THE SOCIAL COST OF HOSPITAL WAITING LISTS AND THE CASE FOR COPAYMENT: EVIDENCE FROM GALICIA

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Abstract:
In this paper we try to quantify the social cost of hospital waiting lists in Galicia, on the basis of the model by Cullis and Jones (1986). From official data of waiting lists for outpatient appointments published by the Galician Health Service (Sergas) and a survey of specialist doctors in the province of A Coruña, we estimate that the cost of waiting lists is 70 million euros annually. We argue that this estimate, which does not include surgical waiting lists, tends to be conservative. Finally, as a possible measure to reduce the costs of waiting, we propose the introduction of a copayment, which would bring about a direct efficiency gain from the reduction in waiting costs and an indirect "efficiency dividend" from the revenue of the copayment, which may reduce the need for market distorting taxes.

Keywords: Waiting, rationing, copayment, efficiency, health

JEL Classification: I11, D45, H27

INTRODUCTION

In Romania in the 1980s, basic food products such as bread, oil or sugar were rationed and "in theory" could only be obtained on the basis of individual or family rationing cards. In practice, however, owning a rationing card did not guarantee in any way the acquisition of products rationed in this way. Often, the purchase of products from the "card" was an extremely costly process, requiring whole hours of waiting in queues in order to obtain goods that, in theory, were guaranteed by authorities through the rationing cards. The issue was even more dramatic for the rural population (especially cooperativist peasants), who faced even greater difficulties to get hold of oil, sugar or even bread.

Meat and meat products were also rationed and, yet, were very difficult to obtain. Thus, before the fall of the regime, the authorities had decided that in Bucharest salami would only be sold on the basis of the identity card that proved the condition of resident of the capital. Besides, each legal resident of Bucharest could buy, after long hours of standing at the queue, a maximum of 200 grams of salami. For a greater quantity, it was necessary to stand at the queue several times (Tismaneanu et al., 2007).

The situation of scarcity fostered the development of a sense of cynicism in the Romanian people. Thus, when some of them observed that, after long hours of waiting at the queue, the bread they bought was hard, one could hear comments like 'the party authorities have ordered to wait until the bread gets hard before selling it in order to reduce demand.' Comments of this kind contain a sort of popular wisdom that goes beyond the bread queue, as we will show when we analyze a related phenomenon, namely hospital waiting lists.

Waiting lists are probably the main problem that public healthcare systems face in most developed countries. Spaniards, Britons, Australians... all of them have something in common when their health fails: the enormous amount of time they must wait until their problem is attended. Healthcare in Spain is a competence of the autonomous communities but so far none of them has been able to give a solution to the immense waiting lists for surgery, diagnostics and consultations with the specialist. In this paper we will analyse the case of a Spanish region (Galicia) but the main results are applicable to other regions and countries with similar public healthcare systems.

In May 2003 the Spanish Law for Cohesion and Quality of the National Health System established that it would be the autonomous communities the ones which would set the guarantees for maximum times of access to their menu of services. However, in the face of the unstoppable increase in patients waiting for surgery, in April 2004, the Ministry of Health committed to prepare a common protocol jointly with the autonomous communities in order to improve access to health services. On that date it was announced that no one should wait more than seven days for a basic diagnostic test, ten days for the first consultation with the specialist and 45 days for a programmed surgical intervention. More than five years later, those times are far away from reality.

Table 1. Patients in structural surgical waiting, by service. Sergas

Service	*Patients in waiting*	*Average waiting time (days)*
Angiology and vascular surgery	2,065	66
Cardiac surgery	320	86
Maxillofacial surgery	401	71
Paediatric surgery	1,157	85
Plastic and reconstructive surgery	1,335	96
Thoracic surgery	130	57
General and digestive surgery	5,368	63
Dermatology	338	34
Gynaecology	2,008	54
Neurosurgery	674	89
Ophthalmology	7,107	63
Otolaryngology	2,049	66
Traumatology	8,854	83
Urology	2,597	72
Total	**34,403**	**71**

Source: Galician Health Service (Sergas), 31/03/2009.

