

# *A note of caution on the financial performance of the British housebuilding sector*

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# A note of caution on the financial performance of the British housebuilding sector

Pat McAllister 

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## ABSTRACT

In the context of concerns about excessive market power, this paper evaluates the financial performance Britain's leading volume housebuilders using data on stock market returns as well as accounting-based financial performance metrics for the last two decades. Using descriptive analysis, the financial performance of the housebuilding sector is compared with 18 other sectors, and variation in financial performance among the seven largest listed housebuilding firms is analysed. The findings indicate that the average stock market returns and profit margins for the housebuilding sector have been relatively low compared to most other sectors. Firms in the housebuilding sector typically have more conservative balance sheets with low gearing and large cash holdings. Possibly, the most distinctive feature of the housebuilding sector is the size of inventories. There has also been significant variation in stock market performance among individual housebuilding firms, with two companies delivering the majority of the sector's returns. It is concluded that this variability may undermine the notion of significant market power within the sector, instead highlighting the importance of firm-specific factors in determining financial performance.

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## KEYWORDS

Volume housebuilders; market power; financial performance; total returns; balance sheet

## Introduction

Over the last four decades, a notable feature of the British housing sector has been its reliance on a relatively small number of housebuilding firms for a substantial proportion of new housing supply. Despite common political opposition to residential development, particularly on greenfield sites, there has been a long history of regulatory and quasi-regulatory investigations of the large, listed housebuilding firms who are perennially seen as a source of various market, rather than government, failures affecting the quantity and quality of new housing supply. The detailed quotation below from Lord Best<sup>1</sup> articulated a fairly typical narrative and highlighted many common concerns about the volume housebuilding sector in the UK.

For about 50 years the private sector housebuilders have built something in the region of 150,000 homes a year. There is no sign that these firms will double their output and enable

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the government to hit its new target of 300,000 new homes a year. Indeed, it is not in the interests of this industry to end the scarcity of homes that has driven up house prices: the stock market valuation of Britain's largest housebuilders rose by 342% over the 5 years to 2013 while housebuilding nosedived to a post-War low ... dependency on this sector now means relying on a very small number of huge firms. And this oligopoly brings the danger of the 'too big to fail' phenomenon that means we can all be held to ransom. Sadly I believe most major 'volume' housebuilders have let us down. Too often the companies appear to do whatever it takes to secure the land, often concentrating on pristine greenfield sites. They then promise plenty of affordable housing and developer contributions, but, once planning consent is granted, they then renege on agreements made: in particular by reducing drastically the number of affordable houses previously pledged. They are accused of using bog standard national pattern-book designs, unsympathetic to local circumstances; of shoddy workmanship and poor customer care; of the scam of selling houses on a leasehold basis with fiercely escalating ground rents; and of building out only at the speed that maintains prices at inflated levels (Best, 2018, no pagination).

Drawing upon a range of sources, Adams et al. (2009) illustrated that Lord Best remarks made in 2018 reflected longstanding concerns about the market structure and performance of the British housebuilding sector.

Given this perception that volume housebuilders deliberately contribute to and then excessively profit from supply problems in the housing sector, the paper examines the historic financial performance of the sector Using descriptive analysis of stock market returns and other financial metrics, this paper examines whether the actual financial performance of the sector over the last two decades supports such perceptions. Specifically, it compares the housebuilding sector's stock market returns and other financial metrics with those of other sectors in order to assess whether this is consistent with the exercise significant market power. Surprisingly, despite longstanding concerns about the market power of the volume housebuilders, this exercise does not seem to have been undertaken before.

The research approach adopted is essentially inductive gathering data to make specific observations and then to try to draw more general conclusions from patterns in the data. In the context of limited-existing previous research on the historic financial performance of listed housebuilding firms, in addition to identifying patterns, trends and relationships, this exploratory paper is expected to generate some clear hypothesis that could be tested deductively in later research. However, it should also be acknowledged that, since observation is theory-laden in that observations are shaped by existing theories and conceptual categories, a rigid binary distinction between inductive and deductive approaches can be problematic. For instance, given that concerns about problems related to oligopolistic structures have been raised about the UK residential development for decades, there is an obvious prior expectation that such structures have led to relatively high profits and returns by the listed housebuilders.

In an Australian real estate market context, Coiacetto (2006, 2009) assessed the potential impacts of oligopolistic market structures in the real estate development sector highlighting the potential for excess profits, above normal prices, collusive behaviours amongst others. In the strategic management field, there has been a longstanding 'classic debate' on the extent to which it is the structural characteristics of business sectors rather than individual firm-specific resources that determine performance variation (Galbreath & Galvin, 2008). The paper provides some preliminary evidence on their financial

performance in this context. However, given the nascent state of research in this area, the paper takes an exploratory approach to build foundational knowledge, to generate initial insights and identify emerging patterns in the data. This exploratory strategy should provide flexibility to highlight unexpected findings and capture broader patterns that might be overlooked by more narrowly focused hypothesis testing.

## Background, market context and related research

While academic researchers have extensively focussed on housing supply, less attention has been paid to the housing suppliers. In Britain, since the sharp decline in local authorities' contribution to new housing supply from the mid-1980s, private enterprises have been the primary suppliers of new housing stock, typically accounting for over 75% of completions in a given year.<sup>2</sup> Over the past two decades, the residential development sector has seen both continuity and change in terms of its industry structure amidst several major market shocks. Significant secular sector changes in the last 20 years include an ongoing decline of small and medium-sized housebuilding firms (see House of Lords Built Environment Committee, 2022), a growing market presence of private equity and alternative asset management firms, the rise of institutional investment in the Build-to-Rent and student accommodation sectors (see British Property Federation, 2024) and the increasing commercialisation of the housing associations, exemplified most recently by the nascent emergence of For-Profit Registered Providers (see Savills, 2023). Indeed, housing associations have become significant developers of private housing for sale to households as well as the buyers of affordable housing developed by private enterprises.

In terms of their business models, the large, listed UK housebuilding firms tend to be quite specialist focussing, with varying regional weightings, almost exclusively on the development of residential properties on greenfield and brownfield sites in mainland Britain. While some of them may engage in some ancillary activities such as manufacturing materials or components, the vast majority of their revenues come from the sale of housing constructed by subcontractors (mainly supplying carpentry, brickwork, plastering, plumbing and groundwork services).

While Wellings (2008) meticulously documented the consolidation of the British residential development sector in the decades following WWII, the 15 years following the merger of Taylor Woodrow and George Wimpey in 2007 to form Taylor Wimpey marked a period of relative stability in the structure of the listed housebuilding sector, if not the housing market, in terms of the relative dominance of volume housebuilders. However, this stability seems to be shifting following the 'great reset' in interest rates in 2022. Although they are also listed companies, either with a shorter track record in the stock market or specialising in different sectors or regions, Crest Nicholson, MJ Gleeson, Morgan Sindall, and Springfield Properties have also consistently delivered several thousand homes per annum. In addition to the firms owned by private equity firms and alternative asset managers, independently owned firms, including Bloor Homes, the Hill Group, Morris Homes, and the Wain Group have continued to have a lesser, albeit significant, market presence.

**Table 1.** The ‘top 7’ listed housebuilders.

Company	Market Capitalisation (£ billion June 2024)	Completions (Financial Year 2022–3)	% Of total completions by private enterprises (2004–2023) <sup>11</sup>	Total employees (2023)	Average selling price (2023)
Berkeley	5.51	4,043	2.4%	2,803	c£608k
Barratt	4.91	17,206	11.0%	6,389	c£320k
Persimmon	4.67	9,922	9.4%	4,828	c£256k
Taylor Wimpey	5.25	10,848	8.7%	4,618	c£324k
Bellway	3.22	10,945	5.5%	5,196	c£310k
Vistry	4.36	16,118	2.9%	4,462	c£276k
Redrow	2.35	5,436	3.0%	2,239	c£386k <sup>12</sup>

Table 1 provides selected data on the largest publicly listed British housebuilding firms. Despite the systematic importance of new housing supply, its financial significance within the broader UK equity market is relatively minor. In June 2024, the total market capitalisation of companies trading on the FTSE 350 was approximately £3.6 trillion.<sup>3</sup> For context, the market values of the housebuilding companies are broadly comparable to the large, listed REITs that focus primarily on commercial real estate investment and development. Examples include SEGRO (market cap £12.4 billion in June 2024), Landsec (market cap £4.9 billion in June 2024) and British Land (£4 billion in June, 2024).

At the time of writing, the ‘top five’ housebuilders are in the bottom quartile of the FTSE 100 index by market capitalisation. Collectively, the largest seven housebuilders by market capitalisation have a combined value comparable to the 3i Group, a private equity and venture capital company with a market capitalisation of £28.3 billion in June, 2024. It is notable that Berkeley, which completes the smallest proportion of homes of the leading listed housebuilders, had the highest stock market value. This reflects the diverse range of factors influencing a company’s market value. Berkeley’s relatively high average selling price is due to its focus on high-density apartment developments in brownfield sites, primarily in London and the southeast of England. Consequently, Berkeley often exhibits significantly different financial performance compared to other firms that operate across most UK regions and primarily build low-density projects often on greenfield sites.

