

# Business School

Department of Real Estate & Planning



## Working Papers in Real Estate & Planning 02/07

The copyright of each Working Paper remains with the author.

If you wish to quote from or cite any Paper please contact the appropriate author.

In some cases a more recent version of the paper may have been published elsewhere.



**FIRM SIZE AND COMPETITION:  
A COMPARISON OF THE HOUSEBUILDING INDUSTRIES IN  
AUSTRALIA, THE UK AND THE USA**

**Michael Ball**

Department of Real Estate & Planning, University of Reading Business School  
[m.ball@reading.ac.uk](mailto:m.ball@reading.ac.uk)

A REPORT FOR THE RICS EDUCATION TRUST

April 2007

## Summary

Housebuilding is frequently viewed as an industry full of small firms. However, large firms exist in many countries. Here, a comparative analysis is made of the housebuilding industries in Australia, Britain and the USA. Housebuilding output is found to be much higher in Australia and the USA than in Britain when measured on a per capita basis. At the same time, the degree of market concentration in Australia and the USA is relatively low but in Britain it is far greater, with a few firms having quite substantial market shares. Investigation of the size distribution of the top 100 or so firms ranked by output also shows that the decline in firm size from the largest downwards is more rapid in Britain than elsewhere.

The exceptionalism of the British case is put down to two principal reasons. First, the close proximity of Britain's regions enables housebuilders to diversify successfully across different markets. The gains from such diversification are best achieved by large firms, because they can gain scale benefits in any particular market segment. Second, land shortages induced by a restrictive planning system encourage firms to takeover each other as a quick and beneficial means of acquiring land. The institutional rules of planning also make it difficult for new entrants to come in at the bottom end of the size hierarchy. In this way, concentration grows and a handful of large producers emerge. These conditions do not hold in the other two countries, so their industries are less concentrated.

Given the degree of rivalry between firms over land purchases and takeovers, it is difficult to envisage them behaving in a long-term collusive manner, so that competition in British housebuilding is probably not unduly compromised by the exceptional degree of firm concentration. Reforms to lower the restrictions, improve the slow responsiveness and reduce the uncertainties associated with British planning systems' role in housing supply are likely to greatly improve the ability of new firms to enter housebuilding and all firms' abilities to increase output in response to rising housing demand. Such reforms would also probably lower overall housebuilding firm concentration over time.

## Introduction<sup>1</sup>

It is often believed in the UK that the British housebuilding industry is different from that elsewhere.<sup>2</sup> This is evident in the analysis of housing supply in the Barker Review, which tended to take the view that the UK industry is exceptional. For example, this perspective was evident in the concerns expressed about quality, innovation and efficiency (Barker 2003, 2004).

A key question is how competitive is UK housebuilding? A traditional view on housebuilding focuses on the many small-scale firms with relatively short lives in the industry, as small-scale and ease of entry and exit are assumptions of the standard competitive market model. Some still believe this to be the case for housebuilding. For example, such market structures have been observed in Canada (Buzzelli 2004). Yet, in the UK, large housebuilding firms have significant market shares. At the time of writing, moreover, another flurry of takeover activity is occurring amongst the largest firms. Is this a distinctive size structure of housebuilding firms and, if so, does it imply that the UK industry is less competitive than those elsewhere?

The degree of effective competition does not simply depend on how many firms exist in an industry but also on how they inter-relate with each other. Industries dominated by a number of large producers can still be competitive in their nature under specific conditions. Many of the benefits of widespread consumerism - extensive product ranges, continuous innovation, rising quality and falling prices – have frequently arisen from industries where only a handful of firms have competed fiercely. This may be a more likely competitive model for the modern housebuilding industry than

---

<sup>1</sup> I should like to express my thanks to the generosity of Fred Wellings for providing me with access to his data on British housebuilders and, also, to Harley Dale for access to housebuilder data drawn up by the Housing Institute of Australia. Thanks also to the RICS Educational Trust for funding this work.

<sup>2</sup> The housing market in Northern Ireland is somewhat distinct from that of the rest of the United Kingdom, so this paper refers specifically to the British industry only.

one of the multitude of small producers, so it is important to investigate the factors influencing inter-firm competition.

Much current comparative information on housebuilding is anecdotal or limited in content, leading to potential biases (Ball 2003). In addition, much published information on housebuilding is grouped together with the construction industry as a whole and cannot be identified separately. Yet there is some comparative information on housebuilders which is standard in form and covers the whole of the housing market. Organisations in various countries publish data on the size hierarchies of existing housebuilders, for instance rankings of the top 100 firms in particular years. These data generally provide a comprehensive review of all but the smallest firms. If this information is analysed over a time it provides some useful insights into competitive processes in housebuilding industries across the world and, so, enables the issue of British exceptionalism to be investigated.

Here information for Australia, the UK and the USA is examined. It provides key insights into market shares and also firm size relationships within housebuilding. To my knowledge, these data have never before been used for international comparisons and, so, offer an opportunity to provide new insights in the characteristics of countries' housebuilding industries.

### **General influences on firm sizes**

When examining the size of housebuilding firms it is useful to put them in the context of how the construction industry in general is organised, because this sets out some broad comparative parameters. For many reasons, the UK housebuilding industry is similar to those existing in other countries. Yet this is unsurprising as the physical and economic nature of the work fixes many of its characteristics.

Construction industries build structures by assembling the necessary inputs at particular locations and undertaking site-specific work. The site and task specific nature of construction has important influences on how the industry is organised and what firms do and, again, this holds true for housebuilding as in other parts of the industry. Take, for example, the distribution element of the production chain. In manufacturing industries, distribution of the product to wide-flung markets occurs after manufacturing. With construction, it is directly related to the site where building takes place: the delivery of inputs rather than transport of the finished product is a central issue in efficient construction activity. The timely arrival of the appropriate building materials and labour teams (and, in the case of housebuilding, the land as well) are important elements of the overall construction management process.

Unsurprisingly, therefore, construction industries have some distinctive characteristics compared to manufacturing industries. Construction is by no means unique in this respect. There are many service industries where the product is consumed at the same place as the product is made.

The physical characteristics of construction generally make it a labour intensive process in which innovations are centred upon the relative proportions of labour to site-delivered materials and other inputs and on the optimal organisation of workflows, with the latter a key function of management. Most innovation occurs in the building materials used, including pre-fabricated components, in the designs of the built structures being constructed and, to a lesser degree, in assembly and management processes. Innovations, as a result, are rarely proprietary to individual construction firms. This helps to explain why construction productivities, when measured appropriately, tend to be quite similar across countries where manufacturing productivity is not (O'Mahony 2002).

Building projects require the processing of large amounts of distinctive information about markets, sites and building processes. A great deal of uncertainty exists in relation to the future (e.g. will the project overrun cost, or will demand remain good when the time comes to sell?) and in relation to current agent behaviour (i.e. is this person putting in the full effort and doing the job properly?). These uncertainties further influence management and firm structures and associated agent incentives. Even so, the broad principle of construction work is similar to that in other industries – standardise as much as possible. The construction industry, and housebuilding within it, have evolved to channel the variable information and uncertainties associated with specific projects, markets and agent behaviour into standardised ways of working in terms of firm operations and inter-organisational relationships.

