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In sickness and in health: improving the analysis of healthcare mergers

Market-based healthcare reforms in many countries are resulting in mergers between healthcare providers such as hospitals. Assessing the competitive effects of these mergers is far from straightforward, especially in the area of geographic market definition. However, some techniques used to define the relevant geographic market are better than others. Using the most robust methods can make the difference between a merger being approved or being blocked

The healthcare sector is one of the world's largest areas of economic activity. According to OECD figures, developed countries spend on average 8.6% of GDP on health services.[1] In many countries where health services are predominantly provided by the state, expenditure on health constitutes the largest single share of the government's budget.

In recent years, there has been a trend towards the introduction of market-based structures in several European countries. For example, in some countries, the delivery of healthcare services (ie, through healthcare providers, such as hospitals and care homes) has been made the responsibility of competing private firms or trusts. Where such markets for healthcare have been developed, the presence of competitive forces is an important driver of improvements in consumer choice, cost reduction and efficiency.

Considering the amount of expenditure devoted to healthcare, and the public policy objective of high-quality and accessible healthcare provision, the issue of competition in the sector is of great importance. In some countries, healthcare reforms have led to the delivery of services by numerous competing service providers. This in turn has led some of these providers to merge in search of economies of scale and scope.

In common with many mergers, those in the healthcare sector can give rise to concerns about competition. This article examines the methods used to assess the competitive effects of mergers in the healthcare sector, looking in particular at geographic market definition, and the advantages and disadvantages of each method. Oxera has provided advice to merging parties in two recent healthcare mergers in the Netherlands—one involving hospitals, the other involving providers of homecare. Aspects of these cases are discussed as examples of how the different methods of geographic market definition have been applied.[2]

Why healthcare mergers are different

When two healthcare providers state an intention to merge, the issue at stake for the competition authorities is whether the merger will lead to an increase in market power for the merged entity, compared with the situation in which the two parties operate separately. In other words, the concern is whether the merging parties compete with each other prior to the merger and, if so, whether the remaining healthcare providers (ie, outside of the merging parties) would be able to provide effective competition after the merger.

Fundamental to any finding in favour of a merger is the ability to demonstrate that, after the merger, significant numbers of consumers will still be willing and able to choose between competing healthcare providers and thereby exert competitive pressure on the merged entity. It is necessary to define markets over two 'dimensions':

– *the product market*, which demarcates which health services are to be considered and in which combinations. For instance, in cases in which general hospitals merge, out-patient services are often regarded separately from in-patient services. In some cases, however, the services provided by hospitals are considered as 'packages';

– *the geographic market*—this refers to the 'catchment area(s)' of the merging parties (eg, hospitals). The presence of competing healthcare providers within the relevant area increases the likelihood of a merger between healthcare providers being allowed to proceed.

Of these two aspects of market definition, the latter often gives rise to the greatest number of difficulties. Where price is taken into consideration by patients when choosing their healthcare provider, the standard SSNIP (small but significant non-transitory increase in price) test framework can be applied.

A commonly used technique for assessing mergers, the SSNIP test reduces the assessment of the relevant geographic market to a single basic question: within the area defined, would a hypothetical monopolist (in this case, a hypothetical monopoly provider of healthcare services) be able to maximise its profits by increasing prices by between 5% and 10%? The geographic market area is then set as the smallest possible area for which the answer to this question is 'yes'.

However straightforward this may seem, in most healthcare markets, this standard framework is difficult to apply. Consideration of how patients choose their healthcare provider quickly reveals where the difficulty lies: patients themselves rarely pay directly for the healthcare they receive. Instead, most patients are covered by either public or private health insurance. In market-based systems, therefore, the competitive pressure on providers is expected to be applied by the insurers rather than the patients, and this is often difficult to observe.

In many countries the situation is even more complicated. The government regulates the prices charged by healthcare providers, so the main concern of regulators is not with mergers leading to higher prices but to a lower quality of service. In effect, if a merger were to lead to a position of market power, the concern is that the merged entity might attempt to increase its profits by spending less on providing healthcare in the absence of any ability to increase prices.

Measuring the quality of healthcare delivery is more difficult than measuring its price. Moreover, the multi-faceted nature of 'healthcare' as a service adds to the complication of geographic market definition.

– Healthcare is a differentiated product with a large number of characteristics among which patients must choose. For example, patients may face a choice between going to a local hospital or travelling further afield for treatment (thereby facing transport costs and inconvenience).

– Patients' choice of healthcare provider may also depend on their condition. It is feasible that patients with certain serious chronic conditions will be more willing to travel further to receive the best treatment than those with minor conditions. On the other hand, some critical conditions warrant the fastest possible treatment and there may be little time to spend choosing between hospitals.

