

# COMPETITION IN NHS QUASI-MARKETS<sup>1</sup>

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7 November 1996

## **Abstract**

Recent reforms of the National Health Service have focused attention on contracts for health services and competition amongst the providers of those services as means of ensuring that quality is maintained at an acceptable standard whilst costs are contained. This paper considers the particular roles that competition may be expected to play in both health authority and GP fundholder quasi-markets.

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<sup>1</sup> We would like to thank Christopher Bliss, Colin Mayer, Ken Mayhew, Ray Robinson and Iestyn Williams for helpful comments and suggestions. The support of the Economic and Social Research Council (ESRC) is gratefully acknowledged. Our research on the NHS was part of the ESRC *Contracts and Competition* research programme and was funded by ESRC award number L114251005.

## I INTRODUCTION

The National Health Service and Community Care Act of 1990 reformed the National Health Service (NHS) by requiring, among other things, that the purchasers of secondary health services be conceptually and operationally distinct from the providers of those services<sup>1</sup>. In the reformed NHS, purchasers may be either integrated District Health and Family Service Authorities (which we refer to as *health authorities*) or general practitioner (GP) fundholders, who purchase secondary health services for patients on their own lists. Providers of secondary services can be GPs, private suppliers or NHS Trusts, the latter including both hospital and community services trusts<sup>2</sup>. The administrative structure of the NHS following these reforms is summarised in Figure 1.

Figure 1 here.

One consequence of the reforms is that the purchase and sale of secondary health services resemble market transactions. Because, however, many of the providers are part of the same NHS as purchasers and because of the extensive powers of the Department of Health to intervene where it thinks appropriate, it is usual to refer to these arrangements as *quasi-markets*. Two particular areas of policy concern in these quasi-markets are the form of interaction between purchasers and providers, which is often specified in a *contract*, and the extent and consequences of *competition* between providers.

The role and forms of contracts in the NHS have been reviewed in a policy context in Chalkley and Malcomson (1996) and Barker *et al* (forthcoming). The purpose of this paper is to review the role of competition, which is actively encouraged by the Department of Health (see, for example, Robinson and Le Grand (1993)) as a device for disciplining providers. In this context, *increased* competition is usually taken as being synonymous with an increased number of suppliers (at least potentially) and we adopt that definition in what follows. The emphasis on seller concentration and the abuse of market power that it permits are clear from the Department of Health's guidelines - see, for example, NHS Management Executive (1993). Traditionally, concentration is viewed as an important influence on the performance of a market. What is not, however, clear is how greater competition in the NHS will affect the performance of *quasi-markets*. Since no economic models specific to the NHS exist for the purposes of guiding policy, it is necessary to consider the wider literature on health markets.

Economic models of health markets have long recognised two important features

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<sup>1</sup> An overview of the reforms can be found in Robinson (forthcoming)

<sup>2</sup> In this paper we focus on secondary health services. Primary health services continue to be provided, as before the reforms, by GPs, opticians, pharmacists and dentists and are purchased by health authorities.

of health services. First, as emphasised by Arrow (1963), with health services there are particular problems in ensuring that patients are as well informed as providers about the quality, appropriateness and cost of treatments. Second, health services are in many cases paid for by a third party such as, for example, an insurance company or, in the NHS, a health authority. In the presence of these features attention has centred on how to ensure that providers deliver appropriate standards of treatment and how to keep costs down. It is these two concerns of quality and cost that we focus on in considering the role and importance of competition in the NHS.

In assessing the role of competition in the NHS, it is useful to note that the UK is not alone in having experienced change in its health care sector. In the US there have been substantial changes in the institutional structures associated with the production, delivery and funding of health services over the last two decades. The emergence and growth of new forms of health care insurance and health care delivery organisations, together with, between 1983 and 1984, a succession of major reforms of the way in which the publicly funded Medicare system purchases health services, has served to focus research on the way health service markets work. An indication of the diversity and extent of the literature that has resulted can be seen in, for example, McGuire and Riordan (1994).

