The Price of Placements in Residential and Nursing Home Care

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Introduction

Markets play a central role in the social care system, a role that was entrenched by the 1990 NHS and Community Care Act. The position of local authorities as a major purchaser of independent residential care and sponsor for clients gives them both the scope and obligation to manage and shape these social care markets. In this process authorities have been working to some extent in the dark. What type of contracts seem to generate the desired results? What effect are their actions having on local markets and how does this translate through to the type of care people receive and the cost of that care? A survey of admissions of elderly people to residential and nursing home care provides an opportunity to address some of these issues from the perspective of publicly funded placements.

This paper briefly describes the survey before discussing the methodology and results of an analysis of the costs of placing people in residential and nursing homes. The main aim of the paper is to explore the factors which might explain the variation of the price of placements identified by the survey.

The survey

Between mid October 1995 and January 1996 information was collected about the circumstances of 2,500 permanent publicly funded admissions from 18 local authorities to residential and nursing home care. Social workers or care managers provided information about the household, dependency characteristics, circumstances of admission, type of home to which they were admitted and contractual arrangements. Data were also collected from the authorities about the financial circumstances and contributions to fees for over 2,100 cases. All the elderly people were tracked one month after admission to identify mortality and location of survivors.

The survey was designed to feed into discussions about the Standard Spending Assessment formulae (1). For this purpose it was important that as much information as possible was comparable with nationally available data. Information about household circumstances was collected to enable comparison with census data and

information about dependency characteristics to allow comparisons with people over 65 living in private households identified in the General Household Survey (GHS). In addition, information was collected to enable the estimation of a number of dependency measures including Barthel (2) and the DHSS 4-category measure used in previous surveys of residential care (3). In order to reflect cognitive difficulties the items used to compile the Minimum Data Set Cognitive Performance Scale (MDSCPS) were included. This seven category hierarchy provides a functional view of cognitive performance that has been shown to correspond closely to the Mini-Mental State Examination and the Test for Severe Impairment (4).

The survey forms one part of a three part study of residential and nursing home care. The other two elements of the survey are a longitudinal follow-up of admissions and a cross-sectional survey of homes. The longitudinal follow-up is tracking residents six, 18, 30, and 42 months after admission. The cross-sectional survey has collected data about residents in over 600 homes in 21 authorities, 17 of which were included in the survey of admissions.

The objective in the admissions survey was to select a representative sample of local authorities on the basis of authority type, size, population density and socio-economic status. As a result of some authorities being unable to participate a disproportionately large number of metropolitan districts were included in the survey (eight metropolitan districts, five counties, and five London boroughs).

Theoretical background

In order to explore variation in the prices of admission to residential and nursing home care we need to identify the principal expected reasons for such variation in prices. The expected influences on the price of placement were drawn from a theoretical *spatial competition* model. We use a standard product differentiation model with a continuous (circular) product space where products are differentiated in a single spatial dimension (5) (6) (7) (8). The demand expressed for provider *i*'s product will depend on its price, the price of competitors and the distance between competitors in terms of the location of their products. Suppose that in addition to provider *i*, there are two representative providers, one on the 'left' and one on the

'right' of provider i along the dimension representing product location, denoted $i - 1$ and $i + 1$ respectively. At this stage we are not restraining the market in terms of the number of providers, but rather assuming that the effect of all providers other than i is summarised by the effects of two representatives. Let the degree of differentiation or the distance between provider i and representatives $i - 1$ and $i + 1$ be f_{i-1} and f_{i+1}. The distance between the two representatives providers is: f_0.

