which could be detrimental for social welfare and for public finance too. The need, therefore,

³⁰ Values, religion, ideology are not relevant for the demand of health services.

to control for the characteristics of the role of private producers bring forward the urgency of theoretical and empirical work that sheds light on the issues dealt with in this paper.

REFERENCES

- Benigni, M. et alii (2000) "Adozione e impatto del sistema di pagamento a prestazione degli ospedali nelle regioni italiane", *Politiche Sanitarie*, 2, 77-86.
- Cellini, R., Pignataro, G. and I. Rizzo (2000) "Competition and efficiency in health care: an analysis of the Italian case", *International Tax and Public Finance*, 7, 503-519.
- Ce.R.G.A.S. - Oasi (1999) *Rapporto n. 0*, Università Commerciale Luigi Bocconi, Milano.
- Dirindin, N. and Vineis (1999) *Elementi di Economia Sanitaria*, Bologna: Il Mulino.
- Fiorentini, G., Ugolini, C. (2000) "L'offerta privata di servizi ospedalieri in un sistema a finanziamento pubblico: un'analisi empirica", *Economia Pubblica*, 5, 115-141.
- Kalish, Aman, Buchele (1998) *Social and Health Policies in OECD Countries: A Survey of Current Programmes and Recent Developments*, OECD Occasional Paper, n.33, Paris.
- Mapelli, V. (1999), *Il Sistema Sanitario Italiano*, Bologna: Il Mulino.
- Ministero della Sanità (1996), *Attività Gestionali ed Economiche delle USL e delle Aziende Ospedaliere*, Annuario Statistico del Servizio Sanitario Nazionale, 1995.
- Ministero della Sanità (1998), *Attività Gestionali ed Economiche delle USL e delle Aziende Ospedaliere*, Annuario Statistico del Servizio Sanitario Nazionale, 1997.
- Ministero della Sanità (1999), *Attività Gestionali ed Economiche delle USL e delle Aziende Ospedaliere*, Annuario Statistico del Servizio Sanitario Nazionale, 1998.
- Nuti, F. (1998), *Introduzione all'Economia Sanitaria e alla Valutazione Economica delle Decisioni Sanitarie*, Torino: Giappichelli.
- Salvioni, F. and L. Garattini (1996) "Il mercato dell'assistenza ospedaliera privata in Italia: profilo storico e prospettive future", *Economia Pubblica*, 4, 91-120.