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# Competition in the Care Homes Market

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A report for the OHE Commission on Competition in the NHS

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## 1 Introduction

Most long-term care in the UK is now delivered in markets, including both the private purchase of care and also publicly-funded care, commissioned on behalf of service recipients by public authorities. The widespread use of markets, an arrangement especially driven by New Right policies of the 80s and 90s, has nonetheless received relatively little critical evaluation. Most publicly funded long-term social care, as distinct from health care, is the responsibility of local authorities. Arguably many local authorities had taken the decision to out-source the provision of care because they anticipated savings in production costs (Wistow, Knapp *et al.* 1996). But there has been far less attention on the consequences of marketization for service recipients, the quality of care, and on the total costs of this policy, nor on wider impacts such as the effect on local labour markets.

Around 90% of care home provision for older people is supplied by the independent sector, that is, voluntary and for-profit organisations. In England, three-fifths of this provision is commissioned by local authorities under contract with providers. The remaining two-fifths is bought privately by (self-paying) individuals. The supply side in England comprises over 10,000 care homes; there is some market penetration by large corporate providers but to a significant degree the market remains decentralised. The potential level and impact of competition in this sector is therefore significant.

This work reviews the literature on the extent and experience of competition in the care homes market. The focus is on the UK (mainly England) but the experience of other countries (mainly USA) in this respect is considered where relevant. The main aims of the review are to assess the impact of competition on both price and quality of care.

The work reviewed here has relevance for policy in social care. In particular, market arrangements for the delivery of social care are (broadly) desirable if: (a) they can provide care at lower cost and/or higher quality than alternative organisational arrangements; and (b) they promote, or at least do not undermine, equity goals. Mainstream theory would lead us to expect that markets which are competitive are more likely to be efficient, compared to non-market arrangements, than markets which are imperfectly competitive. Rather than directly comparing market and non-market organisational arrangements for care homes services, this review concentrates on evidence about: (a) the competitiveness of care homes markets; and (b) the impact of competition in these markets on prices, mark-up rates and quality.

This study involved a (non-systematic) review of the literature, with literature searches using the keywords: nursing homes, market, competition, quality, prices. The Pubmed and Web of Science databases were used.

This review begins by identifying the current state of the care homes market in the UK in more detail. The section thereafter has a discussion of the current level of competition in the care homes market. The penultimate section summarises the literature reviewed regarding the effects of competition on prices and on quality. The paper finishes with a summary and conclusions about the impact of competition in the care homes sector.

## 2 The UK care homes market

The scale and characteristics of the UK care homes market can be gauged by looking at data describing the utilisation and capacity in the market, prevailing prices and also the composition of the market in terms of the nature of buyers and sellers.

Conventionally the supply side of the market has been distinguished by provider type and the demand side by funder type. As to the former, non-public providers include private providers (nominally at least, 'for-profit') and voluntary (or non-profit) providers. Together they form the independent sector. Public providers include both those managed by local authorities and also

those managed by the NHS. Regarding funder types, the market comprises private individual buyers – self-payers – and public purchasers, again the latter being either local authorities or the NHS. As well as market arrangements (that is, involving transactions between independent parties), care services are also provided under non-market, hierarchical organisational arrangements. In this case services are allocated to people by (public) bureaucracies that both fund and produce services (Williamson 1975; Williamson 1985). Although a number of local authorities retain such an ‘in-house’ service, the vast majority of places are now contracted-out in (quasi-) markets to independent sector providers (see tables below).

Publicly-funded residents are assessed by councils and placement decisions are mediated by a care manager or social worker. In theory publicly-funded residents have a choice over which homes they prefer as long as the placement is in line with the ‘usual price’ the local authority is prepared to pay in the independent sector or the availability of placements its own (public sector) homes. The relevant legal guidance<sup>1</sup> states that ‘there should be a general presumption in favour of individuals being able to exercise reasonable choice over the service they receive’. Over-subscription of local authority and NHS homes is resolved by waiting lists. People who wish to move to a care home that costs more than the ‘usual price’ can do so if a third party is willing to pay the appropriate top-up. Residents are not allowed to make their own top-up payments. For self-payers, care managers are also often involved; the majority of new entrants will have seen a council care manager or social worker prior to admission (Netten and Darton 2003).

In any case, the decision to enter a home is usually not made by the resident alone. In their study of self-payers, involving over 300 interviews with relatives or other carer of the resident, Netten and Darton (2003) found that only 15% of respondents felt that residents had made the decision to move into a home on their own. Even allowing for residents without relatives or carers whose decision making processes would not be reflected in the study, we can speculate that overall the vast majority of residents are helped in their choices. In most instances it will be a dramatic change in circumstances, such as hospitalisation, death of a spouse or a domestic crisis that cause the move into a care home. Half of referrals for local authority funded placements come from hospital and community social workers, with friends or relatives being the next most common referrer. In the self-pay market one third of referrals are from friends and relatives with a fifth being from social workers (Laing & Buisson, 2010). Of people with relatives or carers, just under 60% of respondents in the Netten and Darton study reported that someone other than the older person made the decisions.

All care facilities, including those run by the NHS or LA directly are now regulated by the Care Quality Commission against a set of essential (quality) standards of care to protect the safety and respect the dignity and rights of residents. Care services must be registered with the CQC and continued compliance with registration requirements is monitored thereafter. Previously social care services were regulated by the Commission for Social Care Inspection which registered and inspected providers. Inspection reports and quality ratings for each care home are made publicly available and are potentially a source of information on quality to inform potential residents.<sup>2</sup> A number of local authorities also use incentives for quality in their commissioning practice, for example by linking reimbursement rates to quality indicators.

## 2.1 Utilisation

Market arrangements are now used predominantly to provide care home service. They include the self-payer market and also a publicly-funded quasi-market with public authorities purchasing care on behalf of (low income) residents. Table 1 shows how the percentage of placements in care homes under market arrangements was 60% of the total in 1990 and had increased to over 90% by 2008.<sup>3</sup> During the period from 1990 to 2008 the share of the independent sector market supplied by private providers as opposed to voluntary sector providers has remained largely constant at nearly 85%.

