

# Comments

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## INTRODUCTION

The chapters of this volume address issues of hospital competition and share the feature of addressing quality competition under fixed (prospective) prices.

From a theory point of view, the chapters take the final stage of a more complete game, in which prices are determined by regulation in an earlier stage and quality decisions follow. For empirical work, it is necessary to condition decisions on the prices and pricing rules of previous stages (unspecified in the chapters). It requires that quality be observable to the crucial decision maker.

A first point of clarification is whether the crucial decision maker for hospital competition in quality is the patient or the physician. Certain dimensions of quality may be observed by the patient, such as amenities and single vs. double room during admission, although that may tell little about clinical quality. On the other hand, physicians may focus too much on quality and forget about details that make the patient journey less problematic (being treated by the first name instead of being known by the room number, for example). The exact dimensions of quality that are subject to competition between hospitals may or may not be easier to change than regulated prices. The implicit larger sequential game requires, for consistency, that quality is changed more often than regulated prices. This may, or may not, be the case, according to the procedures that set the regulated prices and the dimensions of quality considered. Quality associated with the design of the hospital is certainly less easy to change than regulated prices.

We organized the discussion on a paper-by-paper basis, starting with the (selective) review of the theoretical literature, and then moving to the empirical papers.

### **HOSPITAL QUALITY COMPETITION: REVIEW OF THE THEORETICAL LITERATURE**

The main question addressed in this volume can be stated broadly as the impact of hospital competition on quality. In the chapter presented by Brekke *et al.* the answer is provided by a comparative statics exercise on a stylized model.

A different, complementary, question of interest is about the optimal quality levels: does competition bring too much, too little, or about the right quality? This also is of policy relevance as it immediately raises the issue of whether policy makers should go for more or less competition between hospitals in quality.

Above, we asked for a clearer definition of quality, to define the conditions for application of the results of the papers. But it is required to have a definition of what is “more competition”. In the work by Brekke *et al.*, there are several different ways throughout the paper to define what is meant by “more competition”. To review the main ones: more competition is identified with smaller “transport” costs, holding number of competitors constant; with more competitors, holding “transport” costs constant; with different solution concepts-closed loop vs. open loop solution (knowledge about rivals); and, with a smaller proportion of patients in a monopolistic segment (not explored as such, but can be interpreted in this way).

A small note to add, transport costs are interpreted as a proxy for comparative information on quality. We are not totally convinced by this interpretation and would prefer to see the full model, instead of some loose argument. Perhaps some models of product awareness may be a useful guide for development of such a more general model.

This review chapter assumes away price competition for most of it and looks at the impact of competition on quality of care under different

assumptions regarding 1) the degree of altruism of providers; 2) the existence of profit constraints or soft budget constraints; 3) alternative cost structures; 4) the degree of differentiation (or degree of specialization); and 5) sluggish demand adjustments.

Some common features are easily identified. Competition affects the elasticity of demand to quality intensity and the level of demand. Competition changes the level of demand, either at the provider level or at the market level-demand diversion vs. demand creation effects.

There are assumptions not discussed that deserve, in our view, some attention. Prices are assumed to be prospective prices, and not just being fixed). If alternatively there is some degree of cost sharing, it reduces the cost, supply-side, effects and gives more weight to demand-side effects in the impact of competition. We find it unlikely to alter the main results.

The review provides an answer to the question of what conditions need to be met for competition to have a positive impact on quality. The theoretical conditions reported and treated are simple: whatever increases demand sensitiveness and has marginal cost of treatment decreasing in quality. Thus, increasing competition between hospitals under fixed (prospective) prices does not always result in higher quality. The general result is of ambiguity, but direction of different forces is identified.

The initial section of the paper highlights the direct effects, working through demand functions and cost functions. It ignores all effects resulting from quality choice of rivals. It is more about demand shifters than about competition. It helps to understand effects down the road, when strategic interaction is introduced.