The US health care sector displays some interesting parallels to the NHS. For example, the twin concerns with contracts and competition can be seen in the US context. The ability of different *forms of contract* to deliver health services that meet the aims of purchasers with regard to quantity, quality and cost (see, for example, Ma (1994)) has mainly been examined in the context of the Medicare sector, where the purchaser is taken to be concerned with broad issues of social welfare. The role and consequences of competition for the quality and cost of health services has been extensively considered in the context of the private sector (see, for example, Dranove and White (1994)) where purchasers, being private insurance companies or health maintenance organisations (HMOs), are usually taken to be more narrowly concerned with their own objectives. The existence of purchasers with possibly different objectives is also a feature of the NHS. Health authorities, which are the majority purchasers of health services, are public bodies and, as such, are typically taken to have goals that extend beyond the well-being of a particular interest group. At the same time an important and growing number of services are purchased by fundholders who might be expected to be more narrowly focused on the interests of their own practices and patients.

There are, however, important differences between the US and the UK both in the organisation of health service provision and, possibly, with regard to the objectives of providers and these need to be born in mind before drawing policy conclusions. There are substantial numbers of hospitals in the US that are non-profit institutions and operate alongside “for profit” hospitals, so it is not appropriate to regard even the US market as populated solely by profit maximising providers. In the UK, however, there are additional constraints on decision makers in NHS trusts. Non-executive directors of trusts are appointed by the Secretary of State for Health and those responsible for

negotiating contracts or setting prices are ultimately all employees of the same NHS. These influences may limit the extent to which NHS trusts pursue goals at variance with those of the wider NHS even more than traditional “not for profit” hospitals. NHS trusts are also required, when setting prices, to price services “at cost” allowing for a 6% return on assets (see NHS Management Executive (1990)). Formally this requirement applies to each individual service but most commentators conclude that it is effectively unenforceable except in extreme cases, see Dawson (1994). Certainly in practice, Propper and Wilson (1996) report coefficients of variation in posted prices (for specific tightly defined procedures) of more than 25% and little correlation between prices and costs. Thus, the “at cost” requirement probably does not constrain prices in individual contracts, but rather limits the extent to which trusts are able to generally mark up prices above costs without risking being referred to the Department of Health. It, nevertheless, places a further constraint on trusts.

How these various features of the NHS affect policy conclusions depends, at least partly, upon the kind of quasi-market under consideration. For the purposes of organising our discussion, it is useful to consider separately two conceptually distinct markets within the NHS. The first, which we call the *health authority market*, is one in which health authorities purchase health services on behalf of their populations. The second, which we call the *GP fundholder market*, is one in which GP fundholders in their role as agents for patients purchase health services on their behalf. In the following two sections of this paper we focus on the roles that might arise for competition in each of these two markets.

## II THE HEALTH AUTHORITY MARKET

In terms of the volume and value of services transacted, the health authority market is much the larger. In 1994, NHS trusts provided 95% of all secondary health services in the NHS and the great majority of trusts derive almost all their income from health authorities. In the sample of trusts studied by Propper and Wilson (1996), for example, an average of 95% of income was derived from health authorities. For services for which proximity to patients is important a single health authority may be the most important purchaser. Taken together these observations suggest that, in dealing with providers, health authorities have considerable bargaining power. They certainly negotiate actively with providers over prices.

Competition has potentially two roles in such a context. The first is the *efficiency* role of helping ensure that the contract goes to the most efficient provider, so that unnecessary resources are not used in the provision of services. The second is the *rent allocation* role of helping ensure that the health authority does not pay more for services than necessary. In the conventional textbook monopoly, these two things go together - the monopolist raises prices to extract rent and, in the process of doing that, distorts the choices of purchasers so resulting in an efficiency loss. When purchasers negotiate over services and prices, the two effects can become de-coupled. The purchaser and provider both have an interest in negotiating for the efficient provision of services and agreeing a total payment that allocates the rent without distorting that

provision.