Total demand for provider i's product (D_i) is determined by the number of consumers who buy product i rather than $i+1$, which is denoted x_i and the number who buy product i rather than $i-1$. The latter figure is determined by the number of buying consumers whose ideal product is located between provider i and $i-1$'s product, which is determined by distance between these products, f_{i-1}, less the number who buy product $i-1$. In the usual way demand is therefore:

$$D_i = x_i + f_{i-1} - x_{i-1} = D_i\left(p_{i+1}, p_i, p_{i-1}, f_{i+1}, f_{i-1}, q_{i+1}, q_i, q_{i-1}\right) \tag{1}$$

where for each product $j = i, i+1, i-1$, price is p_j, f_j is distance and q_j is a vector of demand-shift factors that affect the relationship between price and demand levels. In particular the latter factor might be the product 'type' as distinct from its spatial location, an example of which might be its quality. Thus consumers may pay different prices for a product located at the same place as a result of these products being of a somewhat different type. The empirical specification of this vector is discussed below. The distance between provider j and i i.e. $f\{L, n\}$ is a function of the total size of the market (L) and the number of providers in the market (n). We assume that distance between providers is negatively related to the total number of providers in the market, given a constant total market size ($\delta f/\delta n < 0$). Also, that distance is positively related to total market size given a fixed number of providers ($\delta f/\delta L > 0$). Demand functions for the other two products are analogous to Eq. (1).

Placement costs are assumed to take the following form:

$$C_i = c_i x_i + F\left(q_i\right) \qquad \forall i \tag{2}$$

Where c_i is unit marginal cost and F is a sunk fixed cost whose size is affected by the product's type. Profits for provider i are then as follows:

$$\pi_i = \left(p_i - c_i\right)\left(x_i + f_{i-1} - x_{i-1}\right) - F \tag{3}$$

with analogous functions for the other two providers. The profit function is assumed to be additively separate in prices and demand-shift factors (q). We also assume that providers first choose the product type (given its location), then set prices. Prices are therefore determined with given product type. Solving for the first order condition, holding marginal costs constant between providers, the reduced-form price function take the form:

$$p_i^* = p_i\left(f_{i-1}, f_{i+1}, f_0, q_{i-1}, q_{i+1}, q_i, c\right) \tag{4}$$

Estimating this function empirically, whilst not problematic in theory, does present some data problems. In practice, we do not have data for demand-shift factors i.e. product type (q) and market distance (f) for the representative providers $i+1$ and $i-1$, which are theoretical constructs. However, two further theoretical manipulations can provide an estimable function.

First, we can remove the dependence on q_{i+1} and q_{i-1}. In anticipating at the first stage prices that will be optimal at the second the first stage - as given by Eq. (4) - optimal product type functions $q_{i+1}^*(\cdot)$ and $q_{i-1}^*(\cdot)$ can be solved and then substituted into the price function. In this way, we are left with optimal prices which are the basis for our empirical modelling, parameterised in the normal way (with the vector β) and with error ε:

$$p_i = p\left(f_{i-1}, f_{i+1}, f_0, q_i, c_i; \beta\right) + \varepsilon \tag{5}$$

Second, we can assume that, on entry, each provider locates at an equal distance from each other and also that consumers are uniformly distributed according to their tastes so that $f_i = f_{i+1} = f_{i-1}$. Therefore, Eq. (5) reduces to:

$$p_i = p(c_i, q_i, f; \beta) + \varepsilon \tag{6}$$

Product differentiation allows providers to set prices away from competitors' prices and higher than marginal cost and still maintain a viable level of sales. The basis for this argument is that consumers are prepared to pay more for a product or service which closely matches their ideal product. In the model the degree of differentiation or distance, *f*, between one product and its closest substitutes has a bearing on price.

Market distance (*f*)

In practice this product differentiation may be in terms of the geographical location of homes. Distance between competitors then depends on the size of the market - total distance or area in geographical terms - and the amount of provision. The level of provision is hypothesised to be explained by the level of *contestability* of the market; that is, the ease or costliness of market entry which is determined by the size of barriers to market entry and exit (9). Other things being equal we might expect market entry to continue until prices are driven down so that revenue is in line with costs. Market entry costs then limit the number of providers in a market and so maintain geographical separation or distance and, as a consequence, generate a surplus for the provider once entry costs are absorbed. For our analysis, it means that the magnitude of differentiation should be a direct influence on price. Otherwise, if markets were contestable prices would equal marginal costs implying that the size of the market and number of providers would have no influence on price.

