Exploring differences between private and public prices in the English care homes market

Abstract

This work quantitatively assesses the potential reasons behind the difference in prices paid by care home residents in England. Evidence suggests 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. Estimations of private prices at local authority level are used to assess the difference in price paid between private and public prices, the fees gap, using data from 2008 to 2010. Controlling for local area and average care home characteristics, the results indicate that both care home and local authority market power play a 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 the fees paid for LA-funded residents. A recent report published by the Competition and Markets Authority (CMA, 2017) found that fees for self-funded places in England were on average 43 per cent higher than those paid by LAs, and that this varied by region (from 23% in the North East to 52% in the South East). Older evidence from the Office of Fair Trading (OFT, 2005) suggested that around 20 per cent of care homes charged self-funded residents more than LA-funded residents for similar conditions, while other published reports find price differentials in the region of 25-43 per cent (NatWest, 2016). A price differential is also 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).

Despite there being evidence of a fees gap in England between publicly supported and self-funded residents, identifying the potential influences causing price differentials are under-researched. This is partly due to the fact that whilst (average) prices paid by local authorities are publically available, little has been known about the prices that self-funders pay for their care home places. Only recently has there

been information about self-funder prices but predominantly at regional and national level (CMA, 2017).

This paper makes several contributions to the debate around the fees paid by different funding types in the English care homes market. First, we calculate average self-funder prices at the LA-level. This provides valuable information at a more granular level than is currently available. In calculating LA-level self-funder prices, 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. Secondly, having both average LA fees and average self-funder fees we are able to estimate the gap in fees paid by LAs for residents eligible for support and by self-funded residents and take account of the different factors that affect it at the LA-level. In doing so, we set out a conceptual framework that can be used to discuss how the interplay between the market power of both LAs and providers could play a role in the differences in fees paid. Furthermore, contrary to previous studies, we have a panel dataset that covers years 2008 and 2010 and therefore can use panel data models in the empirical estimation to account for time-invariant heterogeneity. Price differences across payer types are examined at the Local Authority (LA) level, where, broadly speaking, public commissioning decisions are made.

Finally, this study is important from a policy point of view. It provides a framework of how key market factors could influence the fees gap and therefore how policy changes such as cuts to social care budgets can feed into the market. 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 financial pressure on LAs. Providers in distress due to 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, 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).

The rest of the paper is organised as follows. The next section describes the English care homes market and there follows a conceptual model that frames the empirical analysis. The data and empirical approach are described and the results are then presented and discussed.

The English care homes market

The English care homes market for older people consists of over 11,000 independent sector (for- and not-for-profit) care homes (CMA, 2017). The sector is fragmented and shows very low market concentration, consisting primarily of many single home or small multi-home organisations and fewer large corporate chains (Forder and Allan 2011). Care home capacity (i.e. the number of available beds) is relatively fixed in the short term (Forder, Knapp & Wistow, 1996) and the cost structure suggests that keeping occupancy rates high, usually around 90%, is important for care homes because it is hard to reduce costs if beds remain unfilled (CMA, 2017).

The care homes market consists of two distinct demand streams, self-funded and LA-funded residents.[1] Qualifying for LA-funding depends on being able to meet eligibility

criteria for both needs and financial assets. The LA portion of the market is a quasi-market (Bartlett *et al.*, 1994). 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). On the whole, the self-pay market can be regarded as a conventional market where self-payers are free to choose their preferred home taking into account factors such as fees, quality and location (Forder and Allan 2014). In practice however, the choice of care home is often made quickly, under pressure and, for at least some, with limited choice, especially for those who have a complex set of needs. It is usually a 'distressed purchase', made after a change in circumstances (e.g. a deterioration in health). This behaviour, together with a lack of transparency concerning care home fees and quality in the self-funder market (CMA, 2017), suggests that care homes may enjoy a certain degree of market power. Evidence from UK and US studies do suggest that care homes have at least some market power (Nyman, 1989; Forder, 2000; Mukamel and Spector, 2002).

Placement decisions for those eligible for council financial support are made by a social worker or care manager, and, in theory, as long as the placement is within the 'usual price' that the LA is willing to pay and meets minimum quality standards, LA-funded residents have a choice over which homes they prefer.