The gains from increasing quality include one, the other, or both of the following: higher demand (either diverted or created), and lower marginal cost of treating a patient, which affects the interest in having more demand (margin effect). The effects can be classified into demand-side

effects—how responsive is demand to quality; what is the change in the level of demand—and on supply-side effects—how quality influences costs (marginal costs of treating patients).

After the first set-up, the review goes into specialization, defined as different treatment endogenously determined, not just as a shifter of demand. The well-known forces for differentiation in spatial models are present, and more competition leads hospitals to differentiate as a way to reduce competitive pressures.

The authors have a section devoted to sluggish demand, that is, demand that adjusts over time. We are not really sure about the interest of this section in this particular review of the effects of competition on quality under fixed prices. It is qualitatively different—the analytical focus is on the transition to equilibrium—and it needs providers of care to have very flexible quality decisions. There is no detailed discussion of the reason why patients react differently. The degree of competition is identified with the solution concept applied. It is debatable whether this is a relevant concept of competition. Leaving this last issue open, the section distracts the reader from the main framework underlying the other sections in the paper.

Soft budget constraints are a major issue in countries with public hospitals funded by general taxation. The soft budget constraint aspect is treated as probability of bail out in case of losses (which is nice way of doing it). The existence of soft budget constraints reduces the costs of quality choice in the low demand state to provider. Consequently, it increases the incentive for quality. Two extensions come quickly to mind. First, higher quality may influence which state of demand occurs at the provider level. Second, the probability of bail out may well depend on how large the provider is. In a “too large to fail” case, there is a further incentive to invest in quality (too much?), as it increases the probability of bail out. If total demand is constant and determined by the characteristics of the population, then having all providers investing more in quality does not change the distribution of

patients across them but has higher costs. Whether this is good or bad depends on what the socially optimal level of quality is. Related to this comment, moral hazard on efficiency deserves more than a footnote, as it may reverse some of the results.

The role of information asymmetries, uncertainty, adverse selection and moral hazard are ignored. These features, often part of the problems in health care markets, deserve a comment on whether they are relevant or not for the implications of competition between hospitals on quality; whether, or not, competition in quality between hospitals under asymmetric information is technically (more) difficult to treat; whether or not there is an impact of these aspects on the major results.

A couple of other general features were sidestepped, deserving future attention in research. When discussing competition in quality, in systems based on a Government-run National Health Service, the role of competition between public and private hospitals becomes relevant. Not only as a matter of (possibly) different objectives of each type of hospital. The public hospital and its objectives may be itself an instrument of intervention in the hospital market, as it may act as a Stackelberg leader and the way patients have (possible) copayments structured influences the market equilibrium (see Barros and Martinez-Giralt, 2002, on this). Different modes of payment may lead to asymmetric equilibrium (e.g., if not paying for hospital outside of the network of third-party payer, it creates an advantage for the in-network provider, reflected on prices paid by patients; arguably this may be of lesser importance in health systems where in which hospitals predominate.)

Quality is assumed to be product specific throughout the review. A more general treatment can look at provider-wide, across products, quality features. This brings in the role of economies of scope, which add complexity and one more effect. Our conjecture is that ambiguity will result with (dis)economies of scope in favour of (negative) positive effect of competition on quality.

A final word is needed about price competition and how it may affect the results reviewed in this paper. The claim produced by the authors, “with endogenous prices, the requirements for competition to increase quality are more stringent than with fixed prices”, is based on the margin effect and lower prices under price competition. But it can be less simple than it seems, depending on the way prices are set and how price competition unfolds. Price competition under reimbursement insurance will soften competition, and bargaining with payers may be tougher. This is another area to explore: the effect of modes of price competition on later stages of quality competition under fixed (prospective) prices (at the stage of quality choices).

In terms of welfare analysis, the authors look at optimal price regulation. Optimal price regulation gives price as instrument to the regulator, so no surprise on result is found. But price is also a guide to quality, and in settings where fixed prices result from some type of negotiation between insurers and hospitals, the signaling aspect of prices may play some role and more importantly optimal price regulation cannot be assumed. More challenging is the situation in which prices are endogenous and the regulator can influence only rules of payment and/or objective function of provider.