– Healthcare is characterised by information asymmetry. Patients generally know less about the quality of the treatment they receive than the provider of that treatment, which can complicate market functioning.

– Patients' perceptions of the quality of treatment/care on offer from healthcare providers may differ, resulting in an inherent preference for a healthcare provider with a good reputation.

The following section looks at the most common methods used for geographic market definition, examining their theoretical merits, and importantly, the information required to apply them in practice.

Sizing up the market

The earliest attempts to define relevant geographic markets in this sector related to hospital merger cases in the USA and used the Elzinga–Hogarty (EH) test.[3] This test is based on 'flows' of consumers, and attempts to define the catchment area of a healthcare provider as the area within which the majority of pre-merger consumers live.

Following this method, the catchment area of the merging parties would be defined as the area that covers at least, say, 90% of patients visiting those hospitals. Hence, outside the catchment area, very few inhabitants would choose to visit the merging parties. The assessment of the potential competitive effects of the merger would then rest on whether the merging parties would end up in a position of significantly increased market power. The presence of remaining competing hospitals within the catchment area and evidence of consumer switching both reduce the potential for the merging parties to end up in such a position.

However, while the EH test is attractive in terms of its simplicity and its minimal information requirements, it suffers from a number of shortcomings, chief among which is its reliance on current 'pre-merger' consumer behaviour. By determining the relevant geographic market only in terms of where consumers live relative to the merging hospitals, the EH test precludes any consideration of consumer choice. Therefore, if, after a merger, the merging hospitals tried to increase their profits by reducing the level of service provided, the EH test would have nothing else to say about the catchment area—it makes the implicit assumption that consumers would still continue to visit the merging parties, in spite of any reduction in the quality of provision.

By looking only at these static consumer flows, the EH test arguably does not even define the relevant geographic market by the right measure. From the description above, the information actually required is a measure of how many consumers would move outside of a geographic market in response to an increase in price, or a reduction in service quality, and not simply how many people already travel further afield.

The effects of these shortcomings are unpredictable, as the EH test has the potential to over- or underestimate the size of the relevant market. For instance, in the USA, a large number of mergers were successfully defended using the EH test by arguing that a significant number of consumers would be willing to travel long distances in order to get to hospital.[4] One study also gives examples in which the EH test yields radically different geographic markets, depending on the methodology used when implementing this test.[5]

Where more information on consumer behaviour/ preferences is available, a number of more sophisticated methods can be used to assess the relevant area over which merging hospitals may face competition. Two methods are isochrone analysis and the time-elasticity approach. Common to both of these methods is the use of more information than simply current patterns of patient flows. As is always the case in economics analysis, the more relevant information that can be incorporated into a model, the greater the likelihood of yielding a robust analysis.

Isochrones

Isochrone analysis can be seen as an extension of the EH test, since its foundation rests on an assessment of where consumers live relative to the merging parties. Using detailed data on the local road topography and the location of the merging parties and their customers, isochrones are constructed to define the geographic area within which the travel time to the merging parties is equal to or less than some specified duration. As with the EH test, this duration is extended until the majority of consumers are included within it.[6]

A logical consequence of defining geographic markets is that they may overlap. The idea of a chain of substitution could, in theory, be used to reach a conclusion that a hospital (or merged hospitals) in one location faced indirect competition from hospitals located well beyond their immediate geographic market (for instance, as defined on the basis of an isochrone analysis). Hence, on the face of it, a hospital in city A could be in competition with a hospital from a neighbouring city B, but not in direct competition with a hospital in a more distant city C. However, as long as the hospitals in B and C were competing then, by a chain of substitution, the hospitals in A and C could still exert competitive pressure on one another.

The issue of chain substitution arose recently in the merger case of Stichting Icare–Sensire–Thuiszorg Groningen, three providers of (mainly) home and geriatric care services in the Netherlands.[7] The Dutch Competition Authority, the NMa, considered that, in the absence of a strong national-level player (homecare provision is currently available from local and regionally based companies) and large areas of overlap, such a chain was not sufficiently strong. Interestingly, in the same decision, the NMa actually allowed a merger between Sensire and Thuiszorg Groningen (although it has not yet gone ahead), and in a later decision allowed the merger of Icare and a new merging party, Evean.[8] In both of these decisions, the merging parties were operating in geographically separate markets. Nevertheless, in future, as the structure of the market develops—both as a consequence of mergers and the restructuring of government-run institutions within the industry—arguments based on chains of substitution may become increasingly useful.

In contrast with the EH test, isochrone analysis can be easily extended beyond an assessment of pre-merger travel habits to incorporate information about consumers' willingness to trade off travel time against price or service quality using an econometric analysis of consumer survey data, for example. This is discussed in the following section.