Care homes are regulated for quality by national regulators, but there is no regulation of prices in the English care homes market (Forder and Allan, 2011). Prices will therefore be determined in the market from the interaction of the different players and their relative market power (care homes, LA commissioners and self-funders). As

noted earlier, care homes are likely to have a certain degree of market power over self-funders due to the nature and timing of the decision and asymmetric information. Similarly, LAs often appear to have a degree of market power due to their purchasing power and better information they have around fees, quality and services of care homes. Commissioners usually negotiate with care homes that are prepared to offer services in line with the local council payment rate. Individual placements for LA-supported residents are then made on the basis of these terms and LA commissioners focus on finding vacancies in care homes with acceptable quality levels. Given that quality is not likely to matter greatly above some minimum level, competition between care homes for LA-funded residents is likely to be focused on price. LAs are likely to secure lower fees compared to self-funders, but it is not always clear whether that is because of their dominant position in the market (Laing 2008; Laing, 2014). Supply side market characteristics, such as the number and the location of care homes in the market are also expected to affect care home market power both over LA councils and self-funders and consequently equilibrium prices.

Conceptual model

Given the institutional characteristics of the care homes market outlined in the previous section, the model that best describes competition in this market is that of monopolistic competition with horizontal and vertical differentiation. In line with this model, entry into the market is free up to the point where average profits are zero, yet there is also a degree of price dispersion, compatible with the presence of market power (Gaynor and Town, 2011). Following Forder and Allan (2014) the market can be described as follows.

Each care home i has the following profits function π_i:

$$\pi_i = \pi_i(q_i) = \sum_k p_i^k \, x_i^k\left(q_i, d_i, p_i^k, \sigma_i, \theta_i\right) - c_i(q_i) \sum_k x_i^k - F(q_i) \qquad (1)$$

where p_i^k are the prices and x_i^k the demand from councils $(k = c)$ and self-funders $(k = s)$ respectively. Demand for care home services depends on care home location (d_i) and quality (q_i) as well as the level of disability and needs (σ_i) in the population and the wealth (θ_i) of service users in the market. Because of the means-testing of public support higher wealth will have a positive effect on self-funder demand and a negative effect on council demand, therefore $\frac{\partial x_i^s}{\partial \theta_i} > 0$ and $\frac{\partial x_i^c}{\partial \theta_i} < 0$. Care homes set quality at or above the minimum regulated quality level $(q_i \geq \underline{q})$. Marginal and fixed costs rise with quality, so that $\frac{\partial c}{\partial q} > 0, \frac{\partial F}{\partial q} > 0, \frac{\partial^2 c}{\partial q \partial q} > 0, \frac{\partial^2 F}{\partial q \partial q} > 0$ and $F\left(\underline{q}\right) = 0$.

The council price is set following a collective bargaining process as:

$$p_c = \rho(N) = c_i(q) + \eta(N) \qquad (2)$$

where $\eta(N)$ is a market power function with $\eta_N \leq 0$ capturing the degree of market power to raise prices above marginal costs as a function of the number of competitors in the market. Care homes are then left to choose self-funder price and quality (after choosing location). The optimal quality and price solving for the first order conditions, in partial reduced form, become: $q_i^* = q_i^*(N_i, d_i, \sigma_i, \theta_i)$ and $p_i^{s*} = p_i^{s*}(N_i, d_i, \sigma_i, \theta_i)$. The equilibrium LA fee becomes $p_i^{c*} = \rho^*(N_i, d_i, \sigma_i, \theta_i)$. Prices and quality are therefore determined in equilibrium as a function of the number and location of competitors, needs and wealth in the market.

Provider and LA market power

There are a number of reasons why we may observe a price dispersion in this market, with self-funder prices being higher than LA fees. First, as outlined above, care homes have market power over self-funders. In particular, information asymmetries are a source of market power for providers – this can support price discrimination between self-funders and LA-funded residents for the same (quality) product (Akerlof, 1970; Stiglitz, 1979; Diamond, 1971; Salop, 1976; Salop and Stiglitz, 1977; Salop, 1977). Otherwise, in competitive markets, both prices would be driven to normal profit levels. Self-funders will face significant (search) costs acquiring information with respect to service provision, prices and quality of care homes. Further, decisions over care home placements are predominantly made at times of distress.