To briefly summarize the main results highlighted by this review chapter: Lower “transport” costs have a positive effect on the impact of competition on quality; less sluggish demand has a positive effect (under open loop); marginal cost of treatment decreasing with quality has a positive effect on quality; and altruism—if it reaches a production decision with negative margins—implies a negative effect of competition on quality (overall profits will include a payment transfer).

After a review on the theoretical aspects of more competition on quality, the natural next question is “what evidence do we have?” This is taken up in the next sections, in which empirical papers presented are discussed.

## OWNERSHIP AND HOSPITAL PRODUCTIVITY

This chapter, by Brigitte Dormont and Carine Milcent, addresses the issue of differential productivity across hospitals with distinct ownership. The starting point is that crude productivity measures indicate that in France public and private nonprofit hospitals are more costly than private hospitals. The analysis carried out in this paper shows that the productivity gap is due to the mandate of public hospitals: they cannot specialize and cannot turn down patients. Non-profit hospitals are subject to the same rules of public hospitals. Put in a different way, it explores the question of differences in patients explaining productivity differences.

Another relevant aspect is the implication of cost structures for payment rules. Adoption of prospective payments in France assumes no scale or scope economies. The underlying assumption is that size and composition of activity are not relevant. A fair question to ask is whether or not this is true.

While these are natural questions, a third element should be considered, quality of management. The private French hospital sector has large chains of private hospitals. It covers 1/3 of discharges. There are several difficulties in measuring real costs and profitability. For example, cost definition does not include doctor's payment in the private sector, but does so in the public sector. Direct cost comparisons have to control for such differences.

Given the problems with cost definitions, the analysis concentrates on production. Hospitals are multiproduct entities, dealing with many productions. To accommodate this feature in a tractable way, there is a synthetic scale. According to this scale, public hospitals are less productive than not-for-profit hospitals, which are less productive than private hospitals. The authors estimate a production function, taking six production factors: physicians, nurses, assistant personnel, administrative personnel, beds as a proxy for fixed equipment, and support staff. The main result is that adjusting for the mix of patients and their characteristics, public hospitals are more efficient, providing a reverse in the ranking once patient characteristics are explicitly accounted for.

On technical grounds, productive efficiency depends on the production frontier specification. With a classic production function, public hospitals are worse, but not after accounting for patients' characteristics. Lower productivity in public hospitals is explained by oversized establishments, patient characteristics, production characteristics, but not by inefficiency in short to medium term management. Of course, size is a management decision but taken at a higher hierarchical level.

Three points are left for future discussion. First, whether or not there are differences due to emergency departments. Second, whether or not teaching and training plays a minor role. Third, whether or not the health professions' mix is the same in the public and private sides.

The paper challenges current views on two grounds: first, superiority of private management based on crude indicators, and, second the use of uniform regulated prices under the presence of economies of scale (and scope) and the mandate to serve all demand that appears at the regulated price. The use of a production function approach does not allow for discussing input price advantages that one sector may have over the other (public vs. private). Extending the analysis to input-prices effects is a natural next step.

## **HOSPITAL COMPETITION, QUALITY, AND EXPENDITURES IN THE US MEDICARE POPULATION**

This chapter seeks to measure the impact of competition on quality. From the theory review, another issue of interest immediately arises: the impact of competition on demand sensitivity. In addition to these demand-side effects, the empirical analysis should ideally address the supply-side aspect: what are the marginal cost effects (which mediate the impact of competition on quality)?

These questions set a broader empirical agenda than the one that can be tackled within this particular chapter. Another possible title, more in line



with the implications that can be drawn, is “Should we encourage quality competition among hospitals?”.

From the theoretical review, a lesson learned is the ambiguity of results. More competition is not always better for increasing quality. The empirical results seem to support this ambiguity. As stated by the authors, in a somewhat benevolent view with regard to the role of competition, the paper “Finds (at best) modest support for the standard competition model”.