Since the global financial crisis, market share dynamics in the housebuilding sector have experienced both short-term and long-term shifts. The consolidation of Bovis Homes, Linden Homes and Countryside Partnerships into Vistry significantly increased Vistry’s share of total completions by private enterprises from 2.5% in 2019 to 10.0% in 2023. In response to deteriorating market conditions following interest rate ‘reset’ in 2022, both Taylor Wimpey and Persimmon sharply reduced their output. Completions for Taylor Wimpey dropped for from 14,154 in 2022 to 10,848 in 2023, while Persimmon’s completions fell from 14,868 to 9,992 over the same period. With Vistry’s emergence and the more organic growth of Bellway, 2023 marked the first year since the global financial crisis that Persimmon and Taylor Wimpey were not among the top three suppliers of new housing.<sup>4</sup>

Turning to the most closely related academic literature, in two papers, Payne (2015) and (2020) provided a detailed analysis of the response in terms of their business strategies

of the large, listed housebuilders to the ‘perverse and powerful shock’ of the global financial crisis. It was argued that the experience had ‘ingrained a level of caution in their business culture’ as the market recovered from the global financial crisis (Payne, 2015, p. 281). An element of continuity was also emphasised. It was argued that a government-led supply-side stimulus involving mainly planning reforms and demand side fiscal incentives enabled the housebuilding firms to persist with established business models based on conventional land acquisition and construction efficiency strategies augmented by a flight from projects and/or markets perceived as risky. A praxeological legacy comprising ‘a diligent and cautious housebuilding industry focused on efficient return on capital employed rather than pushing volume output’ was identified (Payne, 2020, p. 283). However, it needs to be borne in mind that the empirical research for both papers was based on interviews conducted in 2014 and 2015 covering only a relatively short ‘window’ of the aftermath of the global financial crisis.

In more recent research, focussing on variations in completions, profits and dividend distributions from the leading housebuilders between 2017 and 2022, Archer and Cole (2023) updated previous analysis that addressed similar issues over the period from 2005 until 2017 (see Archer & Cole, 2021). In the later paper, they particularly highlighted the dividend distributions which, in real terms, were over three times higher than in 2005, within the context of an approximate 40% rise in output. Somewhat incongruously, while discussing an ‘upward trend’ in profits and dividend distributions per completion, they actually reveal significant declines in the ratios of average gross profit and dividend distributions per completion in nominal terms for 2018–19 compared to 2020–22. For instance, in 2019 it was estimated that £29,770 was distributed in dividends per home completed. The comparable figures for 2020, 2021 and 2022 were £18,279, £19,780 and £22,428 respectively. The reductions would be even more pronounced in real terms given the inflation shocks associated with the pandemic and the energy crisis associated with the conflict in Ukraine.

In a similar vein, concentrating on the former ‘Big Three’ (Barratt, Persimmon and Taylor Wimpey), Foye et al. (2023) analysed their profitability integrating both quantitative and qualitative data. They largely examined the period following the global financial crisis up to 2021, focusing particularly the ‘supernormal profits’ generated by the ‘Big Three’ from 2014 to 2021. Rather than a result of increasing output, the surge in profit levels was attributed not to a substantial increase in completions but to various factors, including increased profit margins and rising house prices. The paper underscores the housebuilding firms’ apparent strategy of ‘margins before volume’. The rise in profit margins is explained by limited competition in the land market, developer-friendly planning reforms, and demand-side subsidies for homebuyers. While acknowledging that occasional periods of supernormal profitability may be expected in a cyclical market, with variation due to the individual firms’ skill or luck, the primary argument was that the increase in profits and profit margins reflected the structural power of the ‘Big Three’. However, the assumption of prioritising margins over volumes seems to contradict actual data showing increasing output post-2014 until the onset of the pandemic in 2020. For instance, Barratt, Persimmon and Taylor Wimpey increased their completions by 20%, 17% and 28% respectively between 2014 and 2019. They were relative laggards compared to Bellway and Redrow who increased their output by 58% and 79% respectively over the same period. Whilst it is challenging to estimate the ‘normal’ level of profitability, there



was also little analysis of the extent to which observed profit levels were supernormal or abnormally large.

Below, empirical evidence is presented on the comparative financial performance of the British housebuilding sector over the last two decades. Historic equity total returns from a range of sectors are analysed to provide a measure of financial performance delivered to shareholders, including both capital gains and dividends. The variation in total returns among the leading housebuilding firms is examined to assess the extent of differences in financial outcomes among them. Additionally, selected accounting metrics on sector and firm profitability, and capital structure are analysed.

## Market-based performance metrics by sector and firm

Data on monthly total returns<sup>5</sup> was retrieved from Refinitiv in April 2024 for the FTSE 350 Index's constituent companies for the preceding 20-year period. Following the retrieval of the data, companies for which the data did not cover the whole 20-year period were excluded. Constituent companies were classified into sectors according to their GICS Industry Name. A number of sectors had only one of two companies and were also excluded from the sample. This left 108 companies for which data was available for the whole period that were then grouped into 19 sectors according to GICS Industry Name (see [Appendix 1](#) for a list of companies included in the sample with their GICS Industry Name). The resultant sector level return indexes consist of equally weighted mean monthly total returns.

The relevant GICS Industry Name for the volume housebuilders is 'Household Durables'. For the sample period, this sector included seven firms – Barratt, Bellway, Berkeley, Persimmon, Redrow, Taylor Wimpey and Vistry. Morgan Sindall, who completed 1,923 residential units in 2023, are included in the 'Construction & Engineering' sector. Several different REIT (residential, diversified, office etc.) and utility (multi, electric, water) sub-sectors with one of two firms have been aggregated to create 'REIT' and 'Utilities' sectors. On a note of caution, due to the relatively small number of firms in most of the sectors, it is worth bearing in mind that, in several sectors, extremely poor or good relative performance by a single firm can dominate the performance of that whole sector.<sup>6</sup>

[Table 2](#) provides the mean monthly total returns by sector along with the average for the whole sample and the comparable total returns from UK government bonds over the sample period. A correlation matrix is also provided in [Appendix 2](#). At first sight, there is little here to suggest that, compared to other sectors, the returns delivered by the volume housebuilders have been abnormally high over the sample period. Throughout the entire period under consideration, the volume housebuilding sector has performed below the average for the whole sample. In terms of mean monthly returns, the sector's performance closely resembled that of the construction and engineering, and REITs sectors. It also exhibited the highest correlation with these two sectors over the sample period compared to other sectors.

When evaluating risk using a common metric such as return volatility, the housebuilding sector displayed the highest standard deviation of returns compared to all other sectors. During the boom-and-bust period coinciding with the global financial crisis, the housebuilding sector experienced its weakest performance from 2004 to 2009, with a

**Table 2.** Total returns by sector: UK FTSE 350 2004–2024.

Sector	Mean Monthly Total Return	Standard deviation	Mean Monthly Total Return2	Mean Monthly Total Return3	Mean Monthly Total Return4	Mean Monthly Total Return5
	2004–2024	2004–2024	2004–2009	2009–2014	2014–2019	2019–2024
Trading Companies & Distributors	1.80%	7.99%	–0.28%	4.09%	1.27%	1.61%
Media	1.40%	7.93%	–0.88%	2.33%	1.98%	1.55%
Specialty Retail	1.36%	8.43%	0.35%	1.92%	2.42%	–0.11%
Metals & Mining	1.24%	7.51%	1.90%	0.44%	1.10%	0.86%
Hotels, Restaurants & Leisure	1.17%	5.38%	0.69%	1.87%	1.01%	0.87%
Aerospace & Defense	1.13%	6.68%	1.61%	1.84%	0.19%	0.53%
Whole sample from FTSE 350	1.12%	4.94%	0.50%	1.77%	0.93%	0.72%
Capital Markets	1.03%	5.47%	0.27%	1.49%	1.05%	0.76%
Chemicals	1.00%	6.36%	0.64%	2.89%	0.47%	–0.20%
Food Products	0.98%	5.02%	0.67%	1.88%	0.56%	0.44%
Machinery	0.98%	6.40%	0.44%	2.41%	0.35%	0.26%
Insurance	0.83%	5.97%	0.03%	1.66%	1.06%	–0.02%
Utilities	0.80%	4.06%	0.73%	1.49%	0.21%	0.67%
Pharmaceuticals	0.69%	4.83%	0.14%	1.04%	0.56%	0.84%
Construction & Engineering	0.67%	7.45%	0.91%	0.83%	–0.44%	0.99%
Household Durables	0.62%	8.59%	–0.63%	1.86%	1.14%	0.03%
REITs	0.60%	6.10%	–0.36%	1.48%	0.81%	–0.04%
Oil, Gas & Consumable Fuels	0.35%	7.10%	0.88%	0.34%	–0.21%	–0.09%
UK Government Bond Total Return Index	0.26%	2.24%	0.52%	0.44%	0.46%	–0.35%
Consumer Staples Distribution & Retail	0.25%	5.74%	0.49%	0.47%	–0.48%	0.29%
Banks	–0.03%	6.41%	–0.73%	0.70%	–0.03%	–0.83%

mean monthly return of –0.63%. It ranked among the worst-performing sectors during this time, with only the banking (–0.73%) and media (–0.88%) sectors performing worse. Out of the 19 sectors analysed, only five had negative total returns on average during this sub-period when the mean monthly total return for the whole sample was 0.50%.