The price dispersion may also be explained by the collective bargaining process taking place between council purchasers and care homes and their relative market power. On the one hand, for a given level of needs in the market, LAs often have a big purchasing position in the market and better information around care home fees and quality. At the margin, LAs looking to place a new resident could have a very large market power if many care homes in the local market have available beds (excess supply). Ultimately, the greater the level of competition for that new placement, the lower will be the price paid by the LA ($\frac{\partial \rho^{c*}(N)}{\partial N} < 0$). In addition, LAs may secure price discounts for 'bulk purchases' from care homes that, in the presence of economies of scale, want to reach optimal scales of operations or deal with uncertainty about local demand and low occupancy rates. At the extreme, LAs may be able to secure placements even below the marginal cost in which case care homes may have to cross-subsidise by charging self-funding residents even higher prices (Hancock and

Hviid, 2010). However, given that many care homes are chiefly, or totally, reliant on LA-funded residents, particularly for certain regions, it would be unrealistic to assume that LAs pay fees below marginal cost for all placements (CMA, 2017; Laing, 2014).

On the other hand, LAs are likely to face pressures to meet increasing demand for LA-funded places because of increasing population needs ($\frac{\partial x_i^c}{\partial \sigma_i} > 0$) and/or in areas with low average wealth ($\frac{\partial x_i^c}{\partial \theta_i} < 0$) and risk facing supply shortages if they push prices too low. If care homes in the local area have limited capacity to take on new residents, this in turn will alter the bargaining power dynamic in the market (excess demand). Overall, we expect that the relative market power between councils and care homes will, *ceteris paribus*, depend on the relative sizes of the self-pay demand and LA-supported demand as well as the intensity of competition in the market.

There are other potential explanations for price differentials between payer types, but these may be more difficult to assess at local market-level. First, vertical quality differentiation where self-funders have a preference for higher quality, potentially even in the same care home. With 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 (Belleflamme & Peitz, 2015). Homes with higher quality would have higher (marginal) costs, and so observed price differences could still be explained even with prices set at marginal cost. As noted earlier, self-funders are more likely to place higher weight on quality compared to LAs when supporting residents.

Individual spend-down of assets can also account for price differences between self-funded and LA-funded residents. Troyer (2002) found that self-payer rates in Florida nursing homes were higher than Medicaid rates because of an inter-temporal premium, i.e. to cover the potential spend down of assets to qualify for (unprofitable) Medicaid coverage. A proportion of social care users in England will face very large social care costs across their lifetimes (Commission on Funding of Care and Support, 2011). However, length of stay in English care homes is relatively short in general, although higher for self-funders. Two studies, one of publicly-funded residents in three local authorities and another of Bupa care homes including both payer types, found average stays of 18 months and 26 months, respectively (Steventon and Roberts, 2012; Forder and Fernandez, 2011).

Following this discussion we see that self-funder and LA fees and the resulting fees gap will be determined in equilibrium by a number of supply and demand side characteristics. Holding other market characteristics fixed (such as population needs levels, care home quality, and economies of scale) the fees gap at the LA-level is likely to be affected by the interplay between care homes and councils' relative market powers. We can expect that higher competition will have a negative effect on both self-funder and LA fees. The overall effect on the fees gap is not clear *a priori* since price competition is expected to be stronger in the LA-funded portion of the market but mark-ups are higher for self-funders. The impact of wealth on the fees gap is also ambiguous. Self-funded and LA-funded price should both rise as wealth increases, the former from increased spending power and the latter from reduced bargaining power of LAs.

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. 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 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.

Both the costs to, and number of residents funded 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.

Data from 2008 to 2010 was used for three primary reasons. First, data on price has become increasingly scarce over time. For example, the report from CMA (2017) on the care homes market has price data for 6,727 older people care homes (59.6% of all homes aimed at older people) and used a further restricted sample of 26 larger care home providers operating 2,000 homes to estimate fees differences between self-funded and LA-funded residents. For 2010, we have price data for 9,126 independent sector care homes (95.0% of all independent sector care homes aimed at older people at that time).[2] For 2008 the same figures are 7,420 and 79.6%, respectively. Second, we have data for out-of-area placements for 2009 provided by CQC, which is key to knowing where LA-funded residents were being supported and

therefore generating appropriate estimated prices (see Table A1 in Appendix). Finally, previous research has shown that the cross-subsidisation issue that exists in the care homes market currently was in existence in the period examined (Forder and Allan, 2014).