Who pays for the placement of an individual in a care home in the current UK market is presented in table 2. It shows that in 2010 40% of placements in independent care homes in the UK were privately (self-) funded, with the NHS paying for 8% of all placements. Self-funded placements increased by 15% from 2000 to 2010, local authority funded placements fell by 7% and NHS funded placements more than doubled in the same time period (Laing & Buisson, 2010).<sup>4</sup>

**Table 1. Utilisation by sector of placement in the UK**

	Year	1990	1995	2000	2005	2010
<b>Private</b>	Residential	140000	151000	163000	161000	171000
	Nursing	104000	174000	164000	146000	151000
<b>Voluntary</b>	Residential	36000	52000	50000	49000	45000
	Nursing	10000	17000	16000	14000	16000
<b>NHS</b>		68000	43000	24000	19000	14000
<b>Local Authority</b>		114000	71000	51000	32000	22000
<b>Total</b>		<b>472000</b>	<b>508000</b>	<b>469000</b>	<b>421000</b>	<b>418000</b>
<b>Private and voluntary as percent of total placements</b>		61%	78%	84%	88%	91%

Source: Laing & Buisson, 2010

**Table 2: Sources of finance for independent care home residents 2010**

Funding Source	Residential Care	Nursing Care	Total
<b>Local Authorities</b>	134000	65000	199000
<b>NHS</b>	0	31300	31300
<b>Self-funding</b>	81000	70000	151000
<b>Total</b>	215000	166300	381300

Source: Laing & Buisson, 2010

## 2.2 Capacity and occupancy

Capacity in the care homes market is measured by the number of available beds. In the short term capacity is relatively immutable (Forder, Knapp *et al.* 1996) and changes in occupancy of those beds give an indication of short-run demand changes. Mirroring trends in placement numbers, much of the capacity of the industry is now in the independently provided part of the market.

Care home places have been falling for over a decade prior to 2009 but have shown a slight increase in recent years. This trend, which is in contrast to underlying trends in need levels, reflects government policy to substitute the use of intensive home care services (domiciliary services) for the use of care home services. Table 3 shows the number of places in care homes in the UK for 2010, while table 4 shows the independent sector of the UK care homes market over time.<sup>5,6,7</sup>

**Table 3: UK care homes market capacity, 2010**

Residential	Number of places
<b>Residential</b>	
Private	190800
Voluntary	48000
LA	29143
<b>Nursing</b>	
Private	172500
Voluntary	16900
LA	1557
<b>NHS</b>	
Geriatric places	15500
<b>Total</b>	<b>474400</b>

Source: Laing & Buisson (2010)

**Table 4: UK care homes in the independent sector**

	Year	Late 1987	April 2003	April 2005	April 2008	April 2010	
<b>For profit</b>	<b>Residential</b>						
	Homes	7521	6494	6183	5765	5600	
	Places	112279	146687	147628	149786	151952	
	<b>Nursing</b>						
	Homes	2098	4584	4223	4196	4321	
	Places	54455	199413	192144	198070	211358	
	<b>Total Homes</b>	9619	11078	10406	9961	9921	
	<b>Total Places</b>	166734	346100	339772	347856	363310	
	<b>Not for profit</b>	<b>Residential</b>					
		Homes	1339	1618	1592	1459	1348
Places		38524	47098	47248	45000	42404	
<b>Nursing</b>							
Homes		251	671	478	469	482	
Places		10136	24800	20630	21214	22527	
<b>Total Homes</b>		1590	2289	2070	1928	1830	
<b>Total Places</b>		48660	71898	67878	66214	64931	
<b>Total</b>	<b>Homes</b>	<b>11209</b>	<b>13367</b>	<b>12476</b>	<b>11889</b>	<b>11751</b>	
	<b>Places</b>	<b>215394</b>	<b>417999</b>	<b>407650</b>	<b>414070</b>	<b>428241</b>	

Source: Laing & Buisson (2010)

Occupancy rates in the market currently stand at around 90%, with slightly higher rates in the voluntary sector than the private sector.<sup>8</sup> Occupancy rates have remained fairly constant over time and even increased slightly in the early 2000's, in line with the decline in market capacity levels at that time. Overall, these rates suggest an efficient use of capacity bearing in mind that turn-over of residents is quite high; average length of stay in a care home is around 2.4 years. The distribution of occupancy rates shows some variation with around 10% of homes having less than 75% occupancy. Again, we would expect turnover of providers in a competitive market.

**Table 5: Occupancy rates in private and voluntary care homes**

Year	Private Sector			Voluntary Sector		
	Residential	Nursing	Dual Registration	Residential	Nursing	Dual registration
March 1998	87.0	85.4	82.2	91.3	91.5	91.1
March 2000	88.4	88.3	86.6	92.7	90.4	89.5
March 2005	91.6	91.5	-	92.9	95.1	-
March 2008	90.7	90.1	-	92.8	94.5	-
March 2010	89.4	87.5	-	93.5	93.3	-

Source: Laing & Buisson (2010)

Note: Prior to 2002, care homes could be registered as residential homes, nursing homes, or dual registration homes which provided both residential and nursing care. From 2002 a care home which provided any of their residents with nursing was known as a 'care home with nursing'.

## 2.3 Prices

There is no regulation of prices in the care homes sector and we see both a significant variation in prices across the market and also movement in average prices through time. Table 6 presents the average weekly fees in UK nursing homes for the last two decades. All prices are expressed in April 2010 money (inflated from money of the day using the CPI).<sup>9</sup> From May 1988 to 2010/11 weighted average prices have risen by 73% in residential homes and 68% in nursing homes. Despite the decline in capacity that occurred, prices were still rising strongly from 2000/01 to 2005/06, with a residential home place being priced 32% higher by the end of those five years and a nursing home place being 35% higher respectively. In real terms, nursing home prices have fallen slightly from 2008/09 to 2010/11.



**Table 6: Average real weekly fees in UK care homes (April 2010 price terms)**

Room type	May 1988	2000/01	2005/06	2008/09	2010/11
<b>Residential</b>					
Single room	301	350	462	499	502
Shared room	277	330	423	442	447
Weighted average	<b>288</b>	<b>345</b>	<b>455</b>	<b>492</b>	<b>498</b>
<b>Nursing</b>					
Single Room	447	493	666	708	698
Shared room	387	457	583	613	612
Weighted average	<b>412</b>	<b>484</b>	<b>653</b>	<b>696</b>	<b>693</b>

Source: Adapted from Laing & Buisson (2010)

## 2.4 The demand for care

A number of studies have considered the overall level of demand for care in the future by looking at the main population level drivers, such as the ageing of the population and the changing pattern of household composition (and hence levels of informal care), disease patterns and so on. As expected, underlying ‘need’ is expected to grow significantly in coming years.

