



COMPARATIVE EFFICIENCY OF HOUSING ASSOCIATIONS

A REPORT FOR THE HOUSING CORPORATION ON THE FEASIBILITY OF AN ECONOMETRIC APPROACH

August 2004



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A theory should be as simple as possible but no simpler.

Albert Einstein



1 Introduction

Many factors affect the costs of housing associations. This document reports the results of an econometric analysis to identify what the factors are and what effect they have on costs.

The Housing Corporation commissioned the analysis with a view to improving its regulatory judgements of housing associations and making them more consistent across associations in different circumstances. The current picture is of a considerable amount of performance information, but no comprehensive and systematic view of efficiency.

In public services generally, efficiency measurement is problematic and controversial. It is technical and depends on making assumptions and generalisations that are subject to challenge from users, providers and other stakeholders. As a result, interpreting and using the results require particular care.

As well as statistical analysis, our project included a number of workshops with Corporation staff, central government stakeholders and senior people from associations. The purposes of these sessions were primarily to identify and define possible cost drivers and to consider the meaning and usefulness of the preliminary results. The debates that took place at these sessions were constructive and greatly helped us to progress the work. We are grateful to those who took part and, for the most part, enjoyed grappling with the application of a somewhat technical econometric approach to an important issue for the sector.

The purposes of the feasibility study were to

- confirm the feasibility of the econometric approach
- develop and test hypotheses about relationships that might explain cost behaviour
- suggest areas where the data should be improved
- consider how the Corporation might use the results in its regulation of the associations
- provide preliminary statistical results to inform the development of the Corporation's policy.

The results of the analysis suggest that it will be possible to use an econometric approach to obtain a better understanding of the relative efficiency of housing associations in differing circumstances and that work to develop the approach will be justified in terms of improved regulation of the sector.

The structure of the report is as follows.

- Section 2 describes the approach.
- Section 3 describes the sources and definitions of the data we used.
- Section 4 summarises the results of the analysis.

The appendices contain

- a glossary of some of the more technical terms (Appendix I)
- a more technical description of the approach and the cost drivers (Appendix II)
- a description of the relationships we tested and the results of the econometric analysis (Appendix III)
- the full set of data we used for each of the associations in the sample (Appendix IV).



2 Existing measures and our approach

2.1 Existing measures

The Housing Corporation assesses the viability, governance, management and development performance of Housing Associations. In doing so, it collates and comments on a range of performance indicators for individual associations. The FPIs recently introduced¹ include the weekly operating cost per unit of rented, managed social housing stock. Unfortunately, this simple measure does not pass the Einstein test. The efficiency measure we consider in this report modifies the unit cost measure in two ways:

First, it allows for the existence of fixed costs of providing housing services. If there are fixed costs, unit costs will vary with the size of association and will mislead as an indicator of efficiency. Secondly, it allows for a series of circumstantial factors that might lead to unit costs being higher or lower than average, for example, regional differences in labour costs; different mix of housing types such as general needs and supported. A credible assessment of efficiency should seek to allow for such differences before reaching conclusions.

2.2 Our approach

Our approach has been to

- develop hypotheses about the cost drivers (i.e. factors that influence the cost of providing housing services) and the relationships between cost drivers and associations' total costs
- assemble relevant data on total costs and cost drivers for a sample of associations
- test the hypotheses and estimate the relationships between total costs and the cost drivers using econometric analysis to derive preferred econometric relationships
- use the preferred econometric relationships to derive a predicted cost for an association and then compare this with actual cost to derive a residual cost difference for each association
- interpret the results (the relationships and the residuals) and draw conclusions.

The results allow us predict what an individual association's costs would be on average and compare the prediction with the association's actual costs. The difference, known as the residual, provides an indicator of the relative efficiency of the association having regard to its particular circumstances.

2.3 Interpreting the results

Evidently, efficiency will be a significant cost driver but there are some important features of the analysis that should be borne in mind when interpreting the results.