Estimating LA-level average self-funder price

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:

$$P_j = n_j P_j^{LA} + (1 - n_j) P_j^{SF} \quad (3)$$

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:

$$P_j^{SF} = \frac{P_j - n_j P_j^{LA}}{(1 - n_j)} \quad (4)$$

Estimating n_j is not straightforward. This is for two reasons. The first is that we need the total number of residents in care homes to be able to work out the proportion of residents that are LA-funded, something that is unknown. 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:

$$n_j = \frac{\sum_{i=1}^{z} N_i^j}{\delta B_j} \quad (5)$$

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.

We estimate self-funder prices for 150 LAs for 2008 and 2010.[3] The details of the estimation process, the raw data used to calculate self-funded prices by LA, and the estimated values are presented in the Appendix.

Given the information available, 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, see Appendix) had an estimated proportion of LA-funded residents over 1. These were London boroughs in all but one case (Thurrock, which adjoins London). As a result, we exclude these LA observations from the analysis as it is very unlikely that there would be a market for self-funded residents in these LAs.

A number of the estimated average self-funded prices for the remaining LAs were clearly outliers (See Figure A1, appendix). This was for a number of reasons; for example, where there are a (very) high proportion of LA-funded residents in the LA then the estimated self-funded price will be (extremely) high.

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, the proportion of residents that are LA-funded, n_j, was changed to the 95th (5th) percentile for those LAs with very high (low) n_j.

Estimating LA-level average fees gap

There were still a number of outlier self-funder prices even with the changes outlined above (see Figure A2 in Appendix). Therefore, for those LAs where we believe there is a market for self-funded residents but where the estimated self-funder price is 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 imputed an adjusted fees gap for those LAs with n_j above (below) the 90th (10th) percentile (0.738 and 0.387, respectively) 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 particularly for LAs with relatively few homes).[4]

Descriptive statistics

Descriptive statistics are presented in Tables 1 and 2 for the final sample of LAs for 2008 and 2010. Table 1 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 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).[5] 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. Self-funders pay on average 33.8%-38.9% more than LAs pay to support residents. For the imputed data the same figures are £147 to £176 and £162, respectively, indicating that self-funders pay 29.3%-35.1% more than LAs pay to support residents.

Table 2 presents the descriptive statistics for the independent variables used in the analysis. As a proxy for LA marker power we use an inverse measure of wealth, specifically the percentage of those eligible that claim pension credit in a LA, an income benefit for older people. The level of care home competition is measured using the average level of LA competition. This is the average of a 10-km distance- and time-weighted Herfindahl-Hirschman Index (HHI) for each care home in the LA (an inverse measure of competition, HHI = 0 implying perfect competition and HHI = 1 implying monopoly).[6] Needs are measured using the percentage of the older population claiming attendance allowance. The additional control variables are a measure of care home quality, the percent of homes rated as good or excellent in the LA;[7] for economies of scale the average size of care homes in each LA, the percentage of the total population that are over state pension age (as a measure of demand); 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. The former was included to control

for the higher prices (and wages) associated with London and the latter to control for any potential differences between years, e.g. potential methodological differences in LA data returns.

<Insert Table 1 about here>

<Insert Table 2 about here>

Empirical specification

From the conceptual framework outlined in section 3 we can estimate the following model of the fees gap:

$$FG_{jw}\ (= p^{SF} - p^{LA}) = FG_{jw}\left(N_{jw}, q_{jw,}\theta_{jw}, \sigma_{jw}\right) + \delta_j + \epsilon_{jw} \qquad (6)$$

Where FG is the fees gap for LA j $(j = 1,2, \ldots, 150)$ in wave w $(w = 1, 2)$, p^{SF} is average self-funder price and p^{LA} average LA-funded price, N is the level of competition in the local market, q the level of quality, θ the level of wealth in the market and σ represents local needs levels. δ_j is a time-invariant, LA-specific, error term and $\epsilon_{jw}$the classical disturbance, both assumed to have mean of zero and constant variance, 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 (6) 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 MI suite of commands available in Stata 15.