In the recovery period following the global financial crisis, the housebuilding sector fared slightly better than the average for the whole sample. From 2009 to 2014, all sectors saw positive mean monthly total returns. The housebuilding sector's average *annual* total return in this sub-period was nearly 25% compared to an average for the whole sample of over 23%. In terms of total returns, seven sectors outperformed the housebuilding sector during this time frame. In the third 60-month sub-period from 2014 to 2019, the housebuilding sector recorded a lower mean monthly total return compared to 2009–2014. However, its relative performance compared to other sectors improved. The mean

**Table 3.** Total returns by housebuilding firm 2004–2024.

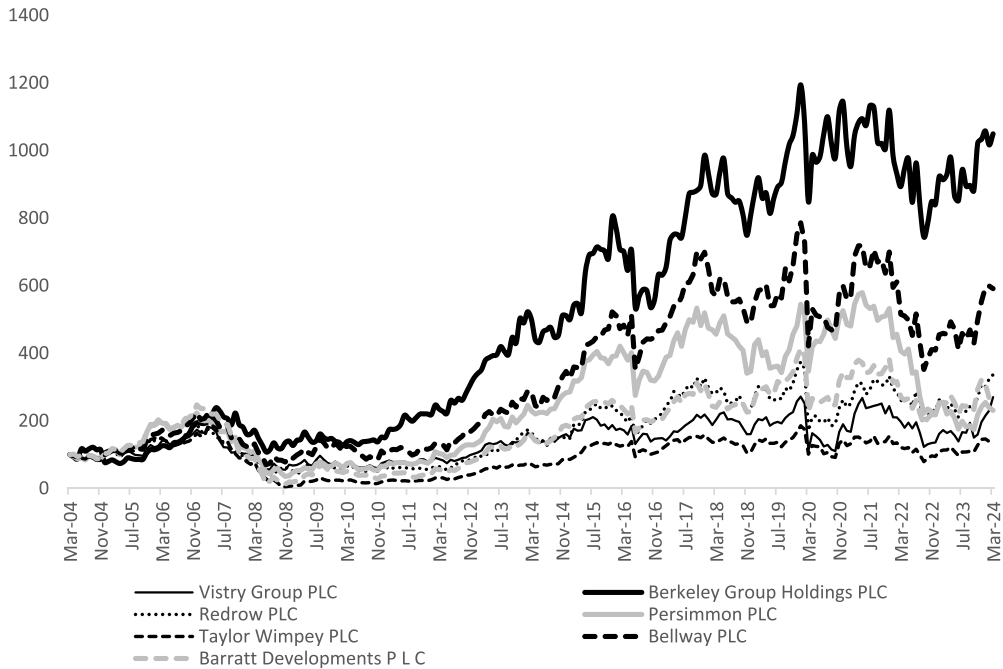
Company	Mean Monthly Total Return	Standard deviation	Mean Monthly Total Return2	Mean Monthly Total Return3	Mean Monthly Total Return4	Mean Monthly Total Return5
	2004-2024	2004-2024	2004-2009	2009-2014	2014-2019	2019-2024
Vistry Group PLC	0.46%	5.61%	-0.33%	1.34%	0.61%	0.42%
Berkeley Group Holdings PLC	1.02%	12.97%	0.75%	2.02%	1.12%	0.30%
Redrow PLC	0.54%	6.63%	-1.20%	1.49%	1.13%	0.20%
Persimmon PLC	0.37%	4.59%	-0.96%	2.31%	0.97%	-0.93%
Taylor Wimpey PLC	0.17%	2.03%	-3.75%	2.14%	1.30%	-0.04%
Bellway PLC	0.76%	9.54%	0.16%	1.67%	1.48%	-0.03%
Barratt Developments PLC	0.41%	5.08%	-2.44%	2.16%	1.24%	-0.17%

annual total return in this third sub-period period was nearly 15% compared to an average for the whole sample of just under 12% with only three sectors producing higher returns than the housebuilding sector. It is these two sub-periods when total returns have been positive on average that have been the main focus of previous research on the profitability of the volume housebuilders (see Archer & Cole, 2021, 2023; Foye et al., 2023). In the most recent 60-month period, which included pandemic-related lockdowns, a post-pandemic inflation shock due to supply-side constraints, and a substantial increase in energy prices, uncertainty increased and performance waned. During this period, the housebuilding sector's relative and absolute performance deteriorated significantly. On average, monthly total returns were barely positive. In comparison, the whole sample delivered a mean monthly total return of 0.72%. Fifteen out of the 19 sectors have performed better than the housebuilding sector during the most recent five-year sub-period.

Whilst a comparison of inter-sector performance based on relatively simple metrics should be undertaken with caution given sometimes substantial variation in companies' sizes, values, leverage and geographical foci particularly, at first sight there is little evidence from the data on total returns to suggest that the listed volume housebuilding sector has managed to outperform the broader stock market or most of its peers between 2004 and 2024. Indeed, the evidence from stock market performance would point to the reverse. As measured by volatility, the housebuilding sector has also exhibited the highest level of risk in the context of underperformance relative to the market benchmark and most other sectors. Below, the variation in stock market performance among the individual housebuilding firms is assessed.

Table 3 provides measures of the mean monthly total return by housebuilding firm for the whole sample over the period. Figure 1 illustrates how the observed differences in average monthly returns have produced very different financial performance outcomes over a 20-year period. The starkest contrast here is with Berkeley and Taylor Wimpey. £1 invested in the latter in 2004 would have grown to £2.69 in 2024; £1 invested in Berkeley in 2004 would have returned £11.46 in 2024. Whilst an explanation of the differences in the stock market performance of individual firms is beyond the scope of this paper, the range of performance seems large. In this context, the diversity of their financial performance is possibly the key signal from this data on total returns to shareholders. If there are oligopoly profits from manipulating housing supply, prices and land markets,

## Total Return Index by Firm 2004-2024



**Figure 1.** Total Return Index by Firm 2004-2024.

they seem to have been distributed rather unequally between the leading housebuilding firms. With its distinct business strategy, albeit the average total return is lower than the average for the whole sample, Berkeley have performed relatively well compared to the other listed, volume housebuilders. Its mean annual total return has been over 15%. The contrast with Taylor Wimpey is again noted. Taylor Wimpey have produced the weakest performance delivering a mean annual total return of approximately 2% over the 20-year period. Barratt, Persimmon, Redrow and Vistry have delivered mean annual total returns that are below the average for the sector ranging between 4% and 7%. Bellway has been the only other firm to outperform the housebuilding sector average over the whole period delivering a mean annual total return of around 9.5%.

It is clear from [Table 3](#) that the period including the global financial crisis was associated with particularly poor performance for the listed, volume housebuilding firms. For instance, after peaking at over £3.90 in April 2007, Taylor Wimpey's share price had collapsed to under £0.07 by December 2008. Similarly, Barratt's share price fell from around £8.25 in February 2007 to close to £0.30 in November 2008. Whilst Barratt's share price recovered to its pre-global financial crisis peak in 2019, peaking again at around £2.20 in early 2020 in the months before the pandemic lockdowns, Taylor Wimpey's share price was £2.26 at the beginning of April 2004 and was £1.33 at the beginning of April 2024. Berkeley has been the only housebuilder to deliver positive returns in all 4 five-year sub-periods. The contrast in share price performance with Berkeley and Taylor Wimpey exemplifies the difference in financial performance. At the end of March 2004, Berkeley's share price was £4.89. At the end of March 2024, it had

risen nearly tenfold to £47.58. Bellway also produced, on average, positive returns throughout the subperiod that included the global financial crisis. However, their mean monthly returns have been slightly negative for the most recent five-year sub-period. Given the sharp inflation spike in 2022 and 2023 and the relatively weak return performance of the listed volume housebuilders *in nominal terms*, it is also important to acknowledge that there is a potential money illusion effect of comparing their recent performance with performance in previous sub-periods when inflation was much lower.

### **Accounting-based performance metrics by sector and firm**

In this section, a number of performance metrics extracted from the Refinitiv database are analysed to provide a comparative perspective on the capital structures, inventories and profit margins of the volume housebuilding sector and the individual firms that constitute the sector. Unlike objectively measured financial returns, accounting metrics, which are ostensibly required to a ‘true and fair’ view of a company’s financial performance and position, allow for some flexibility and judgement in their interpretation and, consequently, in the figures reported. In terms of their inventories, in their annual reports and other documents describing their financial and operational performance, companies do not always use the same terminology to describe their holdings.