- The approach compares the efficiency of associations: it does not consider the absolute efficiency of the sector as a whole.²

¹ Housing Corporation (2004), Proposed changes to the Financial Performance Indicators definitions

² Absolute efficiency is difficult to assess since there is no close comparator for the sector. Some possibilities are

- international benchmarking, although this is plagued by problems of comparability and exchange rates
- individual activities might be benchmarked against similar activities in other sectors
- the trend in sector productivity could be compared with trends in the economy to see how the sector is improving its efficiency over time.



- The outputs of social housing provision are complex and a measure of the overall performance of associations, including effectiveness as well as efficiency, would take account of this. The data that would enable us to do this are not available at present and the output measure we have used is the number of social housing units provided.
- This analysis focuses on associations' operating costs and does not consider capital costs (e.g. of major repairs) or the costs of development activities.

It might be possible to address each of the above by obtaining additional data.

We cannot observe efficiency directly. We have adopted, therefore, an indirect approach that estimates the effect on costs of factors about which we can obtain data and then considers whether the unexplained differences between associations reflect efficiency differences.

As well as efficiency, the residual might be due to data errors or to the omission of material cost drivers and so we cannot say with certainty that residual differences are due to efficiency differences alone. Test statistics, reported in Appendix III, give some comfort on these matters, however, and add to the confidence with which we can interpret the results.

2.4 Using the results

In common with other sector regulators, the Corporation wishes to know more about the efficiency of associations. The associations too, have an interest in exploring efficiency differences and identifying the scope for performance improvement. Economic regulators such as Ofwat and Ofgem use comparative analysis to set targets for efficiency improvement. Regulators focus on the residual as the purported measure of inefficiency after adjusting for the effects of cost drivers deemed to be outside the control of the businesses. Those businesses judged least efficient are set tighter price limits, implying the need for greater efficiency improvements. This process, known as the catch up relationship, is often adversarial and hotly disputed by the regulated businesses.

By contrast, the approach adopted in voluntary benchmarking between companies is cooperative and seeks to identify best practices that can be emulated. This approach implies that all cost drivers, not just those outside the entity's control, should be included.

The situation in social housing has more in common with the latter. The Corporation wishes the sector to use efficiency analysis together with other approaches in its own drive to become more efficient. Hence, we have involved panels of associations and other stakeholders in identifying possible cost drivers and developing the approach.

The need to sustain incentives is an important consideration in the development of the Corporation's approach to efficiency. This had a number of implications for the approach we adopted. For instance, the use of broad output and input measures rather than line-by-line detail gives discretion to associations as to how they choose to respond to the results. The incentive properties will depend, in part, on how the regulator uses the results of the analysis, for instance, the timing and extent to which the less efficient are encouraged or required to move as opposed to leaving this to self-assessment.

The Corporation could consider augmenting the incentives to perform well, without excessive intrusion, by providing guidance, or even assistance, for those needing it. A focus on outcomes, rather than inputs or outputs is capable of reducing perverse incentives and rewards for gaming but achieving this will depend on clear definitions of the desired outcomes of social housing.

