Explaining the fees gap between funding types in the English care homes market

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Acknowledgements

Abstract

This work quantitatively assesses the economic reasons behind the difference in prices paid by care home residents in England. It is generally believed that the price paid by private payers is higher than that paid for publicly-supported residents, and this is often attributed to the market power wielded by local authorities as the dominant purchaser in local markets. Using data from 2008 and 2010 at the local authority level, where funding support decisions are generally made, average self-funder prices are calculated. Estimations of the difference in price paid, the fees gap, controlling for local area and care home characteristics, show that both care home and local authority market power play a vital role in the price determination of the market.

Introduction

Public funding of care home services for older people in England is on a means-tested basis. Those people who do not qualify for state-support (in full or in part) – generally paid through local authorities (LA-funded residents) – are obliged to fund their own care (self-funded residents). Most care homes will take residents from either funding source, although a small minority of care homes focus solely on the self-funding sector of the market. The prices paid by self-funded residents are usually higher than fees paid for LA-funded residents. However, whilst (average) prices paid by local authorities are publically available, little is further known nationally about the prices that self-funders pay for their care home place and therefore there is no evidence as to the reasons for the gap in fees. This work determines the causes as to the gap in fees paid by local authorities for residents eligible for support and self-funded residents. In doing so, we calculate average self-funder prices at the LA-level. We believe this to be the first time that average self-funder prices have been calculated for all LAs in England and the reasons for the difference in price paid by funding types examined.

The empirical evidence in the literature of the implications of different sources of demand in the English care homes market is scant. The extent and (total) value of self-funders has been examined (Forder, 2007; Putting People First Social Care Consortium, 2011) and it has been found that self-funders will have longer stays in residential care (Forder and Fernandez, 2011). Hancock and Hviid (2010) examined the effect of LA market power in England theoretically and using simulations showed that under a modest level of LA market power self-funder prices would be higher but only a very few private payers would be squeezed out of the market. For the US,

Stewart *et al.* (2009) examined public and private payer price growth between 1977 and 2004, and Troyer (2002) examined cross-subsidisation in Florida nursing homes.

From a policy point of view, this work also contributes to an improved understanding of the impact that current budget reductions for social care have on the care homes market.[1] If, for example, LAs' dominant market position is an important explanation of the fees gap then prices for LA-funded residents can be expected to be pushed down as a result of the budget cuts. Providers in distress due to the lower LA fees (and also rising costs) consequently become more reliant on the private segment of the market. Depending on the presence of other market characteristics that affect the fees gap and are explored in this paper, providers may increase self-funder prices to cross-subsidise LA-funded residents. At worst, we could observe more care home closures and greater polarisation of services between affluent and less affluent areas (Office of Fair Trading, 2005; County Councils Network and LaingBuisson, 2015). Understanding the main drivers of prices in the care homes market therefore provides a framework within which to better study how different financing arrangements can feed into the market.

The causes of price differences across payer types are examined by looking at the Local Authority (LA) level, where, broadly speaking, public commissioning decisions are made. In particular, we attempt to determine the effect that both public commissioners and competition have on the difference in average price paid by private and public payers, the 'fees gap', using data for 2008 and 2010. A natural problem that arises is to quantify the level of market power that LA commissioners have; using principle component analysis we construct a market power index based

on available proxies of LA power. In acquiring estimates of the average fees gap we estimate average self-funded resident fees at the LA-level. In doing so, we take into account NHS-funded nursing care payments, out-of-area placements (one LA funding a resident in a care home located in another LA), outlier costs, LA-funded resident proportions, and missing price data.

The rest of the paper is organised as follows. Section 2 outlines the conceptual model that frames the empirical analysis, section 3 describes the data and empirical approach, section 4 presents the results, and section 5 provides a discussion of the findings.

Conceptual model

The English care homes market for older people consists of around 10,000 independent sector (for- and not-for-profit) care homes. As described above, the care homes market consists of two distinct demand streams, self-funded and LA-funded residents.[2] For the period examined in this work, 2008-2010, qualifying for LA-funding depended on being able to meet eligibility criteria for both needs and financial assets. Placement decisions were made by a social worker or care manager, and, in theory, as long as the placement was within the 'usual price' that the LA was willing to pay, LA-funded residents had a choice over which homes they preferred.[3].

Self-funders in residential care are either those that do not qualify for LA-funded care based on needs or financial eligibility, or those that choose to not ask for help from their LA when it comes to funding residential care (Forder, 2007). Often, care

managers and/or social workers will be involved in their decision, and full assessments will have taken place (Netten and Darton, 2003).

There is no regulation of prices in the English care homes market (Forder and Allan, 2011). Pricing decisions in the market will therefore depend on the power that each player in the purchasing decision has. Care homes are likely to have considerable levels of market power over individual self-funders. This is primarily because the decision to move into a care home is usually a 'distressed purchase' where a decision on which care home to choose has to be made quickly due to a change in circumstances (usually a deterioration in health). In addition, there is an asymmetry of information; an individual will typically only make this purchase once and they will commonly only decide between a few care homes (Netten and Darton, 2003). Evidence from UK and US studies do suggest that care homes have at least some market power and that potential residents are sensitive to price (Nyman, 1989; Forder, 2000; Mukamel and Spector, 2002).

Despite certain levels of market power existing for care homes, anecdotal evidence relating to the English care homes sector suggests that margins are very tight. A reason for this is that LAs, as the major buyer of care home places in most local care homes markets, are likely to exert strong levels of market power over care homes. This will come from both a supply side effect and a demand side effect. Where supply is strong this is likely to increase competition for LA-funded residents and so LAs can 'play-off' the care homes driving down the price they pay. Forder and Allan (2014) showed that increased competition reduced quality in the English care homes market but that the effect worked through price – which is consistent with

LA market power. The market power gained from demand relates to the level of LA-funded residents in a local market, i.e. the greater their level in a local market the more reliant will care homes in that market be on the LA.

If the fee paid by a local authority was below the (marginal) cost of a placement, then a care home would have to cross-subsidise by charging self-funding residents higher prices (Hancock and Hviid, 2010). A study funded by the Joseph Rowntree Foundation concluded that most public sector commissioning bodies did not pay fees at levels that were adequate to support and sustain a care home sector that met all of the National Minimum Standards (Laing, 2008). Laing (2015) found for twelve English counties that fees were 43 per cent higher on average for self-funders than LA-funded residents within the same care home for the same type of room. However, given that many care homes are predominantly, or totally, reliant on LA-funded residents it would be unrealistic to assume that all LAs pay fees below marginal cost. An OFT (2005) study of the care homes market found that around 20 per cent of care homes charged self-funded residents more than LA-funded residents for similar conditions of care.

A similar price differential is found in the US nursing home market, where public (Medicaid) pay rates are around 70 per cent of private pay rates (Mukamel and Spector, 2002; Grabowski, 2004). Troyer (2002) found that Medicaid residents in Florida nursing homes were cheaper to care for than self-funded residents, and there was also evidence that for a large minority of homes Medicaid rates were below the level necessary to cover costs of care and that self-payer rates were higher than necessary. For these cross-subsidising homes the self-funder rates were

higher because of an inter-temporal premium, i.e. to cover the potential spend down of assets to qualify for (unprofitable) Medicaid coverage.

Whilst direct observation of prices in England confirms significant price dispersal and differentiation between LA-funded and self-funded residents, it is less clear whether there is actual cross-subsidisation, and to what extent. Indeed, there are other reasons that could explain these pricing patterns. First, as outlined above, the observed price differentiation could be explained by care homes exercising their market power through price discrimination for the same quality product. The distinction between LA-funded and self-funded residents does make this plausible.

A high level of market power would be required to maintain prices above marginal costs. This level of market power could exist in the care homes market since potential residents, in particular self-funders, have limited information about service provision, prices and quality of care homes and acquiring information often includes significant (transaction) costs. Theoretically it has been shown that large information asymmetries and costly information, which can be in the form of search costs, can lead to markets failing (the lemon's principle), or, more likely, to prices above competitive levels (Akerlof, 1970; Stiglitz, 1979; Diamond, 1971; Salop, 1976; Salop and Stiglitz, 1977; Salop, 1977).

Second, there could be vertical quality differentiation where self-funders express a greater preference for quality and thus could be paying for a better quality product, even in the same care home. Places with higher quality would have higher (marginal) costs, and so observed price differences could still be explained even with prices set at marginal cost.