When both purchaser and provider are equally well informed about the costs of providing services, the efficiency role of competition is trivial because the purchaser knows which provider has the lowest expected costs and will negotiate directly with that provider. Moreover, the rent allocation role may also be limited or non-existent. This is most apparent if health authorities can make “take it or leave it” offers. In that case, a health authority could simply specify the services it wants at prices that exactly reflected costs and thus extract all the rent even if the provider has no competitors. The extreme case of “take it or leave it” offers is, perhaps, useful in discussing the US Medicare system, where the rules by which Medicare purchases services are set independently of negotiations with any particular provider. In the NHS, however, health authorities have obligations to ensure that services are delivered, which may undermine their ability to make “take it or leave it” offers. If health authorities cannot make “take it or leave it” offers, increased competition may help them by enabling them to play providers off against each other during contract negotiations and thereby get services delivered for lower prices. But whether or not that is the case depends, even in theory, on some complex issues of bargaining which Osborne and Rubinstein (1990, chapter 9), who analyse the effect of competition in markets where there is bargaining over prices, provide insight into. Moreover, we know of no studies that investigate this issue in practice.

When a purchaser is less well informed about costs than providers, competition has a clearer role in rent allocation. Without competition, a provider may be able to extract revenues over and above those that are strictly necessary to ensure the delivery of services. Excess revenues of this kind are referred to as *informational rents*. They can arise even if a health authority can make “take it or leave it” offers because the health authority needs to ensure that services are available even if a provider has high costs. The high prices necessary to ensure provision then lead to a low cost provider getting an informational rent. This issue has been widely discussed in the context of government procurement - see, for example, Laffont and Tirole (1993). Informational rents can still arise when providers share the same concerns as purchasers. For example, even trusts that share a health authority's concerns for the welfare of patients, as considered by Chalkley and Malcomson (1995), may wish to retain a rent that they can then spend on the patients that they specifically treat. One role for competition, in for example the form of competitive tendering, is to induce providers to offer lower prices for supplying services and thus reduce the informational rents they might otherwise appropriate.

When a purchaser is less well informed about costs than providers, competition in the form of competitive tendering also has an efficiency role. Auction and bidding theory provides an insight into both this and the effect of tendering on informational rents. McAfee and McMillan (1987) have an accessible review of this. A standard result in auction theory is that, if providers differ in the prices at which they are prepared to provide a particular service because of their different costs, competitive tendering will result in the contract going to the lowest cost provider at a price that on

average reflects the cost of the second lowest cost provider. This can be understood most easily in the context of an auction where bidding continues until all bidders except one have dropped out. The last but one bidder will drop out at its reservation price, leaving the winner to accept a price marginally below that. Competition among providers and subsequent bidding for contracts can thus both ensure efficiency in allocating the contract to the lowest cost provider and limit the informational rent to the difference between the costs of the lowest cost and of the second lowest cost providers.

But it may not be efficient to allocate the contract to the lowest cost provider if that provider supplies a low quality service. In the absence of objective measures of quality that can be made enforceable in contracts, bidders who are competing on price have an incentive to cut costs by reducing standards of service as long as these reductions are unlikely to be perceived by health authorities. To counter this, a health authority has to create incentives for providers to deliver the quality of services that it wants. If patients perceive, albeit imperfectly, quality differences in the treatments offered by different providers, then providers may use quality to attract patients and hence patient demand can be used to create such an incentive. Even in the NHS, which has traditionally been seen as offering only limited choice to patients, this kind of incentive mechanism can work. For example, with non-urgent conditions patients always have a choice not to be treated at all if they think that the quality of the treatment that they will receive is too poor. Patients who have the financial resources can choose to be treated privately. In either case providers that have a financial interest in treating patients may be concerned about the quality of treatment they offer. One way for a health authority to exploit this demand mechanism is to set an appropriately high price for services so that providers have an incentive to expand the number of treatments they perform and will therefore want to increase quality. If a provider is the only supplier of services in a particular area, the best it can hope to achieve by increasing quality is an expansion of the market. If however a provider competes with others it has the possibility, through offering enhanced quality, of increasing its market share. In such circumstances, therefore, competition between providers may substantially change their incentives to supply high quality services. This possible interdependency of quality choices is considered, for the case of profit maximising Cournot oligopolists who compete on quality, by Pope (1989) who concludes that quality, for any given price of service, will be increased by greater competition. Thus, with greater competition between providers, the same quality can be achieved at a lower price which may enable a health authority to purchase services at a lower overall cost. The prospect of competition delivering higher quality health services is clearly appealing, but it is important to remember that these mechanisms work only where patients have an effective choice of where to be treated *and* for aspects of quality that they (in consultation with their GPs) are in a position to assess.