Results

Results of the estimation of equation (6) by using the non-missing data are presented in Table 3, whilst the results using data drawn from multiple imputation are presented in Table 4. In all estimations, to examine the relationship between providers and LAs the measures of competition and pension credit uptake are interacted. Standard errors in the results from Table 3 are bootstrapped (500 reps), and in all estimations (Tables 3 and 4) standard errors allow for correlation between observations from the same LA.

We assess the specification of the models in the following ways. The Breusch-Pagan test of the null hypothesis that there are no random effects present in the model is rejected for the models using casewise deletion. 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). Further, for both the non-imputed and imputed models, the Hausman test confirms that the random effects model outlined in equation (3) is correctly specified, except for columns 8 and 9 of Table 4.

In Table 3 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 results show that competition

strongly reduces the fees gap (given the inverse measuring of competition from HHI) whilst lower wealth does not significantly reduce the fees gap.

The results of Table 3 could be due to the large level of missing observations. Therefore Table 4 presents estimations of random effects GLS using multiple imputation (20 imputations). Each of the columns presents the results for various specifications of the dependent variable: 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.

The results from our preferred specification, when we have adjusted prices and addressed missing prices using multiple imputation, are found in column 6. Looking at these, it is clear that competition plays a role in the fees gap with reductions in competition increasing the fees gap significantly. Decreases in wealth, measured using pension credit, have a significant negative correlation with the fees gap. The significant interaction effect between competition and wealth indicates that the impact of (a lack of) competition is mitigated by levels of wealth; for a given level of wealth, decreases in competition reduce the fees gap.

Looking at the other variables included in the model, no significant effect on the fees gap was found for average care home size or quality. A higher prevalence of older people and needs both have a significant negative correlation with the fees gap, whilst increased prevalence of nursing homes and not-for-profit homes have significant positive correlations with the fees gap. A one percentage point increase in nursing homes and not-for-profit homes lead to a higher fees gap by £1.57 per week

and £2.19 per week, respectively, the former significant at 10%. Finally, there is also a significant positive year effect with the fees gap being £39 per week higher in 2010 compared to 2008. Most of the results are robust to changes in the fees gap that is analysed.

<Insert Table 3 about here>

<Insert Table 4 about here>

Given the interaction of competition and wealth, Table 5 presents the marginal effects of competition on the fees gap for various values of pension credit, with other variables at their means, for the estimations from columns 3-6 of Tables 3 and 4. The results suggest that decreases in competition from the mean (i.e. increases in HHI) have less effect on the fees gap as wealth decreases. At the median level of pension credit, a 1% increase in competition will decrease the fees gap by £29 per week in the preferred specification, although this effect is only significant at 10%.

<Insert Table 5 about here>

In addition to the robustness checks included in the main tables, we also performed two further 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.

Discussion

The extent of the gap in fees paid by LA-funded and self-funded residents is well known and is often attributed to the dominant purchasing power of LAs. However, there is little evidence of average self-funded fees paid at the LA-level and little quantitative exploration to assess what influences the gap in fees paid by self-funded and for LA-funded residents. We estimated the average self-funded fee for LAs for 2008 and 2010 using data on average resident price and average LA-funded resident cost. We then assessed the potential 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. We find an average fees gap of £162 per week (range £147-£196) for the period 2008-2010, a relative difference of 32.3% (range 29.3%-38.9%). The CMA (2017) report on the care homes market found an average fees gap of £245 per week, or 43%. The difference could reflect the data used, i.e. the CMA figures on the fees gap used data on prices for a sample of homes and providers, whereas our estimates of the fees gap are at LA-level using estimated self-funder prices and LA-level publicly funded price data. Alternatively, the difference could be explained at least in part by both wage inflation and the continued squeeze in LA-funding over the ensuing period, and overall we believe our estimates are plausible.

Nevertheless, the estimates in this analysis will only be as good as the data used. The price data used to estimate average care home price is based on minimum and maximum prices and no weight is given in terms of the proportion of residents paying

each price (nor prices in between). Further, 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 self-funded fees estimates are hoped to solve at least some of this problem. Further, we used MI methods to address missing fees gap data. The use of MI assumes the data is missing at random (MAR), i.e. the missing data is independent of unobserved data given the data that is observed. If this assumption is violated the data is missing not at random (MNAR) and the results of MI estimations will be biased to some extent (Carpenter and Kenward, 2013).