A number of theoretical analyses outline the conditions under which a (Nash) equilibrium with vertical differentiation can be sustained with the firm(s) setting prices above marginal cost, particularly for the higher-quality products in the market (Shaked and Sutton, 1982; Shaked and Sutton, 1983; Gal-Or, 1983; De Fraja, 1993; Mussa and Rosen, 1978; Srinagesh and Bradburd, 1989). Nonetheless, with free market entry, variable costs that rise with quality and significant heterogeneity of preferences for quality (given price) among consumers, price (Bertrand) competition will lead to markets that are characterised by a range of qualities and prices at marginal costs.

Third, the existence of economies of scale at the home and group level might also account for price differentials. In particular, price discounts for 'bulk purchase' by LAs may exist, either for care homes to reach optimal scales of operation or as a way of dealing with uncertainty about local demand (occupancy rates). If economies of scale are significant, incumbent providers can sustain cross-subsidisation between LA and self-funded clients making close to normal profit levels overall. Where the market for self-funders is relatively small locally, new entrants would not be able to undercut the price mark-ups made on self-funder clients because they cannot achieve economies of scale without LA-funded residents (providers are unlikely to achieve optimal size by just focusing on self-funders).

LA-funded residents, still the majority source of placements, are usually seen by care homes as the core clientele. This may change in time as self-funding is becoming more prevalent.[4] Indeed, some care home groups (e.g. Barchester

Healthcare and Sunrise Assisted Living) are solely aimed at the self-pay market, although these homes provide highly differentiated, high quality services. They also tend to locate in the most affluent areas (Laing & Buisson, 2012). Other big providers, such as Bupa Care Homes, have a largely representative mix of LA-funded and self-funded residents.

This discussion has identified four potential drivers that could explain differences between LA-funded and self-funded prices: market power of care homes i.e. competition; market power of LAs; quality differentiation; and economies of scale. The empirical analyses that follows assesses the effects of each of these on the price differences between the average LA-funded and self-funded price at the LA-level. Our expectations, *a priori*, are that:

1) That the effect of an increase in competition in a local care homes market will be a fall in both LA-funded and self-funded prices, and therefore the effect on the price difference is ambiguous. However, we might expect that competition will have a stronger negative effect on self-funded prices since mark-ups are likely to be higher in the self-funded sector of the market.

2) That an increase in LA market power will increase the gap in fees paid by self-funded and LA-funded residents.

3) That the effect of quality on price differences is ambiguous due to the endogenous nature of the quality decision in the pricing decision. We might expect differences in quality to increase the fees gap since self-funders are likely to value quality to a greater extent.

4) That the greater is the number of residents required to minimise costs the greater will be the fees gap.

Data and empirical approach

Data

Care home-level data is taken from a panel of all care homes in England and then averaged at the LA-level. Broadly, the panel was created from matching the CQC register of care homes for May 2008 and September 2010 to price data from Laing & Buisson.[5] The Laing & Buisson prices directory contains minimum and maximum prices per week by room type (single and other) and client-type (nursing or residential). A blended (mean) price was constructed by taking the average of minimum and maximum price for the service (client and room) types available in the home. Information on the number of beds of each type for each home was not available, only whether or not the service was provided.

Both the costs to, and number of funded residents by, LAs were obtained from council-level unit costs reports available from the Health and Social Care Information Centre (now NHS Digital). Data on LA-level characteristics were obtained from the Office for National Statistics.

Estimating LA-level average self-funder price

A natural estimate of the average self-funded price can be calculated with knowledge of the average price of a care home place and the average LA-funded resident cost. In particular, we assume that the observed (average) price (per week) for a place in an independent care home is a function of the cost (price) per LA-funded resident located in the LA and the price per self-funded resident:

$$P_j = n_j P_j^{LA} + (1 - n_j) P_j^{SF} \tag{1}$$

Where P_j is the (average) care home price, P_j^{LA} is the (average) cost per LA-funded resident located in the Local Authority, n_j is the proportion of residents funded by (any) LAs in LA j, and P_j^{SF} is the (average) price of a self-funded place.

Rearranging, the (average) self-funder price per week for LA j is equal to:

$$P_j^{SF} = \frac{P_j - n_j P_j^{LA}}{(1 - n_j)} \tag{2}$$

We attempt to estimate self-funder prices for 150 LAs for 2008 and 2010.[6] The details of the estimation process, and the estimated values, of self-funded prices by LA are presented in the Appendix, along with the average and regional average costs per LA-funded resident.

There were a number of issues that arose when estimating average self-funder prices at the LA-level, and therefore the estimated fees-gap as a consequence. First, a number of LAs (ten LA observations across the two years for eight LAs) had an estimated proportion of LA-funded residents over 1, suggesting that there would be no market for self-funded residents in these LAs. As a result, we exclude these LA observations from the analysis.

Second, a number of the estimated average self-funded price for the remaining LAs were clearly not plausible. This was for a number of reasons: where the average cost per LA-funded resident is (much) higher than the average price of a care home place then the estimated self-funded price will be (extremely) low; where there are a (very) high proportion of LA-funded residents in the LA then the estimated self-

funded price will be (extremely) high; and a combination of higher (lower) average cost per LA-funded resident than average price and a high proportion of LA-funded residents will push the estimated self-funded price down (up).

We attempted to resolve some of these issues in two ways: first, average regional costs were used in place of LA-level average costs: and second, we trimmed the proportion of residents that are LA-funded, n_j, to the 95th (5th) percentile for those LAs with high (low) n_j.

Estimating LA-level average fees gap

Even with the changes outlined above, a number of the estimated self-funder prices were still clearly incorrect. Therefore, for those LAs where we believe there is a market for self-funded residents but where the estimated self-funder price seems unrealistic the fees gap is in effect 'missing'. We could assume that the missing data is entirely random. However, we can use multiple imputation (MI) to ignore the exact process that led the data to be missing. We impute an adjusted fees gap for those LAs with n_j above (below) the 90th (10th) percentile and for those LAs that had greater than 20 per cent of care homes not reporting any price data (which could influence the observed average price, and hence cause the issues outlined in section 3.2, particularly for LAs with relatively few homes).[7]

LA market power index

There is no definitive measure of the market power that LA commissioners have. We attempt to measure this by creating a categorical variable to identify the level of market power each LA has. We performed principal component analysis (PCA) on three variables that can be used as proxies of market power: the total number of

care homes in the LA; the proportion of care homes that are not part of a care home group (a chain of three or more homes); and the proportion of the older population that claim pension credit.[8] We believe that as each of these increase so the market power for LA commissioners increase.[9]

The results of the PCA are presented in Table 1. The first principal component accounts for 61 per cent of the total variation in the data, with an eigenvalue of 1.82, and mainly measures the overall size (and composition) of the local care homes market, contrasting it with pension credit uptake (a proxy for income levels). The second principal component mainly measures income levels and the composition of the supply side of the market once market size has been accounted for, and accounts for 24 per cent of the variation. A third principal component explains 16 per cent of the variation of the data. Using Kaiser's rule we retain only the first principal component as it is the only component with an eigenvalue greater than one. Component scores for each LA are then estimated and we created a LA power index using the component score to separate LAs equally out in to low, medium and high market power groups.

<Insert Table 1 about here>

Descriptive statistics
Descriptive statistics are presented in Tables 2 and 3 for the final sample of LAs for 2008 and 2010. Table 2 shows the various per week fees gaps between the average price paid by self-funded residents and LA-funded residents, respectively. The basic fees-gap is measured as the difference between the estimated basic, unadjusted, self-pay price and the average cost paid by LAs for a place in a care home provided

by others (corrected for out-of-area placements). The adjusted fees gap is the difference between the adjusted self-pay price (where n_j is trimmed, regional average LA cost and predicted average price are used as discussed above) and the regional average cost paid for a place in a care home provided by others. This is our preferred measure of the price difference.

As robustness checks three other measures of the fees gap are included: where the adjusted average self-funded price is estimated based on 85 per cent or 95 per cent occupancy rates; and where we assume that self-funded residents and LA-funded residents pay the average maximum and minimum price observed in each LA, respectively (assuming a 90 per cent occupancy rate, as the basic and adjusted fees gaps do). The non-imputed data show a range for the average (per week) fees gap of £170 to £196, with the preferred, adjusted, fees gap being £180. For the imputed data the same figures are £147 to £176 and £162, respectively.