Table 1 shows the situation of waiting lists in Galicia at the end of March 2009. As the reader will notice, the figures are far from the objectives set by the Ministry of Health. The average waiting time for a surgical operation (not the maximum) exceeds the maximum set by the ministry in virtually all the specialties, with an overall average of 71 days. The number of patients waiting for a surgical intervention is also considerable, exceeding 34,000.

Table 2. Patients in waiting for a first outpatient appointment, by service. Sergas

Service	*Patients in waiting*	*Average waiting time (days)*
Allergology	3,175	47
Anaesthesiology and reanimation	315	62
Angiology and vascular surgery	3,631	108
Cardiology	5,302	41
Maxillofacial surgery	333	23
Paediatric surgery	1,004	42
Plastic and reconstructive surgery	1,352	83
Thoracic surgery	35	13
General and digestive surgery	7,121	32
Cardiac surgery	42	7
Dermatology	14,258	38
Digestive	9,442	56
Endocrinology	3,482	46
Geriatrics	434	45
Gynaecology	37,191	112
Clinical Haematology	620	44
Intensive medicine	6	24
Internal medicine	2,657	23
Nuclear medicine	7	11
Preventive medicine	165	25
Nephrology	397	21

Neonatology	7	15
Pulmonology	3,605	42
Neurosurgery	2,060	71
Neurology	8,677	77
Obstetrics	1,736	33
Ophthalmology	33,013	66
Medical oncology	82	11
Otolaryngology	7,901	27
Paediatrics	2,483	45
Psychiatry	4,254	26
Radio diagnostics	10	33
Radiotherapy	19	3
Rehabilitation	4,562	33
Rheumatology	5,730	62
Traumatology	24,443	54
Urology	8,734	56
Total	**198,285**	**64**

Source: Galician Health Service (Sergas), 31/03/2009.

The situation is not better as far as consultations with the specialist are concerned. Table 2 shows the state of waiting lists in Galicia at the end of March 2009 and even though the average waiting time (64 days) is somewhat shorter than the one for surgery, it is still far from the objective of the ministry for a maximum wait of 10 days. If we add up the great number of patients waiting for a first appointment (nearly 200,000), the situation is critical.

In this paper we will try to produce a monetary estimate for the social cost of waiting lists in Galicia based on official data and a survey of specialist doctors carried out by the authors in the spring of 2009. We will also make the case for copayment and the increase in the supply of doctors as a means of reducing this welfare cost. But it should be noted that the aim of copayment in this paper is not to reduce public spending on healthcare, but to decrease the cost of waiting lists for a service with excess demand at an exogenously given level of supply.

The rest of this paper is organised in four sections. In the second section we briefly review the literature on waiting lists, the estimation of their welfare costs and alternative rationing systems. In the third section we estimate the welfare cost of waiting lists in Galicia based on official data and our survey of specialist doctors carried out in the spring of 2009. On the fourth section, we present copayment and the increase in the supply of doctors as a means of reducing the welfare cost of waiting lists. Finally, on the concluding section we present a summary of the main results.

LITERATURE ON WAITING LISTS, WELFARE, AND POLICY ALTERNATIVES

The official explanation is that waiting lists are merely backlogs (Ministry of Health, 1963). These explanations imply that the rate at which services are demanded in each period equals the rate at which they are supplied, but due to a backlog of cases, the market does not meet demand at a given time. Total demand for a given period exceeds total supply for that period because of a backlog of cases from previous periods, but such a gap does not indicate a long-term inadequacy of resources to deal with demand. Instead, it represents a backlog of cases that could and should be eliminated through short-term concerted efforts such as, for instance, temporarily making additional operating theatres available, diverting beds from other specialties, reducing the duration of hospital stays, performing surgery in outpatient departments, making use of military and private hospitals, etc. (Lindsay and Feigenbaum, 1984).

Lindsay and Feigenbaum (1984) offer a different interpretation of waiting lists, according to which they would be rationing tools. The argument is based on the fact that the value a medical service decreases with the time of waiting. This is due, among other factors, to the possibility that the condition aggravates with waiting. Besides, demand for health services is generally unpredictable, so waiting costs cannot be avoided by signing up on the list in anticipation.

The perspective of a long wait discourages many patients from demanding the public health services, opting in some cases for the subscription of private health plans. Indeed, Besley et al. (1999) show that longer waiting lists for treatment in the British National Health Service (NHS) are associated with more subscriptions of private health plans.