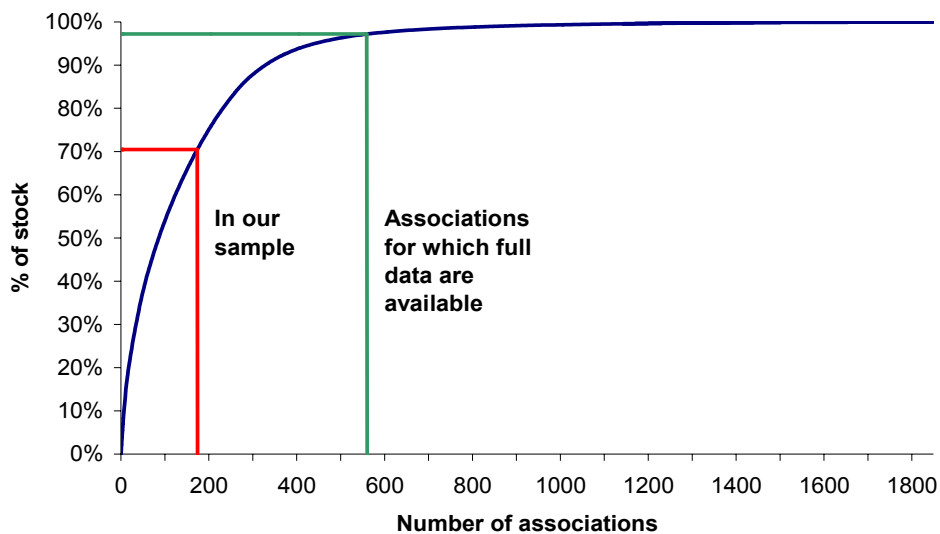


3 Data

3.1 Associations analysed

We analysed data provided by the Corporation for 192 large housing associations. As shown in Figure 1, they account for approximately 70 per cent of the sector's stock but a small proportion of the associations. It would improve the statistical quality of the analysis to use a larger sample of associations. Complete data sets are available for around 580 associations which could be included in the sample and figures for 2003/04 will be available shortly.

Figure 1: Proportion of total stock in sample associations



3.2 Costs

We analysed total operating costs excluding depreciation.

3.3 Cost drivers

We considered cost drivers identified in discussion with the Corporation and other stakeholders. Appendix II includes details of all those we considered. Table 1 shows the drivers that we found to be statistically significant in our preferred econometric relationships.

Table 1: Statistically significant cost drivers

Possible cost driver	Measure/variable
Group status	Member of group – Yes/No
Type of association	Traditional association or LSVT - Yes/No
Duration of LSVT	Up to 5 years, Over 5 years
Ownership status of units	Number of units owned, managed and owned and managed
Total units	Sum of owned, managed, and owned and managed stock
Regional wages	Labour price index normalised for worker characteristics
Type of housing	Proportions of supported, shared ownership and non social housing



4 Interpretation of the results

4.1 The econometric relationships

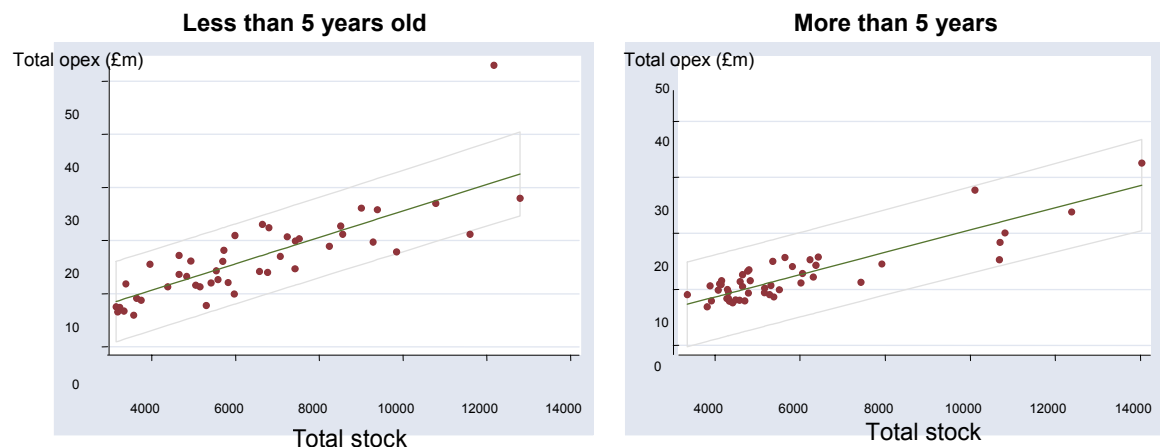
The approach, techniques, data and results are described in more detail in the Appendices.

The key finding is that the results are reasonably good in statistical terms and for the most part consistent with our prior hypotheses, developed in conjunction with a range of stakeholders, about the cost drivers and the relationships.

We specified separate econometric relationships for LSVTs and for traditional associations. This sample split follows conclusions drawn from statistical tests and data analysis.