There has been far less attention on what factors influence individual level demand, and indeed how sensitive purchasers are to price and quality differences between providers. Anecdotally, location, especially proximity of the home to the person’s previous address or their family’s address has been a key reason for demanding a place in a particular care home (Nyman 1994; Netten, Bebbington *et al.* 2001).<sup>10</sup>

A number of studies have found that the level of demand is related to a number of process/quality indicators such as staffing ratios and home level characteristics including sector, staffing levels overnight and the number of beds (Nyman 1989; Forder 2000). These results indicate a potential for competition among providers to have an impact on quality, although the nature of this effect *a priori* is uncertain. This question is addressed below.

## 3 Market power and pricing in the care homes market

The demand for care home placements is also related to price, other things equal. Identifying price elasticity of demand is challenging because observed prices in a care home market also reflect the impact of supply-side (cost) factors. Moreover, demand decisions are ‘lumpy’ in that people buy just one place in a care home. In an inverse demand function we would expect price to be negatively related to demand i.e. lower price implies higher demand, other things equal. But high capacity homes might also have lower marginal costs and so in estimating an observed price to output relationship we need to account for this and other similar effects in order not to over-estimate demand price elasticity. Instrumental variable approaches can be used in this case. After accounting for supply-side factors, a number of UK and US studies (Nyman 1989; Forder 2000; Mukamel and Spector 2002) have found demand prices for care homes are negatively related to output indicating: (a) that potential residents are sensitive to price; and (b) that homes retain some market power.<sup>11</sup>

The evidence regarding the extent of market power from these papers is mixed. Forder (2000) found that mark-up rates in the care homes market for people with mental health problems was relatively modest at around 11%. This study used a sample of 477 residents from a survey of

facilities that provided residential care to people with mental health problems from 8 districts in England and Wales. The analysis showed that private care homes had significantly lower market power compared to non-profit care homes but had a significantly greater likelihood of using their opportunity to make profits. Non-profit providers had a price elasticity of demand of -0.28 compared to private providers that had a price elasticity of demand of -0.082.

US studies found that nursing homes markets were less competitive than Forder found in England and Wales, with much higher mark-up rates in the US; up to 50% in the analysis by Nyman (1989). Mukamel and Spector (2002) examined private nursing homes in the state of New York using data from 1991 and found price elasticities of demand that are consistent with mark-up rates of between 25% and 40%.

Analyses that estimate Lerner indices<sup>12</sup> gain a direct indication of mark-up rates rather than having to infer these rates from measures of competitiveness. There are, nonetheless, issues in correctly identifying demand-side elasticity in estimates using observed price and outputs data. It is perhaps for this reason that most studies of market performance in the care homes sector focus on measuring the level of competition and/or its impact on prices and quality.

Anecdotal evidence relating to the English care homes sector suggests that margins are very tight. A study funded by the Joseph Rowntree Foundation concluded that most public sector commissioning bodies do not at present pay fees at levels which are adequate to support and sustain a care home sector that meets all of the most recent National Minimum Standard (Laing 2008).

### 3.1 Price differentiation

Individual self-payers are largely price-takers in the market. Local authorities, however, are seen as exercising monopsony buying power and can secure sizeable discounts. These discounts are thought to be paid for by charging higher prices to self-funders (Office of Fair Trading 2005). Similar price differentials are seen between public (Medicaid) and private payers in the US nursing home market (Mukamel and Spector 2002; Grabowski 2004) where Medicaid pay rates run at around 70% of private pay rates.

Whilst direct observation of prices confirms significant price dispersal and differentiation between publicly-funded and self-payers, it is less clear whether there is actual cross-subsidisation in the sense of prices for self-payers being sustained above marginal costs and prices for local authority supported residents below marginal cost. Indeed, there are various other reasons why we would expect these pricing patterns to emerge. Clearly, it may be the case that self-funders are paying for a better quality product i.e. not a different price for the same product, even if it is provided in the same care home. Vertical quality differentiation in the market overall will likely involve self-payers being more likely to express a higher preference for quality. Where places with higher quality also have higher (marginal) costs, prices for those services will be above the price for lower-quality places even if prices are all set at marginal cost.

A number of theoretical analyses give the conditions under which a (Nash) equilibrium with vertical differentiation can be sustained with firms setting prices above marginal cost, particularly for the higher-quality products in the market (Shaked and Sutton 1982; Gal-Or 1983; Shaked and Sutton 1983; De Fraja 1993). For example, Shaked and Sutton (1982; 1983) demonstrate that a finite number of providers is sustainable (regardless of market size) with prices above marginal cost in markets where the unit costs of products increase slowly with quality and where willingness to pay for good quality is high. Small fixed costs are sufficient to preclude entry by providers, which would otherwise push prices down to marginal cost levels. In these cases, lower-quality firms price at, or above, marginal cost, or they do not enter the market. Gal-Or (1983) models (multi-product) firms offering a spectrum of products of different qualities with different unit costs. She shows that in a Cournot equilibrium with a given number of firms, new market entry leads to an average reduction in quality. The intuition is that as the

number of competitors increases, greater segmentation of the market between high- and low-quality consumers allows margins to be maintained at the high quality end of the product spectrum.

This result generally contrasts with the literature on quality-differentiating monopolists (Mussa and Rosen 1978). In this case, relative to the competitive solution it is the monopolist that reduces quality at the low-quality end of the market in order to sustain high margins on products for high-quality preferring customers. This strategy limits the number of high-quality customers that switch to lower price, lower quality products. Others show that under more general conditions, monopolists might instead distort quality upwards (Srinagesh and Bradburd 1989).

This literature outlines the various conditions where quality differentiation can lead to super-normal profits. 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.

As regards the analysis of the care homes market, this theoretical literature indicates that without knowing the specific conditions that prevail in the market, it is difficult to infer whether observing price differentiation implies market inefficiency associated with product differentiation.

Another cause of price differentiation might be where firms are able to price discriminate to different consumers of the same (i.e. non-differentiated) product. Again, firms can only discriminate in theory if they: have sufficient market power locally (i.e. do not compete on price); can identify high-demand from low-demand customers and have an available mechanism to separate these customers. In the care homes market, the last two requirements might be met in terms of the distinction between local authority-supported and self-pay clients. However, it is less obvious that care homes could maintain prices above marginal cost for self-payers without being under-cut by competitors.