The empirical analysis assumes, pretty much in line with the theory review, that prices are fixed. Prices have to be fixed at some stage. The reader needs to know more about this stage and whether the level of competition in quality is also influenced by that stage. For example, from the theory review, we know that prices/margins affect incentives for quality, and that altruism may lead to negative margins, which reverses the incentives for more quality if more competition is introduced.

Unlike the theory review, this paper makes the assumption of free entry in addition to fixed prices, meaning that entrants have to take existing prices. This assumption begs evidence of this entry (and that entrants take previous prices as given). The setting is clearly tailored to the United States health system. Free entry does not characterize many (most) of the health systems in Europe. In particular, whenever public provision of care through a National Health Service is present, entry is subject to system planning and political decisions, not to market forces. Some entry of private hospitals does exist but it cannot be claimed to be a general characterization of conditions under which quality competition unfolds in the health system.

One important point from theory was the role of demand diversion and demand creation effects, and providing more information about these effects in the clinical procedures selected for exploration is welcome. From a birds-eye view, it seems unlikely to have demand creation for AMI, perhaps some may be present for dementia, and more so for hip and knee replacement. This should be put to closer scrutiny and discussion.

Cost structures played an important role in the theoretical model, and nothing is said or tested about them in the present paper. It may be worthwhile to know how quality affects the cost of treatment in each of the procedures and across hospitals, even if coming from other empirical works on the United States hospital market.

On the empirical procedure, competition levels across markets are the key issue, and the competition level is measured by summary indices. The paper deliberately avoids estimation of a structural model, focusing instead on reduced form equations and a competition index to trace the effects of more (or less) competition. The standard index is the HHI concentration index, which requires a careful definition of market boundaries and which rivals are included in the market.

The authors note, correctly, that the HHI may not be the best one for differentiated products. The theoretical underpinnings of the HHI index are based on homogeneous oligopoly competition, in which this measure of market concentration can be directly linked to the difference in prices to marginal costs as a measure of exercise of market power. No such theoretical link can be claimed for the case of differentiated products and the HHI. Thus, the authors suggest using the LOCI index proposed in Akosa-Antwi, Gaynor and Vogt (2006).

This index, used to measure competition in markets with differentiated products, has a theoretical background. It also has a problem: it was constructed for price competition. It is a structural measure but has a behavior assumption included in its derivation—competition comes from more firms dividing the same market (and this was the least interesting form of competition in the theoretical model of quality competition between hospitals). Thus, an important challenge results: can we make a better “bridge” from theory to a summary indicator of quality, and not price, competition?

The effort to have a theory-based index is important. Two features suggest that an index different from LOCI should be used. The first feature

is the assumption of free entry, which is not present in the computation of the LOCI, based on the first-order condition for profit maximization.

The second feature is that LOCI is derived based on price competition while the empirical setting takes prices as fixed (citing from the text, “In this paper, we tested the standard model of competition subject to fixed prices in the US medicare market”).

The approach used to derive the LOCI can be easily adapted to a setup of quality competition under fixed prices. There are  $j = 1, \dots, J$  hospitals,  $t = 1, \dots, T$  different types of patients with  $N_t$  patients of each type. Types include patients with the same demand. The profit function is:

$$\Pi_j = \bar{p}_j D_j(\bar{\mathbf{p}}, \mathbf{q}) - C_j(D_j(\bar{\mathbf{p}}, \mathbf{q}), q_j)$$

Both the vector of (fixed) prices and the vector of (observable) qualities determine the demand for hospital treatment. Costs are a function of quantity of care (patients treated) and quality of care. We assume here a flexible representation, allowing quality of care to also affect the marginal cost of treating patients.