#### ***Capital structure: cash and short-term investments, and long-term debt***

Whilst firms have different liquidity requirements and thus varying needs to hold cash and short-term investments, there has been a significant shift in the level of cash holdings of the volume housebuilding sector compared to other sectors over the sample period. In 2004, cash and short-term investments represented over 7% of the total revenues of the volume housebuilding sector. This was above the median (3%) for all sectors and was one of the highest apart from Aerospace and Defence (26%), Construction and Engineering (8%), and Food Products (22%).

In 2004, the volume housebuilders were holding £857.5 million in cash and short-term investments representing 7.4% of total revenues. The holdings grew from £746.1 million (7.0% of total revenues) in 2013, peaked at £6.13 billion (27.4% of total revenues) in 2021, and were around £4.54 billion (19.5% of total revenues) by 2023. [Figure 2](#) illustrates the extent to which the housebuilding sector appears to be abnormal in this regard. For the whole sample, the median holding of cash and short-term investments as a proportion of total revenues for all sectors increased slightly 3.3% to 3.4%. In contrast, for the volume housebuilding sector, whilst revenues increased by an average of 3.75% per annum, holdings in cash and short-term investments have grown by just over 9% per annum.

The relative size of the holdings of cash and short-term investments varied significantly among the housebuilding firms. In [Figure 3](#), Berkeley stands out among most metrics for the sector and is particularly notable for its substantial holdings in cash and short-term investments. In contrast, despite recent convergence, Bellway and Redrow have tended to hold relatively low levels of cash and short-term investments compared to Barratt, Persimmon, Vistry and Taylor Wimpey. Whilst housebuilding firms clearly

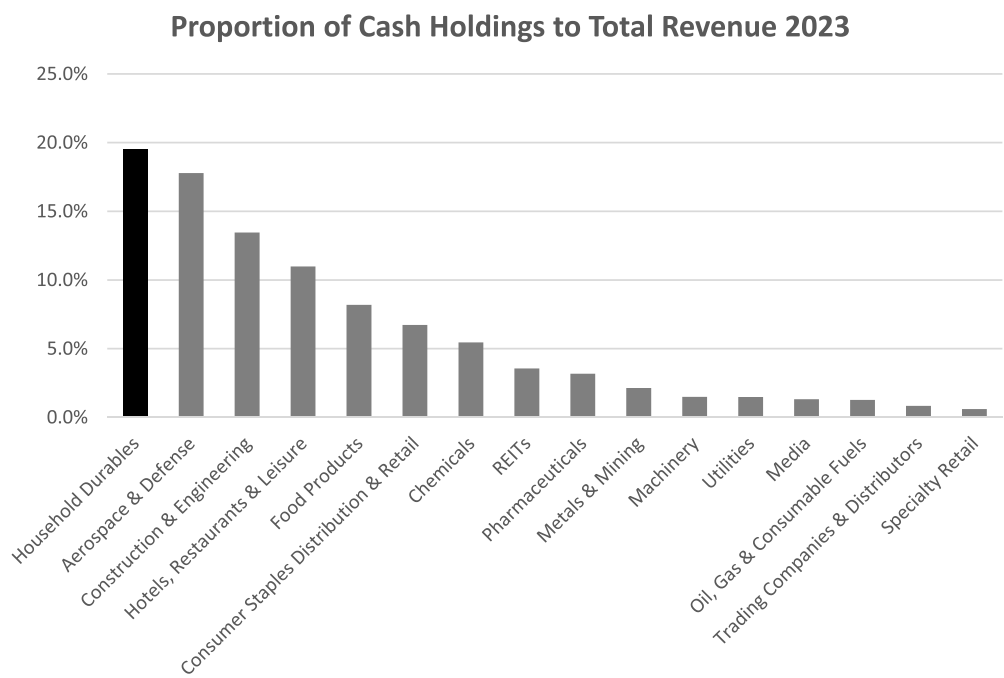


Figure 2. Proportion of Cash Holdings to Total Revenue 2023.

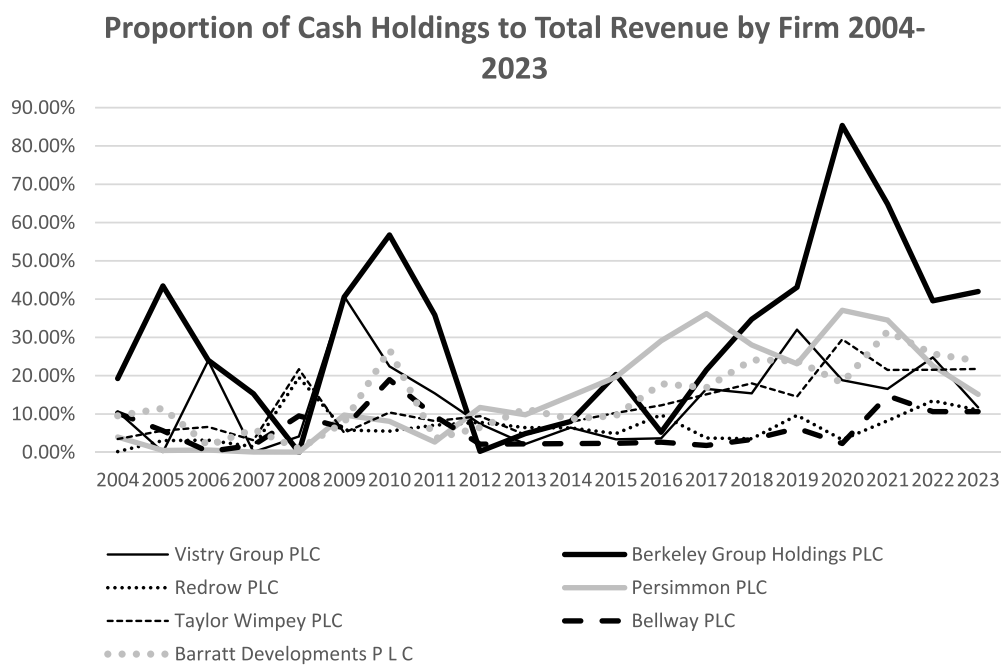
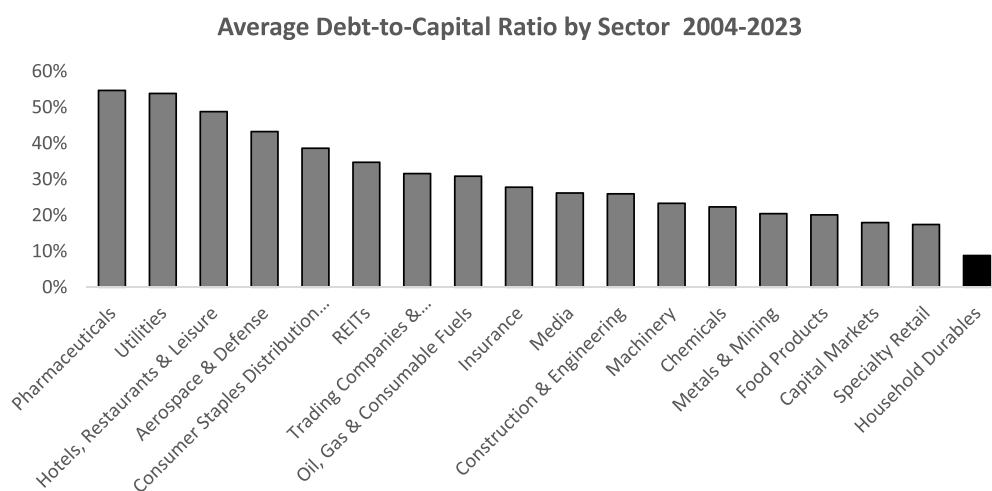


Figure 3. Proportion of Cash Holdings to Total Revenue by Firm 2004-2023.



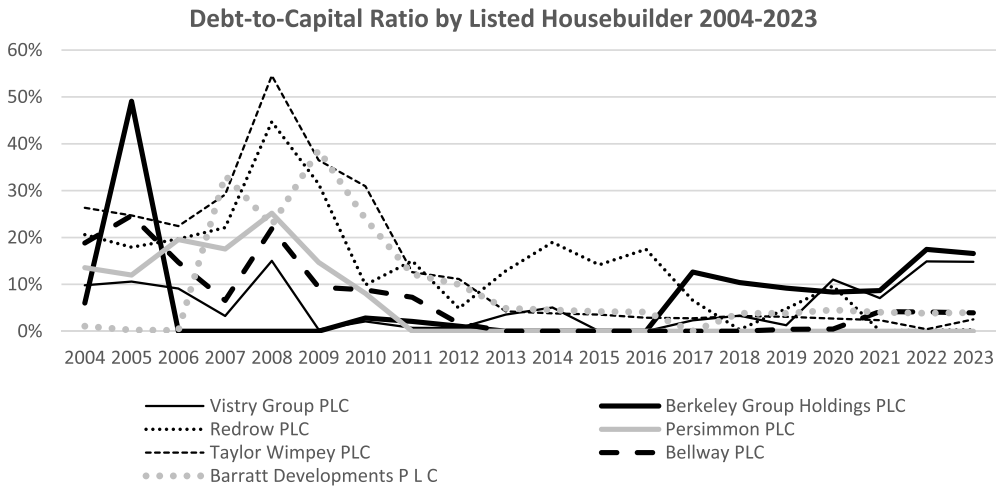
**Figure 4.** Average Debt-to-Capital Ratio by Sector 2004-2023.

have different strategies regarding the appropriate level of cash holdings, it is challenging to identify any rationale based on differing operational needs.