The number of providers that can be accommodated in a contestable market will also be affected by the level of aggregate demand. In our empirical analysis, a number of discrete market areas exist as defined by each of the eight local authorities in the sample. Locality's purchasing power, and the nature of the LA regulation and admissions process need to be accounted for to control for differences between sample local authorities. Purchasing power refers to both the financial wherewithal of

the local authority and also the political preferences for provision of residential care services to meet perceived needs.

The independent residential care market is also affected by the extent and nature of public sector local authority (LA) provision. Wistow et al. (10) suggest that the relationship between local authority purchasers and these local authority providers is on a somewhat different basis than the relationship between LA purchasers and the independent sector. This hypothesis implies that competition between individual independent sector providers and LA providers is different from competition within the independent sector. In particular we suppose initially the possibility that some quantity-adjustment process is in operation which can supersede the price mechanism. At the extreme then, the total amount of the LA sector provision affects the independent sector by changing the level of *demand* for the latter sector's supply rather than competing for a given level of demand. We therefore call this the *residual demand* model. In so far as this is the case, the impact of the public sector is in terms of a demand-shift effect and not in terms of supply-side product differentiation.

Costs (*c*)

Placement costs, *C*, are influenced by input prices, the characteristics of the individual (including their level of dependency, their circumstances at admission and so on) and characteristics of the home. The latter encompasses the 'technology of care', that is the process by which the use of resource inputs such as skilled labour and specialised capital leads to changes in welfare outcomes for users. For a given level and quality (and so value) of outcomes, the level of expenditure on inputs (i.e. costs) can vary according to the care technology used (11). Features of homes and the nature of the 'product', which characterise the technology of care, should then be an influence on costs and in turn, prices.

Demand shift (*q*)

These home and product characteristics or types are also expected to have an effect on demand. They constitute our first form of demand-shift effect as captured by the term q in the above model. The second relevant demand-shift effect, considered below, is contract arrangements. Both influence the relationship between price and

demand for each product. Respectively, we write these influences as $q = \{Q, Y\}$ and so our empirical model becomes:

$$p_i = p(c_i, Q_i, Y_i, f; \beta) + \varepsilon \tag{7}$$

The former demand-shift effect, Q, refers in particular to the distinction between nursing and residential care and also to the private and voluntary sector ownership difference. Various aspects of care quality are also relevant dimensions by which providers may seek to differentiate their products.

There are two dimensions of contracting (element Y) which are believed to have a particular influence on prices. First, in expressing demands for services, whether reimbursement is linked to the provision of facilities as in block contracts, or linked to clients as in spot contracts. Second, whether reimbursement is agreed in advance (at the start of a contract period and so prior to any admissions made under that contract) or whether payment is determined at the point of admission (and so can potentially be made contingent on the client's circumstances and characteristics). Contracting choices have ramifications for the distribution of risk between purchaser and provider and therefore affect the size of the *real* costs organisations incur in providing a service. For example, with fixed price spot contracts (often called *call-off* contracts), providers' unit revenue is fixed but unit cost depends on both the dependency characteristics of the client and also the number of client referrals (relative to the optimal home capacity). The provider is exposed to all the risk with this type of contract. Block contracts in contrast, do not make reimbursement contingent on the number of referrals; the risk is instead shifted to the purchaser.

Choices between different contracting arrangements also imply choices of different sets of incentives, which will affect demand for placements. Information problems are of particular relevance. When information regarding production is asymmetrically distributed between purchaser and provider (in favour of the provider) the potential is created for providers to use their better information in three ways to increase surplus (profit). First, by misrepresenting client or product characteristics; for example, claiming that the costs of care of a client of particular dependency are higher than is

actually the case and thereby securing a higher payment or exaggerating product quality to improve demand. Second, by shirking on efforts to reduce costs or by cutting corners on meeting specifications. Third, by using superior information to select or cream-skim those clients who are likely to be low cost. The choice of contracts has a direct effect on such behaviours: fixed price contracts promote the third type, whilst contracts with client-specific prices promote the first. Both types of contract are susceptible to the second problem.