The variables used to explain the economic factors are: for care home competitiveness the average level of LA competition as measured by a 10-km distance- and time-weighted HHI for each care home in the LA[10] (an inverse measure of competition, HHI = 0 implying perfect competition and HHI = 1 implying monopoly); for LA market power the LA power index, with 1 representing low power and 3 high power; for the quality effect the percent of homes rated as excellent in the LA[11]; and for economies of scale the average size of care homes in each LA.

The additional control variables are: the percentage of the total population that are over state pension age (as a measure of demand); the percentage of the older

population claiming attendance allowance (as a measure of needs); the percentage of care homes in the LA which are primarily aimed at clients with dementia, that are nursing homes and are in the voluntary sector, respectively; and then two dummy variables to indicate whether the LA was a London borough and whether the observation came from 2010.

<Insert Table 2 about here>

<Insert Table 3 about here>

Empirical specification

From the conceptual framework outlined in section 2 we can estimate the following model of the fees gap:

$$FG_{jw} \left(= p^{SF} - p^{LA}\right) = FG_{jw}\left(N_{jw}, X_{jw}, q_{jw}, B_{jw}, \sigma_{jw}\right) + \delta_j + \epsilon_{jw} \qquad (3)$$

Where FG is the fees gap for LA j ($j = 1,2, \dots, 150$) in wave w ($w = 1, 2$), which is the difference between the average self-funder price and the average LA-funded price, and this is a function of competition, N, LA market power, X, quality, q, economies of scale, B, and σ, which is a vector of market related characteristics (demand, needs levels, etc.). δ_j is a time-invariant, LA-specific, error term and ϵ_{jw} the classical disturbance, both assumed to have mean and variance of zero, and the latter error term is assumed to be uncorrelated with the time-invariant error term and the regressors of interest. Initially we estimate equation (3) using OLS, therefore assuming that the error terms are not correlated over time. We then

estimate the model using random effects GLS to allow for the panel nature of the data.

We estimate models on both the imputed and non-imputed (casewise deletion) data, the latter for comparison. Estimations on the imputed data set used Rubin's rules to calculate coefficients and standard errors and were undertaken using the multiple imputation (MI) suite of commands available in Stata 13.

Our hypotheses suggest that following relationships will be found: $\frac{\partial FG}{\partial N} < 0, \frac{\partial FG}{\partial X} > 0, \frac{\partial FG}{\partial q} > 0$, and $\frac{\partial FG}{\partial B} > 0$.

Results

Main findings

Results of the estimation of equation (3) by using the non-'missing' data are presented in Table 4, whilst the results using data drawn from multiple imputation are presented in Table 5. Standard errors in the results from Table 4 are bootstrapped (500 reps), and in all estimations (Tables 4 and 5) standard errors allow for correlation between observations from the same LA. In Table 4 the OLS cross section results for the basic and adjusted fees gap are presented in columns 1 and 2, whilst columns 3 and 4 present random effects GLS for the basic and adjusted fees gap, respectively. The Breusch-Pagan test of the null hypothesis that there are no random effects present in the model is rejected, whilst the Hausman test confirms that the random effects model outlined in equation (3) is correctly specified. The results show that competition strongly reduces the fees gap (given the inverse measuring of competition from HHI) and also provide some indication

that LA market power increases the fees gap (although noting the opposite result when looking at the raw, unadjusted fees gap).

The results of Table 4 could be due to the large level of missing observations. Therefore Table 5 presents estimations of random effects GLS using multiple imputation (20 imputations). Each of the columns presents the results using different dependent variables: 5 the basic fees gap; 6 the adjusted; 7 and 8 adjusted assuming 85 per cent and 95 per cent occupancy, respectively; and 9 adjusted using minimum and maximum prices for LA-funded and self-funded residents, respectively.

We test for the significance of random effects in MI regressions by applying the Breusch-Pagan test for random effects on each imputation. Irrespective of the fees-gap estimated, for all 20 imputations the null hypothesis of the B-P test was rejected (all at the 1 per cent level) suggesting panel effects are very important in the model.

Our preferred specification are the results in column 6. Looking at these, it is clear that competition plays a very important role in the fees gap: at the means, a 1 per cent increase in competition would decrease the fees gap by £37 per week. LA market power has a positive effect on the fees gap: a LA that has high market power has a fees gap that is £40 per week higher than other LAs with less market power. No significant effect on the fees gap was found for average care home size, but quality does have a small, significant positive effect on the fees gap: a one percentage point rise in the number of homes rated as excellent would increase the fees gap by £1.74 per week.

Looking at the other variables included in the model, increases in demand and needs both significantly reduce the fees gap to a large extent, whilst increased prevalence of nursing homes and not-for-profit homes significantly increases the fees gap. Finally, there is also a significant positive year effect with the fees gap being £36 per week higher in 2010 compared to 2008.

Most of these results are robust to changes in the fees gap that is analysed. However, the positive effect of LA market power is not significant when looking at the basic fees gap in column 5. There is also some suggestion that random effects are not consistent for columns 8 and 9, perhaps giving some indication of an issue with endogeneity.

<Insert Table 4 about here>

<Insert Table 5 about here>

Interaction between competition and LA market power

We also interacted competition and LA market power (where low and medium market power LAs are combined together) using the adjusted fees gap model in column 6. These results (not presented in full) do not change compared to those in Table 5 with the same significant results found. Of particular interest are the marginal effects of LA market power given competition, and *vice versa*. These are presented in Table 6. The first column shows that the effect on the fees gap of high LA market power rises as competition increases (i.e. as HHI decreases). Indeed, the results suggest that for LAs with low levels of competition high LA market power has no discernable impact on the fees gap. The results from the second column suggest that the effect of competition on the fees gap is only significant with low or

medium LA market power. However, a chi-squared test of equality finds that the difference of the competitive effect on the fees gap for differing levels of LA market power is not significant ($\rho = 0.15$).

<Insert Table 6 about here>

Specification checks

We performed a number of specification checks. First, there could be misspecification of the data if we have incorrectly assumed that the fees gap cannot be negative in value. However, a random effects Tobit, with the fees gap censored at zero, does not alter the results. Second, including the excluded LA observations in the analysis, and thus assuming that there is a self-funder portion of the market in these LAs, also does not change the results.

Third, the index of LA market power is highly correlated with the measure of competition. This is likely to be the case given the nature of the problem examined, but this could affect the results. An uncorrelated measure of LA market power, a ranking based on the percentage of all schools rated as good or excellent in an LA (so assuming that good LA performance in one area is indicative of better performance in others), was used as an alternative but no significant effect was found.

Discussion

The extent of the gap in fees paid by LA-funded and self-funded residents is well known and is mainly attributed to the dominant purchasing power of LAs. However, there is no existing evidence of average self-funded fees paid at the LA-level and subsequently nor do any reasons as to what causes the gap in fees paid by self-

funded and for LA-funded residents. This analysis presents the first attempt to do so. We estimated the average self-funded fee for an LA for 2008 and 2010 using data on average (weekly) resident price and average (weekly) LA-funded resident cost. We then assessed the causes of the fees gap between self-funded and LA-funded resident fees.

The estimates for average (weekly) self-funded price have controlled for out-of-area placements, nursing care contributions, missing price data, and high proportions of LA-funded residents in an LA. Nevertheless the estimates will only be as good as the data used and a number of simplifying assumptions were made. For example, we have used data for 2009 out-of-area placements, and so have assumed that out-of-area placements were exactly the same over the period 2008-2010. A more likely concern is that LA-cost data may be skewed by the inclusion (or exclusion) of overhead costs which differ amongst LAs. The use of regional average LA-cost fees in our preferred self-funded fees estimates are hoped to solve at least some of this problem.

Taking the data limitations into account, we find that LA market power significantly increases the fees gap for those LAs with the highest market power. The size of the effect on the fees gap is estimated to be around £40 per week, or 28 per cent of the mean weekly fees gap. Results of interactions between LA market power and competition show that this effect is mitigated when the level of competition in the local market is weak. This is indicative of LA market power being generated from the supply side of the market (care homes competing for LA-funded residents) rather than the demand side (the ratio of LA-funded to self-funded residents).

Nonetheless, the fees gap will persist in a healthy, competitive, local market because of the market power of LAs.