The corresponding first-order condition for profit maximization can be written as :

$$p_j = \frac{\partial C_j}{\partial D_j} + \frac{\partial C_j / \partial q_j}{\partial D_j / \partial q_j}$$

Taking the individual random utility model to be:

$$U_{tj} = -\alpha_1 \bar{p}_j + \alpha_2 q_j + a_{tj} + \varepsilon_{tj}$$

The last component, the error term, follows a Weibull distribution (generating a standard logit demand system, with quality as a decision variable instead of price). Total demand directed at a particular hospital is defined as:

$$D_j = \sum_{t=1}^T N_t \bar{m}_t \Pr(t \rightarrow j)$$

where  $\bar{m}_t$  is the average quantity used by patients of type  $t$ . From this structure,

$$\frac{\partial \text{Pr}}{\partial q_j} = \alpha_2 \text{Pr}(t \rightarrow j)(1 - \text{Pr}(t \rightarrow j))$$

Then,

$$p_j = \frac{\partial C_j}{\partial D_j} + \frac{1}{\alpha_2} \frac{\partial C_j / \partial q_j}{\sum_t N_t \bar{m}_t \text{Pr}(t \rightarrow j)(1 - \text{Pr}(t \rightarrow j))}$$

The LOCI in the original proposal of Akosa-Antwi *et al.* (2006) was defined as the additional term to marginal cost, which corresponds here to the second term in the right-hand-side excluding the scale factor  $\alpha_2$ . Unlike the original LOCI, the second term depends on the marginal cost of quality, which concerns both the impact of quality on marginal costs of treating patients and on fixed costs (independent of treating patients, including here the costs of building quality).

The LOCI is based on market shares and the deviation to marginal cost pricing will include a term related to marginal cost of quality that is not reflected in the LOCI. This deviation is also different from the HHI index. Thus, we cannot state which of them, HHI or LOCI, is the more adequate summary index to include in the empirical analysis. For constant marginal cost of quality, it will be the LOCI, but it does demand this assumption. The authors opt to have a second-order Taylor approximation to derive a closed form expression for the quality level.

On the empirical procedures, there is a very careful analysis and definition of quality measures used for the clinical procedures selected. We would welcome information on the profit of each procedure per hospital (back to the price issue, or margin more precisely).

The “instrument” (in the econometric sense) is the number of hospitals. This option is a natural one, given the information available to the authors. However, it is still pretty much the same information set that is used in the

competition index. In terms of theoretical consistency and under the initial assumption of free entry/exit, the number of hospitals should be endogenous to the degree of competition (which is not measured only by the number of competitors, as detailed in the theory review paper).

The obvious issue is then what other alternatives are possible. Since the interest lies in the role of competition, a possibility is to address reaction functions directly, using residual demand function estimation (an approach employed for prices in competition policy).

Another possibility is to explore information in other aspects known to have impact on the link between competition and quality. For example, explore the ability to have more on the role of non-profit/for-profit and soft budgets for some hospitals (e.g. explore differences in soft/hard budget constraints between non-profit part of larger organizations willing to take losses in hospital care *versus* profit-oriented hospitals). In a similar spirit, payment system differences can be used as a source of variation (not much is said in this paper about price formation and price variation across hospitals).

The arguments on demand being more or less sensitive to quality with more competition seems to call for interaction effects, and addressing both level of demand and sensitivity of demand could be potentially interesting, again drawing upon the results of the theory review paper.

A relevance test to the paper is given by asking the following question: do we understand enough of competition in quality to advise for more/less competition? The answer is “not yet”, but this paper starts to walk the path leading to the answer.

Aspects that should be addressed in future empirical work include the definition and computation of better instruments and alternative to concentration indices; and the analysis of the welfare effects of quality at the margin (one always assumes that we have under-provision of quality, an assumption that should be subject to empirical testing).

These empirical results may also raise challenges to the economic theory. For example, is it possible to get the “right” level of quality in

a decentralized way? What are the implications of taking competition as the reverse side of the coin to freedom of choice, taken as a value itself? There is also a need to know more about how quality competition takes place, about the relationship between sensitiveness of demand and patient information, about the relationship between more hospitals and the level of demand (determined by patients' decisions or by physicians' decisions?), about the impact of having more choice options to patients (with same number of hospitals), as (potential) benefits of more competition being weighted against investment duplication.

These points look at the desirability of having more competition to having more quality. A different, complementary, view is also required. Given an objective on quality, what's the best instrument to achieve it? In particular, knowing and assessing in a comparative view the alternative instruments to competition should help us understand when and why fostering competition is the right policy to follow.