Empirical specification

Regression analysis was used to estimate a price function as specified as equation (7). The unit of analysis is the individual placement. The analysis excluded placements in local authority homes and used a sample of 2171 placements in independent sector homes for which information was available about gross fees charged and contracting arrangements. Missing values reduced the final estimation sample to 1880 placements. The 'price' dependent variable is the gross cost of the placement including contributions by the local authority, the client and any top-up payments made by others. In relevant authorities this was deflated using the Area Cost Adjustment (ACA) which essentially allows for higher labour input costs expected in London and the South East. The average cost of all placements before deflating using the ACA is £285. Once area variations have been allowed for the average cost is £272. As this adjusted figure has been used in the main analysis these deflated figures have been reported below unless specified otherwise.

Table 1 presents the range of independent variables that are used to act as empirical proxies for the four theoretical components (c, Q, Y and f) in equation (7). The exact definition of the independent variables is given below. As the underlying theoretical specification is the *reduced form* price equation the ordinary least squares (OLS) regression technique is sufficient and appropriate in the estimation of the relationships between the price dependent variable and the specified independent variables (12).

[TABLE 1 HERE]

A shortcoming of the estimation arises with respect to data limitations. In particular, appropriate proxy variables to capture the influence of demand-shift effects on price were difficult to find. Dummy variables identifying each of the local authority areas were used. However, on the usual grounds of statistical performance, theoretical appropriateness and parsimony these variables were dropped. As reported below, diagnostic tests could not reject the final model as being mis-specified.

Data limitations were also binding with respect to quality variables. The usual problem of finding reliable indicators of quality, particularly the intangible aspects was found to apply. Finally, the slight over-representation of metropolitan local authorities raised some questions about sample representativeness. In view of the very large number of observations spread across all sample local authorities, it is anticipated that all expected sources of variation are adequately represented in the data. Thus there should be no obvious distortions in the findings. Nonetheless, if conclusions were to be drawn out regarding the national picture, some re-weighting might be advisable.

Results

The results of the OLS estimation are given in tables 2. Statistical diagnosis provided no grounds for the rejection of the specification (Ramsey's Reset test was not significant at the 5 per cent confidence level). A test for heteroskedasticity rejected the starting assumption that the variance of the OLS error terms is constant. Non-constant error variance does not put any bias on the estimated (beta) coefficients of the independent variables. It does, however, render uncorrected t-ratios unsafe (t-ratios indicate the probability that the estimated coefficient falls within corresponding limits around the real value). However, White (13) provides a correction for this problem; hence White's t-ratios are given in tables 2.

[TABLE 2 HERE]

The estimation produced a high adjusted R-squared statistic which provides some indication of the degree to which difference in prices between providers in our sample are explained by the independent variables.

The specification was also applied to the nursing and residential care sub-samples separately. The estimation results were very similar for both new models compared with each other and with the combined sample model. The only significant difference was that the sign on the spot contracts variable was positive for the nursing homes sub-sample (see below).

Costs

Information on the marginal costs of placements are not available. Indeed, there are considerable practical difficulties in ascertaining such data using sample methods. Instead we substitute the cost *function* for marginal cost. Key elements of this function are: type of bed, client characteristics and capital costs.

The registration and regulation arrangements for residential and nursing homes ensures that nursing homes must use a higher level of, and more costly, staff inputs. A first cost factor therefore is the type of home, with higher unit costs expected for nursing homes, even when all other influences are taken into consideration. This expectation was supported by the data (see table 2). Before adjustment for regional variations in the cost of inputs the average price of a placement in a nursing home is £327 per week compared with £245 in a residential home (33% higher). Once deflated using the ACA, the prices are £314 and £234 respectively.

Another cost-influencing factor is client dependency characteristics. A positive relationship between costs and the dependency characteristics of the individual is expected, even with the presence of the nursing bed dummy variable. A number of difference indicators of dependence were used but the Barthel score of functional ability was finally chosen. There was some variation in the point at which functional abilities affected costs but Barthel scores lower than 13 or 14 were indicative of higher costs. A Barthel cut-off dummy at a score of 9 was found to be significant.