How do these arguments hold up when profit is not the only goal of providers? To the extent that even NHS trusts are interested in obtaining a surplus that they can use to address their own priorities, the main insights above would appear to be robust. The really crucial issue for the analysis is that the purchaser wants a higher quality service

than would be provided in the absence of the kind of incentive that we have discussed. That is plausibly the case for any provider that faces a binding budget constraint - which is likely to be the case in most UK hospitals.

### III THE GP FUNDHOLDER MARKET

One of the perceived benefits of having GP fundholders purchase secondary health services for their patients is that they are more closely in touch with their patients needs and wants. Because they also see patients after treatment, GP fundholders are in a better position to assess whether the care received by individual patients was of an appropriate standard and use that to inform subsequent purchasing decisions. However, fundholding involves having more purchasers who may each then have less bargaining power in negotiating with providers. Indeed, the GP fundholder market, with its multiplicity of purchasers in each locality, seems closer to the private sector for health services in the US than to the health authority market. With health services, it is often desirable that patients are close to providers. Thus, health services from different providers are, at least in terms of location, typically differentiated products and the perfectly competitive market model does not seem appropriate. The US literature has, therefore, typically treated private sector markets for health services as imperfectly competitive in one of two ways, in both of which purchasers take prices and quality set by providers as given. The first, assuming numerous providers, focuses on the decisions of providers that take their demand curves as given whilst the second, assuming only few providers, allows for providers to manipulate demand, taking account of the strategic interdependence of their decisions.

The nature of competition between providers depends in part on the particular services being supplied. Where, for example, many providers in an area offer a particular service, or closeness to a patient's home is not an overriding consideration so that providers compete over a wider geographical area, the first approach may be appropriate. Where, because of either the highly specialised nature of a service or the importance of location, a GP is never going to sensibly consider more than a few providers, the second may be more appropriate. Because each approach may be relevant for some health services, we discuss each separately below. First, however, we consider the evidence relating to the extent of competition in the NHS.

For the limited range of services that GP fundholders purchase, there is evidence that locational factors are not necessarily overriding. Propper and Wilson (1996) found that on average only 30% to 40% of services delivered by NHS trusts to the patients of GP fundholders were provided to patients within a 30 minute travel radius. Appleby *et al* (1994) calculate that, for general surgery procedures in 39 NHS hospitals in the West Midlands area, only approximately one quarter have a degree of concentration as measured by the Hirshman-Herfindahl index above the level that would give rise to anti-trust action in the US. General surgery is a widely provided service and hence is a good candidate for being one of the more competitive but the evidence indicates that there are a substantial number of competing providers for at

least some services in at least some areas of the country. This evidence, of course, takes account only of the number of actual competitors and not the number of potential competitors who might enter the market if prices were sufficiently high. If providers can easily enter and subsequently exit a particular market without incurring sunk costs, that market may be contestable in the sense of Baumol *et al* (1982). The market may then approximate a perfectly competitive market, even though there are very few actual providers. Some providers in the NHS, for example, have used mobile units for the provision of services away from main hospital sites. This may allow the kind of entry that makes a market contestable, but it is clear that this kind of provision is only practicable for a very limited number of health services.