Care home market power is also extremely important in explaining the fees gap. We find a negative effect of competition on the fees gap suggesting, in absolute terms, that the impact of increased competition is more strongly felt on self-funder fees than LA-funded fees. It is likely that information asymmetries allow care homes to employ price discrimination. A potential alternative explanation for this finding is that care homes are 'pushed', at least to some extent, into using their market power to extract rents because LA market power is so strong. In other words, there is a 'knock-on' effect on the fees gap of LA market power as well as, or instead of, price discrimination. Potentially this could be the case since many care home providers care more about the quality of service they provide and the outcomes of their residents as opposed to pure profit-making (Kendall, 2001; Knapp *et al.*, 2001; Matosevic *et al.*, 2008). However, the inclusion of an interaction between competition and LA market power showed some indication that the impact of care home market power on the fees gap depends on a lack of LA market power which weakens the veracity of this argument.

Our results also found a small positive effect of quality on the fees gap. Using our preferred specification, the fees gap for an LA with the 75th percentile of excellent rated homes (22.9 per cent) would be just over £23 a week higher than an LA with the 25th percentile of excellent rated homes (9.6 per cent).

Increases in demand, either from a larger population base or greater needs, reduces the fees-gap; this suggests that self-funded fees are more responsive to

changes in market conditions than fees that are LA-funded. Our measure of economies of scale, average care home size, did not increase the fees gap. However, larger proportions of nursing homes did increase the fees gap. This is found in spite of controlling for weekly nursing care payments and so could potentially be capturing an economies of scale effect as nursing homes tend to be larger on average than residential care homes (Laing & Buisson, 2012). We additionally found that larger numbers of voluntary sector homes increase the fees gap. This is unsurprising given that the voluntary sector generally have higher costs and a greater level of quality (Grabowski and Hirth, 2003; Mukamel *et al.*, 2005; Forder and Allan, 2014).

We also find a significant increase in the fees gap over time, even after controlling for inflation. There are a few potential competing theories as to what this is capturing. The first is that it is capturing the squeeze on LA expenditure and number of residents supported at this time (Fernandez and Snell, 2012; Fernandez *et al.*, 2013)**.** An alternative to this is that care homes used their market power to charge self-funded residents more, or some combination of the two. A third alternative is that it is capturing a quality effect from the availability of quality ratings, which were first made publicly available in May 2008 and so the market adapted to their availability by 2010. A fourth alternative is that an economies of scale effect is being captured, with care homes potentially becoming increasingly concerned with making sure they optimise resident levels as the economic conditions deteriorated so greatly at this time.

These results shed light on the implications that the government austerity

programme has had for local care homes markets. Funding reductions to local

government have resulted in LAs using their market power to reduce, or not raise,

the fees paid to providers, further adding to financial pressures that care homes are

facing. To the extent that care homes have market power over the private segment

of the market has further led to increases to self-funders' fees and a polarisation of

services in local markets (Humphries et al., 2016). The viability of care home supply

also becomes a concern, particularly in relatively poorer areas where there are

larger numbers of LA-funded residents (County Councils Network and LaingBuisson,

2015).

Reforms to social care funding were included in the Care Act 2014, but were

subsequently postponed until April 2020 (Department of Health, 2015). Included in

the reforms were a 'cap' on care costs and an increase in the means-test threshold.

Any reforms to the funding of social care that include these measures could lead to

an increased cost of residential care to the public purse. The result of these changes

would be the increased bargaining power of local authorities as more people qualify

for public support (Hancock et al., 2013). Given the former, LAs would likely to be

increasingly squeezed on reducing costs for residential care; given the latter, LAs

could be able to push down the price they pay for placements even further.

There are a number of weaknesses to this analysis. The data limitations have

already been outlined and specification checks have addressed some potential

problems. However, a further issue that we have not resolved fully is endogeneity;

the price paid by the LA to support a resident or by self-funded residents affects

quality and competition levels in the local market. Future work could attempt to resolve this issue with the use of instruments for competition and quality. However, finding effective instruments that affect competition and quality but not price is likely to prove difficult at such an aggregated level of data.

A potentially more prudent route for future work would be to use price and other data from a sample of care homes and examine market power at the care home level. However, examining LA power at this level may prove difficult with a sample of care homes from (potentially) only a handful of LAs.

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[1] Gross spending by LAs on social care has fallen by 9 per cent in real terms between 2009/10 and 2014/15 as a result of reduced central government funding (Humphries et al., 2016).

[2] A third, minor, stream, consists of wholly NHS-funded residents who meet continuing care criteria. This stream accounts for around 8 per cent of all placements. We ignore this demand stream since pricing decisions will be based not just on care homes markets but also on hospital markets as local CCGs pay for continuing care. However, the implications of these placements on the prices estimated is considered in the analysis that follows.

[3] If the price of a care home place was greater than the 'usual' price a third party was required to pay the appropriate top-up, usually a relative.

[4] However, self-funding residents also include those who have assets just above the means-test threshold, and this latter group will not want to, or necessarily be able to, pay high fees. Also, LA-funded residents can have their fees topped up by a third party.

[5] See Allan and Forder (2015) for details on the matching process within and between years.

[6] We excluded City of London as it had no care homes and amalgamated the Isles of Scilly with Cornwall.

[7] We used the pairwise matching method (pmm) for 20 imputations using the following variables: percentage of the population that is above state pension age, total care home places, average LA cost, the percentage of homes rated with an excellent rating, the average size of a care home, pension credit uptake, attendance allowance uptake, the average LA care home place price, a dummy variable indicating if the LA was a London borough, and the percentage of homes in each LA that were nursing homes, in the voluntary sector and have residents with dementia as their primary clients, respectively. The data were imputed across the two waves with a wave dummy included in the imputation model.

[8] We performed a Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy with the data demonstrating a value of 0.629. This suggests the data had a mediocre level of common variance but was suitable for PCA.

[9] The two waves of data are used together for the PCA. All the variables included were normalised to have a mean of 0 and variance of 1.

[10] For an explanation of this measure of HHI, see Forder and Allan (2014).

[11] Care homes were rated by the CQC during this period and could attain a rating of poor, adequate, good or excellent.

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Table 1: PCA of LA market power indicators

Variables	PC1	PC2	PC3
Non-CHG (%)	0.574	0.596	-0.561
Total LA homes	0.622	0.128	0.772
Pension Credit (%)	-0.532	0.793	0.298
Eigenvalue	1.82	0.70	0.48
Variance Explained	60.57%	23.50%	15.93%

Table 2: Fees gaps ($(P^{SF} - P^{LA})$, £s per week)

Local Authorities	n	Mean	S.D.	Min	5th pc	Median	95th pc	Max
Non-imputed data								
Basic	138	195.51	139.88	15.21	29.33	177.13	517.09	711.11
Adjusted	136	180.37	143.41	0.24	16.36	145.34	461.68	805.05
Adjusted (85% Occ.)	136	193.79	155.10	0.27	17.72	156.69	510.18	852.46
Adjusted (95% Occ.)	136	170.05	134.72	0.22	15.33	137.99	437.87	766.88
Adjusted (min/max)	133	173.48	138.20	3.55	18.75	142.48	445.07	823.68
Imputed data								
Basic	5,800	162.14	146.33	15.21	15.21	117.01	516.50	711.11
Adjusted	5,800	162.42	146.51	0.24	7.54	110.08	459.23	805.05
Adjusted (85% Occ.)	5,800	176.43	156.97	0.27	8.06	115.57	485.70	852.46
Adjusted (95% Occ.)	5,800	151.90	139.09	0.22	0.22	103.26	437.87	766.88
Adjusted (min/max)	5,800	147.32	140.51	3.55	8.83	103.79	445.07	823.68

Table 3: Independent variables

Local Authorities (n=290)	Mean	S.D	Min	Max
Economic factors				
Average Competition (HHI)	0.038	0.030	0.010	0.183
LA power index	2.03	0.81	1	3
Quality (Excellent %)	17.27	11.10	0	62.5
Average care home size	38.69	9.12	25.06	99.75
Control factors				
Older population (%)	18.78	4.01	7.97	29.97
Attendance Allowance (%)	13.61	2.41	7.02	20.28
Primary client: Dementia (%)	15.03	8.80	0	50
Nursing home (%)	40.12	14.73	8.20	100
Voluntary sector (%)	14.71	12.35	0	75
London (Yes = 1)	0.19	0.39	0	1
Year	0.51	0.50	0	1