Although the Barthel variable was significant in the final model, its t-ratio and coefficient were considerably higher when the nursing bed dummy was dropped. Similarly, when the Barthel variable was dropped the nursing bed variable showed a

stronger association with price. Clearly there is a degree of collinearity between these two variables but the findings are consistent with a significant dependency characteristics affect both within and across care settings.

In addition to Barthel, which measures functional dependency, indicators of need for nursing care and frequent behavioural problems (daily or more often) also were associated with higher prices. One indicator of social reasons for admission: housing needs, was associated with lower costs. These needs, which are more frequently identified for among people admitted to residential rather than nursing care, are in addition to individual dependency characteristics but tend to be associated with lower physical and cognitive impairment.

A final cost factor is a proxy for capital input prices. Capital is an important input in the residential and nursing production process and therefore we would expect capital prices to be positively correlated with costs and therefore product prices. The proxy variable is building society average dwelling prices (1992) (14). This variable proved to be a highly significant explanator ($p < 0.0001$) with the expected positive sign on the OLS coefficient. The coefficient on this variable implies that a £1 increase in average dwelling prices is associated with a £0.65 increase in (ACA-adjusted) placement prices. A full analysis of the impact of capital prices on residential care costs also requires an investigation which taking the home as the production unit (rather than the individual placement). This is pursued in future work.

Product characteristics

Little information was available about the home or product received by elderly people. Data were available, however, about whether the home was residential or nursing, and, if dual registered, whether the individual was admitted to a nursing or residential bed. The providing sector of the home (private or voluntary) was also identified. These factors were included in the estimation according to their hypothesised links with total costs. But they can also be interpreted as having a direct influence demand at a home level, and in that way, affect prices. The dummy variable representing nursing homes proved to be statistically significant (see table 2).

Market distance

The local authority area serves to define the boundaries on each market. A shortcoming of this assumption is that markets so defined in our sample vary considerably in terms of size. We address this problem by including the size of LA population (aged 75 and over) in the estimation.

The theory described above leads us to expect a positive relationship between price and distance which, with constant market size, is equivalent to there being a negative relationship between the price and the number of products in the market. There are two particular specifications of distance we can use. The first is to begin with the hypothesis that independent nursing homes and residential homes are highly vertically differentiated so that in effect there are two largely separate consumer bases for each care type. Thus horizontal (geographical) distance can be treated separately for each of these two market subsectors. An appropriate specification would then have the prices of residential care home placements in our sample explained by total market area divided by the number of residential care products (places). The nursing home prices would be specified with the total market area divided by the number of nursing home products.

Alternatively, we can take the degree of vertical differentiation to be small so that both types of homes are competitors for the same consumer base on a geographical basis. Distance should then be defined as total market area divided by the sum of products of both types of provider. Both specifications were applied to the data. The first however was rejected by Ramsey's reset specification test. The second specification - with a single distance variable - was not rejected and performed well statistically ($p < 0.0001$) having the expected sign. This finding offers some preliminary support for plans expressed in the 1997 Conservative White Paper to integrate the registration of nursing and residential care providers.

A slight variation in this latter model's specification was tried. A variable defined as average local population density (aged 75 and over) was included to replace the existing population variable. This specification is arguably more precise in controlling for different market types in our sample because it links demand directly

with the spatial differentiation of supply. However, it transpired that the results were almost identical with the original specification.

Further analysis regarding the strength of this association was also undertaken, primarily to attend to the issue of cross-boundary placements and the definition of 'true' market boundaries. Little systematic data were available on the extent of cross-boundary placements although what exists points to London Boroughs as being not insignificant exporters. Using interactive dummy variables, the strength of association between price and market distance was distinguished between London and non-London authorities. The estimated size of the association was found to be significantly higher for London authorities, meaning a higher change in prices in London authorities (on average) for a unit change in market distance. This result is consistent with a lower price elasticity of demand facing the average London provider, which in turn implies a potential for greater surplus levels. Furthermore, the result is consistent with a greater change in price as associated with a change in the size of supply (holding total market size constant) which can be interpreted as an indicator of lower competition.