Reinforcing the shift to more conservative capital structures by volume housebuilding firms in the aftermath of the global financial crisis, there has also been a significant change in their borrowing levels. In 2004, long-term debt constituted nearly 14% of the total capital of the volume housebuilding sector. This was below the median of 24% for all sectors and was among of the lowest, apart from Capital Markets (13%), and Oil, Gas and Consumable Fuels (10%). This gearing ratio of the volume housebuilding sector peaked at 26% during the global financial crisis but quite quickly declined as the sector recovered, remaining between 3% and 6% over the last decade. In contrast, the typical exposure to long-term debt has increased for other sectors over the last two decades. In 2023, the median ratio of long-term debt to total capital for all sectors was nearly 30%, having not exceeded 33% over the entire 20-year period. As [Figure 4](#) illustrates, the volume housebuilding sector has on average had the lowest exposure to long-term debt over the whole sample period.

[Figure 5](#) illustrates the extent of variation between the firms over time. The global financial crisis clearly caused significant volatility in the capital structures of the housebuilding companies, as some firms either increased their long-term debt capital to fund operations amid collapsing equity values and, consequently, total capital. During the post-crisis recovery period, with the possible exception of Redrow, housebuilding firms maintained either no or very low levels of long-term debt. In the most recent five-year period, as Berkeley significantly expanded the scale of their landbank (mainly through the buy-out of JV partners) and Vistry acquired Linden Homes and Countryside Properties, their gearing ratios have increased to 17% and 15% respectively. However, this level of leverage is still well below the median of 29% for the whole sample.

Regarding their capital structures, the housebuilding firms then exhibit elements of both continuity and change. At the beginning of the sample period, the housebuilding firms generally had relatively conservative capital structures compared to other sectors. This tendency was reinforced in the aftermath of the global financial crisis, which



**Figure 5.** Debt-to-Capital Ratio by Listed Housebuilder 2004-2023.

affected the housebuilding sector almost as severely as the banking sector in terms of returns. Before the global financial crisis, the housebuilding sector typically held relatively high levels of its capital in cash and short-term investments and maintained relatively low levels of long-term debt compared to most other sectors. As the housebuilding firms recovered from the market turmoil, all of them have had periods of no long-term debt at some point in the last decade.

### **Inventory**

In addition to their cash holdings, the current assets of the volume housebuilders mainly comprise of inventory, which itself primarily consists of their landbanks and work-in-progress. For example, Barratt's 2023 Annual Report showed current assets valued at £6.72 billion, largely made up of cash or cash equivalents (£1.27 billion) and inventories (£5.24 billion). Barratt's inventories consisted mainly of land held for development (£3.14 billion) and construction work in progress (£1.91 billion). Thus, cash holdings, landbank and work in progress accounted for nearly 95% of the company's current assets. Given that the figures are so stark, illustrating in charts the extent of the difference between the housebuilding sector and other sectors in terms of relative inventory size is superfluous. From 2004 to 2023, the inventories of the housebuilding firms averaged 130% of their revenues, a level unmatched by any other sector. The closest sectors, Aerospace and Defence and Chemicals, both held only 18%. Similarly, average inventory days over this period were 557 for the housebuilding sector compared to 178 days for the next highest sector (Pharmaceuticals) and an average of 107 days for all sectors.

Compared to other sectors, the relative size of the inventories held by the housebuilding firms may seem abnormal and, in the context of mutating housing 'crises', these inventories have been a source of recurrent controversies for decades. The debate has centred on claims of 'land hoarding' and 'drip feeding' housing supply (see Smyth, 1982; White, 1986). Critics argue that housebuilding firms hold excessive land and work-in-progress inventories for anti-competitive or speculative motives (Chamberlain & Walker,



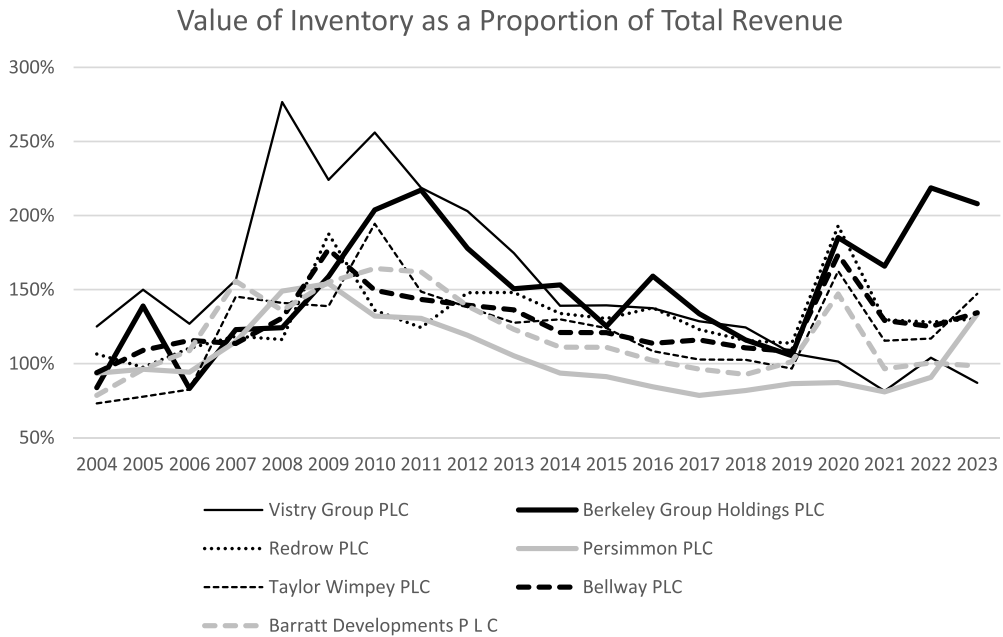
2020). The accusation has been that housebuilders act on various incentives to hold more land or build out more slowly than they would require for purely operational reasons. In effect, it is claimed that their abnormally large inventories enable the volume housebuilding to prevent competitors from; entering specific local markets, increasing supply, introducing price and product competition, and taking market share (see Competition, and Markets Authority, 2024). In addition to providing some ability to build out at market absorption rates that maintain stable prices, a linked charge is that excessively large land holdings reflect land speculation or investment by the housebuilders who expect to benefit from increasing land prices as well as reduced competition.

Housebuilders typically argue that strong counterincentives exist to minimise inventory costs and that there are the significant risks associated with allocating substantial capital to their inventories of development land and work in progress. These issues have been central to the UK Competition and Markets Authority's (CMA) Market Study of the housing building sector carried out in 2022–3. Focussed largely on their market behaviours in the land market, in response to concerns about potential oligopolistic behaviours, the housebuilding firms have claimed that regulatory uncertainty caused by the planning system that forces them to hold relatively large land inventories.<sup>7</sup> In their response to the Competition and Market's Authority's consultation exercise, Crest Nicholson response reflects the stance of many large, listed housebuilding firms.

Crest Nicholson employs a fast asset turn business model and the Return on Capital Investment metric is seen as one of the most important by shareholders. As such, the efficiency in the process of buying land (typically at an eight-figure sum), investing (typically a seven figure sum) to obtain a planning permission, and then the building and selling of houses is of the utmost importance. This business model then requires Crest Nicholson to reinvest the profit into further projects. This business model does not reward the inefficient use of land, nor does it encourage the 'hedging' of future land value increases as any such increase would not realise the level of profit that could be generated by development. Consequently, Crest Nicholson has no incentive to hold on to land that can be developed ... the increasing size of landbanks ... are a symptom of these underlying failings: a) Both the planning and consenting process for consented land are slow and uncertain ... (Clarke, 2023, p. 4)

The variation in the inventories of the housebuilding firms may offer further insights. Figure 6 shows total inventories as a proportion of revenues. Since inventories have tended to be more 'sticky' than revenues as market shocks causing revenues drops (due to decreased sales and sale prices) can substantially increase this metric without corresponding changes in the value of inventories.<sup>8</sup> For instance, the pandemic caused the listed housebuilding sector's revenues to drop from £22.2 billion in the financial year 2018/9 to £16.8 billion in 2019/20, while the value of total inventory actually grew from £22.4 billion to £24.3 billion. More broadly, since the post-global financial crisis recovery, the housebuilding firms have tended to hold inventories varying around 125% of their total revenues.