One example of such standardised institutional inter-relationships is that building work is highly conducive to the extensive contracting out of work and sub-contracting. Large firms, including housebuilding ones, consequently often have very small own workforces and limited fixed capital. They deal in ‘flows’ of activity with limited ‘stocks’ of capabilities. This has implications for the hierarchy of firm sizes because in principal it is possible for housebuilding firms to build more dwellings with relatively small increases in direct employment. This may open up opportunities for scale economies but, most importantly, highlights the greatest constraint on firm outputs: acquiring land and financing land holdings.

There are some obvious differences in the types of housing built across countries. Some of these differences are determined by building regulations and urban policies but many are determined by purely economic factors. The relative costs of building materials vary depending on their local abundance, especially given the typically high costs of transport of such bulky goods. Real wage levels differ between countries as

well. These two factors help to explain dwelling type variations, because differences in the trade-offs between labour and material costs help to determine the building technologies used in specific countries and regions. This helps to explain the long-term dissimilarities in the relative use of timber, brick and block and cement framing systems in housebuilding in the UK, rest of Europe and the USA. Climate also influences housebuilding forms as well.

Urban policies by influencing built forms also affect firm sizes. In countries like the UK, where nowadays urban policy pushes for high density development on brownfield sites, policy squeezes out small-scale residential developers that have neither the financial resources nor the capabilities to build such projects. In contrast, extensive greenfield development possibilities still exist at the fringes of Australian and US cities, despite growing restrictions, which more easily enable small-scale producers to acquire a relatively limited number of plots and build homes on them.

There are broad similarities in the institutional arrangements associated with housing supply in Australia, Britain and the USA (Ball 2003; Dowling 2005; Wellings 2006). Common practices extend through firm ownership structures, mortgage markets, the relative importance of owner occupation and several other factors. For instance, most housebuilding firms are independent companies in all three of them. This contrasts with, for example, most of continental Europe, where housebuilders tend to be part of broader construction enterprises and wider conglomerates. In part, this is because in many continental European countries, market-led ways of organising construction are circumscribed by labour and procurement legislation, which tends to result in distinct organisational relationships in construction and housebuilding. Added to this are key differences in typical sources of finance. In the three countries surveyed here, the largest housebuilders are publicly listed on stock exchanges and, so, rely on equity

finance as well as bank borrowings. Lenders and shareowners tend to prefer firm specialisation for transparency. In contrast, long-term banking relationships are more common in continental Europe, so that the transparency of housebuilding operations is not at such a premium (Ball 2006).

### **American, Australian and British housing markets in the 2000s**

Not only are institutional arrangements similar. The market contexts in which housebuilders have been operating for most of the 2000s were positive in all three countries. In each one, falling interest rates, positive demographics and strong economic growth triggered housing booms and strong price growth (Figure 1). In Australia double-digit annual house price rises lasted from the middle of 2001 to the middle of 2004 and, in the USA, somewhat later from the middle of 2004 to early-2006. Interest rate rises subsequently pricked their respective booms, although actual house price falls have been very limited in scale and geographic extent. The upswing in the UK lasted longer than in both the other two countries, although again rising interest rates dampened price growth from 2005 onwards with a partial revival in 2006.

The supply side response to rising house prices has been mixed. In terms of average building rates, Australia and the USA considerably outstrip the UK. When relative population sizes are taken into account, the USA built over twice as many dwellings annually in the 2000s than in Britain and Australia over 70% more (Table 1).

Housebuilding rates in the UK are also low by European standard.<sup>3</sup>

Constraints on urban growth imposed by the planning system have generally been blamed for the low level of British housing output; although successive governments' insistence on building on previously-used urban 'brownfield' land, rather than green

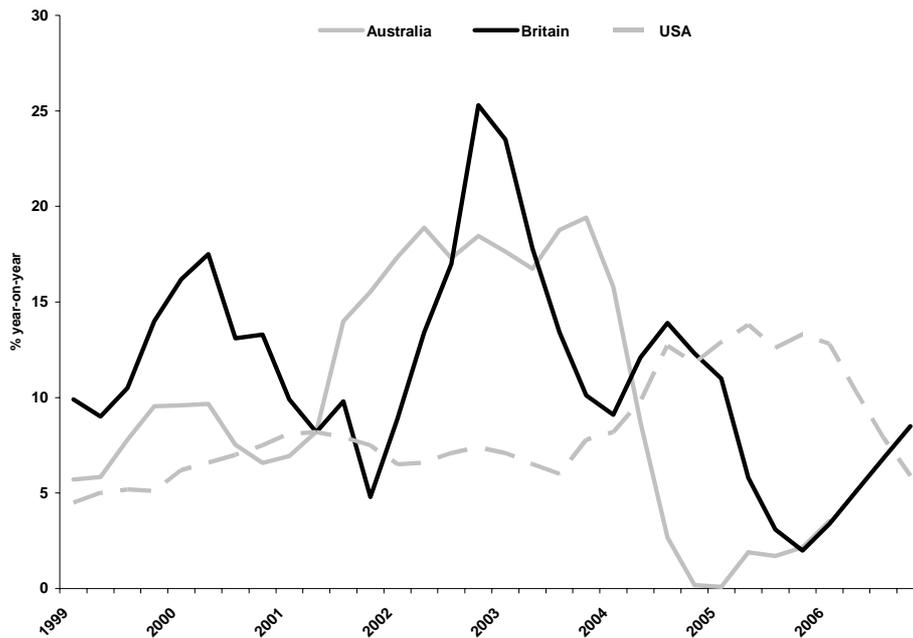
---

<sup>3</sup> *Housing Statistics in the European Union 2004/5.*

fields, may have contributed as they are more difficult to develop and take longer to set up (Adams 2002). By 2006, 72% of residential development in England was on such brownfield sites.