For LSVTs, the cost function is a linear relationship with a fixed annual cost and a cost per unit, and an additional cost per unit for LSVTs created less than 5 years ago. These factors explain 71% of the variation in costs across LSVTs. The more recently created LSVTs have a higher incremental cost per unit than longer established LSVTs as illustrated by the different slopes of the graphs in Figure 2.

Figure 2: Econometric relationships for LSVTs



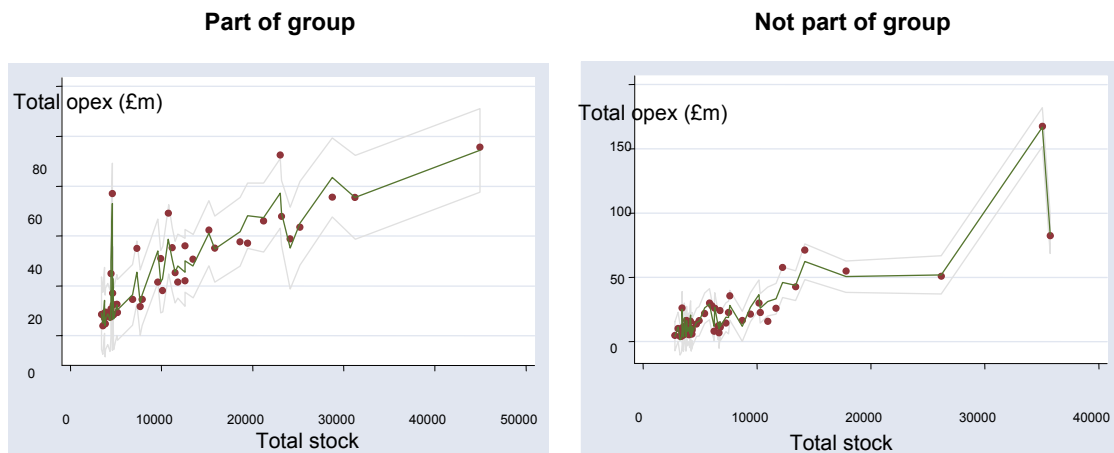
For traditional associations, the statistical tests suggest that the cost relationships are different for associations that are part of a group and those that are not. We have, therefore, estimated separate relationships for the two sub-divisions. These are illustrated in Figure 3.

In addition to group status, the statistically significant cost drivers for the traditional associations are units owned, units managed and units owned and managed; regional wages; and the proportion of supported housing. Since there are multiple cost drivers, the relationship is represented by a wiggly line. These factors explain more than 90 per cent of the variation in costs across associations. Our analysis also suggests that traditional associations exhibit scale economies. This means that, other things being equal, bigger associations have lower incremental cost per unit than smaller.

The measures that we considered of stock concentration and regional economic activity (other than that reflected in labour cost differentials) were not statistically significant.



Figure 3: Econometric relationships for traditional associations



Priorities for the future to improve the analysis include

- assembling a larger sample of associations, in particular including smaller associations
- assembling cost data that treat capitalisation more consistently across associations.

4.2 The scope for improvement and distribution of results

As discussed in 2.1, we believe that the simple unit cost measure provides a poor view of relative costs since it ignores the extent to which the circumstances of associations differ.

A key finding resulting from the econometric analysis is illustrated in Figure 4. This represents the cumulative cost differences for associations whose costs are above average. One curve represents the difference above average unit cost; the second represents the difference using the predictions from the econometric analysis.