Again, Berkeley Homes have been a prominent exception to this pattern. They stated in their 2022 annual report that their operating model was 'land-led' rather than focussed on 'volume growth' (the Berkeley Group, 2022). In 2023, Berkeley's inventories included £927 million of land not under development and approximately £4.25 billion of work in progress. In the financial years 2021/22 and 2022/23, their total inventories were valued



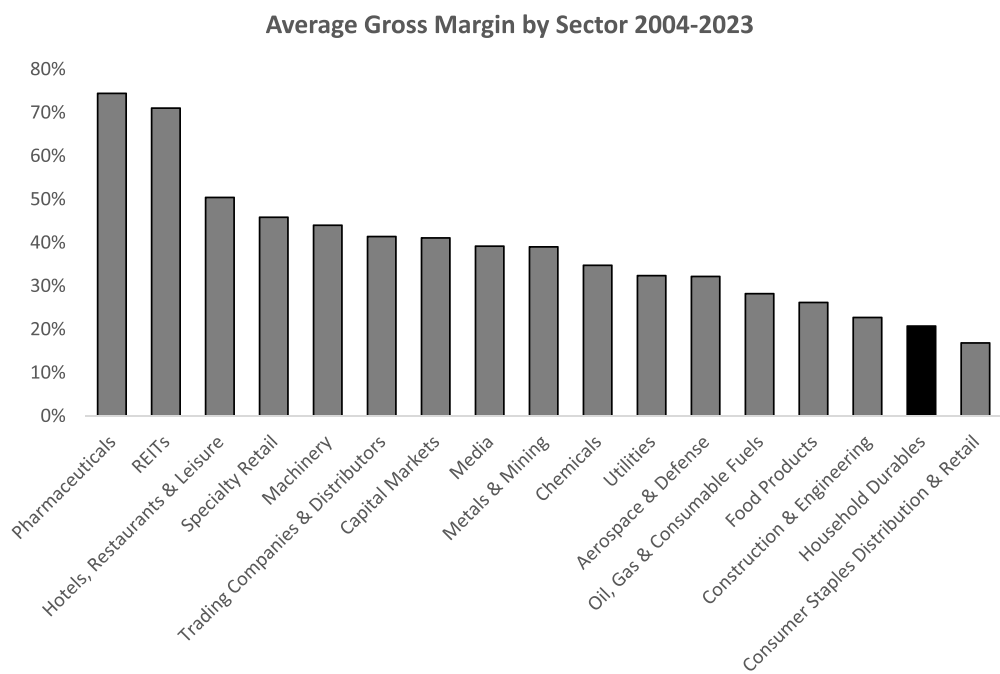
**Figure 6.** Value of Inventory as a Proportion of Total Revenue.

at 219% and 208% of their total revenues, respectively. In 2023, Berkeley's average inventory days were 1060. The mean for the other six large, listed housebuilding firms was 550. However, Berkeley's 'land-led' strategy may also be a relatively short-term phenomenon. Berkeley did not acquire any additional sites during the financial year 2022/3 and expected to continue 'to deliver new homes, without new investment fully replacing production' (Berkeley Group, 2023, 22).

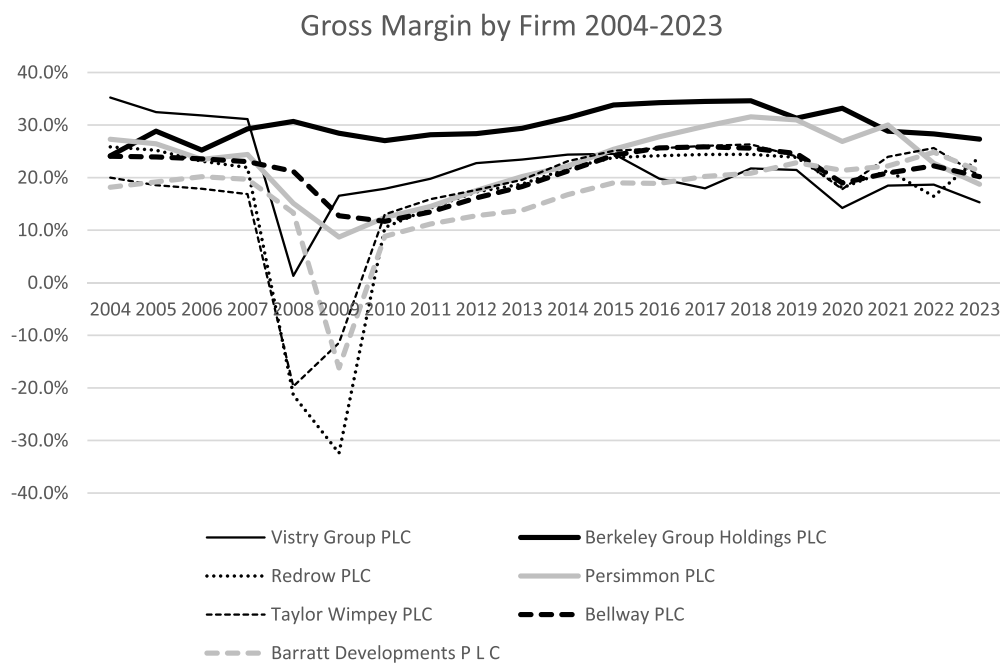
Clearly, the housebuilding sector is abnormal in terms of the relative size of its inventories and, consequently, in terms of its relative exposure to inventory risk.

### **Profitability**

In this section, the focus is on comparing the gross rather than net profit margins of the different sectors and the housebuilding firms. Gross margin reflects the ratio between gross profit (before deduction of interest and taxes on profits) and total revenues and it can vary significantly between sectors and firms within a sector. For instance, REITs typically have comparatively high gross margins. Between 2004 and 2023, the mean gross margin was 71% for the sector. This relatively high figure can be attributed to the fact that direct operating costs of leasing commercial space tend to be a relatively low proportion of the rents, which are the main source of revenues. In contrast, two of the largest supermarket operators in the UK, Tesco and J Sainsbury, had average gross margins that fluctuated within the range of 4% to 8% over the sample period. Given the huge range in gross margins and the consequent complexities in making meaningful inter-sectoral comparisons, the data presented in Figure 7 should therefore be interpreted with some caution.



**Figure 7.** Average Gross Margin by Sector 2004-2023.



**Figure 8.** Gross Margin by Fim 2004-2023.

The differences in gross margin between the firms within the sector are displayed in [Figure 8](#). It is notable that, except for the Consumer Staples Distribution and Retail sector,<sup>9</sup> the housebuilding sector has consistently exhibited the lowest gross margins over

the last two decades. In the four years leading up to the global financial crisis, the sector's gross margin remained consistently close to 25%. However, during the crisis, the sector's average gross margin fell to 1% in the 2008/9 financial year, recovering to its pre-crisis level in 2014/15. Since then, it has hovered at around 25% dropping to 21% in the financial year 2022/23. Whilst re-iterating caveats about the challenges in comparing sectors, the housebuilding sector's gross margins have typically been 15%–30% lower than the average for all sectors.<sup>10</sup> Based on a simple comparison of gross margins between sectors, there is little evidence to suggest persistent abnormal profitability.

Turning to the differences between firms within the housebuilding sector, it is notable that, since the global financial crisis, only Berkeley has consistently maintained high gross margins relative to the other large, listed housebuilders. Excluding Berkeley, since 2008 when ranked each of the other large, listed housebuilding firms has had relatively high gross margins and relatively low gross margins compared to its peers. The range of gross margins between the firms is quite high. Over the entire sample period, the median difference between the firm with the highest gross margin and the firm with lowest gross margin was around 15%. Overall, the housebuilding sector has relatively low gross margins compared to other sectors with most individual housebuilding firms failing to consistently exhibit relatively high or low gross margins compared to their peers.

## Conclusion

The financial performance of the British housebuilding sector has both influenced, and been influenced by, long-term, evolving challenges in housing supply. In response to slowing sales rates and concerns about falling prices, the sharp cuts in output by most of the firms by around a quarter 2022 and 2024 plainly illustrated the focus of the housebuilding firms on financial performance rather than on maintaining or increasing housing output. The most financially successful housebuilder, Berkeley, has increased their annual output by under 500 homes over the last two decades. Historically, the reliance on a relatively small number of large firms for the delivery of new housing supply has recurrently generated concerns about oligopolistic behaviours in the housing and land markets. As a result, these major suppliers have consistently faced regulatory scrutiny, primarily focused on industry structure, land use regulation, infrastructure capacity, workforce issues, and business models.

The limited academic research on the financial performance of the housebuilding sector has largely focussed on the existence or extent of excess profitability concentrating primarily on the surge in profits and returns between 2013 and 2019, which followed a market crash during the global financial crisis and a subsequent recovery. However, the housing sector is typically characterised by cyclical market fluctuations. The strong returns and profits observed between 2013 and 2019 that have been the focus of recent research may be primarily explained in terms of cyclical increases in output, profit margins, and house prices. Pro-cyclical policy interventions such as planning reforms and demand-side subsidies can be framed as contingent events reflecting the prevailing socio-politico-economic institutional landscape. Such historically contingent factors may have amplified the structural cyclicity of the housing market. Indeed, it is notable that the housebuilding sector's total returns and profit margins have deteriorated significantly since 2019.