*Figure 1: Housing price changes in Australia, Britain & USA 1999-2006*

Quarterly



Source: Australian Bureau of Statistics, UK Office of National Statistics, US OFHEO

*Table 1: Housebuilding rates in Australia, Britain & USA*

Average annual private output per thousand population, 2000-2005

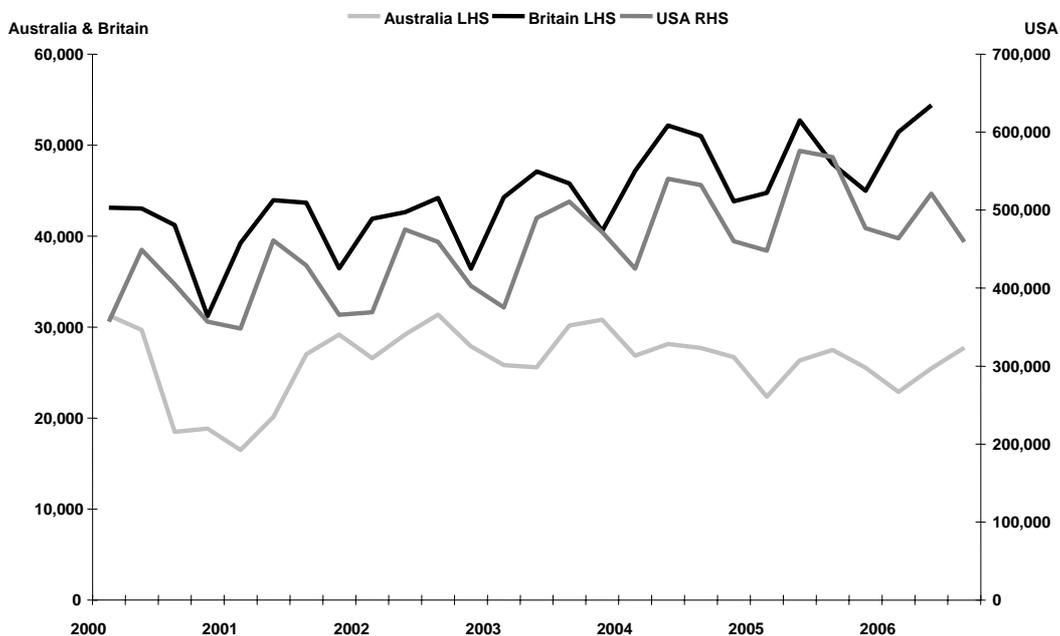
	<u>Number</u>	<u>Index</u> (UK =100)
Australia	5.2	172
Britain	3.0	100
USA	6.1	201

Source: Australian Bureau of Statistics, UK Office of National Statistics & CLG, US Bureau of the Census

In terms of the change in number of units started each year, private housebuilding in Britain picked up in the first five years of the new century, compared to a flat performance over the previous decade (Figure 2). Australia and the USA have experienced a recent weakening of supply side responsiveness to housing upswings in relation to historic patterns. As in Britain, consequently, a sluggish supply-side in the face of high demand has contributed to rising prices. Australia's output actually stagnated during the 2000s, despite sharply higher house prices (Figure 2). Tightening planning rules have been argued to be contributory factors to greater supply side rigidity. So-called 'smart growth' programmes aimed at cutting suburbanisation and NIMBY-induced local government actions have stifled housing growth at key localities in both Australia and the USA.<sup>4</sup>

Figure 2: Housing Starts in Australia, Britain & USA 1999-2006

Quarterly, not seasonally adjusted



Source: Australian Bureau of Statistics, UK CLG, US Bureau of the Census

<sup>4</sup> (Glaeser 2005; Moran 2006).

Despite all three countries' experiences of weakening supply, the overall relative amounts of housebuilding are markedly different and this fact must be borne in mind when making comparisons. The USA builds ten times as many homes each year as Britain (for a population approximately 5 times as great) and Australia now roughly half as many as Britain for a population a third of its size.

### **The relative market shares of the larger housing producers**

Given that the technologies and market structures of housebuilding are similar in the three countries, the shares of output taken by the different sizes of producer might be expected to be similar. This is broadly the case in Australia and the USA but not in the UK where the larger firms have a much higher national market share.

In each country, there are a limited number of large producers and then a declining size hierarchy with a long tail. Evenly, the tail flattens out as a large number of small-scale producers exist in each country and they are many 'organise-your-own' (OYO) owner-developers, who generally build only one property. Many small-builders build intermittently and, so, may produce no dwellings in any particular year.

Data on the smallest producers are hard to come by but there is information on the rankings of the larger firms as noted earlier. This larger firm information gives a good indication of the degree of concentration in a particular country's housebuilding industries.<sup>5</sup> Tables 2 to 4 show the market shares of the largest firms in Australia, the USA and Britain respectively.

Within the hierarchy of firms, there is obviously movement of specific firms up and down the rankings from year-to-year. Some firms also drop out of the rankings as they quit the industry or are taken over by others. (Takeover, of course, does not

---

<sup>5</sup> The dates in these data refer to company reporting times and, so, actually reflect the year prior to those dates.

necessarily mean relative failure. Some offers are simply too good to refuse). Other firms may enter housebuilding, possibly through acquiring an existing firm and, then, may expand it rapidly. At all size levels, consequently, there is considerable churn in the actual firms occupying specific places in the size hierarchy. However, that is not of major concern here as the question being addressed is the nature of the firm size structure at distinct points in time rather than being focused on where any particular firm is within that hierarchy, interesting though question that may be.

In Australia, the top 100 housebuilders produce around 40% of total housing output and the top 10 around 15% (Table 2). There is some indication that concentration rose during the second half of 1990s with the top 30 firms expanding their market shares but it then declined again somewhat in the 2000s. As there is a lack of information prior to the mid-1990s, it is unclear whether that period was an exceptional one or not. The changes in shares may represent cyclical variations. There is no compelling evidence that concentration is increasing over time and the overall level of concentration is low by the standards of many other industries in Australia. This low concentration characteristic was noted for the construction industry as a whole by a recent major study.<sup>6</sup>

*Table 2: Market shares in Australian housebuilding 1994-2006*

% of total housing units produced												
<b>Firm rank</b>	<b>94/95</b>	<b>95/96</b>	<b>96/97</b>	<b>97/98</b>	<b>98/99</b>	<b>99/00</b>	<b>00/01</b>	<b>01/02</b>	<b>02/03</b>	<b>03/04</b>	<b>04/05</b>	<b>05/06</b>
1-10	10	12	14	15	16	15	17	16	16	14	13	14
11-20	5	6	6	6	8	6	8	9	9	8	6	7
21-30	3	3	4	4	5	4	5	5	5	5	5	5
31-50	5	5	5	5	5	5	7	5	5	7	7	7
51-100	5	6	6	6	6	5	7	6	6	6	7	7
<b>Top100</b>	<b>28</b>	<b>31</b>	<b>35</b>	<b>36</b>	<b>40</b>	<b>35</b>	<b>44</b>	<b>41</b>	<b>41</b>	<b>40</b>	<b>38</b>	<b>40</b>

Source: Housing Institute of Australia

<sup>6</sup> Australian Commission on Construction Productivity, 2002.

The share of the top 10 firms in the USA is close to that of Australia and, in fact, the shares are even the same in 2005. The size hierarchy below the top 10 firms again drops away rapidly in terms of annual output. The top 100 have a much smaller share of the overall housing market than in Australia, at below 30%, but such a comparison is probably inappropriate because the US market is so much larger. If the top 400 US firms are taken into account, their market share rises somewhat to 36%, which is not so different from that in Australia. As in Australia, these market concentration figures are on the low side compared to many other US industries. In the average US industry, the share of the four largest firms (a standard measure of market concentration) is 38%. The US housebuilding industry is clearly far below that.