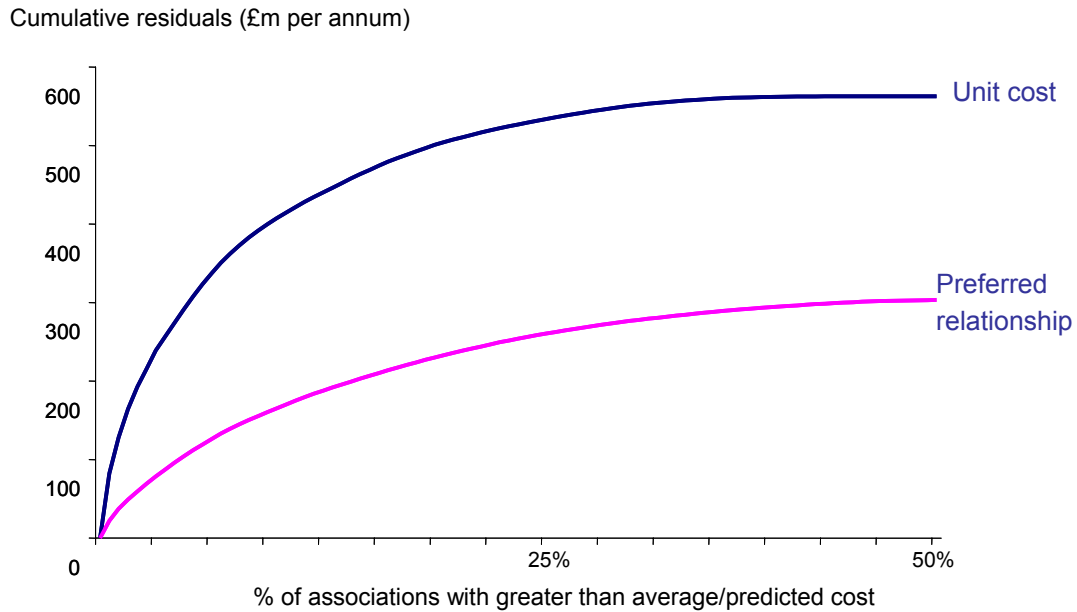
The difference between predicted and actual costs is significantly compressed when we use the preferred relationship in calculating the residuals, rather than relying on the simple unit cost measure. If we were to take this difference as an indication of the scope for efficiency improvements in the sector, the unit cost basis greatly overestimates the scope for improvement.

This is not a surprising result, although it is potentially important for policy towards the sector as a whole.

As noted in section 2.3, however, we cannot be sure that the whole of the difference between actual and predicted costs reflects inefficiency. While the results of the statistical tests we have applied are reasonably good, they do not rule out other factors. Better and more extensive data and further consideration of the data and of the results might lead to the relationships being refined. In any event, it will add to the confidence that we can attach to the interpretation.