This paper has attempted to provide a circumspect analysis of the financial performance of the British housebuilding sector in the context of the performance of other business sectors. An important note of caution is that there are data and methodological challenges with such a comparative exercise. Defining sectors is itself problematic, and economic sectors vary significantly in terms of firm and market size, international exposure, maturity, regulatory frameworks, reliance on physical capital versus intellectual property, capital structure etc. These and other potential confounding factors mean that any inferences or conclusions based on the descriptive data presented here need to be treated with caution. Nevertheless, despite the data being descriptive and not accounting for potential confounding factors, there are glaring patterns that provide useful evidence.

A central mechanism underpinning these concerns about market concentration is that limited competition enables tacit coordination among firms on output levels and pricing, potentially allowing them to sustain elevated profit margins. This market dynamic is associated with several undesirable outcomes, including higher prices, reduced supply, lower quality, diminished innovation, and broader inefficiencies. Paradoxically, despite these market characteristics, there is limited evidence of consistently robust financial performance within the sector over the past two decades. In reality, the transmission of market power to abnormal profits may not be clearcut. Hicks (1935) 'quiet life' hypothesis posits that reduced competition can foster inefficiency, suppress innovation, and encourage managerial priorities that favour stability and risk aversion. Such tendencies can counteract the financial advantages typically associated with market power. This hypothesis appears consistent with common criticisms of volume housebuilders, which highlight their reluctance to embrace modern construction methods, conservative approaches to build-out rates, limited innovation, reliance on proven formats, and risk-averse financial strategies. Moreover, the combination of an oligopolistic market structure and the 'scarring effects' of the 2008 global financial crisis may have further entrenched these conservative and risk-averse tendencies, thereby resulting what Hicks described as a 'quiet life'.

Compared to other business sectors, the British housebuilding sector has been characterised by conservative balance sheets with minimal leverage and high cash reserves. Following the recovery from the global financial crisis, housebuilders have further reinforced their cautious financial management practices by increasing cash reserves and reducing debt. This apparent risk aversion may partly explain the relatively poor stock market performance of the housebuilding sector compared to other sectors. However, the central point is that, over the last two decades, the stock market returns of the British housebuilding sector have been relatively low compared to most sectors. With the exception of Berkeley, no firms have consistently maintained high profit margins compared to their peers, and there has been significant variation between firms and over time. An unexpected finding of this research has been the relatively low average stock market returns and gross margins over the last two decades. Compared to all but one of the other business sectors, the housebuilding sector has had lower gross margins in the last 20 years. These lower gross profit margins have also been reflected in the stock market. Over a 20-year period, the housebuilding sector has performed less well than most other sectors.

One of the most striking and controversial attributes of the listed housebuilding sector is the substantial capital tied up in inventory, including land and work in progress. Compared to all other sectors, the housebuilding sector is a significant outlier in this regard. Major US

housebuilders have recognised that, rather than acting as a source of competitive advantage or as a means of generating asset performance, instead this capital allocation may create an 'inventory drag' similar to the phenomenon of 'cash drag' caused by large cash holdings. Large, illiquid real estate holdings tie up significant amounts of capital that could otherwise be used to generate higher gross margins through building and selling new homes.

The significant variation in stock market performance among individual housebuilding firms over the last two decades suggests a diverse financial landscape within the sector. To some extent, this variability undermines the notion of substantial and persistent market power within the sector, suggesting that significant market power, if present at all, is not uniformly distributed. Instead, it may underscore the critical role of firm-specific factors in determining financial outcomes. Managerial expertise, strategic decision-making, and operational capabilities would be expected to be pivotal in shaping a firm's financial performance. These factors should lead to differing levels of success, even among companies operating within the same sector. Thus, understanding the financial performance of housebuilding firms potentially requires a nuanced analysis that considers the unique attributes and strategies of individual companies. Variance components and/or decomposition analysis seems to provide potentially useful approaches in this context.

Looking forward, despite housing's crucial role as social infrastructure and long-term controversies about its supply, academic research has arguably paid too little attention to the housebuilding sector's structure and its financial performance. This paper's overuse of modal verbs reflects the fact that the empirical research here has been preliminary, leaving scope for more robust, in-depth studies. Future research could investigate how and whether large inventories and cash holdings act as a drag on the financial performance of the housebuilding sector compared to other sectors. The variation in financial performance among housebuilding firms raises questions about its potential underlying determinants such as variation in product mix, geographical focus, capital structure, growth focus, land strategy, operational efficiency etc. Such research would require much more granular firm-level data and robust econometric identification strategies. Similarly, as noted above, explaining differences in financial performance among sectors, requires accounting for numerous potential confounding factors. Understanding the economic concept and estimation of normal profit or returns for real estate developers has become increasingly important in land use regulation but remains poorly understood. Short-term financial analyses may miss the fact that, in cyclical sectors with recurring periods of expansion and contraction, returns or profits may be persistently abnormal in positive and negative directions.

Finally, while the structure and operations of the UK residential development sector have been documented through both academic research and regulatory analysis, with the exception of the United States, there remains a notable deficit in empirical knowledge about the residential development sectors in other markets. This research gap is particularly evident in relation to the industry structures, the financial performance of residential development firms, and the business models found in different national contexts. The comparative richness of UK-focused research stands in marked contrast to the limited systematic evidence available about how housing development sectors are structured and function in other mature housing markets. This disparity in empirical knowledge constrains our ability to draw meaningful cross-national comparisons and understand how different institutional and market environments shape residential development practices and market structures.

## Competing of interest

The authors report there are no competing interests to declare.

## Notes

1. Lord Best is an independent peer in the House of Lords having spent most of his career in senior management positions in the housing association sector.
2. Of a total of 3,343,740 completions in the UK between 2004–5 and 2022–3, 82% were completed by private enterprises. This data has been extracted from Worksheet 2a from the ONS' [Housebuilding Dataset](#). The data used on completions by private enterprises used in this paper have been extracted from this dataset.
3. This figure was obtained from the [London Stock Exchange website](#) Market capitalisation of the other companies cited in this paragraph was obtained from Google Finance.
4. According to their latest trading updates at the time of writing, in 2024 Persimmon and Taylor Wimpey expect their completions to remain broadly at the reduced level of 2023. Bellway are projecting a sharp fall in their total output to around 7,500 units. Vistry expect to overtake Barratt as the largest supplier of new housing increasing their output to around 18,000 homes in 2024 compared to Barratt's projection of 13,500–14,000 completions. There has been a flurry of merger and acquisition activity in the sector with some further significant corporate acquisitions being proposed but not finalised. Barratt are proposing to takeover Redrow. Persimmon are proposing to acquire Cala, a privately owned housebuilding firm, from Legal and General Capital. Cala completed 2,917 units in 2023. Bellway are proposing to takeover Crest Nicholson. Crest Nicholson are one of the smaller listed housebuilders with a market capitalisation of around £400 million as of end of 2024.
5. Returns are expressed in nominal terms. Whilst individual total returns were obtained for each month, the calculation of mean monthly return over the sample period was based on the geometric rather than the arithmetic mean. The geometric mean tends to be regarded as a superior measure of return as it reduces the effects of volatility on return estimation. This is a particular issue with some of the housebuilders. For instance, over the whole sample period Taylor Wimpey exhibits the highest standard deviation of monthly total returns for the volume housebuilders at 14.6% with an arithmetic mean total return of 1.2% per month (15.9% annualised). However, Taylor Wimpey's geometric mean total return is only 0.17% per month (2.0% annualised). Given that Taylor Wimpey's share price on 8 April 2004 was £2.26 compared to £1.35 on 12 April 2024, it is apparent that the geometric mean return metric provides a more appropriate performance metric in this context.
6. It is worth noting that it is a stylised fact that a relatively small number of firms tend to account for most of the long-term positive performance of most equity indices. For instance, in a study based on the stock market performance of more than 64,000 companies across a large sample of global markets, Bessembinder et al. (2023) found that over half of compound long-term returns measured from 1990 to 2020 underperformed returns to one-month U.S. Treasury bills over matched time horizons. The best-performing 2.39% of firms accounted for all global net wealth creation.
7. It is worth noting that a number of government-driven investigations into potential oligopolistic behaviours in the housing land market by the Office for Fair Trading in 2007–2008, Oliver Letwin in 2017–18 and the Competition and Markets Authority have not found evidence of significant market power.
8. It is worth noting that inventory tends to be recorded at the lower of historic cost or Market Value in the listed housebuilders' annual reports.
9. This sector contains three firms – Tesco, J Sainsbury, and Marks and Spencer Group.
10. For instance, for the financial year 2022/3, the average gross margin for the housebuilding sector was 21% and the average for all sectors was 39%.