On a quick take, three potential alternatives to increase quality are clinical protocols, pay for performance, and motivation of health professionals. Under clinical protocols as instrument for quality, the main issue is to define quality and monitor the process and outcomes that achieve it.

Under pay for performance, the point is to define observable quality measures and condition payment on their achievement.

A final general point refers to an assumption used in the discussion of the theory background of this paper, free entry and exit of providers, in what we may call the political economy of competition. This is not much of an issue in the United States, but countries with public hospitals inserted into a National Health Service, have to deal with how health bureaucracies deal with both entry and exit. Although most of the time the concern is with financial failure of hospitals and soft budget constraints, entry can be distorted as well. From the public side, it is possible to have too much entry due to "empire building" by hospital managers or by the bureaucracy that manages them. From the private side, it is possible to have too much entry

due to the so-called “business stealing effect” in the presence of important fixed costs (as is the case with the construction of a new hospital)—the new hospital neglects the fact that part (most?) of its demand will come from other existing hospitals, and its private profitability of investment will be greater than the social profitability. On the exit, there is a large asymmetry between private and public hospitals. While the former will just go bankrupt and exit (where exit can mean to be acquired by another entity), the latter may benefit from soft budget constraints and absence of political will to close capacity. On exit, competition should force less efficient/lower quality hospitals to close activity, but soft budget constraints may exist and public hospitals remain open despite making permanent losses. Application of this empirical framework to countries with a National Health Service will have to recognize this feature.

### **THE COMPETITION EFFECT OF A FRENCH REFORM ON HOSPITAL QUALITY**

Utilising a payment reform in France, Gobillon and Milcent discuss the relationship between market concentration, competition and quality. Their analysis is a welcome addition to a literature on hospital competition in which there are few empirical studies from a European setting.

Quality, even within the traditional structure-process-outcome framework of Donabedian, is a concept that is inherently multidimensional. Gobillon and Milcent choose, as is often done in these types of analysis, to limit their analysis to patients with acute myocardial infarction (AMI). The argument for this is as follows: first, patients with AMI will generally be admitted to the closest available hospital, thus there will be no selection bias for this patient group. Second, hospitals providing high quality care for patients with AMI are also likely to provide high quality care for all other patient types; hence quality for AMI patients is a valid indicator for overall hospital quality of care. Third, the quality of care for AMI patients can be adequately measured by 30 days in-hospital mortality rates.

The authors should not be criticised for choosing indicators of quality that are well-established in the literature. Studies from the NHS also seem to corroborate that when AML mortality decreases following increased competition, so does mortality from other causes. Still, the notion that AML is a general marker for hospital quality deserves to be discussed more thoroughly. One might propose that strategies followed by hospitals to increase quality “across the board” include following established protocols (process quality) and possibly also increasing costs. Obviously, there is room here for studies that apply a broader spectrum of quality measures.

In recent years we have seen pro-competitive reforms in several European countries. The simple rationale behind these reforms is that competition will increase both efficiency and quality, and—by extension—consumer welfare. Policy measures target demand side (extending patient choice and publication of performance (and quality) indicators), as well as supply side (payment reforms and the transformation of public hospitals into trusts) issues. The introduction of patient classification systems such as the DRG-system has also facilitated models in which prices can be administratively set, thus providing a setting in which hospitals may compete on quality rather than price.

To encourage competition regulators need to make sure that there is a well-functioning market for hospital services. Thus they need to be concerned about both the supply side (there need to be a sufficient number of hospitals actually competing for patients within a defined geographical area) and the demand side (there needs to be sufficient information available for patients or their referring physicians to make informed decisions about where to be treated).

The payment-reform that motivates the paper by Gobillon and Milcent largely concentrates on the supply side. One of their premises is that absence of market concentration is a necessary, but not a sufficient condition for competition. If hospitals are not financially penalised when they deliver low quality, either in the form of lower market shares or in the form



of lower income, they are not likely to adapt to a competitive environment. Thus, the way hospitals are reimbursed will also have consequences for their behaviour. Gobillon and Milcent analyse the effects of the French payment reform in an environment where there are three distinct types of hospitals; private for-profit, private non-profit, and public state-owned. This provides a potential to analyse behavioural differences between different organizational forms, but also to study the effects of transition from a fee-for-service to a DRG-based system, vs the transition from a global budget to a DRG-based system.