The market shares of the largest producers in the USA have been growing over the past decade. In 1995, for example, the top 400 only produced 21% of all US dwellings whereas the share had risen to 36% in 2006. Furthermore, the scale of the operations of the largest had increased considerably over that period, with the output of the top 10 in 2006 being greater than the whole of the top 400 a decade early.<sup>7</sup>

*Table 3: Market shares in US housebuilding 2002-2006*

% of total housing units produced

<b>Firm rank</b>	<b>2002</b>	<b>2005</b>	<b>2006</b>
Largest	2	2	3
Top 10	11	14	15
10-25	5	5	5
26-45	4	4	4
46-100	5	5	5
Top 100	24	28	29
101-400	8	7	7
Top 400	32	35	36

Source: Own calculations from *Professional Builder* & Bureau of the Census data

<sup>7</sup> *Professional Builder Magazine*, 2006.

British housing supply is much more concentrated than in either Australia or the USA. The largest British firm has four times the market share of its equivalent in the USA.<sup>8</sup> Altogether, the top 10 producers build 44% of new total housing output, including OYOs - three times as much as in Australia or the USA. Overall, the top 100 firms produce 70% of all private dwellings – twice as many as the top 400 in the USA - with the greatest concentration of production amongst the largest firms (Table 4).

*Table 4: Market shares in British housebuilding 2001-2005*

% of total housing units produced

<b>Firm rank</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
Largest	9	9	8	8	8
Top 4	29	29	29	28	27
Top 10	46	47	46	45	44
11-20	13	13	11	12	11
21-30	6	6	6	5	6
31-50	6	10	8	9	9
51-100	2	4	4	4	4
<b>Top 100*</b>	<b>73</b>	<b>76</b>	<b>71</b>	<b>71</b>	<b>70</b>

\*2001 top 75, 2002 top 97 & 2003 top 95 only

Source: Own calculations from Wellings and CLG data

There was a slight decline in the degree of concentration in Britain between 2002 and 2005, with the share of output taken by the top 100 falling from 76% to 70% – mainly because of declining shares amongst the largest 20 firms. Over the longer term, in contrast, concentration has grown substantially. In 1988, the top 40 firms produced 48% of private housing output, rising to 54% in 1993 (Ball 1996), while the top 30 alone had a 61% share in 2005.

Overall, the data do point to an exceptional concentration of production amongst the larger firms in British housebuilding. In order to examine why this should be the case it is necessary to examine potential scale economies and market contexts.

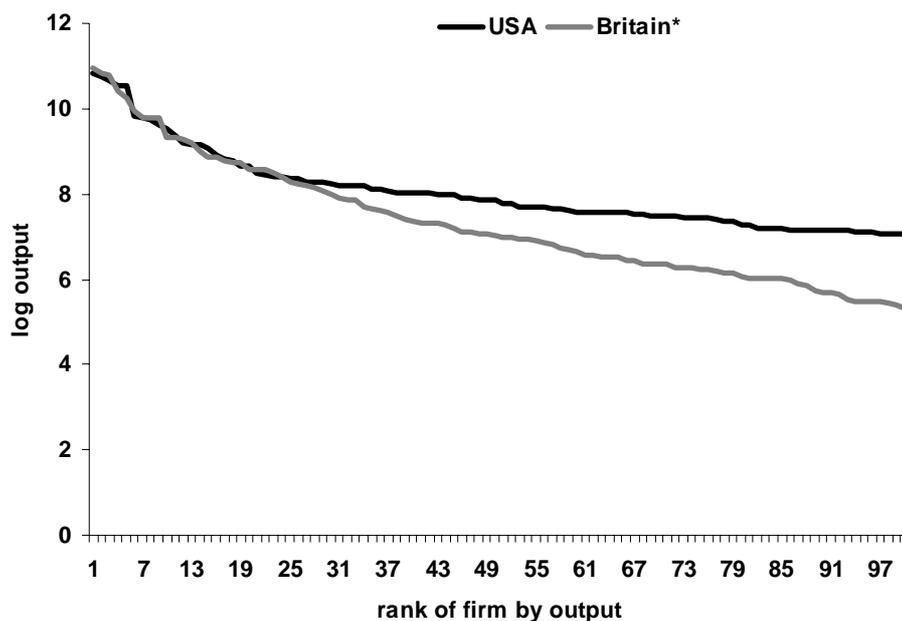
### **The rank size distribution of firms**

<sup>8</sup> With the takeovers announced in 2006/7, the share of the largest British firm will rise to 10%, over 5 times that in the USA.

So far, market shares have been examined. A more detailed understanding of firm relationships can be derived by looking at the size distribution of firms by ranking them according to their output. This is undertaken for a hundred or more firms in each of the three countries in the Appendix. The main results show that:

- The rank size distribution of firms is broadly consistent with studies in other industries
- The relationship between the sizes of firms along the size hierarchy in Australia and the USA is similar; whereas in Britain there are larger output differences moving along the hierarchy, especially below the 25<sup>th</sup> firm mark (Figure 3). This implies not only that the largest firms have a bigger share of the market but also that it may be more difficult to grow to be a larger firm in Britain at the lower end of the large firm size range than it is in the USA or Australia.
- The size hierarchy relationship breaks down somewhat for the largest firm sizes in all three countries. The outputs of the top handful of firms are generally not as large as the models shown in the Appendix predict. This suggests that it is generally harder for the largest firms to increase their outputs than for the firms slightly further down the size hierarchy.

*Figure 3: The size hierarchy of firms in Britain and the USA compared 2005*



Note: The outputs of UK firms have been scaled up fourfold for the purposes of this comparison.

### Geography and firm size/concentration

The basic features of the urban geography of the three countries being compared here help to explain some of the differences between the housebuilding industries in them. Housebuilding firms in the USA have a far larger market in which to operate than in the other two countries. The largest firms are much bigger and, numerically, there are more large ones in existence than elsewhere. Britain has a smaller population but its regions are more densely packed together making it easier for firms to operate across them. Australia's much smaller population is spread out in widely dispersed cities, which puts constraints on the scale and number of large housebuilding enterprises.

The relative sizes and recent growth rates of the largest homebuilders in each country are shown in Table 5. The USA's top housebuilder in 2005 was more than three times as large as the UK's and ten times that of Australia. Broadly similar

*Table 5 : Relative sizes and growth rates of firms compared*

		<i>Australia</i>	<i>Britain</i>	<i>USA</i>
<b>No. built by the largest firm in:</b>				
	2001/2	3,337	12,051	30,394
	2005	4,558	14,351	51,383
<b>Growth rate 2001/2-2005</b>		37%	19%	69%
<b>Ratio of largest to US largest</b>				
	2001/2	0.1	0.4	1.0
	2005	0.1	0.3	1.0
<b>No. built by 25<sup>th</sup> largest</b>	2005	750	998	4,291
<b>No. built by 100<sup>th</sup>- 400<sup>th</sup>(US) firm</b>	2005	95	51	178

ratios existed in 2002, when the US market was more subdued and the other two country's markets were booming, so that the differences do not seem to be greatly influenced by market cycles. Australia's large firms seem particularly small compared to the others. Such size differences may mean that non-US-based firms are missing out on potential scale economies.