11. These percentages should be regarded as approximations. The listed housebuilders do not report their annual results at the same time. Persimmon, Taylor Wimpey and Vistry report for the calendar year. Barratt's and Redrow's year end are 30 June. Bellway's year end is 31 July and Berkeley's is 30 April. The ONS' Housing Dataset provides annual and quarterly time series on housing completions. Annual figures are provided for both financial and calendar years. Since matching the times series is not possible, there are often minor variations in market share estimates depending on the time series selected. These variations became more significant in 2020 and 2021 when the sharp falls in completions due to the pandemic could be recorded in different years by different firms due to different reporting periods.
12. Redrow do not report an average selling price in their annual report. This estimate is based upon 5,436 reported completions and reported £2.1 billion of revenues from home sales. It is also worth noting that, for all firms, the average selling price incorporates the sales of affordable housing to registered providers at below market rates.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

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## Appendices

### Appendix 1. List of companies and sectors

Company Name	GICS Industry Name
Babcock International Group PLC	Aerospace & Defence
Melrose Industries PLC	Aerospace & Defence
Rolls-Royce Holdings PLC	Aerospace & Defence
Senior PLC	Aerospace & Defence
Chemring Group PLC	Aerospace & Defence
BAE Systems PLC	Aerospace & Defence
Standard Chartered PLC	Banks
HSBC Holdings PLC	Banks
NatWest Group PLC	Banks
Close Brothers Group PLC	Banks
Lloyds Banking Group PLC	Banks
Barclays PLC	Banks
TP ICAP Group PLC	Capital Markets
Rathbones Group PLC	Capital Markets
3i Group PLC	Capital Markets
Investec PLC	Capital Markets
Man Group PLC	Capital Markets
Intermediate Capital Group PLC	Capital Markets
London Stock Exchange Group PLC	Capital Markets
Law Debenture Corporation PLC	Capital Markets
St James's Place PLC	Capital Markets
Global Smaller Companies Trust PLC	Capital Markets
IP Group PLC	Capital Markets
Johnson Matthey PLC	Chemicals
Croda International PLC	Chemicals
Elementis PLC	Chemicals
Victrix PLC	Chemicals
Morgan Sindall Group PLC	Construction & Engineering
Keller Group PLC	Construction & Engineering
Balfour Beatty PLC	Construction & Engineering
Kier Group PLC	Construction & Engineering
J Sainsbury PLC	Consumer Staples Distribution & Retail
Tesco PLC	Consumer Staples Distribution & Retail
Marks and Spencer Group PLC	Consumer Staples Distribution & Retail
Cranswick PLC	Food Products
Associated British Foods PLC	Food Products
Tate & Lyle PLC	Food Products
Mitchells & Butlers PLC	Hotels, Restaurants & Leisure
Compass Group PLC	Hotels, Restaurants & Leisure
Carnival PLC	Hotels, Restaurants & Leisure
Domino's Pizza Group PLC	Hotels, Restaurants & Leisure
J D Wetherspoon PLC	Hotels, Restaurants & Leisure
Greggs PLC	Hotels, Restaurants & Leisure
Whitbread PLC	Hotels, Restaurants & Leisure
Flutter Entertainment PLC	Hotels, Restaurants & Leisure
InterContinental Hotels Group PLC	Hotels, Restaurants & Leisure
Vistry Group PLC	Household Durables
Berkeley Group Holdings PLC	Household Durables
Redrow PLC	Household Durables
Persimmon PLC	Household Durables
Taylor Wimpey PLC	Household Durables
Bellway PLC	Household Durables
Barratt Developments P L C	Household Durables
Hiscox Ltd	Insurance
Prudential PLC	Insurance
Legal & General Group PLC	Insurance
Beazley PLC	Insurance

(Continued)

Company Name	GICS Industry Name
Aviva PLC	Insurance
Rotork PLC	Machinery
Vesuvius plc	Machinery
Weir Group PLC	Machinery
Spirax-Sarco Engineering PLC	Machinery
Morgan Advanced Materials PLC	Machinery
IMI PLC	Machinery
Bodycote PLC	Machinery
ITV PLC	Media
WPP PLC	Media
Future PLC	Media
4imprint Group PLC	Media
Informa PLC	Media
Anglo American PLC	Metals & Mining
Antofagasta PLC	Metals & Mining
Rio Tinto PLC	Metals & Mining
Centamin PLC	Metals & Mining
Hill & Smith PLC	Metals & Mining
Centrica PLC	Multi-Utilities
National Grid PLC	Multi-Utilities
Telecom Plus PLC	Multi-Utilities
SSE PLC	Electric Utilities
Pennon Group PLC	Water Utilities
Severn Trent PLC	Water Utilities
United Utilities Group PLC	Water Utilities
Harbour Energy PLC	Oil, Gas & Consumable Fuels
BP PLC	Oil, Gas & Consumable Fuels
Shell PLC	Oil, Gas & Consumable Fuels
AstraZeneca PLC	Pharmaceuticals
GSK plc	Pharmaceuticals
Primary Health Properties PLC	Health Care REITs
British Land Company PLC	Diversified REITs
Land Securities Group PLC	Diversified REITs
Segro PLC	Industrial REITs
Great Portland Estates PLC	Office REITs
Workspace Group PLC	Office REITs
Derwent London PLC	Office REITs
Unite Group PLC	Residential REITs
Hammerson PLC	Retail REITs
Big Yellow Group PLC	Specialized REITs
Currys PLC	Specialty Retail
Kingfisher PLC	Specialty Retail
JD Sports Fashion PLC	Specialty Retail
WH Smith PLC	Specialty Retail
Bunzl plc	Trading Companies & Distributors
Travis Perkins PLC	Trading Companies & Distributors
Diploma PLC	Trading Companies & Distributors
RS Group PLC	Trading Companies & Distributors
Howden Joinery Group PLC	Trading Companies & Distributors
Grafton Group PLC	Trading Companies & Distributors
Ashtead Group PLC	Trading Companies & Distributors

## Appendix 2. Correlation matrix: mean monthly total returns by sector 2004-2024

	Aerospace & Defense	Banks	Capital Markets	Chemicals	Construction & Engineering	Consumer Staples Distribution & Retail	Food Products	Hotels, Restaurant s & Leisure	Household Durables	Insurance	Machinery	Media	Metals & Mining	Utilities	Oil, Gas & Consumable Fuels	Pharmac euticals	REITs	Specialty Retail	Trading Companies & Distributors	Whole sample	FTSE UK Governm ent Bond Total Return Index
Aerospace & Defense	1.00																				
Banks	0.54	1.00																			
Capital Markets	0.56	0.74	1.00																		
Chemicals	0.54	0.47	0.59	1.00																	
Construction & Engineering	0.66	0.49	0.54	0.50	1.00																
Consumer Staples Distribution & Retail	0.49	0.53	0.48	0.40	0.48	1.00															
Food Products	0.43	0.41	0.45	0.35	0.46	0.48	1.00														
Hotels, Restaurants & Leisure	0.59	0.49	0.55	0.54	0.55	0.46	0.43	1.00													
Household Durables	0.51	0.51	0.54	0.43	0.62	0.45	0.50	0.57	1.00												
Insurance	0.60	0.66	0.62	0.42	0.55	0.42	0.43	0.50	0.57	1.00											
Machinery	0.63	0.61	0.67	0.76	0.60	0.46	0.35	0.56	0.50	0.49	1.00										
Media	0.53	0.53	0.56	0.44	0.47	0.46	0.38	0.50	0.42	0.56	0.53	1.00									
Metals & Mining	0.43	0.44	0.49	0.51	0.43	0.28	0.23	0.42	0.28	0.30	0.58	0.33	1.00								
Utilities	0.29	0.25	0.33	0.31	0.25	0.38	0.37	0.21	0.33	0.30	0.28	0.25	0.18	1.00							
Oil, Gas & Consumable Fuels	0.44	0.49	0.41	0.32	0.41	0.36	0.27	0.31	0.20	0.46	0.44	0.39	0.40	0.14	1.00						
Pharmaceuticals	0.20	0.19	0.27	0.24	0.16	0.21	0.25	0.22	0.15	0.26	0.19	0.20	0.19	0.35	0.25	1.00					
REITs	0.48	0.63	0.69	0.55	0.54	0.50	0.51	0.46	0.65	0.60	0.54	0.48	0.35	0.50	0.25	0.23	1.00				
Specialty Retail	0.46	0.49	0.53	0.40	0.45	0.52	0.32	0.48	0.48	0.36	0.49	0.39	0.35	0.28	0.17	0.07	0.44	1.00			
Trading Companies & Distributors	0.58	0.56	0.61	0.60	0.59	0.41	0.40	0.57	0.58	0.53	0.69	0.57	0.38	0.27	0.35	0.15	0.55	0.51	1.00		
Whole sample	0.76	0.70	0.79	0.74	0.73	0.60	0.54	0.74	0.69	0.66	0.83	0.68	0.61	0.42	0.46	0.26	0.71	0.65	0.78	1.00	
FTSE UK Government Bond Total Return Index	0.01	-0.11	0.00	0.12	0.02	0.12	0.20	0.03	0.15	-0.03	0.07	-0.01	0.09	0.33	-0.14	0.21	0.26	0.04	0.06	0.11	1.00