However, the result is also consistent with the cross-boundary placement effect. A significant level of placements outside London would affect 'true' average market distance as pertaining to London authorities. London markets would overlap to some extent with non-London markets. The latter markets have much higher average distances between suppliers which in turn means that true London markets would have higher average distances than given by LA area market distance variable (which is the ratio of the size of the London borough over the size of supply within that borough). If the London distance variable used in the estimation is an underestimate of the true value, then we would expect that the use of a London interaction dummy in the estimation to produce the results that were found. However, we cannot determine which explanation - lower competition or higher levels of outside placements - is appropriate, only that the data are consistent with either explanation.

A higher value of the market distance variable would act to reduce the size of the coefficient on this variable as pertaining to London in the price estimation. The net

size of the association between price and a change in supply - which is our indicator of competition - is not quite as clear cut. The coefficient on market distance is lower but the average value of true market distance is higher. In practice the former effect will dominate the latter meaning a *smaller* change in price associated with a unit change in supply. In other words, if we accept that true market distances are larger than the estimation value, then this means that the latter would under-estimate the level of competition in London.

Local authority effect

An appropriate specification for our empirical model, in accepting the residual demand hypothesis as discussed above, is to include an independent variable which is a direct measure of local authority provision. Thus the extent of LA provision would be inversely correlated with the *demand* for independent sector provision. Alternatively, if LA providers are not so favoured then the impact of changes in the extent of LA provision is a *supply-side* effect. Any impact of a change in the number of LA providers on independent provider's pricing would be felt via the change on average market distance.

On average about 8 per cent of publicly supported residents were placed in local authority provision. In seven of the authorities the proportion was higher, ranging between 11 and 26 per cent. The data providing support for the first specification - the residual demand model. A dummy variable indicating that the authority placed a higher than average proportion of people in local authority provision is associated (significantly) with a reduction of independent sector prices of approximately £16. However, this finding does imply a rejection of the second specification, the supply-side competition model. Further investigation of the nature of competition between the independent and public sectors is therefore warranted.

Contractual arrangements

Social workers were asked to identify the type of contract that had been agreed and how the price was reached. These factors proved consistently important in the analyses of costs of placement.

Spot or block contracts

Spot purchases with approved providers are the most common type of placement (70 per cent of placements). Spot contract placements with other homes that were not approved providers accounted for 20 per cent of placements, whilst the remainder were under block contracts (10 per cent). Distinguishing between residential and nursing care, block contracts are very rare with nursing homes - only 3 per cent of placements compared with 17 per cent in residential homes.

A crude comparison of mean prices (table 3) indicates that admissions under spot contracts have higher relative (mean) prices. Admissions under spot contract with non-approved providers have yet higher relative (mean) prices, while admissions under spot contracts with approved providers have lower relative prices.

[TABLE 3 HERE]

Various specification of contract type were tried in the estimation. The final model reported in table 2 distinguishes between spot contract with approved and non-approved providers, and also uses interactive dummy variables which differentiate the impact of the spot contract variables between nursing and residential care home types. In all cases these variables were statistically significant.

The chosen specification with its interactive dummy variables precludes straightforward interpretation of the impact of each contract type from the estimation coefficients reported. The net effect of spot contracts with non-approved providers is a linear combination of the coefficients relating to the association between this contract variable as it applies to both the residential and nursing homes in the sample. In this way it was calculated that the use of spot contracts with non-approved providers is associated with a price increase of £1.59. In contrast, use of spot contracts with approved providers is consistent with a £0.54 reduction in price. These latter two results are consistent with the crude comparisons reported in table 5. The (unweighted) combination of these two types (i.e. all spot contracts) has an association with price of *positive* £1.05. The weighted combination (by sample mean) has a coefficient value of -£0.01.