Similar size differences between the countries also occur further down the firm size range. However, by the 25<sup>th</sup> largest firm the comparative ratio change with, for example, Australia's firms declining in size at a slower rate than the UK's. By the 100<sup>th</sup> firm point, the UK firms' output is far less than that of the Australian one's, in marked contrast to the comparison at the largest firm level.

In terms of growth rates, US firms exhibit a high ability to increase their outputs over relatively short-time periods, either through acquisitions and organic takeover. For instance, the largest producer's output in 2005 was 70% larger than it was in 2002. This period might have been unique in some respects because such rapid expansion occurred during a housing boom, at a time when large housebuilders were stock market favourites and, so, had plentiful access to capital. The downturn since Spring 2006 means that the largest firm's output is likely to fall for at least some time to come. Yet the recorded US growth rates of recent years illustrate the technical

feasibility of fast increases in housebuilding firms' outputs when input constraints are relatively limited.

So, even though, full time series analysis on the comparative long-term growth rates of the major housebuilding firms is impossible with the limited data sets available. Yet, what information exists from the US case does suggest an ability of firms to respond rapidly and effectively to sharp growth in demand; at least in the localities where land supply constraints are relatively limited.

This industrial performance is unmatched elsewhere. Neither Australia's nor Britain's largest housebuilders grew at such rates over the same time period, despite the booms in their markets. Britain's largest firms were particularly slow at expanding over the five year period, as shown in Table 5, in common with the already noted 'low housebuilding' characteristic of the country. As there is no evident technical reason why their growth rates should be less than in the USA, this suggests that input supply constraints must be more binding in these two countries, particularly in the UK.

An obvious difference between the UK and the other two countries is the scale of the distance between regional housing markets. Virtually everywhere in Britain can be reached within a matter of hours. The sheer continental scale of the other two countries and the strong regional specialisation of housebuilders within them suggest that distance is a barrier to geographic diversification in housebuilding in them.

Paradoxically, this has not stopped a number of UK firms from venturing overseas. However, most of these exercises proved to be failures, with the possible exception of a few firms' recent investments in the USA (Wellings 2006). Even in the latter case, much of the success occurred during the 2000s' market boom and may not be repeated in the subsequent downswing. The two most successful firms with USA

operations at the time of writing were in discussions to merge, with one of the benefits of doing so suggested to be associated with their businesses in the USA.

Geography, it seems, has important effects on the production costs of housing producers. A wider geographical spread increases the scope of the markets in which firms can work and, hence, the potential demand for their products. But it also increases costs and limits the degree to which senior management can monitor the behaviour of local operations and effectively assess their investment decisions. As a result, greater spatial reach increases the risks associated with land acquisition and housing development.

The spatial compactness of Great Britain means that travelling times between the major urban agglomerations are far less than in the other two countries. The trade-off between higher potential demand and higher costs and risks is therefore relatively favourable. Senior managements can more cheaply and extensively monitor operations when they are spread widely across the country in Britain than is the case in Australia and the USA. This fact of geography is a considerable boon to larger UK firms because they can relatively easily diversify across various housing markets - by product type and geographically. This is particularly important in the context of the study of relative firm sizes because regional price dynamics are imperfectly correlated (Meen 2001) and, though less carefully studied, the same is likely to be true for specific product sub-markets (i.e. flats vs single family homes; up-market vs starter homes, etc). The broad range of housing market diversification options on offer mean that British operators, if they are large enough, can smooth their outputs and revenues by altering the relative scale of their businesses in different parts of the country more easily and at lower cost than in the other two countries examined here with their more spread-out urban geographies.

A easier ability to diversify spatially may thus help to explain why housebuilding is more concentrated in Britain than in the other two countries surveyed here. British producers can grow larger by successfully moving into progressively more regional and product sub-markets. The largest firms consequently are diversified over a wide range of housing markets and have presences in most housing sub-markets across the nation, whereas further down the size range firms are more specialised in terms of product and geography. There are likely to be minimum efficient operating sizes for local operations, with some variation depending on the product type. So, as firms move into more markets, their size increases rapidly above that of the more localised and product specialist ones. This, in turn, may help to explain the sharper fall off in output moving down the firm size hierarchy because the degree of diversification diminishes rapidly down the firm size hierarchy in Britain

Such a pattern of national producers at the top of the housing firm hierarchy does not exist in Australia and the USA. Instead, all housing producers are strongly regionally specialised and, to a lesser extent, focus on particular product markets. Large firms are disproportionately associated with a handful of specific major urban growth areas, such as those in the sunbelt states in the USA.

Another factor encouraging greater spatial concentration of housebuilders in Australia and the USA compared to Britain is that the urban fringes of many Australian and US cities still offer far greater scope for land development and housebuilding than is the case in the UK, despite growing land-use restrictions. This means that firms can grow within one or two housing market areas by undertaking a limited number of large-scale suburban developments in ways that are rarely open to UK firms, which face strong regulatory constraints on suburban expansion and, so, need to be more spread out across a wider number of sites.

In Australia the degree of spatial concentration is particularly marked. Three of the four largest firms operate solely in Western Australia, where Perth and its environs are home to the majority of the population. It is true that Western Australia is booming, yet the state is home to only around 10% of the whole country's population. However, the sheer distance from other regional centres in Australia may make it difficult for successful producers in the Perth area to move into the country's other housing markets way to the east.

The extent of regional specialisation in Australia and the USA means that the national firm concentration results may need to be qualified in local housing markets where the real competitive interface between housebuilders actually exists. Regional data are likely to show higher levels of housebuilder concentration than national information in Australia and the USA but have less of an effect in Britain, given the preponderance of larger firms there.

The impact of the regional concentration effect can be seen most clearly with the data available for Australia (Table 6). The shares of the largest producers rise noticeably in all of the states containing the country's major cities. In the two states with the fastest growing populations, the concentration ratios are far higher than the national average. South Australia's concentration ratio of 37% for the top 10 producers approaches that of Britain and Western Australia's at 57% considerably surpasses it. However, both are relatively small housing markets. In the larger and more mature markets of New South Wales, Victoria and Queensland, concentration ratios remain far less than in Britain.

In contrast, all regional markets in Britain exhibit relatively high degrees of firm concentration, although not necessarily with the same producers in each (Ball 2006).

In London, for example, there is quite a high concentration ratio but this arises

because there are only a limited number of firms with the capacity to fund the expensive land there, undertake the scale of projects required and cope with the lengthy development pipelines associated with the city's predominantly brownfield schemes (Barker 2003).