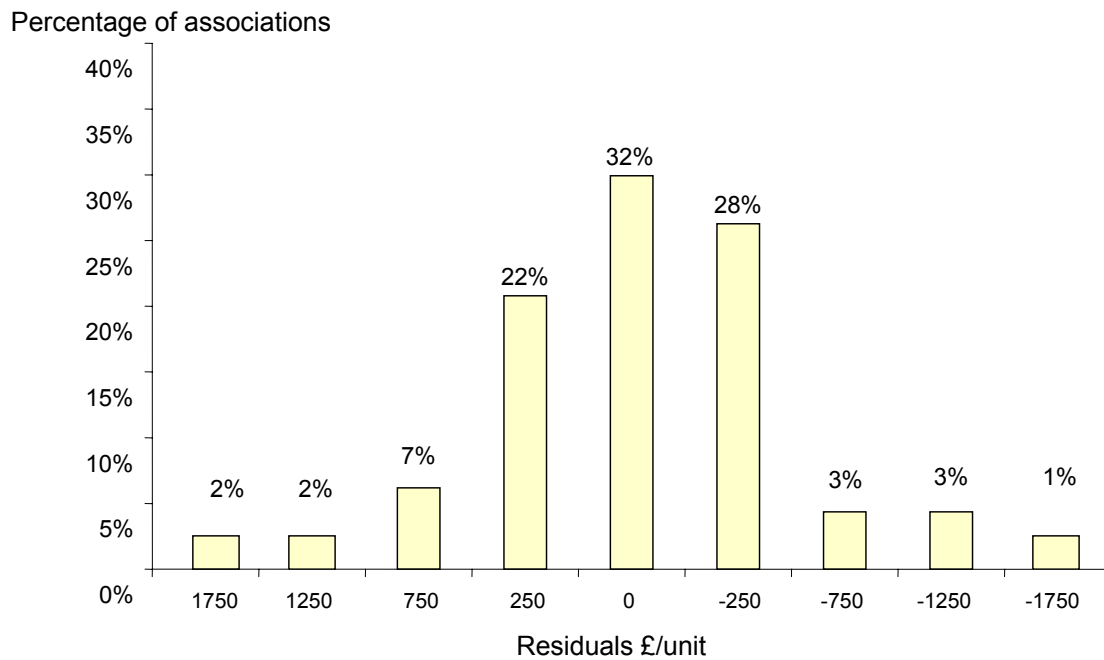


Figure 4 – Possible scope for efficiency improvement



After allowing for the effects of the statistically significant cost drivers, a relatively small number of associations have significantly higher than average residuals. Figure 5 shows that 11% of associations in the sample have unit costs that are more than £750 per unit above predicted unit costs (i.e. based on the preferred econometric relationships) and 4% have unit costs that are more than £1,250 above. Evidently, this should have implications for the focus of the Corporation's regulatory attention. The proportions in each band will change depending on the boundaries chosen.

Figure 5: Distribution of the residuals





4.3 Individual associations

Appendix III sets out the econometric results for the sector as a whole and the sub-divisions and Appendix IV shows the results and data for the individual associations included in the sample.

4.4 Relevance of the results

We hope that the methodology and approach will develop in a manner that is collaborative and that it will be valued by the sector as a whole. In our view, this would be the best way of improving the understanding of costs and efficiency in the sector. The use and development of the analysis should be, therefore, for further consideration by associations and stakeholders.

During the course of our work, we noted a number of ways in which the results of the analysis might influence developments and we have listed them below.

- The focus on evidence and its consistent use should promote a dialogue with and between associations that can identify errors or inconsistencies in the data and suggest ways of improving data in future.
- The analysis provides a discipline for identifying and testing potential cost drivers, identifying those that are supported by the evidence and either eliminating others or improving the specification of how the driver might influence associations' costs.
- The residual or unexplained cost differences should motivate "high cost" associations to consider why they differ from the norm and to focus their search for improved efficiency or, alternatively to explain why their higher cost output is justified in terms of public value.
- Identifying cost drivers should stimulate structural changes leading to greater efficiency. For example, if there are economies of scale then the business case for mergers and acquisitions should be pursued more actively.
- The residual cost differences, alongside other indicators of performance, provide a consistent and evidence based focus for regulatory attention.

4.5 Outstanding issues

The efficiency of the sector

The analysis does not address the efficiency of the sector as a whole relative to other sectors and the economy generally. It concerns the efficiency of associations relative to one another. Given the nature of the social housing sector, it will be difficult to make comparisons with other sectors at an aggregate level, although comparisons of particular activities, development or care services for example, might repay analysis. Comparing trends over time across sectors should also be informative.

The output measure

The output measure we used in this analysis was housing units. Associations might suggest that any excess of actual costs over predicted was caused by a different mix of outputs or outputs of different quality. Over time, it might be possible to capture such differences in the efficiency analysis and the Corporation should keep this under consideration. In any event, the analysis so far will assist in assessing the validity of such suggestions.



As we observed in the introduction, the approach we are describing here is one part of an overall performance assessment. Our analysis has not addressed the trade-off between cost efficiency and effectiveness i.e. whether the outputs delivered are the most valued. In future, the assessment of differences in the value of output might be subject to greater scrutiny, particularly if individual associations identify differences in output as reasons for differences in their costs.

Improving the specification and measurement of the cost drivers

At various points in the report, we have identified issues of a technical nature that could be addressed by future refinements of the analysis. These include

- better specification of the cost drivers for LSVTs
- obtaining data on some potential cost drivers that we were not able to include in our analysis
- improving the specification of how certain cost drivers might affect associations' costs
- extending the analysis to consider the efficiency of development activities
- extending the sample to include more, particularly smaller, HAs.