## NUMEROUS PROVIDERS

The most extensive literature on the effects of competition between hospitals deals with a case, in the spirit of monopolistic competition, where there are numerous providers of differentiated services. For an overview of the literature, see Dranove and White (1994). In this setting, an increase in the number of competing firms is usually assumed to result in greater responsiveness of demand to prices, together with reduced demand for any individual provider. Hence, the expected effect of increased competition is that it causes prices to fall. Translated into the context of the GP fundholder market, this would suggest that increased competition between providers should lower the prices faced by GPs and ultimately allow GP budgets to be trimmed. This conventional argument, however, ignores the possibility that purchasers lack information about what precisely they are purchasing.

Where GPs are uncertain as to the inherent benefits of different treatments offered by competing providers, health services have the characteristics of what Satterthwaite (1979) calls *reputation goods*. For such goods the implications of increased competition for the price responsiveness of demand, and hence for prices, depends on the way in which purchasers gather information. It is possible for increased competition to make demand less responsive to price if, for example, GPs' information about the range of treatments on offer, and about which particular providers offer those treatments, becomes diluted by increased competition. Thus, even the narrow question of whether increased competition results in lower prices requires an empirical answer. Empirical studies of this relationship in the US have contradictory findings, largely because of two problems that plague researchers in this field. The first is the problem of defining the extent of a market. The second is the ever changing nature of health services and, in particular, the tendency of services to become inherently more costly over time. One view from, for example, the work of Davis (1971) is that there is very little evidence of a statistically significant relationship between prices and measures of the extent of competition. This view is supported only for data prior to 1985 by Dranove, Shanley and White (1993) who find, for a later period, a significant negative relationship between prices and competition. However, Manheim *et al* (1994), using a different definition of a hospital's market, find a negative relationship between prices and competition that is stable over time. For the UK there is much less evidence but Propper and Wilson

(1996) report a study of prices charged by trusts for *extra-contractual referrals* (ECRs) by GP fundholders. ECRs are services purchased on a patient by patient basis and hence these prices are perhaps least likely to be subject to intensive negotiation. Propper and Wilson (1996) found no consistent relationship between the prices posted for ECRs and measures of competition.

If we allow for the complications involved in providers *choosing* the quality of the services they offer, it is necessary to consider how quality, as well as price, affects demand. A fundamental problem here is that, whilst increased quality may be expected to increase demand, it has ambiguous consequences for the price responsiveness of demand. On the one hand, a trust may wish to improve the quality of services relative to competing trusts in order to generate more demand. On the other hand, it may find such quality expansion undesirable because the price responsiveness of demand that it then faces causes it to have to lower prices. This explanation of the fundamental ambiguity of the impact of competition on quality derives from the work of Spence (1975). It suggests that the impact of increased competition on even patient *welfare* is, in general, ambiguous (see Dranove and Satterthwaite (1992)). Clearly in this context predictions about the impact of increased competition depend crucially upon the precise link that exists between price, quality and demand, which is always going to be difficult to specify. It is, nevertheless, possible to consider the nature of possible trade-offs that emerge from increased competition.

Lower prices, coming as a result of increased competition, may be associated with lower quality because providers are forced to reduce their costs. Wherever quality features as one of a provider's goals this trade-off is possible because a provider with a preference for delivering high quality treatments will finance these by setting high prices. But even in this case a trade-off will not always materialise. The reason is that, whilst changes in demand conditions brought about by increased competition naturally affect a provider's revenue, they need not affect its assessment of the cost or benefit of quality at the margin. There is therefore a possibility that increased competition leads to lower prices without reducing quality. Another possibility, which is much discussed in the US literature and referred to there as the "Medical Arms Race", is that increased competition encourages providers to increase quality and that as a consequences the overall cost of health services increases. This can arise if enhanced quality is an effective method of increasing demand in the presence of greater competition.