*Table 6: Firm concentration ratios in Australia's principal regions*

	Top firm	top 5	Top 10
New South Wales	3	12	19
Victoria	4	14	22
Queensland	6	15	21
W. Australia	18	47	57
S. Australia	9	26	37

Source: Housing Institute of Australia

### **Scale economies**

An obvious explanation for the existence of large-firms are economies of scale. The data on concentration ratios and firm size to an extent present conflicting evidence on whether they exist in housebuilding. On the one hand, apart from Britain, national concentration ratios are low in housebuilding and, even in Britain, they are lower than in many other industries. This suggests few scale economies because so many small producers seem capable of competing effectively with larger ones in an industry where there is limited product differentiation between firms. On the other hand, some very large firms do exist, especially in the USA but also in the UK, which may suggest that size has some benefits after all. Such scale benefits, moreover, may have increased over time, because the largest firms seem to be growing the fastest.

Scale benefits in lowering production costs are not difficult to envisage. They include gains from specialisation and management hierarchies, flow process techniques, marketing, purchasing and procurement. Land banks can be assembled that ensure continuous production. Larger firms are also less prone to failure and, so, will find it

easier and cheaper to raise capital, especially through public listing on stock exchanges.<sup>9</sup> Scale economies certainly exist, but what is unclear is whether they continuously exist or they tail-off in larger firms sizes as diseconomies, such as management overload, start to mount.

Unfortunately, there is little evidence with which to answer these questions. The little there is suggests that on a cross-sectional basis amongst the top 50-100 firms in the UK, the larger ones do not make higher profit margins than those lower down the size (Ball 2006, Wellings 2006). This finding is compatible with a view that there are constant returns to scale amongst the larger firms. However, cross-sectional studies are insufficient to identify the full benefits of scale, especially in a cyclical industry like housebuilding. As identified above, for example, larger firms are more able to diversify and, hence, they may be more profitable over the full length of a housing market cycle.

There could also be other adverse size factors at work as well as positive scale economies, which counteract some of the potential impacts on profitability of them. Therefore, an lack of evidence of rising profit margins may arise because production benefits of scale are counteracted by such other factors. Profits data consequently are a second best measure of scale economies rather than an adequate substitute for production cost analysis.

Several market factors may impinge more strongly on large housebuilders. Other firms, for example, may be more competitive towards their larger brethren. The top firms are more likely to have market strategies towards each other at either the local or national levels, for instance, which they would not bother having with smaller companies. Large landowners may also be wary of giving too much local market

---

<sup>9</sup> Ball 2006 provides a more detailed analysis.

power to one purchaser and, so, may prefer to offer some land to other builders than to one or more of the larger players in a local housing market. Finally, there may also be constraints on the demand side. Specific large builders may find that they reach market saturation in one market area and harder to sell more units above a particular threshold. Such negative factors relate to markets rather than to production costs but they may help to explain why the largest firms have greater apparent difficulty in growing than smaller ones in all three countries, as identified in the rank size analysis shown in the Appendix.

### **Planning influences on housebuilder size**

Planning controls by their nature restrict the supply of development land. The most obvious difference between Britain and Australia's and the USA's housing markets is the much greater degree of planning constraint. Can this be the explanation for the greater degree of industry concentration in Britain?

A simple explanation would be that in a situation of constrained land supply a few housebuilders could commandeer most of the potential land identified for development in a land use plan and, thereby, limit the operations of others. Large firms on this argument are a direct result of severe planning constraint.

However, this simple constraint equals big builders argument has weaknesses. In the first place, why should housebuilders be the winners in the context of supply constraints? Planning constraint designates market powers to the owners of sites where development is permitted, not to housebuilders. They instead are intermediaries in the land development process, needing land in order to build homes. Why does not some type of agency other than a housebuilder end up owning most of the available development land, if it is financially profitable to do so? They could be, say, existing

landowners, a land development companies – and their financial backers - or a landowner who buys up other sites in the area. In practice, none of these outcomes may occur but the point is that it not obvious that builders should be able to outbid all others. In the absence of some special knowledge, builders are as likely to have to pay the prevailing market price for land under conditions of severe planning constraints as they are under free market conditions.

Taxation considerations and investor motives are also important in determining land holding strategies (Adams 2002). These institutional factors are unlikely to lead to housebuilders having an edge over other potential landholders. In fact, if housebuilders did continuously earn excess returns from the land market that would attract other intermediaries to compete with them bringing returns down.

Another determinant of who holds land relates to the potential riskiness of land investment. Land prices historically vary more than house prices. When the market is rising, it is clearly beneficial to hold onto land but not when prices are falling.

Rational agents will only hold onto land if the expected increase in price is greater than the holding cost (Evans 2004). In general, housebuilders cannot feasibly expect continuously to purchase land on such advantageous terms as land prices fall as well as rise. The available UK evidence does not suggest that housebuilders hold large stocks of land, beyond that necessary to sustain development pipelines (Barker 2003).

Even if land constraint itself does not necessarily lead to increasing concentration in the housebuilding industry, the detailed institutional structure of planning systems may instead influence housebuilder size profiles. The UK system of requiring detailed planning permission for every new development, for example, can act as a significant barrier to entry, because it both lengthens the time taken in the development process and increases uncertainty within it (Allmendinger 2006).

One way round planning-induced delay problems for a builder is to purchase sites from intermediaries, who identify sites, propose broad schemes and get general planning approval for them and sell the sites onto housebuilders, which then go on to obtain detailed planning permission. The problem is that if housebuilders wish to expand rapidly when demand in the housing market is rising there is unlikely to be sufficient one-off sites around. New entrants are faced with having to purchase a fairly large portfolio of sites to build up production to a scale that is economically viable and to have a forward stock of building land. The obstacle of a lengthy planning permission process means that a significant programme of land acquisition would involve several years or more of delay. Costly investments would have been made on which there was no prospect of return for some time, by when the housing market may have cooled. Consequently, it is the length of time required for land development in the planning process and the uncertainty of successful outcomes within it, combined with severe constraints on new land supply, that may act as a major institutional barrier to entry into housebuilding and rapid expansion within it.

The other option for those investors that want to enter housebuilding is to buy an existing firm. They have the advantage of having a stock of available sites with planning permission and others in the pipeline and in prospect of development soon. If the target is a larger firm, moreover, it will have sites spread across many local markets providing the diversification benefits examined earlier. Given these positive attributes, it is often worth an entrant to pay a takeover premium to purchase an existing firm above market value of their land stocks (when valued as individual sites) simply on the basis of the pooled benefits of those land stocks.<sup>10</sup> The same rationale holds for existing firms that wish to expand quickly. Rapid increases in output can

---

<sup>10</sup> On the assumption that the firm's land bank does not contain too many lemons in the form of poor sites. There may be an information problem here for acquirers when valuing target firms.

often best be achieved by buying up competitors and the larger they are the better. Firms under takeover threat or that are interested in a merger also have an incentive via the takeover premium to sell themselves as going entities rather than to sell off their land stocks piecemeal and distribute the revenues to shareholders.