The existence of economies of scale at the home and group level might also account for price differentials. In particular, price discounts may be offered for 'bulk purchase' by local authority purchasers either as a response to uncertainty about local demand (occupancy rates) or to help providers reach optimal scales of operation. If economies of scale are significant, incumbent providers can sustain cross-subsidisation between local authority and self-pay clients making close to normal profit levels overall. Where the market for self-payers is relatively small locally, new entrants cannot undercut the price mark-ups made on self-pay clients because they cannot achieve economies of scale without publicly-funded residents (providers are unlikely to achieve optimal size by just focusing on self-payers, especially without quality differentiation).

Local authority-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 and more prevalent.<sup>13</sup> 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, 2010). Other big providers, such as Bupa Care Homes, have a largely representative mix of local authority-supported and self-pay residents.

For the fee round of April 2010 average local authority baseline fees increased by 0.8% according to Laing & Buisson (2010) and small increases are likely to continue in the next few years with cuts in the grants to local authorities from Central Government. This increase is well below inflation levels and also below the estimated 2.1% care home cost inflation rate for 2010-11 (Laing & Buisson, 2010). Arguably, this low rate of price inflation continues a trend seen throughout the last decade. Nonetheless, there has not been a significant contraction in supply to date. The situation with Southern Cross is still being assessed and the implications in terms of

home closures is not yet known, but in any case, it is not clear whether council payment rates or bad business practices were the main cause of the company's difficulties.

Local authorities are able to exercise market power and exert downwards pressures on prices. The degree of this monopsony power varies around the country, however, and tends to be lower where self-payers constitute the largest market share. Where councils are able to significantly influence prices they need to be careful to ensure that prices are not pushed below marginal costs and as a result precipitate significant supply contraction.

## **4 Measuring the level of competition in the UK care homes market**

Conventional methods of measuring competition involve the definition of a set of boundaries and the (relative) scale of providers (by output or capacity) in the market boundary. However, before turning to this literature, it is worth briefly reflecting on the significance of potential barriers to market entry and exit in the UK care homes market. In the main, although there are some sunk costs in terms of the cost of meeting regulations, notably in achieving registered home status, barriers to entry and exit are comparatively low in the care homes market (Forder, Knapp *et al.* 1996). Economies of scale exist but are small relative to the size of demand in local markets. Branding opportunities have also been limited to date.

### **4.1 Market concentration and competitiveness**

In the UK care homes market in 2010 there were 11751 care homes in the independent sector, with 511 major providers (i.e. with 3 or more homes in the group) in the market accounting for some 42% of all care homes and 55% of all care home beds.

Table 7 presents concentration ratios for the UK care homes market when looking, to begin with, at just the independent sector. In terms of market concentration the top 5 providers account for over a fifth of the independent sector care homes market when looking at beds and just over an eighth of all the homes in the market. If the market was considered to include the public sector, then the 5-firm concentration ratio for beds would fall to 19.0%. The 5-firm Herfindahl-Hirschman index (HHI) for the care homes market was 123 in 2010.<sup>14</sup>

Assessing competitiveness from whole market concentration ratios is limited because there is no obvious comparator and because apparently low levels of overall concentration could mask high concentration in certain local areas. Nonetheless, these measures suggest that the national market at least is highly competitive. When assessing the effects of mergers on market competition in the UK the Office for Fair Trading (OFT) uses the following thresholds: a market with a HHI of more than 1000 following a merger is considered concentrated, and a market with a HHI of more than 2000 after a merger is considered highly concentrated. Mergers of firms that have a combined market share of under 40% (or under 30% in non-horizontal mergers), a market that will still have 4 or more firms after merger, and any merger that changes the HHI for the market by less than 250 points in a concentrated market or 150 points in a highly concentrated market, are usually not looked into by the OFT when looking at potential anti-competitiveness (Competition Commission and Office for Fair Trading, 2010). In these terms the UK care homes market shows very low concentration.

We can also compare the care homes market with other UK industries in terms of concentration ratios. Table 8 presents 5-firm concentration ratios when measured by beds for the UK care homes market for 2010 and for other UK industries for 2004. As can be seen, the care homes market is broadly in line with the less concentrated among the other industries in the UK.

**Table 7: Market concentration of the independent sector care homes market**

Top providers (in number of beds)	Homes	Beds	Concentration ratio (Beds)	Concentration ratio (Homes)
<b>Largest providers</b>				
Top 2	977	58,112	13.6%	8.3%
Top 4	1472	86,064	20.1%	12.5%
<b>Top 5</b>	<b>1567</b>	<b>90297</b>	<b>21.1%</b>	<b>13.3%</b>
Top 10	1890	106,306	24.8%	16.1%

Source: Adapted from Laing & Buisson (2010)

**Table 8: 5-firm Concentration Ratios**

	Concentration ratio
<b>Market (2010)</b>	
Care Homes	21
<b>Industry (2004)</b>	
Retail Distribution	20
Hotels, Catering, Pubs	13
Motor Vehicles	34
Telecommunications	61

Source: Mahajan (2006) and adapted from Laing & Buisson (2010)

Whilst on these measures the care homes market overall appears highly competitive, the level of market concentration has been increasing markedly in the last two decades. Table 9 shows the level of coverage of the UK care homes market by major providers (i.e. who own 3 care homes or more). There has been a progressive increase in groups owning multiple care homes. For the private sector major providers increased markedly during the 1990s with the move away from public sector provision. At the same time, the average number of places per home has increased significantly. According to Laing and Buisson, in 1987 the average number of places was 19, but this had risen to 36 places per home by April 2010.

**Table 9 Market share of major providers of care homes**

Year	1989	End 2001	April 2005	April 2008	April 2010
<b>For profit care homes</b>					
Total overall homes	12147	11781	10406	9961	9921
Major provider homes	606	2441	2771	3700	4159
Major provider share (homes)	5.0%	20.7%	26.6%	37.1%	41.9%
Total beds	232200	356700	339800	347900	363300
Major provider beds	23300	118000	135000	176300	199700
Major provider share (beds)	10.0%	33.1%	39.7%	50.7%	55.0%
<b>Not-for-profit care homes</b>					
Total overall homes	-	2344	2070	1928	1830
Major provider homes	-	1499	1515	1449	1326
Major provider share (homes)	-	64.0%	73.2%	75.2%	72.5%
Total beds	-	73090	67900	66200	64900
Major provider beds	-	49100	51100	51000	48700
Major provider share (beds)	-	67.2%	75.3%	76.9%	74.9%
<b>Overall</b>					
Total homes	-	14125	12476	11889	11751
Major provider homes	-	3940	4286	5149	5485
Major provider share (homes)	-	27.9%	34.4%	43.3%	46.7%
Total beds	-	429790	407700	414100	428200
Major provider beds	-	167100	186100	227300	248400
Major provider share (beds)	-	38.9%	45.6%	54.9%	58.0%

Source: Laing & Buisson (2010)

Note: Major providers are groups with 3 or more homes

## 4.2 Local market competitiveness

The whole market concentration ratios outlined above are indicative of a high level of competition overall. Much of the competition literature, however, seeks to establish more directly the relationship between competition and performance in recognising that competition need not always lead to *good* performance. This competition literature compares performance between local markets.