In other words, if in a free market system demand is rationed by increasing the price of products until the quantity demanded equals the quantity supplied, in a waiting list system rationing is achieved by increasing waiting times (thus decreasing the quality of service) until the quantity demanded equals the quantity supplied. This has considerable implications in terms of welfare.

Cullis and Jones (1986) develop the argument by Lindsay and Feigenbaum (1984) and propose a simple method to estimate the social cost of waiting lists. This is based on the fact that patients generally have one option to avoid waiting lists, namely private medicine. Indeed, despite the governmental prominence in the financing of health in many countries, the private health sector is still important. This is so even though most part of public provision is strongly subsidised and, in many cases, free of charge for the patient (Besley et al., 1999).

For Cullis and Jones (1986), therefore, the costs of waiting should not exceed the price of an equivalent service in the private sector, which provides us with a ceiling for the cost of waiting by any given patient. Obviously, waiting will not affect all patients on the list in the same way. Some will suffer the wait in such a way that the cost of waiting will be close to the maximum, i.e., the price of the private service (P). On the other hand, other patients will hardly suffer from waiting, so that their cost will be near zero. If we a assume that patients on the waiting list are uniformly distributed between these two extreme types, then the average cost will be equal to one half of the private cost of the service (P/2).

This finding coincides with the results of a natural experiment analysed by Deacon and Sonstelie (1985). As a consequence of price controls of gasoline imposed in the spring of 1980, a series of Chevron fuel stations in California were obliged to reduce the prices of gasoline. The resulting prices were lower than those of other main brand providers and, as expected, long queues formed in these Chevron stations. The authors interviewed the customers of a low cost fuel station and those of two nearby stations, Mobil and Union, where prices were free. All the consumers in the sample faced a choice between two alternatives: relatively cheap gasoline with a significant time of waiting or relatively expensive gasoline without waiting. By choosing one of the two alternatives, the interviewed drivers revealed information about the opportunity cost of their time. The estimations implied that about half of the rent transferred from the Chevron station was dissipated in costs of waiting.

An alternative method for estimating the social cost of waiting lists is contingent valuation. For instance, Propper (1990) draws estimations of the costs borne by patients in waiting lists for non-urgent medical treatments. The estimations indicate that the average valuation of a month in the waiting list for non-urgent treatments in England in 1987 was about 40 pounds, although there were significant interpersonal differences in the valuations. Bishai and Lang (2000) estimate how much the patients on the waiting list would be willing to pay for an operation of cataracts in Manitoba (Canada), Denmark and Barcelona in exchange for a reduction in their waiting time. Their estimate is that an average cataracts patient would be willing to pay between 24 and 107 dollars of 1992 for a reduction of one month in the waiting time.

The method by Cullis and Jones that we use in this paper presents a number of advantages with respect to contingent valuation. Firstly, it is not based on hypothetical questions but on verifiable hard facts. Secondly, by not asking respondents about waiting lists overtly, the risk of an elicitation bias is reduced. Finally, the simplicity of the method allows applying it to wider contexts in order to compare the results of different healthcare systems and examine the evolution of the costs of waiting throughout time.

As far as copayment is concerned, the majority of studies on copayment focus on its relationship with healthcare expenditure (e.g. Rodríguez, 2007). However, because of the treatment given to copayment in this paper, it would fit more within the literature on the rationalization of waiting lists in order to reduce their welfare cost. One of the main alternatives proposed has been

the prioritization of patients by means of a point system based on their medical and social conditions (Rodríguez Míguez et al.).

ESTIMATING THE WELFARE COST OF WAITING LISTS IN GALICIA

In this section we apply the method by Cullis and Jones to the estimation of the social cost of waiting lists for outpatient appointments in Galicia. Data on the size of waiting lists and average waiting times by medical specialty are published every three months by the Galician Health Service (Sergas). To these data we must add an estimate of the price of an equivalent appointment without waiting in the private sector.

The average price of a private appointment with a specialist doctor depends on specialty. In this paper we have estimated the different prices by means of a telephone survey we carried out in March and April of 2009. In order to avoid the risk of elicitation bias, we did not mention the fact that this was a survey. We just asked the date of the next available appointment and an orientive price for a first consultation. When the doctors mentioned a price interval, we used the mean.