Other things being equal we would expect spot contracts arrangements to have higher prices compared with block contracts because, with the former, risk regarding the number of admissions is with the provider (see the theoretical section above). The allocation of risk changes when account is made of approved and non-approved status for providers. Approved status should entail considerably less risk for providers compared with non-approved status. Thus in the former case a price discount is likely to reflect the greater certainty of placements being made. This hypothesis is supported by the data. Nonetheless, risk is still greater with spot contracts of either type than with block arrangements.

Our *a priori* expectation of higher spot contract prices is modified if differences in competitiveness are taken into account. Block contracts are likely to increase provider market power especially if the number of (guaranteed) places bought is large (as it often is so that the risk advantages may be had). When a market is very competitive anyway this shift in market power is unlikely to have any particular significance. However, if a market is not very competitive then the use of block contracts may have important ramifications for price negotiation. Indeed, in this situation block contracted providers may be able to push up prices relative to spot contract providers. The data were interrogated using an interactive variable. It was found that there was a statistically significant relationship suggesting prices are higher when spot contracts are used where competition is high. By contrast, spot contract prices are lower compared to block contract prices in relatively low competition areas.

Advanced or contingent pricing

The process of negotiating price is also hypothesised to have an impact on placement prices. Before considering other influences the average cost of an individually negotiated contract for a specific client was £296 compared with £269 for other arrangements. In the regression analysis, which allows a range of other factors have been taken into consideration, placements with individually negotiated contracts were associated with price being some £20 (approximately) higher. This relationship was highly significant ($p < 0.0001$). The data provide support for our hypothesis that

providers have an incentive to exaggerate the costs of care in order to secure a higher price (15). It is important to stress that the regression allows account to be made of client circumstances and dependency and therefore seeks to control for real differences in costs. Thus we can discount the hypothesis that these contracts are used when clients have special circumstances such as particularly difficult behaviour, severe dementia or nursing requirements that would raise the costs of care. If anything, people who had an individually negotiated price tended to be less dependent according to our measures. A caveat is that some cost-raising client characteristics may not be sufficiently specified in the regression (despite the diagnostics rejecting mis-specification problems) and therefore we cannot completely reject the special circumstances hypothesis.

In addition to this hypothesis regarding information and incentives, we need also to consider bargaining and co-ordination. An individually negotiated placement is likely to occur when a purchaser wants the contract to be tailored specifically to the individual client's needs (and expression of choice). This form of commissioning must by definition have a client specific focus and therefore is likely to be undertaken with decentralised purchasers (e.g. care managers with purchasing resources); it would be very difficult and inefficient to operate this type of commissioning strategically. However, these decentralised purchasers will have far less market power than strategic purchasers. Thus, comparatively the balance of bargaining power is with the provider. Consequently we would expect the negotiated price of such a placement to be relatively high. In contrast when the authority is negotiating for a price for future residents the balance of power is in favour of the local authority if the home wants to have a future supply of publicly funded residents. Moreover, strategic purchasing is far more feasible. The data do not reject this hypothesis.

It might be expected that those authorities that set a price tariff authority wide would be most effective in keeping costs down but in practice when this was included in the equation (as it was in some models) it actually served to raise the expected cost of placement. What did seem to keep costs down was where authorities agreed a price in advance with individual homes. In our analysis, a price of placement reduction of about £4 was associated with a fixed price policy at the home level. It is possible that

this reflects authorities taking advantage of specific offers from homes where competition is high and homes are under-occupied. Local authorities negotiating with all homes individually would have important implications for their transaction costs.

Discussion

The primary objective of this paper is an understanding of what factors lie behind the cost, to the purchaser, of residential and nursing care for elderly people. A priori theorising and previous analysis point to the elements that make-up production cost as being closely associated with prices. Strong evidence of such a relationship was found, particularly in regard to client dependency and the type of care they receive as defined by registration legislation. Drawing further on the relevant theory, two other sets of influences on price were identified and subsequently investigated. These factors are competition and contract type.

A spatial differentiation model was used as the basis for considering the empirical relevance of competition. The competition variable was simply defined as average market (LA) size divided the LA number of places. This proxy measure proved to be highly significant ($p < 0.00001$). The implied strength of association with this measure and prices, as estimated, can be put into context using the notion of an 'average' authority which has the sample's mean size and number of providers. Interpreting our results for such an authority, a 1 per cent change in the number of places (both residential and nursing) is associated with a minus 12p change in the price of placement (all other things being equal).