Time elasticity

The time-elasticity approach was originally applied by academics in the USA.[9] Their analysis examined patients' responses to a hypothetical increase in travel time (via a survey of patients), and their increased willingness to travel to competing hospitals in response to this.

A hypothetical increase in travel time may seem an unlikely way of assessing the competitive effects of a merger, since travel times do not increase specifically as a result of a merger (the hospitals stay where they are). However, because patients rarely pay healthcare providers directly at the point of delivery, assessing a price elasticity is meaningless. Instead, the willingness of patients to travel further in order to avoid paying increased charges can be used to simulate price effects from patients' travel time choices.

Put simply, the time-elasticity approach allows the definition of the geographic market based on how many consumers would switch to competing healthcare providers in response to, typically, a hypothetical 10% increase in travel time to the merging parties. Using a range of assumptions (which have to be verified with

care), the results of the time-elasticity analysis are then transformed into equivalent changes in the price–cost margin, which are then used to assess the full competitive effects of the merger.

This approach represents an important departure from the reliance on static consumer behaviour, and gives the time-elasticity approach a significantly stronger theoretical underpinning than EH-type analysis.

Difficulties in this approach are the need to collect survey data from patients and to undertake a rigorous econometric analysis to derive the required elasticity measures. However, these difficulties need to be balanced against the fact that an assessment based on time-elasticity analysis may be more credible and robust than one based on the EH test alone.

The NMa used a time-elasticity study in its assessment of a merger between two local hospitals in the Netherlands.[10] While the study had a number of shortcomings, it suggested a broader geographic market than the NMa had initially considered. This was consistent with the evidence provided by the merging parties and led the NMa to approve the deal.

Table 1 presents an overview of the information requirements, advantages and disadvantages of the various approaches discussed above.

Concluding remarks

Defining the relevant geographic market is a critical stage in the assessment of the competitive effects of healthcare mergers. While relatively simple techniques, such as the EH test, can yield useful indicators of the geographic market, their lack of robustness realistically enables them to be seen only as indicators. More recent approaches, in particular time-elasticity analysis, can allow a more reliable definition of the relevant geographic market. Although this requires the collection and analysis of significant amounts of patient data, the improvement in the quality of the analysis could make the difference between a merger being allowed or being blocked.

Table 1 Overview of approaches

	Information requirements			
Method	Static location data	Travel time data	Consumer survey data	Advantages and disadvantages
Elzinga–Hogarty	✓	–	–	Requires little information, simple to use, but weak theoretical underpinning
Isochrones	✓	✓	–	Still relatively simple to use. Can be extended to time-elasticity approach
Time-elasticity	✓	✓	✓	Requires considerable information, especially about consumers. Has strong theoretical underpinning and can yield credible analysis

[1] OECD Health Data 2005. Figure cited is for 2003.
[2] NMa (Nederlandse Mededingingsauthoriteit) (2004), 'Case 4295: Stichting Icare–Sensire–Thuiszorg Groningen', December 31st, and NMa (2005), 'Case 3897: Ziekenhuis Hilversum–Ziekenhuis Gooi-Noord', June 8th.
[3] See Elzinga, K.G. and Hogarty, T.F. (1973), 'The Problem of Geographic Market Delineation in Antimerger Suits', *Antitrust Bulletin*, **18**, pp. 45–81.
[4] A review of such cases is provided in Capps, C.S., Dranove, D., Greenstein, S. and Satterthwaite, M. (2002), 'Antitrust Policy and Hospital Mergers: Recommendations for a New Approach'. *Antitrust Bulletin*, **47**, pp. 677–714.
[5] Frech III H.E., Langenfeld, J. and McCluer, R.F. (2004), 'Elzinga-Hogarty Tests and Alternative Approaches for Market Share Calculations in Hospital Mergers', *Antitrust Law Journal*, **71**:3.
[6] The principles and application of isochrone analysis are set out in *Agenda* (2005), 'Attack of the Isochrones: An Emerging Approach to Defining Local Markets', June, available at www.oxera.com.
[7] NMa (2004), 'Case 4295: Stichting Icare–Sensire–Thuiszorg Groningen', December 31st.
[8] NMa (2005), 'Case 5040: Stichting Icare–Stichting Evean', July 7th. Another recent merger which was permitted without challenge due to the geographic separation of the merging parties was NMa (2005), 'Case 4267: Zorg en Welzijngroep/Thuiszorg Nieuwe Waterweg Noord/Maatzorg de Werven–Kraamzorg Delfland)'.
[9] Capps et al. (2002), op. cit.
[10] NMa (2005), 'Case 3897: Ziekenhuis Hilversum–Ziekenhuis Gooi-Noord', June 8th.

If you have any questions regarding the issues raised in this article, please contact the editor, Derek Holt: tel +44 (0) 1865 253 000 or email d.holt@oxera.com

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