The sample was selected in a systematic way. The list of doctors was drawn from the yellow pages of the province of A Coruña (*Páginas Amarillas, 2008-2009*). We called, by strict order of apparition on the telephone directory, all the specialist doctors. When there was no answer we called the next doctor in the list. When we reached the end of the list we started again from the beginning. We repeated this process until we obtained three prices for each specialty. In the cases where we were unable to obtain a sample, because they were rare specialties, we used the average price of the rest of specialist doctors in general for whom we did have estimates.

From data on the size of waiting lists and the average waiting time published periodically by the Galician Health Service (Sergas) we can calculate the number of patients treated per year, by dividing the total number of patients in waiting at a given point by the average waiting time measured in years. We them multiply the resulting number by one half of the estimated price of a private appointment (P / 2) in order to obtain an estimate for the total cost of waiting for each medical specialty.

Table 3. Annual social cost of waiting lists for outpatient appointments in Galicia, 2009

Service	*Patients in waiting*	*Average waiting time (days)*	*Patients per year*	*Price of a private appointment*	*Annual social cost (€)*
Ophthalmology	33,013	66	182,572	80.00	7,302,876
Dermatology	14,258	38	136,952	96.67	6,619,567
Gynaecology	37,191	112	121,203	107.50	6,514,651
Traumatology	24,443	54	165,217	76.67	6,333,577
Digestive	9,442	56	61,542	166.67	5,128,570
Cardiology	5,302	41	47,201	196.67	4,641,484
Otolaryngology	7,901	27	106,810	80.00	4,272,393
Psychiatry	4,254	26	59,720	132.50	3,956,425
General and digestive surgery	7,121	32	81,224	95.00	3,858,136
Urology	8,734	56	56,927	123.33	3,510,401
Internal medicine	2,657	23	42,165	150.00	3,162,408
Neurology	8,677	77	41,131	130.00	2,673,530
Rehabilitation	4,562	33	50,458	90.00	2,270,632
Rheumatology	5,730	62	33,733	131.67	2,220,816
Pulmonology	3,605	42	31,329	115.00	1,801,427
Allergology	3,175	47	24,657	113.33	1,397,184
Endocrinology	3,482	46	27,629	90.00	1,243,301
Obstetrics	1,736	33	19,201	107.50	1,032,065

Angiology and vascular surgery	3,631	108	12,271	127.50	782,304
Neurosurgery	2,060	71	10,590	110.00	582,458
Paediatric surgery	1,004	42	8,725	105.00*	458,075
Paediatrics	2,483	45	20,140	40.00	402,798
Nephrology	397	21	6,900	105.00	362,263
Plastic and reconstructive surgery	1,352	83	5,946	76.67	227,922
Maxillofacial surgery	333	23	5,285	85.00	224,594
Geriatrics	434	45	3,520	95.00	167,211
Clinical haematology	620	44	5,143	60.00	154,295
Preventive medicine	165	25	2,409	105.00*	126,473
Medical oncology	82	11	2,721	90.00	122,441
Radiotherapy	19	3	2,312	105.00*	121,363
Cardiac surgery	42	7	2,190	105.00*	114,975
Anaesthesiology and reanimation	315	62	1,854	70.00	64,905
Thoracic surgery	35	13	983	105.00*	51,591
Nuclear medicine	7	11	232	105.00*	12,194
Neonatology	7	15	170	105.00*	8,943
Radio diagnostics	10	33	111	105.00*	5,807
Intensive medicine	6	24	91	105.00*	4,791
Total	**198,285**	**64**	**1,381,264**	**104.16**	**71,934,844**

* Specialties for which no particular price could be estimated.

Source: Galician Health Service (Sergas), 31/03/2009 and telephone survey.

Table 3 is the result of applying the method by Cullis and Jones (1986) to waiting lists for outpatient appointments in the Galician Health Service (Sergas). The estimated annual cost of waiting amounts to 7.3 million euro for Ophthalmology, as a result of multiplying the number of patients (182 thousand) by the average cost of waiting (80/2). Similarly, the cost of waiting lists is estimated at 6.6 million euros annually for dermatology, 6.5 million for gynaecology, and so on.