Appendix I – Glossary of econometric terms in the report

The glossary explains the econometric terms used in the report. It does not repeat those definitions that are included in the text, for example of the various statistical tests.

Coefficient	The extent to which the dependent variable changes with respect to changes in an independent variable.
Cost drivers	The explanatory variables in the econometric relationships.
Econometrics	Use of statistical techniques to estimate the form and nature of causal relationships between economic variables.
Fixed costs	Elements of cost that do not vary with the number of units the association has. In an econometric cost equation, the intercept is interpreted as the fixed cost.
Intercept	The point at which the line representing the econometric relationship crosses the vertical axis when plotted in two dimensions.
Relationship	The equation showing how the variables being analysed are related.
Residual	The difference between the actual costs of an association and the cost predicted by the econometric relationship.
Variables	In econometrics, the behaviour of the dependent variable (in this case HA costs) is related to or explained by the explanatory variables (in this case the cost drivers).



Appendix II – Overall approach, identifying cost drivers and data definitions and sources

Overall approach

Our approach has been to

- develop prior hypotheses about the factors that influence the costs of social housing services and the nature of the relationships between the costs and the cost drivers
- formulate a general model that will be able to test these hypotheses
- assemble relevant data on costs and cost drivers for a sample of associations
- determine the preferred econometric relationship between the costs and the cost drivers having regard to statistical tests (see subsequent paragraph) and prior hypotheses
- use the econometric relationships to derive a predicted cost for each association and then compare this with the association's actual operating cost to derive a residual cost difference for each association
- interpret the results and draw conclusions.

We applied a range of statistical tests to the estimated relationships. The results of the tests indicate

- which cost drivers are significant in statistical terms
- how well the estimated relationship fits the data - the better the fit the stronger the support for the relationship
- whether there is evidence that significant variables have been omitted from or mis-specified in the relationship.

The better the test results, the more confident we can be that the relationship is meaningful.

The hypotheses we tested came from discussions with sector stakeholders about what might be the cost drivers and their relationship with total costs. The hypotheses represent causal relationships, for example an association with stock predominantly in high labour cost areas will, other things being equal, have higher costs than associations with stock predominantly in low labour cost areas. If the index representing local labour cost variations is statistically significant then the hypothesis is supported by the analysis.

Figure II.i illustrates the elements of our econometric approach.

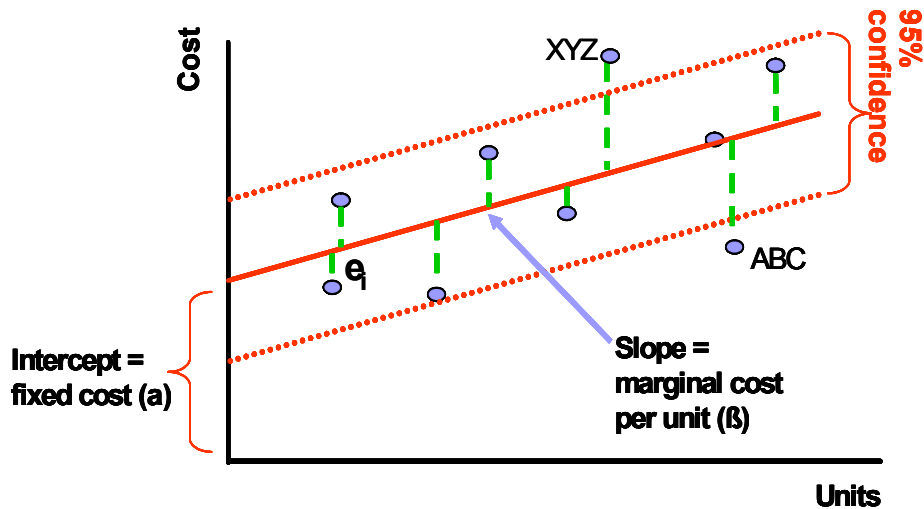
The blue points represent the costs of the individual associations and the red solid line is the estimated relationship. This is the relationship that best fits the data. Best fit is that relationship which minimises the sum of squares of the distances between the line and the individual points. The technique we use to estimate the line is known as Ordinary Least Squares (OLS).