The definition of local market boundaries and size has been tackled in a number of ways. In the US, a county level definition is most often used (see below). Others (e.g. Gertler and Waldman 1992) use a weighted average of counties that care home residents came from, while Grabowski and Stevenson (2008) use a radius of 12.5km around each care home. For the UK, Forder and Netten (2000) use local authority level in England, while Gage *et al.* (2009) define the market at the county level.

Zwanziger *et al.* (2002) analysed the origin of residents in care homes in the state of New York in an attempt to derive market size and analyse the level of competition in the market. The

authors compared a county-level HHI with an HHI based on a resident's previous zip-code. Specifically, the zip-code market for a care home was all the zip-codes which cumulatively accounted for 70% of the residents in a care home when the zip-codes were ranked in descending order by the level of residency in the care home.<sup>15</sup> The zip-code market HHI was then calculated as the weighted average of the HHI of every zip-code in the care home's zip-code market. Using admissions data from 1991-1997, their analysis showed that almost two-thirds of the care homes studied had fewer than 10% of admissions from outside the county in which they were located, which would indicate that the county-level was a good measure of a care home's market.<sup>16</sup> However, they also found that a typical care home's zip-code market was smaller than the county level, with the median level of the county's over-75 population that was in the zip-code market of a care home being 37.5%.

The authors then went on to analyse the level of competition that a care home faced in their market, and showed that the level of competition may be over-emphasised when looking at the county-level. When using the county definition of the market there would be 20% more care homes in competition on average than the number of care homes in competition using the zip-code definition. Finally, the authors estimated an OLS regression of the zip-code HHI with county-level HHI as the independent variable as well as a constant and found that together they could only explain 51% of the zip-code HHI.

The majority of papers that compare local market competitiveness use a local market HHI. However, other measures of competition have been used in the care home literature, such as density of provision, market share over potential consumers in the market (e.g. Mehta 2006)<sup>17</sup> and also occupancy rates.

Competition measures are likely to be endogenous. The level of competition in a market will depend in part on prevailing prices and quality. These are signals that will prompt market entry and exit that in turn affects the competitiveness of the market. For example, a market with initially low levels of competition may have relatively high prices. These prices attract market entry which in turn increases competitiveness.

## **5 The impact of competition on prices and quality**

### **5.1 Competition and prices in the care homes market**

Forder and Netten (2000) analyse the impact of competition on the price of placements in residential and nursing care homes in England. This study of 2500 resident placements in homes in 18 local authorities between mid-October 1995 and January 1996 uses the inverse density of provision as a measure of competition, which is equal to the total market size of a local authority divided by the number of care homes in the local authority. The results were found using OLS, but a Ramsey Reset test did not find any evidence of misspecification due to endogeneity in the competition measure, and showed that prices, measured as the overall cost of a placement inclusive of local authority contributions, were significantly affected by the level of competition, with an increase in competition leading to lower prices. The mean price elasticity of competition in terms of the number of firms was -0.04, while for providers in London authorities the mean price elasticity was -0.08 (i.e. lower competition in London).<sup>18</sup>

Machin and Manning (2004) used a sample of care homes from the South of England to analyse the theory of competitive labour markets. On the assumption that care homes markets are competitive, the authors expected that wages (for the same quality and type of employee) should show little heterogeneity. But their descriptive and multivariate analysis of the data instead suggested high levels of wage dispersion that could not be explained by a competitive scenario leading the authors to reject the competitive labour market theory in this case.<sup>19</sup> There are a number of possible explanations, but finding a pattern of inter-firm wage dispersion is consistent with firms operating in a non-competitive product market.<sup>20</sup> These results might

indicate that local care homes markets are less competitive than the competitiveness indicators discussed above might suggest.

Netten *et al.* (2003) undertook a study of care home closures in the UK in 2000-01, and this study also has some bearing on the impact of competition. Their descriptive analysis was based on information collected from a postal survey, a telephone survey and interviews with independent providers. Home closure was predominantly reported as being due to low fees. Closures appeared to be concentrated among smaller, single home organisations, suggesting a weak link between market concentration and home closure.

There is also evidence of competition effects on prices for care homes in the USA. Mehta (2006) analysed the care home industry in the USA, in particular looking at consumer preferences to determine the appropriate definition of market size for the care homes market. The paper used information obtained through the Online Survey, Certification and Reporting (OSCAR) dataset for all 408 nursing homes located in Wisconsin for 2002. Their analysis shows that the number of firms within 5 miles was significantly associated with lower prices: each extra competitor located within 5 miles of a care home reduced the price by 0.4% to 1.8% depending on the specification of the model. The results were obtained using OLS and there is no indication that they account for the endogenous nature of competition measures although the subsequent analysis of consumer preferences does account for the endogeneity of prices on consumer demand for care homes.

Nyman (1994) also analysed care homes (skilled nursing facilities) in Wisconsin, using data from 1988, and found some evidence of market concentration (using a county level HHI) being positively (but weakly) associated with price levels. The effect size was small: a doubling of the HHI would lead to an increase in the price of a private place by 3.4% and of a Medicaid funded place by 3.3%. Certificate-of-Need (CON) laws, which impose rules that any new potential market entrant must justify their case to a government planning agency, operated in Wisconsin at the time and could lead to excess demand. Nyman also found that an increase in the number of empty beds in all nursing homes in a county (a measure of excess demand) would reduce prices in intermediate care facilities. The results are estimated using OLS and do not account explicitly for the endogenous nature of competition. Nyman argues that the presence of CON laws removes any endogeneity between concentration in the market and profits since no new firms may enter the market and so profit making is possible without altering the level of competition. However, this neglects both the counterargument, that excessive profit making could lead to firms leaving the market, and the point that competition within an existing and unchanging market may still be affected by profits.