The average cost of an appointment with a private specialist is around 105 euros, which implies an average cost of waiting of 52 euros for an average waiting time of 2 months (64 days), which leaves us with an average cost of waiting of 25 euros per month. This estimate would be conservative if we compare it with those by Propper (1990) for the UK and Bishai and Lang (2000) for Canada, Denmark and Spain based on the contingent valuation method. Even so, the estimated social cost of waiting lists for outpatient appointments amounts to 71.9 million euros annually.

COPAYMENT AND THE COST OF WAITING

The estimation above is based on the fact that consultations with specialist doctors in the Galician Health Service (Sergas), as in the British National Health Service of the 1880s analysed by Cullis and Jones (1986), are free of charge for users. But in other health systems patients must pay part of the cost of the service, which is known as copayment. As we will show below, such a copayment can affect the social cost of waiting lists considerably.

We start from the premise that the public healthcare system will be at 100% of its capacity, so that the number of patients treated annually is given exogenously by the capacity of the public health service (S) and that copayment is not introduced in order to reduce the number of patients but to improve the quality of the service. As long as copayment is lower than the price paid in the private sector for an equivalent service, the market for the public service will clear, in a particular application of Say's law that 'supply creates its own demand'. In this case, Say's law would not operate through a decrease in price, which is fixed at the level of the copayment, but through a reduction in waiting time for the public service.

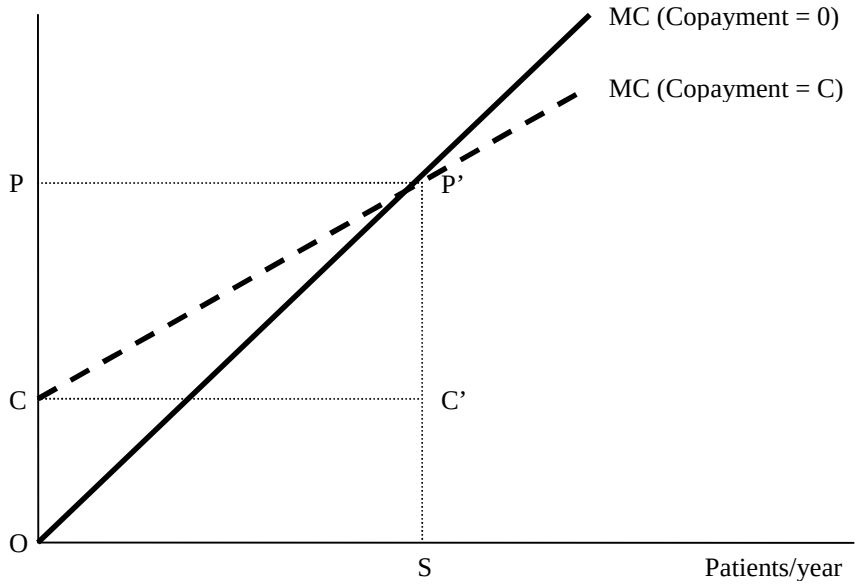

Figure 1. Effect of a copayment on the cost of waiting

Figure **1** shows the effects of a copayment (C) on the costs of waiting. The continuous line represents the marginal cost of waiting (MC), i.e. the cost of waiting for the marginal patient, in the absence of a copayment. These costs are entirely costs of waiting, and are increasing due to the sorting of patients as a function of the costs of waiting. In an extreme is the patient that is not bothered at all by waiting (MC = 0), whereas on the other extreme is the patient whose cost of waiting is equal to the cost of private service without waiting (P). People with a cost of waiting above P will not use the public service, as they will rather use the privately provided services. The total cost of waiting is equal to the area of the OSP' triangle or, which is the same, one half of the private price P multiplied by the number of treated patients S, as in the model by Cullis and Jones (1986).

By introducing a copayment (C), the cost of access for the patient is now the addition of the cost of waiting plus the copayment (C). But the marginal patient treated by the public system will still have a cost of access (amount of the copayment plus the cost of waiting) equal to P. The number of patients is also kept constant at the level of full capacity of the system (S). Thus, the new marginal cost line is the dashed one that goes from C (the case of the patient who does not care to wait) to P' (the case of the patient for whom it is indifferent between waiting for the public service and visiting a private doctor). The new marginal cost line has a lower slope than the one without copayment because, even though the subjective valuation of the cost of one day of waiting is unaffected, the copayment does reduce the average waiting time.