Table 4: Results using non-imputed data

	1 Basic CS		2 Adjusted CS		3 Basic RE		4 Adjusted RE	
	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
Economic factors								
Average Competition (Log HHI)	70.88***	24.71	61.13***	22.71	80.48***	24.92	72.48***	20.91
LA power index: Low	61.98**	31.05	21.62	29.62	56.29*	31.68	17.37	25.84
LA power index: High	40.78	29.42	44.34**	20.62	38.08	27.81	33.12*	19.20
Quality (Excellent %)	0.468	1.266	1.359	0.984	0.958	1.208	1.621	1.017
Average care home size	0.457	1.965	1.715	1.743	0.284	1.933	1.518	1.636
Control factors								
Older population (%)	-13.37***	4.594	-18.92***	3.237	-14.50***	4.045	-19.58***	3.396
Attendance Allowance (%)	-8.114	7.714	-15.92***	5.663	-4.803	7.473	-13.19**	5.419
Primary client: Dementia (%)	1.034	1.745	1.483	1.390	0.953	1.669	1.385	1.555
Nursing home (%)	0.238	1.007	1.052	0.888	0.499	1.047	0.892	0.867
Voluntary sector (%)	0.221	1.242	3.791***	0.907	-0.223	1.257	3.616***	0.934
London (Yes = 1)	87.38**	39.70	16.17	29.09	90.37**	40.01	19.78	30.06
Year	61.53***	18.19	59.19***	14.23	63.36***	18.52	57.55***	14.97
Constant	658.95***	150.38	678.67***	120.90	664.87***	125.35	713.88***	121.31
N (clusters)	138 (105)		136 (99)		138 (105)		136 (99)	
R²	0.445		0.678		0.439		0.674	
Wald					100.46***		143.48***	
Breusch-Pagan					9.09***		2.76**	
Hausman					12.73^NS		11.73^NS	

NS, *, **, and *** indicates not significant and significance at the 10%, 5% and 1% levels, respectively. Standard errors control for clustering within LAs.

Table 5: Results using multiple imputation

	5 Basic RE		6 Adjusted RE		7 Adjusted RE (85% Occ.)		8 Adjusted RE (95% Occ.)		9 Adjusted RE (min/max)	
	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
Economic factors										
Average Competition (Log HHI)	48.56***	16.27	37.35***	14.44	42.67***	16.01	36.86***	13.68	29.57**	14.12
LA power index: Low	4.64	18.66	7.00	15.68	5.63	17.71	4.71	15.02	-0.44	15.32
LA power index: High	30.21	19.89	39.94**	17.00	39.97**	17.73	38.29**	16.42	46.58***	17.83
Quality (Excellent %)	2.056**	1.039	1.736**	0.772	1.718*	0.912	1.625**	0.780	2.142**	0.863
Average care home size	-0.297	1.698	0.986	1.289	1.252	1.326	0.715	1.168	0.020	1.242
Control factors										
Older population (%)	-15.08***	3.09	-14.54***	2.71	-16.11***	2.83	-13.57***	2.61	-12.32***	2.76
Attendance Allowance (%)	-15.56***	4.70	-18.66***	4.19	-19.06***	4.61	-18.02***	4.07	-20.79***	4.08
Primary client: Dementia (%)	0.822	1.153	0.931	1.029	1.230	1.093	0.784	0.952	-0.932	0.991
Nursing home (%)	0.880	1.005	2.088**	0.928	2.175**	0.947	2.066**	0.928	2.431***	0.870
Voluntary sector (%)	-0.759	0.939	2.095**	0.841	2.386**	1.006	2.028***	0.751	1.747*	0.901
London (Yes = 1)	67.55**	30.30	21.98	27.55	22.56	29.83	22.42	27.25	15.51	26.65
Year	44.75***	12.88	36.08***	10.55	35.48***	10.78	37.92***	9.55	50.59***	9.70
Constant	718.91***	116.10	585.34***	88.36	631.36***	95.75	562.83***	84.20	573.66***	77.75
N (clusters)	290 (148)		290 (148)		290 (148)		290 (148)		290 (148)	
Imputations	20		20		20		20		20	
Average RVI	0.125		0.366		0.340		0.305		0.373	
Largest FMI	0.182		0.393		0.397		0.337		0.432	
Hausman	11.30[NS]		16.71[NS]		11.99[NS]		20.25**		17.47*	

[NS], *, **, and *** indicates not significant and significance at the 10%, 5% and 1% levels, respectively. Standard errors control for clustering within LAs.

Table 6: Marginal effects

	LA market power (High)			Competition (Log HHI)		
Competition (Log HHI)	Coefficient	S.E.	**LA Market Power**	Coefficient	S.E.
Mean	39.17**	16.96	Low/Medium	46.98***	16.50
5th percentile	58.75**	27.55	High	24.33	19.32
25th percentile	50.41**	21.60			
Median	42.74**	17.83			
75th percentile	28.32	18.70			
95th percentile	12.86	28.93			

[NS], *, **, and *** indicates not significant and significance at the 10%, 5% and 1% levels, respectively.

Appendix

From equation (2) we know that the (average) self-funder price for LA j is equal to:

$$P_j^{SF} = \frac{P_j - n_j P_j^{LA}}{(1 - n_j)} \qquad (A1)$$

Estimating n_j is not straightforward. This is for two reasons. The first is that we need to know the total number of residents in care homes to be able to work out the proportion of residents that are LA-funded. The second is that LA-funded residents may be funded by one LA but located in another (out-of-area placements). The proportion of LA-funded residents located in LA j is therefore calculated as:

$$n_j = \frac{\sum_{i=1}^{z} N_i^j}{\delta B_j} \qquad (A2)$$

Where N_i^j is the number of LA-funded residents that are funded by LA i and located in LA j, δ is the assumed occupancy rate, and B_j is the total number of places in LA j.

Information on total LA-funded resident numbers was taken from council-level unit costs reports for 2007/08 and 2009/10.[1,2] To find the total number of LA-funded residents in the independent sector for each LA or region we assume that all residents in homes run by the public sector are LA-funded and that these homes have 90% occupancy. We use figures provided by the CQC from 2009 on out-of area placements by each LA to assign LA-funded placements to the LA in which they are actually located.[3]

The proportion of self-funded residents in independent care homes is not known. We therefore use data of the number of residents that are funded by LAs, which, when subtracted away from total places in a LA (weighted by occupancy rates), will leave the number of residents that are self-funded.[4] We assume a 90% occupancy rate in all estimations, but as a sensitivity analysis we also assume 85% and 95% occupancy rates.[5]

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1 In two cases (Manchester and East Sussex) data on resident numbers and costs for 2010-11 are used due to there being no reported average cost for an LA-funded resident for 2009-10.

2 We use 2007/08 and 2009/10 (rather than 2008/09 and 2010/11) resident number and cost data as the date of collection for costs is the 31st March of each financial year and so this data is closest to our price data.

3 Hence, we assume that out-of-area placements remained constant over the period 2008-2010.

4 Note that this does not allow for the small proportion of residents that are funded by the NHS. However, this problem is mitigated somewhat by varying the occupancy rate (although the issue of how wholly NHS-funded places affects the reported prices by care homes in the price data remains). In analysis not presented in the paper, we find that adjusting the occupancy rate to 100% does not markedly change the estimated self-pay price for a LA (except for the few LAs that have the issues described in section 3).

5 At the regional level, regional occupancy rates are adapted from Laing & Buisson (2010), where the regions reported differ slightly from those used in this analysis.

The prices obtained from Laing & Buisson will include both third party top-ups made on top of the price paid by an LA and NHS funded nursing care payments. We are unable to deal with the former in our analysis, but we can attempt to solve the latter issue. We removed NHS funded nursing care payments that a certain proportion of nursing home residents receive using the following process (using 2010 as the example): in 2011/12 PCTs spent £488m on funded nursing care, which suggests that 86,335 placements a year receive a weekly nursing care payment of £108.70. There were 186,601 nursing home places available in 2010. Assuming a 90% occupancy rate in nursing homes, the average weekly funded nursing care payment for every nursing home resident would be £55.88. We subtract this figure from the average price of a nursing home place for each care home.

In addition, again using 2010 as the example, we excluded from the distribution analysis care homes reporting an average price per week over £2000 (n=9) and care homes with an average price below the (initial) 5th percentile of the regional price distribution for nursing and residential homes respectively (n=564). Prices are inflation adjusted to July 2012 terms. Finally, all price distributions are weighted by the size of the care homes (number of beds) so that the data is more representative of resident numbers.