In summary, the argument is that the scarcity of readily developable land, induced by planning rules and constraints, encourages British firms to take each other over as a means of quickly increasing land banks. Firms are willing to be acquired because of the premium they can command as going entities. The conditions for increased market concentration are in place, particularly at times when outsiders wish to enter the industry or insiders want to expand their outputs. By taking over another housebuilder, the acquiring firm's size rises but there is only slow replacement of firms further down the hierarchy. Over time the industry becomes increasingly concentrated. Neither the degree of planning constraint nor the pooling benefits of land banks are so great in Australia and the USA, so their housebuilding industries are less concentrated.

## **Conclusions**

The British housebuilding industry has a high degree of concentration by international standards. It is much higher than either Australia or the USA. Two principal reasons have been suggested here to account for this. First, the close proximity of Britain's regions enables housebuilders to diversify successfully across different markets. The gains from such diversification are best achieved by large firms, because they gain scale benefits in any particular market segment. Second, land shortages induced by a restrictive planning system encourage concentration as a means of acquiring land and make it more difficult for new entrants to expand at the bottom end of the size hierarchy. In this way, concentration grows and a handful of large producers emerge.

Such conditions do not exist to the same extent in either Australia and the USA, so their housebuilding industries are far less concentrated than Britain's. There is insufficient information to demonstrate these hypotheses in a rigorous way but they are compatible both with theory and the evidence that is available.

Whether the scale of concentration in British housebuilding is a matter of concern depends on the degree of competition remaining. Rivalry between the larger firms for land is likely to be great and high is the mutual interest they have in taking each other over, particularly at times of relative firm weakness caused, say, by poor management decisions or risky investment strategies going wrong. In such contexts, it is difficult to envisage British housebuilding firms behaving in a long-term collusive manner.

The arguments here, if correct, also have policy implications. It is not only important to increase the supply of development by weakening the overly severe planning constraints currently existing in Britain; equally needed is a speeding up of the planning process and a lowering of the uncertainty of planning decision outcomes.

Without such changes, individual firms may have incentives to grow through acquisition but overall industry output will rise much more slowly in response to upswings in housing demand. If a more rational approach could be achieved in Britain with regard to land-use planning and housing supply, by-products are likely to be a greater ease of entry into the housebuilding industry and a fall in the concentration of Britain's housing supply in the hands of a relatively small number of firms. Without such reforms, firm concentration is likely to continue to rise on a trend basis.

## **APPENDIX:**

### **The Rank Size of Housebuilding Firms in Australia, Britain & the USA**

There is a marked L-shaped distribution in housebuilding firm-size hierarchies with a few large producers and long-tail of firms. Figure A1 shows the distributions for the top 100 firms in Britain and the USA. These types of distribution are common in other industries as well as housebuilding and in such diverse fields as city sizes, financial time series, earthquake magnitudes and internet usage (Ijiri 1977; Laherrere 1998; Axtell 2001). There is a great deal of interest in both mapping such distributions and in trying to explain them.

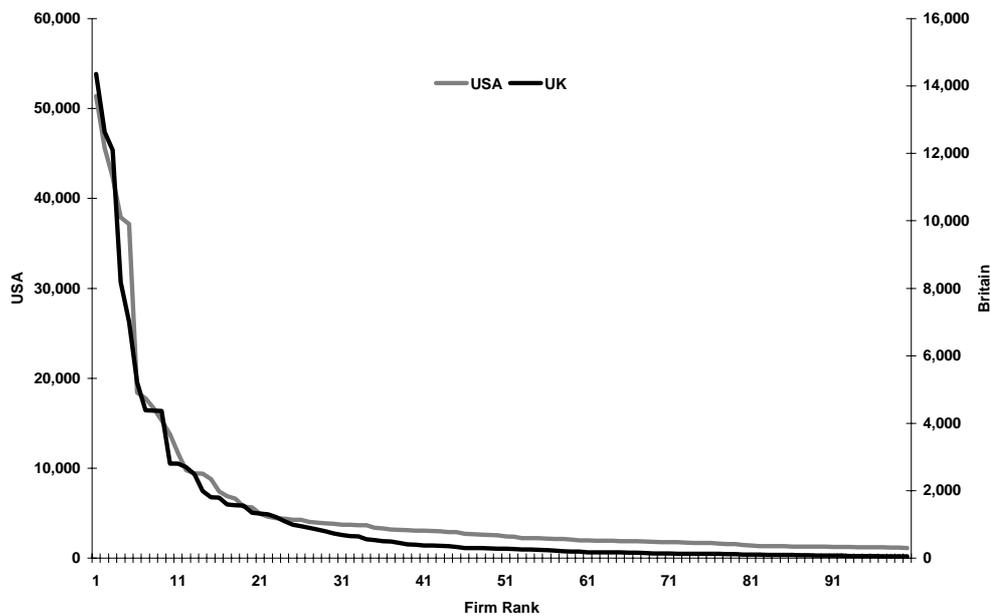
A common hypothesis is that such distributions follow a power law of the form:

$\log(\text{rank}) = c + b \log(\text{output}) + \varepsilon$ , where  $\varepsilon$  is an error term (Fujita 1999).

In this formula, if the slope,  $b$ , was equal to  $-1$  and relationship held exactly, the second-largest firm would be half the size of the first on so on down the size range. As firm sizes typically flatten out at some stage with small firms producing similar levels of output, such a power law relationship cannot hold across the whole range of firms. There is also likely to be an error term in any fitted equation. However, a power law relationship may be a good approximation for the larger size categories.

*Figure A1: Rank sizes of top 100 firms in Britain and USA*

Number of dwellings built in 2005/6



The benefit of this type of function for the analysis here is that it provides a means of comparing the distribution of larger firm sizes across the three countries in a precise way. Regressions can be estimated for each country for each year that data are available. The aims are:

- To examine whether the slopes of estimated functions are similar between the three countries and are constant over time;
- To examine the residuals to see if particular parts of the size distribution are atypical.

Table A1 presents the results. All equations have high  $R^2$  and significant coefficients, confirming the usefulness of the power law approach. Two sets of results for the USA are presented: one for the top 100 and one for the top 400 firms. Inclusion of a longer tail diminishes the output coefficient somewhat but the results of the two are sufficiently close that it seems most appropriate to compare the top 100 distributions in all three countries.

The slopes of the distributions over time are by no means constant, especially in the case of Australia, where the longest time period of data are available. This suggests the array of firm rank sizes does vary over time, possibly as firms respond in different ways to phases of the housebuilding cycle. The average value of the slope in Australia, however, approximates to -1, which can perhaps be interpreted as the long-run equilibrium value. If that is the case, the top 100 in Australia and the USA are very similar, with both of them approximating to -1.

The slope coefficient for Britain differs noticeable from the other two, averaging around -0.7 rather than -1. This means that the size difference between the top of the distribution and the bottom of it is great than in the other two countries.