This discussion raises the possibilities that increased competition can result in lower prices together with lower quality, lower prices together with constant quality, or higher prices together with higher quality. In order to investigate the effects of competition on quality, empirical researchers have looked at hospital costs, with higher quality assumed to lead to higher costs. Studies in the US provide some support for the "Medical Arms Race" view which predicts that increased competition will result in higher costs. Again, see Dranove and White (1994) for an overview. However, this evidence is not conclusive (see Dranove, Shanley and White (1993), for example) and we are not aware of any studies that address the issue in the context of

the NHS.

Again, it should be noted that most of the theoretical analysis that we have discussed relates to profit maximising hospitals. However, the central idea that providers may trade-off quality and price is, we conjecture, robust for one simple reason. Even providers that want to provide high quality services at low prices will be forced to trade-off one against the other if they face a binding budget constraint. Moreover, the empirical evidence for the US relates to non-profit, as well as “for-profit”, hospitals.

## FEW PROVIDERS

Where there are only a few competing providers, a standard result is that they may be able to make oligopoly profits. This result has one of two implications for the operation of the GP fundholder quasi-market. In the case that providers are profit maximising private sector hospitals, it implies that GPs may be making transfers to private shareholders from their (taxpayer financed) budgets. Where providers are NHS trusts, it implies that those trusts may acquire surpluses from their dealings with GPs which they then use to pursue their own trust-specific goals. An immediate issue is, whether competition between providers will reduce oligopoly profits or surpluses. Standard oligopoly models suggest that, provided competing suppliers are not allowed to coexist in markets for very long periods of time and so establish reputations with each other for acting co-operatively, increased competition will generally reduce profits. If, however, there are significant fixed costs involved in providing health services, there is a limit to the number of providers that it is efficient to sustain and thus a limit to the extent to which competition alone can be relied upon to reduce excess profits or surpluses. Traditional models, which do not take account of the concern for quality, predict that the extent to which competition can reduce profits depends on the precise form that strategic interdependence takes (for example, competition in prices or quantities). Where providers compete on price alone, a very little competition may suffice to reduce profits, whereas if competition is focused on market share even moderately competitive markets can still be characterised by high profit margins. Tirole (1989) provides a comprehensive guide to these and other issues in oligopoly markets.

Even if competition reduces profits it may have an adverse effect on quality. Then, or if competition alone cannot be relied upon to remove excess profits, there may be a case for some regulation. The NHS quasi-market has explicit provisions for such regulation. For example, the regional outposts of the NHS Executive can exercise control over behaviour by providers that is perceived to be contrary to the wider needs of the service. However, it seems implausible that these outposts have sufficient information about costs and qualities of every service supplied by every provider to be able to specify these in an enforceable way in every case. The literature on regulation of oligopoly, as applied to health, provides insight into the issues that arise when regulators cannot observe aspects of quality (which may, nevertheless, be observed by patients and GPs) and do not have full information about the costs of providers. Our

discussion of these issues follows Biglaiser and Ma (1993), Ma and Burgess (1993) and Wolinsky (1995).

Two possibilities for regulation have been examined in this literature. One is simply to regulate prices, a form of *managed competition*. The other is to, in addition, divide up the market so that each provider has a monopoly position in a segment of it. This is, for obvious reasons, called *regulated monopoly*. The advantage of regulated monopoly is that it avoids a potential inefficiency that arises because, in acting strategically, providers include in their assessment of the gains from increasing quality any improvement in market share. Because one provider's gain in market share is another provider's loss then, all else equal, the private gain from increasing quality exceeds the social gain and providers tend to compete wastefully in quality. Hence, there is an argument for giving each provider a monopoly position in a segment of the market to prevent excessive competition in quality and then regulating prices in order to reduce monopoly profits. This argument, if accepted in the case of the GP fundholder market, would seem to offer a clear cut policy conclusion that runs counter to encouraging more competition between hospitals. But there are a number of problems with the argument that make the policy implications less clear cut in practice.

The first problem arises from the nature of quality. If quality is not well perceived by patients or GPs, there is little potential for the wasteful competition in quality that may result from oligopoly.