Taking the data limitations into account, we find that provider competition and wealth have a significant negative correlation to the fees gap. Given our expectations on how these factors will influence market prices, these negative effects suggest, in absolute terms, that the impact of increased competition is more strongly felt on self-funder fees than LA-funded fees and for wealth the impact is greater on LA-funded fees.

We also find that 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. The results suggest no effect of quality on the fees gap, although the interpretation of this effect is difficult given the challenges involved in measuring quality at LA-level. Similarly, our proxy for 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 in estimating self-funder prices 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, 2014). 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. This could be explaining differences in data over the two years, for example the way LAs calculated their costs. However, potential alternatives as to what this is capturing include the squeeze on LA expenditure and number of residents supported at this time (Fernandez and Snell, 2012; Fernandez *et al.*, 2013), which would have important implications given the current policy climate and continued funding constraints (see below), that care homes used their market power to charge self-funded residents more, or some combination of the two.

The findings for competition and wealth offer some evidence of the influence that LA and provider market power potentially have on prices in the care homes market. It is likely that LAs have significant market power. The negative effect of wealth on the fees gap could be seen as indicative of LAs' ability to dominate the market and pay low fees. However, it is also likely that information asymmetries allow care homes to employ price discrimination, which would explain the significant negative effect of competition on the fees gap. Whether care homes are 'pushed', at least to some

extent, into using their market power to extract rents because LAs are able to exploit their market power to a greater degree when provider competition is high, is unknown. The significant negative interaction effect between wealth and competition found in some specifications could certainly be indicative of this. In other words, there may be 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 will have concerns over 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). That the marginal effect of competition on the fees gap was not significant at lower levels of wealth, i.e. where LA market power is likely to be high, further suggests that LAs have a very strong influence on local care homes markets.

Whether LAs are purely interested in acquiring services with a minimum acceptable level of quality is certainly arguable. For example, incentive payments for quality are used in care homes in other countries and in England as well, at least to some extent (Malley *et al.*, 2015; Allan & Forder, 2012). In addition, the Care Act 2014 included a statutory market shaping responsibility for LAs. LAs are formally tasked to promote a vibrant, continuously improving, market for social care with a wide variety of alternative forms of care. However, the extent of market shaping is difficult given that there are usually considered to be many social care markets within LAs, e.g. by type of care, location, and demand stream (Needham *et al.*, 2018). Additionally, adult social care directors are increasingly looking at efficiency savings and are most concerned about their ability to sustain markets given budgets (ADASS, 2019).

As such, our results may provide some further evidence 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 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).

The Care Act 2014 also included reforms to the funding of social care, but these were subsequently scrapped with a new green paper on social care planned for a number of years but currently delayed (Jarrett, 2019). 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. A further consequence of changes of this type 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 limitations to this analysis. The data limitations have already been outlined, although specification checks have addressed some potential problems. A further issue that we have not resolved fully is endogeneity; the price

paid for a care home place 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.

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[1] A third, minor, stream, consists of wholly NHS-funded residents who meet continuing care criteria. This stream accounts for around eight 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.

[2] The current market has over 11,000 care homes aimed to support older people or those living with dementia according to registration data with CQC. For 2008 and 2010 we were further able to identify a home's primary client being older people or those living with dementia.

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

[4] 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.

[5] Table A5 in the appendix shows that the average self-funder prices used in the robustness checks are significantly different from the preferred, adjusted average self-funder price.

[6] See Forder and Allan (2014) for more information.