As an additional sensitivity check we also assume that the average price of a care home place is equal to the following:

$$P_j = \alpha_j P_j^{max} + (1 - \alpha_j) P_j^{min} \qquad (A3)$$

Where p^{max} and p^{min} are the average maximum and minimum price observed in each LA for a care home place, respectively. Assuming that $\alpha_j = (1 - n_j)$ and substituting $(A3)$ into $(A1)$ we obtain the following alternative way to estimate the average self-funded price for each LA:

$$P_j^{SF} = \frac{(1 - n_j) P_j^{max} + n_j (P_j^{min} - P_j^{LA})}{(1 - n_j)} \qquad (A4)$$

Average cost per LA-funded resident in the independent sector is measured using the average cost of funding a LA resident in a care home provided by others for 2007/08 and 2009/10 from council-level unit costs reports available from the Health and Social Care Information Centre (now NHS Digital). Costs are inflation adjusted to July 2012 terms. The average cost per LA-funded resident located in LA j needs to be adjusted to reflect the issue of out-of-area placements discussed previously. This is calculated as:

$$P_j^{LA} = \frac{(\sum_{i=1}^{z} P_i^{LA} N_i^j)}{\sum_{i=1}^{z} N_i^j} \qquad (A5)$$

Where P_j^{LA} is the average cost per LA-funded resident in the independent sector for LA j and $(\sum_{i=1}^{z} P_i^{LA} N_i^j)$ is the total cost of LA-funded residents funded by each LA i that are placed in a care home in LA j.[6]

Table A1 presents for 2008 and 2010 by LA both the average and regional average cost per LA-funded resident in (non-LA provided) care homes once inflation and out-of-area placements are taken into account.

Table A2 presents by LA for 2008 and 2010 the basic average self-funded price for a place in a care home per week and the adjusted price, both taking into account inflation and in July 2012 terms. The adjusted price is calculated as follows: first, average regional costs were used in place of LA-level average costs; second, we trimmed the proportion of residents that are LA-funded, n_j, to the 95th (5th) percentile for those LAs with high (low) n_j; finally, a predicted average price was used for LAs with 20% or more of care homes that did not report any price or that had a proportion of LA-funded residents below (above) the 5th (95th) percentile.[7,8]

Table A3 presents the mean average self-funded price for the various estimations over the two waves. The basic average self-funder price is 5.1% higher on average than the adjusted average self-funder price, although the difference is not significant. The mean 85% occupancy rate, 95% occupancy rate, and min/max price estimations are respectively 1.5% higher, 1.0% lower and 3.2% lower than the mean 90% occupancy adjusted price, and for each the difference is significant, although only at the 10% level for the 95% occupancy estimation.

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6 Therefore, the average cost per LA resident will differ from those found in council-level unit cost reports.

7 The log of LA average price was regressed on the log of costs, the proportion of self-funders (assuming a 90% occupancy rate), and the log of average house price. This is estimated for all LAs within the 5th and 95th percentiles of the distribution of the proportion of self-funders and that have more than 80% of care homes with care home price data.

8 This final stage of adjusting the price is not included in the empirical analysis of the fees gap because of the use of multiple imputation for missing fees gaps. As such, the adjusted price here differs from that used to estimate the average fees gap for LAs. The differences in the two estimated adjusted prices are minor (those presented here are 2.2% lower on average than the adjusted price used in the main empirical analysis), but a test of equality is rejected at the 10% level. Using this adjusted price in the initial, non-imputed, fees gap analysis does not markedly affect the results found.

Table A1: Average and regional average cost per LA-funded resident

Local Authority	2008 Average Cost	Regional Average Cost	2010 Average Cost	Regional Average Cost
Barking and Dagenham	£580.89	£591.13	£503.35	£609.26
Barnet	£579.77	£591.13	£617.31	£609.26
Barnsley	£459.09	£415.23	£458.70	£450.66
Bath and North East Somerset	£529.17	£481.33	£503.30	£505.13
Bedford	£526.81	£518.73	£530.99	£523.92
Bexley	£568.81	£591.13	£622.96	£609.26
Birmingham	£455.69	£449.48	£550.21	£493.67
Blackburn with Darwen	£460.19	£436.76	£461.48	£453.77
Blackpool	£406.16	£436.76	£403.41	£453.77
Bolton	£422.29	£436.76	£424.93	£453.77
Bournemouth	£507.85	£481.33	£520.65	£505.13
Bracknell Forest	£589.07	£505.64	£565.03	£539.41
Bradford	£424.68	£415.23	£498.08	£450.66
Brent	£529.16	£591.13	£790.61	£609.26
Brighton and Hove	£577.63	£505.64	£554.46	£539.41
Bristol, City of	£562.48	£481.33	£554.06	£505.13
Bromley	£570.60	£591.13	£611.53	£609.26
Buckinghamshire	£572.62	£505.64	£631.51	£539.41
Bury	£533.80	£436.76	£423.63	£453.77
Calderdale	£413.89	£415.23	£394.15	£450.66
Cambridgeshire	£421.09	£518.73	£479.95	£523.92
Camden	£595.89	£591.13	£657.54	£609.26
Central Bedfordshire	£528.33	£518.73	£545.48	£523.92
Cheshire East	£460.76	£436.76	£439.50	£453.77
Cheshire West & Chester	£461.82	£436.76	£483.85	£453.77
Cornwall & Scilly Isles	£411.98	£481.33	£412.26	£505.13
Coventry	£487.90	£449.48	£461.21	£493.67
Croydon	£506.62	£591.13	£494.45	£609.26
Cumbria	£518.55	£436.76	£511.00	£453.77
Darlington	£434.53	£454.15	£481.18	£504.70
Derby	£432.42	£435.10	£437.78	£444.29
Derbyshire	£465.27	£435.10	£440.40	£444.29
Devon	£462.60	£481.33	£522.67	£505.13
Doncaster	£474.56	£415.23	£421.75	£450.66
Dorset	£516.96	£481.33	£583.92	£505.13
Dudley	£449.85	£449.48	£464.89	£493.67
Durham	£481.43	£454.15	£539.81	£504.70
Ealing	£731.96	£591.13	£578.41	£609.26
East Riding of Yorkshire	£391.77	£415.23	£424.92	£450.66
East Sussex	£426.75	£505.64	£564.70	£539.41
Enfield	£528.44	£591.13	£566.29	£609.26

Local Authority	2008		2010	
	Average Cost	Regional Average Cost	Average Cost	Regional Average Cost
Essex	£578.10	£518.73	£571.13	£523.92
Gateshead	£441.11	£454.15	£543.99	£504.70
Gloucestershire	£481.03	£481.33	£466.72	£505.13
Greenwich	£592.77	£591.13	£640.37	£609.26
Hackney	£579.75	£591.13	£631.70	£609.26
Halton	£403.13	£436.76	£401.50	£453.77
Hammersmith and Fulham	£593.37	£591.13	£626.53	£609.26
Hampshire	£447.80	£505.64	£465.25	£539.41
Haringey	£557.42	£591.13	£549.77	£609.26
Harrow	£585.62	£591.13	£596.96	£609.26
Hartlepool	£460.14	£454.15	£445.79	£504.70
Havering	£541.19	£591.13	£557.88	£609.26
Herefordshire, County of	£526.57	£449.48	£539.25	£493.67
Hertfordshire	£565.67	£518.73	£597.84	£523.92
Hillingdon	£634.70	£591.13	£598.61	£609.26
Hounslow	£619.38	£591.13	£653.25	£609.26
Isle of Wight	£397.29	£505.64	£452.77	£539.41
Islington	£609.95	£591.13	£586.43	£609.26
Kensington and Chelsea	£675.99	£591.13	£802.51	£609.26
Kent	£453.55	£505.64	£471.74	£539.41
Kingston upon Hull, City of	£395.85	£415.23	£418.34	£450.66
Kingston upon Thames	£630.13	£591.13	£610.81	£609.26
Kirklees	£422.91	£415.23	£451.01	£450.66
Knowsley	£418.14	£436.76	£433.27	£453.77
Lambeth	£626.73	£591.13	£648.24	£609.26
Lancashire	£436.83	£436.76	£473.72	£453.77
Leeds	£336.94	£415.23	£467.23	£450.66
Leicester	£395.86	£435.10	£384.20	£444.29
Leicestershire	£415.68	£435.10	£406.15	£444.29
Lewisham	£582.11	£591.13	£594.33	£609.26
Lincolnshire	£452.36	£435.10	£439.93	£444.29
Liverpool	£337.38	£436.76	£370.53	£453.77
Luton	£490.93	£518.73	£532.66	£523.92
Manchester	£422.40	£436.76	£425.57	£453.77
Medway	£458.53	£505.64	£454.01	£539.41
Merton	£529.41	£591.13	£552.92	£609.26
Middlesbrough	£458.57	£454.15	£510.58	£504.70
Milton Keynes	£514.16	£505.64	£497.76	£539.41
Newcastle upon Tyne	£447.54	£454.15	£487.29	£504.70
Newham	£552.62	£591.13	£580.50	£609.26
Norfolk	£389.57	£518.73	£422.43	£523.92