A second problem arises if there is the kind of asymmetry of information regarding costs discussed above in the context of the health authority market. If a regulator does not know precisely the costs that different hospitals must incur in delivering treatments it is not possible to efficiently define the extent of each provider's monopoly. In such circumstances it may well be preferable to encourage competition between providers in order that they reveal information about costs. The issues here are analogous to those discussed in the context of the health authority market with an additional trade-off between efficiently resolving informational problems and avoiding inefficient competition. This trade-off is considered in detail in Wolinsky (1995).

A third problem with the argument in favour of regulated monopoly, as Wolinsky (1995) points out, is that it relies on the ability of a regulator to impose sufficient penalties on providers who do not behave appropriately. This may be problematic for NHS trusts that cannot commit to making payments that result in them making a loss.

Strategic interdependence between providers of health services raises a number of other issues that this brief consideration has not detailed. Most notably, there may be important dynamic concerns about decisions to invest in capacity which affect the extent of future competition and which may in turn depend crucially upon the present extent of competition between providers.

## IV SUMMARY

This paper has focused on the role of competition in the reformed NHS. The concerns that we have discussed are how to ensure that health services are delivered at appropriate quality and low cost.

The first point to be considered by policy makers is the context in which competition is pursued. With health authority purchasers, we have argued that the potential for competition to have an impact is affected by the bargaining position of those purchasers negotiating contracts. The details of how contracts can be used have been discussed elsewhere and that discussion suggests two possible roles for competition in a contractual environment. The first is in shaping the bargaining power of providers. The second is in providing information to health authorities who are less well informed than providers about, for example, costs of treatment. Put simply, a benefit of having many competing providers is that they can be offered the opportunity to tender for contracts and in so doing may reveal information about their costs that would otherwise result in informational rents. However, there is a real risk that, in doing this, the quality of services may be driven down unless appropriate mechanisms for maintaining quality are instituted.

Where, as in the GP fundholder market, purchasing power is not so concentrated, conventional models of imperfect competition can provide insights into how increased competition may work. We considered separately approaches that assume numerous providers and only a few providers.

Where the services under consideration are such that providers are numerous, an approach in the spirit of monopolistic competition is a natural starting point. Traditionally, in this framework increased competition is associated with lower prices. But where purchasers do not have good information about the precise differences in services on offer, this association between competition and lower prices may be broken. The risk of higher prices resulting from greater competition is increased if quality is perceived by providers as being an effective way of increasing demand. Then providers may react to increased competition by increasing quality to such an extent that the cost of health services increases. Even where prices are lowered by competition, there is a risk that this may be accompanied by lower quality. In assessing this risk of lower quality it is important to take account of the extent to which providers have inherent concerns about the quality of services they offer. Empirical research in the US suggests that these are not just theoretical possibilities. In the light of this research care needs to be exercised before promoting competition as a means of ensuring lower prices because there is at least some, albeit disputed, evidence in favour of the “Medical Arms Race” hypothesis.

Where the nature of health services is such that they are supplied by only a small number of providers, the possibility that providers perceive the interdependence of their decisions may be relevant to policy. In this case oligopoly models can be used to identify further policy issues. Where competition is so restricted that a large profit or

surplus can be generated there is a real question of whether increased competition or regulation is the more appropriate means of reducing prices. The nature of quality of health services implies that, at least in some circumstances, it may be preferable to rely on regulation. This is the case if regulators have, or can obtain, good information on provider's costs and are able to impose losses on providers. In other circumstances the choice between greater competition or increased regulation is a more subtle one.

The approach that has been adopted in this paper is to consider the contributions of theory as it relates to competition separately from the contributions of theory as it relates to contracts and to focus only on the former. The latter has been discussed in Chalkley and Malcomson (1996b). The UK health care sector has two characteristics that would appear to make a consideration of the possible interactions between contracts and competition desirable. First, there has been increasing pressure upon health authority purchasers, when making contracts, to consider competition amongst the providers of health services as a goal in itself and, second, providers make choices regarding the terms on which they are prepared to sell services to GPs conditional upon the contracts that they have entered into with district health authorities. This interaction has, however, still to be investigated.

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