[7] 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: 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 2: Independent variables

Local Authorities (n=290)	Mean	S.D	Min	Max
Average Competition (HHI)	0.038	0.030	0.010	0.183
Pension Credit Uptake (%)	25.19	8.35	9.65	57.30
Quality (Good/Excellent %)	84.46	10.52	33.33	100
Average care home size	38.69	9.12	25.06	99.75
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 (2010 = 1)	0.51	0.50	0	1

Table 3: 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.
Average Competition (Log HHI)	146.31**	74.10	108.88	69.37	138.76**	70.31	118.06*	61.48
Pension Credit (%)	-10.07	16.17	-11.23	14.91	-6.88	15.10	-10.80	13.78
Log HHI*Pension Credit	-2.78	3.90	-2.06	3.76	-1.99	3.63	-1.98	3.34
Quality (Good/Excellent %)	0.118	1.255	-0.103	1.086	0.448	1.22	0.345	1.15
Average care home size	1.07	2.18	2.65	1.83	0.830	2.17	2.49	1.91
Older population (%)	-12.49***	4.70	-18.97***	3.089	-13.29***	4.31	-20.07***	3.05
Attendance Allowance (%)	-6.53	9.97	-9.95	6.34	-3.18	9.36	-6.97	6.48
Primary client: Dementia (%)	1.42	1.88	1.78	1.49	1.25	1.82	1.61	1.59
Nursing home (%)	0.051	1.152	0.703	0.973	0.356	1.11	0.606	0.988
Voluntary sector (%)	0.499	1.284	3.93***	1.08	0.076	1.38	3.59***	1.10
London (Yes = 1)	106.90***	40.19	18.39	33.34	108.79***	39.72	22.43	34.37
Year	56.84***	18.69	58.90***	14.81	61.88***	16.27	59.32***	14.50
Constant	887.82***	325.01	885.55***	295.57	797.85***	325.05	72.66***	274.57
N (clusters)	138 (105)		136 (99)		138 (105)		136 (99)	
R^2	0.423		0.666		0.418		0.663	
Wald					75.76***		164.52***	
Breusch-Pagan					6.66***		1.97*	
Hausman					7.00^{NS}		9.38^{NS}	

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

Table 4: 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.
Average Competition (Log HHI)	125.88***	47.88	108.96***	38.65	117.74***	38.13	105.66***	35.56	118.56**	35.34
Pension Credit (%)	-14.86*	8.84	-17.24**	6.92	-18.29	6.92	-17.16	6.47	-21.57***	6.36
Log HHI*Pension Credit	-3.32	2.21	-3.25*	1.72	-3.52**	1.74	-3.27**	1.62	-4.00**	1.56
Quality (Excellent %)	0.232	0.654	0.169	0.667	0.148	0.765	0.263	0.529	0.370	0.584
Average care home size	0.222	1.73	2.05	1.24	2.61*	1.36	1.63	1.18	1.51	1.24
Older population (%)	-14.41***	3.41	-15.66***	2.84	-17.05***	3.10	-14.74***	2.76	-14.41***	2.57
Attendance Allowance (%)	-11.10**	5.39	-9.57**	4.20	-10.58**	4.46	-9.09**	3.67	-8.42**	3.60
Primary client: Dementia (%)	1.17	1.17	1.16	1.05	1.29	1.08	0.911	0.990	-0.788	0.972
Nursing home (%)	0.723	0.971	1.57*	0.87	1.42	0.896	1.57*	0.84	1.75**	0.862
Voluntary sector (%)	-0.575	0.890	2.19***	0.75	2.25**	0.872	1.96***	0.72	1.71**	0.70
London (Yes = 1)	71.44**	31.50	26.62	29.28	28.53	30.54	2.60	27.33	26.26	27.42
Year	49.81***	12.40	39.42***	10.45	42.93***	10.31	38.35***	8.91	56.55***	9.68
Constant	989.59***	212.64	874.07***	182.24	940.11***	187.68	839.74***	169.82	917.21***	164.56
N (clusters)	290 (148)		290 (148)		290 (148)		290 (148)		290 (148)	
Imputations	20		20		20		20		20	
Average RVI	0.115		0.303		0.314		0.265		0.332	
Largest FMI	0.206		0.385		0.423		0.331		0.355	
Hausman	16.16^{NS}		12.79^{NS}		12.66^{NS}		20.26**		20.03**	

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

Table 5: Marginal effects of competition on the fees gap

	3 Basic RE	4 Adjusted RE	5 Basic RE (MI)	6 Adjusted RE (MI)
Pension credit percentile				
10th	106.58***	85.94***	72.12***	56.27***
25th	102.00***	81.37***	64.46***	48.77***
Median	89.79**	69.18**	44.06**	28.78*
75th	79.24	58.66	26.45	11.52
90th	68.13	47.57	7.88	-6.68

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