Local Authority	2008		2010	
	Average Cost	Regional Average Cost	Average Cost	Regional Average Cost
North East Lincolnshire	£402.08	£415.23	£522.23	£450.66
North Lincolnshire	£423.72	£415.23	£400.06	£450.66
North Somerset	£482.24	£481.33	£427.26	£505.13
North Tyneside	£413.64	£454.15	£482.33	£504.70
North Yorkshire	£422.32	£415.23	£463.78	£450.66
Northamptonshire	£450.84	£435.10	£515.50	£444.29
Northumberland	£479.65	£454.15	£502.74	£504.70
Nottingham	£382.42	£435.10	£425.19	£444.29
Nottinghamshire	£418.87	£435.10	£431.45	£444.29
Oldham	£369.23	£436.76	£435.76	£453.77
Oxfordshire	£615.58	£505.64	£765.87	£539.41
Peterborough	£430.44	£518.73	£468.99	£523.92
Plymouth	£441.77	£481.33	£475.69	£505.13
Poole	£588.12	£481.33	£634.28	£505.13
Portsmouth	£453.53	£505.64	£456.63	£539.41
Reading	£585.57	£505.64	£566.71	£539.41
Redbridge	£597.43	£591.13	£604.01	£609.26
Redcar and Cleveland	£370.31	£454.15	£517.09	£504.70
Richmond upon Thames	£625.20	£591.13	£644.93	£609.26
Rochdale	£414.69	£436.76	£421.26	£453.77
Rotherham	£466.91	£415.23	£436.33	£450.66
Rutland	£268.30	£435.10	£469.07	£444.29
Salford	£438.95	£436.76	£474.32	£453.77
Sandwell	£451.79	£449.48	£501.32	£493.67
Sefton	£444.64	£436.76	£519.24	£453.77
Sheffield	£430.53	£415.23	£457.54	£450.66
Shropshire	£428.14	£449.48	£480.34	£493.67
Slough	£416.43	£505.64	£523.11	£539.41
Solihull	£447.70	£449.48	£484.68	£493.67
Somerset	£478.53	£481.33	£503.84	£505.13
South Gloucestershire	£606.20	£481.33	£579.06	£505.13
South Tyneside	£429.63	£454.15	£495.53	£504.70
Southampton	£401.04	£505.64	£413.39	£539.41
Southend-on-Sea	£526.89	£518.73	£483.37	£523.92
Southwark	£636.10	£591.13	£684.49	£609.26
St. Helens	£433.35	£436.76	£448.35	£453.77
Staffordshire	£410.62	£449.48	£512.32	£493.67
Stockport	£432.71	£436.76	£444.11	£453.77
Stockton-on-Tees	£453.83	£454.15	£440.74	£504.70
Stoke-on-Trent	£422.49	£449.48	£448.35	£493.67
Suffolk	£599.41	£518.73	£478.06	£523.92
Sunderland	£456.89	£454.15	£512.24	£504.70
Surrey	£600.31	£505.64	£618.14	£539.41

Local Authority	2008 Average Cost	Regional Average Cost	2010 Average Cost	Regional Average Cost
Sutton	£553.86	£591.13	£588.09	£609.26
Swindon	£519.84	£481.33	£512.42	£505.13
Tameside	£461.06	£436.76	£462.82	£453.77
Telford and Wrekin	£468.43	£449.48	£482.71	£493.67
Thurrock	£527.48	£518.73	£561.15	£523.92
Torbay	£396.82	£481.33	£440.65	£505.13
Tower Hamlets	£544.67	£591.13	£561.18	£609.26
Trafford	£426.79	£436.76	£440.84	£453.77
Wakefield	£430.34	£415.23	£435.96	£450.66
Walsall	£443.89	£449.48	£552.36	£493.67
Waltham Forest	£578.41	£591.13	£590.57	£609.26
Wandsworth	£687.27	£591.13	£658.32	£609.26
Warrington	£443.18	£436.76	£494.06	£453.77
Warwickshire	£437.15	£449.48	£479.81	£493.67
West Berkshire	£485.69	£505.64	£471.78	£539.41
West Sussex	£581.09	£505.64	£568.15	£539.41
Westminster	£659.12	£591.13	£767.22	£609.26
Wigan	£440.94	£436.76	£461.00	£453.77
Wiltshire	£496.40	£481.33	£595.61	£505.13
Windsor and Maidenhead	£541.21	£505.64	£540.73	£539.41
Wirral	£516.99	£436.76	£457.76	£453.77
Wokingham	£575.46	£505.64	£640.88	£539.41
Wolverhampton	£438.80	£449.48	£465.39	£493.67
Worcestershire	£481.92	£449.48	£432.94	£493.67
York	£421.54	£415.23	£467.76	£450.66

Table A2: Estimated average (weekly) self-funded resident fees

Local Authority	2008		2010	
	Basic	Adjusted	Basic	Adjusted
Barking and Dagenham*	£649.09	£404.31	£1,136.51	£1,023.34
Barnet	£832.90	£815.99	£871.65	£881.28
Barnsley*+	£300.60	£450.38	£418.97	£430.56
Bath and North East Somerset*	£620.61	£687.71	£752.83	£747.99
Bedford*	£559.97	£541.30	£670.89	£679.26
Bexley*	£505.47	£457.06	£843.26	£872.51
Birmingham*	£559.72	£477.24	£517.24	£591.72
Blackburn with Darwen*+	£382.11	£424.41	£399.25	£407.62
Blackpool*+	£402.66	£374.20	£435.15	£386.38
Bolton	£471.79	£453.12	£520.73	£493.38
Bournemouth*	£647.35	£616.63	£720.04	£729.88
Bracknell Forest	£702.11	£611.54	£799.94	£817.94
Bradford	£581.72	£471.64	£594.41	£632.57
Brent+	N/A	N/A	£756.54	£903.12
Brighton and Hove	£575.80	£672.64	£698.24	£720.11
Bristol, City of*	£506.86	£572.38	£667.15	£704.46
Bromley*	£717.99	£675.92	£889.32	£891.38
Buckinghamshire*	£784.53	£808.29	£805.20	£869.55
Bury*	£362.21	£517.55	£538.28	£510.37
Calderdale*	£489.88	£523.54	£552.47	£507.70
Cambridgeshire*	£740.20	£570.64	£783.88	£735.18
Camden*	£2,077.98	£2,118.79	£1,368.65	£1,414.31
Central Bedfordshire*	£674.14	£603.77	£758.12	£800.45
Cheshire East	£661.16	£681.47	£731.83	£720.84
Cheshire West & Chester	£542.68	£582.46	£642.30	£681.84
Cornwall & Scilly Isles*	£679.05	£615.36	£678.29	£625.84
Coventry	£472.17	£467.41	£648.96	£615.35
Croydon*+	£697.35	£548.09	£822.40	£683.08
Cumbria*+	£458.12	£614.41	£526.76	£555.93
Darlington*+	£405.70	£448.32	£453.35	£475.16
Derby*	£432.46	£476.54	£540.28	£532.14
Derbyshire*+	£388.83	£591.07	£526.21	£523.86
Devon+	£585.70	£556.85	£583.80	£592.90
Doncaster*	£401.20	£473.59	£495.51	£471.46
Dorset*+	£663.83	£741.25	£682.93	£710.50
Dudley*+	£420.89	£482.24	£430.00	£388.80
Durham*	£490.41	£363.62	£476.18	£521.00
Ealing*	£331.16	£678.94	£842.25	£808.21
East Riding of Yorkshire	£493.78	£573.16	£544.13	£507.99
East Sussex+	£635.39	£752.10	£665.57	£681.18
Enfield	£714.16	£565.79	£943.25	£877.08
Essex	£515.46	£601.91	£665.43	£705.63