## 5.2 Competition and quality in the care homes market

The previous section shows that competition affects prices, but how will competition affect quality? Quality for a care home has been measured in a number of ways in the literature. One can examine official measures of standards in care homes, the closure rates of care homes, the mortality rate of residents and other adverse health measures, the use of drugs, staffing levels.

There is very little evidence in the literature regarding the effect of competition on quality for the UK. In a study primarily about the impact of ownership type on quality, Gage *et al.* (2009) did not find any association between a CQC inspection quality rating and bed vacancy rates. There was a positive association between price charged and quality in a quality ratings regression but no account was made for any endogeneity in this relationship.

In their study of home closures, Netten *et al.* (2003) found no relationship between the quality of the home and the likelihood of closure, although (low) price was seen as an important contributory factor. There is a tentative suggestion in these results that homes compete on price to a greater extent than on quality. A more nuanced argument would be that once homes have attained minimum quality levels (as defined by CQC minimum standards) then public purchasers are more interested in purchasing from the lowest cost bidder. The self-pay market



is presumably more concerned with quality, not least because we see significant vertical price differentiation in the market.

Similar indications of the relative importance of price over quality come from the findings that larger homes tend to be associated with lower quality. (Torrington 2007) As noted above, the average size of home has increased substantially in the last two decades as providers seek to exploit economies of scale, the consequences of which (lower prices) are evidently valued by purchasers.

There is a larger literature on quality and competition from the USA. Castle *et al.* (2007) examine how competition has affected scores on a range of nursing home quality measures (QMs). They examine 15 quality measures that are reported by the Center of Medicaid and Medicare Services, and look at the changes in these scores for care homes between January 2003 and January 2004. Their measure of competition is the county-level HHI. These QMs are published for each care home and available to potential residents. The study showed that greater competition significantly increases the likelihood of improved scores on 5 of the 14 individual quality measures (competition being insignificant on the others). The significant QMs included prevalence of bed sores, proportion of residents needing help with activities of daily living, proportion of residents with delirium and with moderate or severe pain. Bed sores prevalence is a common quality measure in the US literature, but the others used in this study are much less so. In fact these other QMs have strong overlap with case-mix and need variables. The authors use logistic regressions to examine the impact of competition on quality and they do not control for the endogenous nature of the relationship between competition and quality.

Starkey *et al.* (2005) analyse 1,121 nursing homes from the states of New York, Maine, Vermont, Kansas and South Dakota using data from 1996, and measure quality by looking at the prevalence of use of constraints, catheters, pressure ulcers, mood decline and cognitive decline. They found that nursing homes in states with active CON laws were more likely to have residents with pressure ulcers, mood and cognitive decline. In as far as CON laws act as barriers to entry, less contestable markets (with CON) showed poorer quality than more contestable markets. In a similar result, the authors also showed that quality levels were relatively high when there was excess capacity (defined as the average number of unoccupied beds per facility in the market in which the nursing home is located). The study also included a (county-level) HHI measure of market concentration, but this was not significant in any of the quality estimations. The results are obtained using weighted least squares regression and the endogenous nature of competition is not controlled for in the empirical analysis.

Gertler and Waldman (1992) analyse cost functions and policy in the nursing home industry. They use data from a 1980 survey of New York State's long term care facilities and focus only on for-profit homes. Estimation of cost functions under certain conditions allows the imputation of an (unobservable) quality indicator. Their analysis subsequently shows that competition, measured using a patient-origin HHI index, increases this quality indicator. However, the cost of the increase in competition would be very large compared to any increase in quality. In particular, increasing the HHI by one standard deviation would increase quality by 2.5% but would increase costs by 19.5%. In other words promoting quality through increases in competition would be very expensive whereas restricting competition would promote large savings in costs without impacting greatly on quality. While the authors treat quality as endogenous of costs they strictly treat competition as exogenous from the firm.

The evidence outlined thus far suggests that quality is improved with higher levels of competition. In contrast, there are a number of articles which find evidence of competition reducing quality. Grabowski (2004) used a large (112,000 cases) panel dataset to investigate the impact of Medicaid reimbursement policy and competition on a range of quality measures. Weighted least squares estimates using data relating to the period 1991 to 1998 showed the (county-level) HHI index to be positively related to quality, that is more concentrated, less competitive, markets had better quality. Moreover, higher Medicaid rates were associated with

better quality. Grabowski also argued that in the time period analysed, nursing home markets were generally not experiencing excess demand (that might result from CON laws for example). Grabowski discusses the endogeneity between price and quality but does not control for the endogenous relationship between competition and quality.

Zinn (1994) examined the effect of competition on quality using data for around 14,000 nursing homes in 48 states of the USA for 1987. The study used incidences of health problems and the number of registered nurses per resident as measures of quality. The results were mixed. Using two stage least squares (2SLS) regression the author found that increased concentration (as measured by a county-level HHI index) reduced the prevalence of catheterization, restraining and not being toileted (but had no significant effect on the registered nurse to resident ratio). Zinn used 2SLS estimation to allow for the simultaneity that care homes face in their decisions about both quality levels and the number of Medicaid patients and the case mix of patients they take. The author used the number of Medicaid patients as one of a number of measures of competition. It was argued that any new entrants into the market usually aim at the self-pay part of the market to avoid the potential dependence on the Medicaid programme, which could have reimbursement rates that do not reflect the marginal costs of care that new firms face. So the potential endogeneity between competition and quality was controlled for to an extent although the HHI index was assumed to be exogenous.

The study also used two proxies for market contestability: the use of CON regulations and an excess capacity measure. The simultaneous use of these two proxies in the quality estimations appeared to have generated some multicollinearity problems. Each measure was associated with better quality for two of the four quality indicators but associated with worse quality in the other two. Overall, Zinn concludes that improved contestability (as so proxied) was associated with better quality.

Gammonley *et al.* (2009) showed that staffing levels were significantly affected by competition using data from 14,194 US nursing homes for 2003. Their analysis looked at the employment of a qualified social service staff member in the home, a requirement for large homes (over 120 places), but voluntary for smaller homes. For those smaller homes, the authors found using logistic regression that the level of competition was negatively related to the likelihood of employing a social service provider. Competition is measured using a county-level HHI and there is no control for the possible endogenous nature of competition.