Clearly, within the constraints of this type of empirical analysis (which were described above), the findings suggest a relatively low-key role for local authority competition policy, such as efforts to reduce barriers to market entry and exit. Other work has used a price elasticities approach in making inferences about contestability (16). This approach avoids the problems of defining market boundaries. The results were broadly consistent with the above estimates, with mark-up rates (surpluses) running at no more than 10 per cent of the weekly charge.

Perhaps a more important focus for policy is in establishing the priority given to in-house provision over and above the independent sector. Our results certainly point to the existence of a negative relationship between the size of the in-house sector and the price of independent sector supply. Moreover, there is some empirical support for the view that, within our sample, the size of in-house provision acts to reduce total demand for independent sector rather than being solely a supply-side competition effect.

Local authorities have little or no influence over many factors that influence costs. One area where they do clearly have an influence is on the contractual arrangements they enter into with homes and their policies when agreeing prices. According to our sample, contract choice has an important relationship with prices. Statistically significant associations with price we found with respect to spot or block contracts; whether contracts were written with approved or non-approved providers; and whether prices were set in advance, at the home or local authority level, or whether they were set according to specific clients.

The choice of contract and reimbursement mechanism therefore appears to have implications for the price of particular residential care placements. But what does this mean for the welfare of stakeholders? The choice of contract type is argued to affect: the distribution of risk between purchaser and provider; the degree of targeting of services that is accommodated; and, incentives for acquisition of low cost production techniques and also misrepresentation of information. The former feature, the allocation of risk, would be expected to show up in the agreed price. Providers may accept lower prices if their risk burden is reduced and this insurance adjustment is quite consistent with mutual benefits. Adopting contracts that facilitate this insurance function is clearly desirable and should lead to lower prices (taking other factors as constant).

The choice of contract type is also a *de facto* choice of incentives which has ramifications for appropriate use and reporting of information. The argument is made that non-contingent fixed price contracts (e.g. block contracts) tend to promote inappropriate selection of clients (cream-skimming) while contingent contracts (spot

contracts) may be associated with exaggeration of the costs of providing specific client care (15).

A problem is that the risk function and information properties associated with different contract types may be inconsistent in terms of stakeholder outcomes. Lower prices need not be indicative of fewer informational problems; indeed the converse is likely to be the case. For example, block contracts may reduce provider risk and hence the contract price, but may also lead to cream-skimming and shirking on quality. In assessing therefore the choice of contract types for policy purposes, even at a very modest level, our judgement should go beyond looking simply at which type of contract tends to generate lowest prices. In addition, any assessment of these contract choice consequences (on stakeholders welfare) must take account of the costs of that choice. Contracts and reimbursement mechanisms are methods of governance of transactions. Governance can improve outcomes for given resourcing levels but in doing so diverts resources away from directly productive uses. The opportunity cost of governance is therefore a loss of (potentially) beneficial outcomes associated with the diversion of resources away from production. Clearly this siphoning of resources is acceptable only if the benefits created by more intensive governance exceed these opportunity costs.

Scope remains for a more in-depth investigation of the relationship between price and contract type. Progress can then be made in making a fuller assessment of optimal choices of contract type. Further work to unpack market-level effects on prices such as the impact of contestability and how it is linked with demand for a particular provider's product would also be useful. Such as approach would also side-step the problems of defining market boundaries. Indeed, the most useful information for policy making is in regard to short-term and long-term market contestability.

The findings of this work can be seen as a contribution to the policy debate regarding the nature and scope of commissioning arrangements that are available to local authorities. Some important associations between competition, contract choices and prices were investigated and discussed. Whilst not explicitly drawn out, the analysis suggests that modest but not insignificant efficiency savings could be released as a

result of improved policy choices regarding commissioning arrangements. At the very least, the findings provides some justification for further work to more precisely assess the potential for reductions in efficiency shortfalls.

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