Gateshead*+	£470.77	£372.92	£431.65	£517.08
Gloucestershire	£679.78	£615.10	£898.10	£861.71
Greenwich*	£718.82	£512.94	£1,016.89	£1,070.94
Hackney+	N/A	N/A	£794.96	£970.20
Halton*+	£411.84	£439.84	£530.85	£408.02
Hammersmith and Fulham*	£1,173.51	£1,056.81	£1,074.50	£1,090.92
Hampshire	£728.11	£871.47	£819.81	£771.30
Haringey	£912.70	£834.81	£960.18	£906.62
Harrow*	£720.85	£664.07	£775.69	£766.43
Hartlepool*+	£334.44	£402.01	£488.77	£413.37
Havering*	£677.81	£521.04	£733.96	£685.65
Herefordshire, County of*	£466.09	£663.64	£577.56	£724.61
Hertfordshire*	£710.93	£653.53	£830.75	£917.70
Hillingdon	£619.94	£589.32	£819.56	£737.52
Hounslow	£1,140.10	£662.73	£1,027.72	£1,068.49
Isle of Wight	£671.86	£545.40	£630.95	£553.29
Islington+	N/A	N/A	£3,643.15	£1,700.13
Kensington and Chelsea*+	£923.47	£1,222.57	£856.82	£1,464.92
Kent	£642.58	£621.30	£745.01	£681.04
Kingston upon Hull, City of*+	£473.01	£211.45	£438.82	£368.60
Kingston upon Thames	£722.95	£686.66	£850.75	£871.80
Kirklees	£496.89	£524.73	£595.14	£595.45
Knowsley*+	£414.99	£373.98	£803.82	£798.23
Lambeth	N/A	N/A	N/A	N/A
Lancashire	£470.66	£603.38	£542.92	£562.29
Leeds*	£784.40	£509.41	£665.45	£678.08
Leicester	£599.05	£451.70	£603.46	£548.03
Leicestershire*	£554.56	£607.50	£627.29	£598.12
Lewisham+	N/A	N/A	£857.46	£953.27
Lincolnshire	£467.57	£507.60	£536.74	£531.87
Liverpool*	£610.21	£213.09	£626.42	£469.11
Luton*	£561.69	£433.71	£790.35	£614.06
Manchester	£503.25	£431.84	£533.39	£500.98
Medway	£662.07	£583.94	£1,076.48	£836.32
Merton*+	£894.68	£733.30	£993.17	£961.27
Middlesbrough*+	£397.47	£395.46	£427.45	£432.76
Milton Keynes*	£749.49	£531.89	£923.12	£888.08
Newcastle upon Tyne*+	£437.92	£459.14	£447.12	£424.52
Newham*+	£1,111.48	£269.51	£748.65	£719.86
Norfolk*	£578.91	£599.49	£688.95	£602.32
North East Lincolnshire+	£437.98	£415.48	£372.79	£434.74
North Lincolnshire*+	£389.37	£395.39	£452.68	£406.41
North Somerset*	£512.84	£627.37	£706.90	£639.35
North Tyneside*+	£437.46	£496.43	£478.40	£463.94
North Yorkshire*+	£596.12	£841.47	£617.18	£650.56

Northamptonshire	£536.69	£557.18	£582.31	£695.89
Northumberland*+	£419.30	£523.85	£466.12	£463.80
Nottingham*	£449.57	£406.65	£503.76	£481.92
Nottinghamshire	£453.12	£562.85	£548.46	£537.82
Oldham*+	£4,311.29	-£794.43	£458.43	£436.08
Oxfordshire+	£816.67	£898.96	£803.59	£936.06
Peterborough+	£947.53	£351.90	£723.07	£493.28
Plymouth*	£403.08	£426.51	£589.59	£565.26
Poole*+	£682.63	£650.86	£713.96	£784.49
Portsmouth*	£1,639.15	£710.61	£740.41	£654.27
Reading*	£733.13	£573.78	£953.28	£718.44
Redbridge*	£635.36	£577.22	£825.59	£818.71
Redcar and Cleveland*	£689.22	£396.52	£538.70	£562.53
Richmond upon Thames+	£805.11	£916.87	£888.30	£1,063.58
Rochdale*+	£393.88	£431.34	£480.92	£441.72
Rotherham*+	£320.77	£473.87	£429.30	£404.27
Rutland*+	£751.09	£626.76	£678.76	£692.23
Salford*+	£428.55	£420.37	£385.52	£413.27
Sandwell*	£387.06	£341.36	£639.28	£659.18
Sefton	£477.42	£527.09	£504.38	£584.46
Sheffield	£597.03	£416.46	£517.71	£524.71
Shropshire	£533.90	£648.60	£581.60	£572.30
Slough*	£1,710.92	£912.87	£1,039.61	£1,018.63
Solihull*+	£465.60	£662.90	£645.98	£600.35
Somerset*	£574.85	£623.91	£649.94	£648.85
South Gloucestershire*	£486.82	£596.33	£577.46	£688.56
South Tyneside*+	£472.46	£417.25	£460.10	£436.83
Southampton*	£588.82	£473.40	£715.47	£595.32
Southend-on-Sea*	£500.63	£539.33	£653.66	£604.16
Southwark+	N/A	N/A	-£1,766.99	£1,182.96
St. Helens*	£388.52	£463.78	£568.22	£563.85
Staffordshire*	£564.00	£483.50	£481.01	£625.36
Stockport	£543.62	£596.07	£547.74	£541.27
Stockton-on-Tees*+	£407.44	£446.85	£508.72	£438.22
Stoke-on-Trent*+	£533.92	£318.96	£631.52	£393.22
Suffolk	£537.15	£610.15	£792.09	£760.27
Sunderland*+	£383.55	£349.79	£413.24	£422.99
Surrey*+	£790.95	£1,074.68	£872.78	£914.56
Sutton*	£700.80	£568.70	£699.88	£774.11
Swindon*	£627.64	£497.44	£806.75	£815.68
Tameside*+	£131.25	£261.88	£392.56	£413.81
Telford and Wrekin	£497.77	£527.94	£594.46	£581.82
Thurrock*	£320.32	£514.77	N/A	N/A
Torbay*+	£505.69	£527.65	£511.12	£474.83
Tower Hamlets*+	£2,020.41	£1,271.14	£1,035.00	£962.47
Trafford*	£618.82	£685.37	£683.56	£673.49

Wakefield	£449.29	£483.50	£514.08	£498.29
Walsall*+	£443.28	£438.79	£327.82	£413.39
Waltham Forest*	£871.52	£519.04	£861.96	£608.82
Wandsworth	£994.78	£895.01	£1,216.65	£1,302.95
Warrington*	£595.37	£561.65	£580.51	£690.63
Warwickshire+	£651.09	£648.48	£697.32	£689.41
West Berkshire*	£747.91	£672.41	£1,018.51	£960.84
West Sussex*+	£599.18	£939.46	£714.76	£729.91
Westminster	N/A	N/A	N/A	N/A
Wigan*	£378.56	£404.51	£526.48	£538.54
Wiltshire*	£702.35	£686.70	£837.71	£926.21
Windsor and Maidenhead*+	£926.26	£948.64	£998.52	£887.66
Wirral*	£459.60	£526.95	£582.99	£642.05
Wokingham*+	£850.98	£684.72	£900.87	£831.81
Wolverhampton*+	£398.23	£405.98	£482.41	£547.21
Worcestershire	£601.89	£641.05	£658.01	£601.56
York	£632.51	£636.64	£773.59	£787.29

N/A indicates that the proportion of LA-funded residents in the LA was estimated to be over 1, and therefore no self-funded price was estimated as there is unlikely to be a self-funded market in these LAs.

* indicates that the adjusted average fees gap was estimated using multiple imputation for 2008 and therefore less confidence can be attached to the estimated average self-funded price shown.

+ indicates that the adjusted average fees gap was estimated using multiple imputation for 2010 and therefore less confidence can be attached to the estimated average self-funded price shown.

Table A3: Overall means of estimated average self-funder price

Estimation	Mean price	S.D.
Basic	£663.13[NS]	£392.35
Adjusted	£629.53	£242.17
Adjusted (85% Occ.)	£638.95**	£234.05
Adjusted (95% Occ.)	£623.03*	£208.57
Adjusted (min/max)	£609.22**	£252.13

NS, *, **, and *** indicate no significance or significance at the 10%, 5%, and 1% level, respectively, in a test of the equality of means between the relevant estimated self-funder price and the estimated adjusted self-funder price.