Zinn *et al.* (2009) examined performance failure of US care homes and found mixed evidence on the effects of competition on quality. Specifically they examined what determines termination from the Medicaid and Medicare programmes as their measure of nursing home performance. Their analysis uses data from 1996 to 2005 for 10,901 nursing homes located in urban areas. Their results indicated that homes that had experienced a change in ownership, smaller homes, homes with top quartile proportions of Medicaid-funded residents, and those homes with top quartile deficiency citations rates were all significantly more likely to be terminated. These results suggest that quality is important to purchasers (Medicaid funded) which would be consistent with the expectation that competition could raise quality, given cost (by driving out low-quality homes).

Castle *et al.* (2009) examined the direct relationship between nursing home closures and market competitiveness in the USA. Competition was measured using a county-level HHI and was found to increase the likelihood of closing significantly in 1999 and 2002, but it did not significantly affect the likelihood of closing in 2005. Although these results do not have a direct bearing on the question of how competition affects quality, they do suggest that competition is a motivating force in the care homes market. O'Neill *et al.* (2003) paint a somewhat contrasting picture looking at market exit/home failure. In their study of terminations, they did not find a significant difference in the likelihood of termination based on the level of competition.<sup>21</sup>

There is a great deal of US literature which attempts to examine the differences in quality provided by non-profit and for-profit care homes. Although the conclusions are not entirely

clear cut, the literature points to non-profit homes having higher quality than for-profits, other things equal (Ballou 2008, Chou 2002, Grabowski and Hirth 2003, Grabowski and Stevenson 2008). Unless non-profits can differentiate their products or rely on alternative funding, we might expect that greater competition would lead all firms to choose profit maximising price/quality (at normal profit rates), and this would imply a reduction in market quality levels.

## 6 Summary and conclusions

This report has examined the level of competition in the UK care homes market and the effects of competition on price and quality. The study involved a (non-systematic) review of the literature, with literature searches using keywords (nursing homes, market, competition, quality, prices). The primary focus was on UK literature, but the more extensive US literature was also relevant. There are many parallels between the UK and US markets, where the supply-side of mostly private care homes have their places purchased by both private self-payers and by public agencies on behalf of people with low income. Perhaps the biggest difference historically has been the use of certification of need (CON) regulation in the US that effectively controls the total bed availability in a local market. These regulations can act as barriers to entry which means that local markets can be in excess demand but not see an increase in either total providers or capacity from incumbents. In the UK, nursing homes have to achieve minimum standards (be registered) but total capacity in a market is not regulated.<sup>22</sup>

After the introduction, section two of the paper has a description of utilisation and capacity in the care homes sector. Over time the organisation of care home provision has shifted significantly towards market forms of organisation, either in the form of full markets with self-payers buying from the independent sector or quasi-market with LAs/NHS commissioning from independent sector providers. Currently over 90% of placements are under market auspices. Over time, prices have either remained static or even fallen in real terms.

Section three of the paper briefly assesses the direct evidence of market power and mark-up rates that prevail in the market. Anecdotal evidence relating to the English care homes sector suggests that margins are very tight. The very small research literature indicates that care homes appear to face relatively high price elasticity of demand and therefore mark-up rates (profits) appear to be modest (e.g. with mark-up rates a little over 10%). The US literature shows very similar results on prices and mark-up, albeit with much higher estimated mark-up rates compared with the UK estimates.

Prices are differentiated between publicly-supported and self-pay residents. Some commentators have suggested that discounts secured by local authorities are in part covered by higher prices to self-payers. But there is no clear evidence as to whether observed price differentiation is due to price discrimination (cross-subsidisation) for the same product as opposed to being due to quality differentiation. Care homes do vary significantly in terms of their physical fabric, amenities, staffing and their quality ratings, for example. It is also possible that places within the same care home could differ in their quality. There is no evidence on this issue, but some insight can be gained from the theoretical literature. Vertical quality differentiation can arise with consumers paying prices that vary with the marginal costs of different quality levels. The literature also indicates specific conditions under which vertical product differentiation can be used to sustain prices above marginal cost in some cases. Price discrimination requires a way to differentiate consumers, and the distinction between publicly-supported and self-payers is relevant in the case of care homes. But it also requires that firms have market power or otherwise we would expect the higher prices to self-payers to be undercut by competitors. The potential effect of economies of scale is also relevant here, but again research on the relationship between scale and costs is limited.

Section four summarises the evidence about the competitiveness of the UK care homes market. Across the UK there are over 10,000 care homes. By most overall measures, the care homes

market appears to be highly competitive. Market concentration has been increasing in recent years but still remains very low. The 5-firm HHI for the care homes market was 123 in 2010, which is significantly below any threshold for intervention by the competition authorities in the UK.

High levels of competition and/or contestability should imply low prices and low mark-up rates. But the implications for quality of increased competition are less clear cut. Section five assesses the evidence in the literature of the effects of competition on price and on quality.

There is a small but significant literature for the UK that shows the expected result that competition lowers prices. The effect sizes are relatively small, which is consistent with the research that finds modest mark-up rates and market power among providers. The US literature shows very similar results in this respect.

Our review of the literature did not produce any directly relevant evidence for the UK on the effects of competition on quality in the care homes market. Indirect sources might be interpreted as showing a modest positive effect, especially for local authority purchased care, but more work is needed in this area. The literature is also limited in the US case, but some studies have been undertaken looking directly at competition and quality relationships. Generally they show mixed results. In the main, studies that looked at the relationship between quality and market concentration as measured (mostly) by a county level HHI found that more competition (lower concentration) leads to (or is associated with) reduced quality. One study (Castle *et al.* 2007) found the opposite.

By contrast most studies that look at markers of market contestability – e.g. use of CON regulations, indicators of excess demand – suggested that the least contested markets (e.g. where excess demand can persist) produced lower quality than markets with higher contestability.

A number of studies (Gammonley *et al.* 2009, Nyman 1994, Starkey *et al.* 2005, Zinn 1994, Zinn *et al.* 2009) found both the apparently conflicting results – of lower concentration and also lower contestability (or at least greater excess demand) being associated with decreased quality – at the same time.

The messages are therefore mixed regarding the impact of competition. Part of the reason may be due to the methods used currently in the care homes literature. Most studies to date have used a HHI defined over county areas in the US and have treated this index as exogenous in estimations of price and quality. There are a number of issues with this approach. First, concentration measures need not be good proxies for competitiveness or contestability. Most of the studies reviewed did include a ‘size-of-demand’ variable (normally the over 65 population in the market), but did not interact this variable with the concentration measure. Even if this were done, competitiveness does not always correlate with contestability (where the threat of market entry may be sufficient to regulate a low competition market).