In their analysis Gobillon and Milcent use a Herfindahl market concentration index as a proxy for degree of competition. Market concentration will obviously depend on the geographical area that is defined as a “market”, and they present a number of alternative concentration measures. With some exceptions their results are robust to choice of measure. On the other hand the correlations between their different indices are often in the range of 0.4 to 0.6 and the practical interpretation of a change in HHIs is not clear. This has implications for policy decisions that affect market structure. Policy makers will want to know whether there is a lower threshold at which which markets can be said to be too concentrated as well as whether there is an upper threshold where the positive effects of competition are exhausted. When measures of concentration are diverse and poorly correlated the interpretation and corresponding policy implications of a possible association between “market structure” and quality becomes more difficult.

For strong believers in the merits of competition the results in Gobillon and Milcent may be somewhat disappointing. They find an effect of market concentration on the level of quality for the group of non-profit hospitals, but not for the for-profit or the public hospitals. As non-profit private hospitals are more autonomous than their public counterparts, they suggest that managerial autonomy may matter. However, it is difficult to see why they do not observe the same effect in for-profit hospitals with presumably the

same autonomy. One possible explanation can be a combination of low price/cost margins, relatively inelastic demand and costs that are strongly positively related to quality. This suggests that the aggregate (system) level type analysis done by Gobillon and Milcent can be supplemented by more specific analysis of how both demand and costs depend on the level of quality.

A final point should be made about competition under administratively set prices. Introduction of activity based financing often leads to better cost information. The need for hospitals to monitor their own costs arises both because they have to compare costs to income, and because the administratively set prices often are calculated from historical (average) hospital costs. In light of the notion of reservation quality as a competitive strategy, we might see excess overall capacity and corresponding excess costs in hospital markets that are competitive. As long as excess costs are absorbed in the administratively set prices, this strategy will be viable from the point of view of the hospital, but hardly from a societal point of view. This will be difficult to detect in studies such as the one of Gobillon and Milcent, in which there is no price differentiation. It does however point at the potential for comparative cross-national studies.

## FINAL REMARKS

Most health care systems seek to find a balance between planning and regulation on the one hand and competition and financial incentives on the other. Competition, it seems, does not lead to any substantial increase in quality in France. Gobillon and Milcent suggest that poor information may be one explanation for this. They may be right, but this analysis points to the need for a better understanding of what factors primarily drive our (or our referring doctors') choice of hospitals. One important message from the papers in this volume is that the notion of the informed consumer—a necessary condition for any market to function—is difficult to recognise in an area as complex as hospital care.

The three first papers show that competition between hospital under fixed prices is not a trivial issue, as the allocation of resources (quality of care choice) depends on the particular features of the type of care provided and on the fixed price (that determines the existing margin). Conditional predictions on the impact of competition on quality of care require definition of what the meaning of competition is (more hospitals, higher elasticity of demand to quality, etc.) and the measurement of crucial magnitudes. Both theoretically and empirically one does not obtain general presumptions. In addition, the use of simple indicators and mechanisms (like uniform prospective prices) may be misleading about relative efficiency of hospitals, as mandates to some hospitals (and not forced on others) and patients' characteristics and selection will influence market distribution of patients. This poses important challenges for policy making regarding introduction of competition. Either there is compelling evidence on the crucial parameters before, or a clear risk of unexpected results is present. But the evidence needed may not be available without experiments introducing competition. Not introducing competition has the risk of forgoing the benefits it may bring in some cases. For policy makers, caution is the key word. That is, introduction of competition needs to be closely monitored, and according to observed results readjustments may be required. The set of papers in this volume illustrates the theoretical and empirical difficulties with the analysis of competition between hospitals (under fixed prices).

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