From a social point of view, the revenue from the copayment (C x S) is nothing but a transfer from the users of healthcare services to taxpayers, as it reduces the need of funds by the government. But a copayment also produces a net effect in terms of social welfare through the reduction in the costs of waiting. These costs are now the area represented by triangle CC'P', this is, ½ x (P-C) x S. Therefore, the introduction of a copayment brings about a reduction in waiting costs equal to ½ x C x S, namely one half of the revenue from the copayment. In other words, each euro of copayment brings about a dividend of 50 cents in terms of social welfare.

Furthermore, because this efficient copayment reduces the need for public funds, it can lead to an additional indirect efficiency gain, as it reduces the need for market distorting taxes as a source of public finance. The benefit from this indirect effect is sometimes called 'efficiency dividend' and can be considerable, depending on the marginal cost of public funds. This cost varies among countries, mainly as a function of the structure of the tax system and the structure of the labour market. In the case of Spain, Sancho (2004) has estimated this welfare cost by means of a

computational general equilibrium model. The numerical results suggest that the marginal inefficiency of the tax system is considerable, of an order of 50% of the amount raised and spent under the conditions of budgetary balance at the margin (fixed public deficit). This implies that the total welfare gain (direct through waiting cost reduction plus indirect through the reduction in taxes) could reach 100% of the amount of the copayment.

There are other ways of introducing a deliberate cost of access to outpatient appointments that have been used in practice. One example is the requirement to sign up for the waiting list in person in the outpatient department of the hospital, far away from the health care centre and the domicile of the patient. This is often a practical requirement when there is a theoretical possibility to get the appointment by telephone, but patients are faced with a collapsed or unattended line. The costs of transport and time associated to this requirement (T) produce a similar effect to a copayment of the same amount in terms of reduction in the costs of waiting (½ x T x S). However, the private cost in terms of time and transport (T x S) is a deadweight loss from a social point of view, not a mere transfer from patients to taxpayers. Thus, the net impact of a measure of this type is a reduction in social welfare of one half of its amount (½ x T x S) with respect to the waiting lists that is supposed to combat.

Another implication of the model is that the cost of waiting decreases when the price of private health services decreases. This can be achieved mainly through an increase in the supply of doctors. An example of such a measure can be found in the increase in the supply of dentists in Spain during the last 20 years as a result of regulatory changes, which has been paired with lower inflation than other non-hospital health services and the consumer price index in general, as well as an increase in the use of the private dentist vis-à-vis the public one, despite the fact that the list of services covered by the public system has increased throughout this period (Pinilla Domínguez and Stoyanova, 2008).

CONCLUSIONS

In this article we have analysed the problem of hospital waiting lists. The standard version is that they are mere backlogs that would be solved with shock therapy. However, a more detailed analysis indicates that waiting lists act as rationing means to adjust the quantity of public health services demanded by users to the limited resources of the public system. The main difference with rationing by prices is that rationing by waiting lists reduces the quantity demanded by reducing the quality of the service provided. This reduction in quality has no counterpart in reduced costs of provision, so it represents a deadweight loss.

In this paper we have estimated the social costs of waiting lists for outpatient appointments in Galicia from the perspective of welfare economics by applying a method originally developed by Cullis and Jones (1986). Some of the advantages of this model are its objectivity and simplicity, which allows obtaining frequent updates of the estimates and comparing them to other healthcare systems. By applying this method, we estimated that the social cost of outpatient appointments in Galicia amounted to 71.9 million euros in 2009.

From a normative point of view, there is good news, however, because the costs of waiting lists can be reduced considerably through the introduction of a copayment, at the rate of 50 cents of saving for each euro of copayment. Furthermore, this copayment can be used to reduce the need of public funds of the public sector, thus reducing the need to have resort to taxes and other means of revenue with a distorting effect. This additional ‘efficiency dividend’ depends on the marginal cost of public funds but can also be considerable, accounting for to up to another 50 cents of gain per euro of copayment.

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