Second, as Zwanziger *et al.* (2002) show, there are limitations in using county areas as market boundaries, and yet almost all the work reviewed has used some arbitrary measure of market size. This may be adequate when considering supported care home residents in the UK (and Medicaid supported residents in the USA), but it will not necessarily be a good measure of market size when considering self-payers. Future analysis in this area will need to take this into account by using other measures that are starting to become more prevalent such as travel time. For example, Mehta (2006) uses driving times as an alternative measure when estimating the impact of distance from a care home on consumer utility.

Third, market shares are also potentially endogenous where prevailing market price and quality levels are likely to prompt market entry and exit. Exogenous treatment of market concentration may then produce biased estimates of the impact of market competition on quality and prices. This review of the literature has shown that the majority of the work to date does not control

for the potentially endogenous relationship between competition and both quality and price, and indeed only a few works have even addressed the issue at all.

Given the wholesale marketization of UK (and especially English) care homes provision, the relative lack of evidence is perhaps surprising. On the other hand, many commentators might simply regard the care homes market as being little different from any other (competitive) market and infer that prices would fall and quality rise to efficient levels. The, albeit limited, literature does support this expected price effect, but there is enough evidence to be uncertain about the effects on quality.

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<sup>1</sup> As pertaining to the National Assistance Act (1948) (Choice of Accommodation Directions) 1992 and the National Assistance (Residential Accommodation) (Additional Payments and Assessment of Resources) (Amendment) (England) Regulations 2001.

<sup>2</sup> Prior to October 2010 care homes were given a star rating against a set of minimum standards. Homes could awarded 3 stars if they were providing excellent service, 2 stars for providing good service, 1 star for adequate service and 0 star for a poor service. These star ratings are still available publically for care homes that had been rated.

<sup>3</sup> These figures are compiled by market analysts, Laing and Buisson, using both government statistics and also results from their annual survey of care home providers. These estimates are well-regarded by the care sector.

<sup>4</sup> In April 2000 there were 131000 self-funded placements, 214000 local authority funded placements and 15000 NHS funded placements.

<sup>5</sup> Beds used as residential only in care homes with nursing are included in the Residential figures in Table 1, whereas they are included as Nursing care home places in Table 4. As a result some figures from the tables may not look comparable.



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<sup>6</sup> Prior to 2004 the figures in Table 4 exclude care homes with fewer than 4 places. For some indication as to the size of this effect, in April 2004 there were 529 care homes with fewer than 4 places that accounted for 1439 places.

<sup>7</sup> In the 1980s there was a rapid expansion of private sector care homes as the population became more aged and funding was provided by the state through income support. In 1993, funding of care home placements was moved from the state to local authorities who began using assessments of need before placement, and this led to capacity shrinkage in the UK care homes market for more than a decade.

<sup>8</sup> One explanation for this is that the local authorities favour the voluntary sector over the private sector when it comes to placements.

<sup>9</sup> April's CPI figures are used for each year as care homes will usually change their prices once a year in April (Laing & Buisson, 2010).

<sup>10</sup> In the US, Nyman (1994) found that 80% of residents choose nursing homes in the county in which they were previously resident.

<sup>11</sup> In a perfectly competitive market providers would be price takers.

<sup>12</sup> The Lerner index is a way of measuring the level market power that a firm has. The Lerner index is equal to:  $L = (P - MC)/P$ , where P is the price set by the firm and MC are the marginal costs that the firm face. If data is available for both costs and prices for a firm then the level of market power can be directly estimated.

<sup>13</sup> Note however that self-funding residents not only include those who are paying the highest fees but also people who are not able to get means tested funding from local authorities because they have assets and income just above or around the threshold. As such this latter group will not want to be paying very high fees. Also, local authority funded residents can have their fees topped up by a third party.

<sup>14</sup> The HHI is equal to the sum of the largest n firms' market shares squared. A market with only 1 firm in would have a HHI of 10000 and would be a monopoly, while a perfectly competitive market would have an HHI close to zero.

<sup>15</sup> While trying to show that the use of an arbitrary measure of a market boundary may be flawed, the choice of 70% of residents was still an arbitrary decision made by the authors. A more thorough analysis would have been to look at different cumulative percentage levels.

<sup>16</sup> The vast majority of care homes (over 80%) had fewer than 20% of their admissions from outside the county in which they were located. This finding is very similar to that of Nyman (1994).

<sup>17</sup> Consumers are defined as all those over the age of 65 although their results do not alter when changing this to all those over the age of 75. Their analysis only focuses on self-pay residents and so this measure calculates the market share for each care home in a self-pay market in particular.

<sup>18</sup> As the authors point out, the result is also consistent with the argument that London has a higher level of outside placements.

<sup>19</sup> Their initial descriptive analysis highlights that there is significant wage dispersion between care assistants working in different care homes, and little wage dispersion within care homes. This result appears to be inconsistent with the competitive theory of the labour market. The authors then showed that there are significant differences in the wages of those who work in care homes where wage dispersion within the firm is high compared to those that work in care homes where there is little or no wage dispersion within the firm. Again, this result is inconsistent with the competitive theory of the labour market, unless there was some difference in quality between the workers. To examine this the authors used price of placements in care homes as a proxy for worker quality. They used Tobit regressions of price of placements to show that there are no differences between the price of placements in care homes with wage dispersion and those in care homes without wage dispersion, and so conclude that the competitive theory of the labour market is inappropriate in this setting.

<sup>20</sup> The authors use care home prices as a proxy for the quality of the staff that in turn impacts on the quality of the project. Their price estimations for this purpose lack a formal measure of competition. Indeed, a scenario could exist in which firms with no wage dispersion have significantly less competition compared to those firms that have wage dispersion. As a result some (or all) of the workers in the care homes with no wage dispersion actually receive more than their efficient wage as these firms face relatively less competition and so may not need to assess their input costs as aggressively as care homes that do face more competition. Care homes that do have wage dispersion also have significantly greater levels of competition and so they have to be as efficient as possible with their input costs and so pay their workers their marginal product. The conclusions of the paper would be incorrect if the inclusion of a measure of competition meant that there was a significant difference in price between firms with wage dispersion and those firms that do not have wage dispersion.

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<sup>21</sup> The measure of competition used is an HHI for the metropolitan area. There may be an argument that the market size decided upon is too large if metropolitan areas have larger populations than US counties.

<sup>22</sup> Local planning rules might have some effect on market capacity in the UK.