*Table A1: Power law estimates of housebuilding firm ranks*

$$\log(\text{rank}) = c + b \log(\text{output}) + \varepsilon$$

	<u>C</u>	<u>t-stat</u>	<u>Output</u>	<u>t-stat</u>	<u>R sq</u>
<b>AUSTRALIA</b>					
1994	10.55	68.36	-1.20	-46.18	0.96
1995	10.33	63.54	-1.17	-42.50	0.96
1996	9.73	61.58	-1.08	-39.96	0.95
1997	9.85	64.12	-1.10	-41.88	0.95
1998	9.28	50.82	-0.99	-32.13	0.93
1999	9.04	53.80	-0.93	-33.51	0.93
2000	9.84	49.02	-1.03	-31.99	0.92
2001	9.59	49.77	-1.03	-32.04	0.93
2002	8.78	43.30	-0.87	-26.48	0.89
2003	9.62	40.45	-0.99	-26.08	0.89
2004	9.67	47.50	-1.01	-30.71	0.92
2005	10.13	48.60	-1.09	-32.18	0.93
2006	9.92	50.73	-1.06	-33.24	0.93
<b>BRITAIN</b>					
2001	7.37	50.23	-0.64	-27.90	0.91
2002	7.98	68.35	-0.72	-40.09	0.96
2003	7.78	71.32	-0.70	-41.22	0.96
2004	7.88	73.80	-0.71	-42.96	0.96
2005	7.86	68.66	-0.70	-39.90	0.95
<b>USA</b>					
<b>top 100</b>					
2002	11.60	71.18	-1.03	-49.17	0.96

2005	12.05	101.71	-1.05	-71.44	0.98
2006	11.73	110.11	-1.01	-76.46	0.98
<b>top 400</b>					
2002	11.02	319.60	-0.95	-176.80	0.99
2005	10.87	336.58	-0.91	-184.14	0.99
2006	10.58	321.16	-0.86	-171.91	0.99

Figure A2: Actual data and fitted equations compared

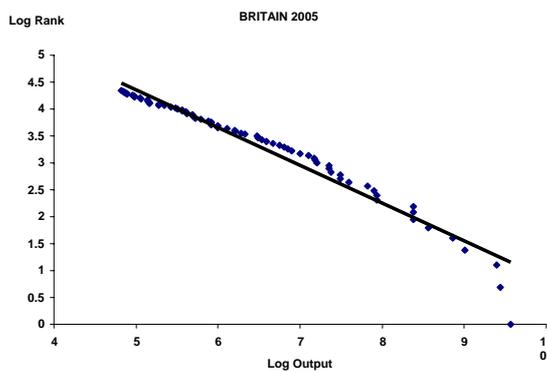
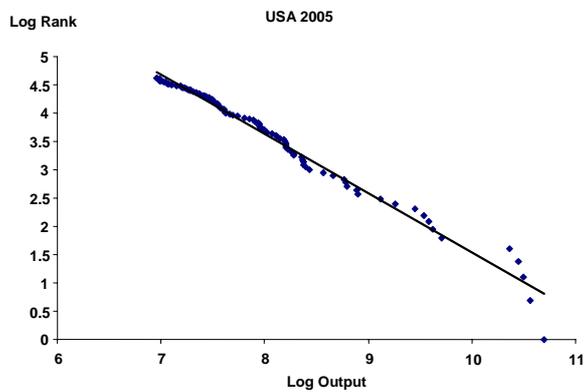
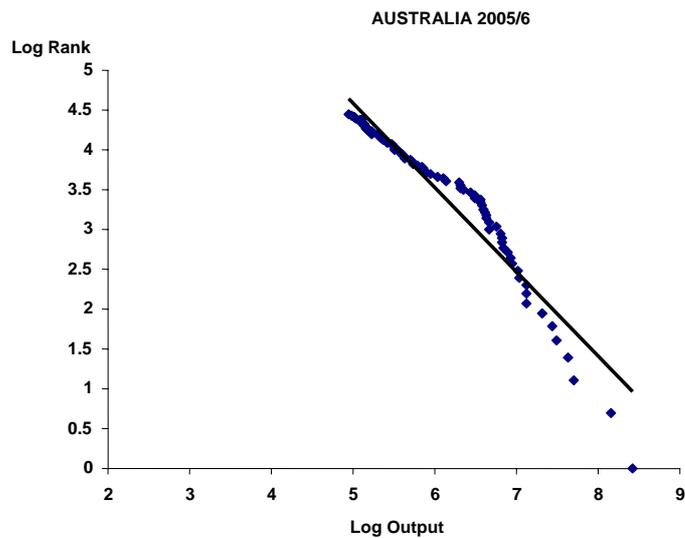


Figure A2 compares the actual data with the fitted equations. Although the general goodness of fit is high, it can be seen that the error residuals are consistently greatest at the top of end of the distributions. The functions considerably over-predict the outputs of the largest firms, which suggests the going is tougher at the top.

## **Bibliography**

- Adams D., Watkins, C. (2002) *Greenfields, Brownfields and Housing Development*. Blackwell Publishing, Oxford.
- Allmendinger P., Ball, M. (2006) Rethinking the Planning Regulation of Land and Property Markets. Final Report. 2006 (web-based publication). In. New Horizons Research Programme, ODPM, London.
- Axtell R.L. (2001) Zipf Distribution of U.S. Firm Sizes. *Science*, 293, 1818-1820
- Ball M. (1996) *Housing and Construction: a Troubled Relationship?* Policy Press, Bristol.
- Ball M. (2003) Markets and the structure of the housebuilding industry: an international perspective. *Urban Studies*, 40, 897-916
- Barker K. (2003) Review of Housing Supply. Interim Report - Analysis. In. HM Treasury, London
- Barker K. (2004) Review of Housing Supply. Final report - Recommendations. In. HM Treasury, London
- Buzzelli M. (2004) Exploring Regional Firm-Size Structure in Canadian Housebuilding: Ontario, 1991 and 1996. *Urban Geography*, 25, 241-263
- Dowling R. (2005) Residential building in Australia, 1993-2003. *Urban Policy and Research*, 23, 447-464
- Evans A. (2004) *Economics and Land Use Planning*. Blackwell Publishing, Oxford.
- Fujita M., Krugman, P., Venables, A. (1999) *The Spatial Economy*. MIT Press, Cambridge, Mass.
- Glaeser E., Gyourko, J. (2005) The impact of zoning on housing affordability. *Economic Policy Review. Federal Reserve Bank New York*, 9, 21-39
- Ijiri Y., Simon, H.A. (1977) *Skew Distributions and the Sizes of Business Firms*. North-Holland, New York.

- Laherrere J., Sornette, D. (1998) Stretched exponential distributions in Nature and Economy: 'Fat tails' with characteristic scales. *European Physical Journal*, B2, 525-539
- Meen G. (2001) *Modelling Spatial Housing Markets. Theory, Analysis and Policy*. Kluwer, London.
- Moran A. (2006) *The Tragedy of Planning. Losing the Australian Dream*. Institute of Public Affairs, Melbourne.
- O'Mahony M., deBoer, W. (2002) Britain's relative productivity performance: has anything changed? *National Institute Economic Review*, 179, 38-43
- Wellings F. (2006) *British Housebuilders: History and Analysis*. Blackwell Publishing, Oxford.