The red dotted lines represent the 95% statistical confidence interval for the estimated relationship.

The intercept term (α) represents the minimum or fixed costs of providing HA services (units of housing) while the slope term (β) represents the marginal relationship between additional units and costs.



Figure II.i: Illustration of estimated cost relationship



The green vertical dotted lines represent the residual differences between estimated and actual costs for each association (an example ϵ_i is marked). The relationship between costs and the single cost driver is therefore:

$$\text{Cost}_i = \alpha + \beta (\text{units})_i + \epsilon_i$$

We considered many explanatory factors and some of our preferred relationships therefore include more than one β term. The econometric technique isolates the individual marginal contribution of cost drivers to costs and shows their statistical significance in explaining overall costs.

Identifying cost drivers

We identified cost drivers for consideration having regard to

- relevant literature³
- views expressed by Corporation staff and other stakeholders
- the availability of reliable and consistent data for a sample of associations.

We then looked at the statistical significance of each cost driver to establish whether it had a material impact on the dependant variable, total cost, when other significant factors were taken into account. Our preferred relationships include the significant cost drivers.

³ Kiddle, C., (2003), Multiplication and division: the distribution of stock between landlords in the housing association sector. Housing Corporation Sector Study 27.
Kiddle, C., (2002), The impact of the large scale voluntary transfer of local authority housing stock on the HA sector. Housing Corporation Sector Study 17.
Trimmer CS (2002), Assessing housing association properties against the Decent Homes Standard. Housing Corporation Sector Study 19.
Bruce Walker & Alan Murie, (2004) The performance of social landlords in Great Britain: what do we know and what does it show? Housing Studies Vol 19 (2)



Data definitions and sources

This section describes the sources and definitions of the data we used in the econometric analysis. The data themselves for the sample of associations are in Appendix IV.

Operating costs

We used information on total operating costs from the 2002/03 statutory accounts of a sample of housing associations. Accounting depreciation is unlikely to provide a consistent measure of the capital used in the delivery of housing association services and we therefore deducted this from the total cost.

Capitalisation policies differ significantly in the sector and this might be distorting the data. It will be possible to explore this using the data for 2003/04. These will include information on capitalised expenditure on existing stock, as distinct from new development, and will permit a better treatment of this issue. These data will be available in September.

Financing costs should be considered as a separate matter and we have not included them in this the analysis.

We focused on analysing the total operating costs of associations rather than the costs of individual activities. This was because there is no widely accepted set of activity definitions and, in any event, attributing common costs to different activities is arbitrary. To do so would lead to poor statistical results and false inferences about individual activities.

Social housing stock

We used the Regulatory and Statistical Returns, which provide information on social housing units owned, managed, and owned and managed and according to the type of housing, namely

- general needs housing
- supported housing
- staff/warden accommodation
- leased housing
- non-social housing.

Large scale voluntary transfers (LSVT)

In a Housing Corporation study evaluating the impact of large scale voluntary transfer (LSVT) on the stock profile of housing associations, Kiddle (2002) highlighted differences between LSVT HAs and non-LSVT HAs in terms of the dispersion and profile of their stocks.⁴

The Corporation informed us of the status of the associations in our sample and whether an association was an LSVT or not was a statistically significant variable in our analysis.

We were told that LSVTs in the early years of transfer (up to five), usually require significant spend on improvement works to the transferred stock, therefore would have higher costs than

⁴ Kiddle C (2002) The impact of the large scale voluntary transfer of local authority housing stock on the HA sector. Housing Corporation Sector Study 17



would be the case for non LSVT associations. We sought to reflect this by considering the length of the period since the transfer occurred, and found that LSVTs that are less than five years old have a higher incremental cost per unit than older associations.

Group structure

Some associations are part of a group of two or more organisations. We were interested to see whether membership of a group affected costs. The Corporation provided information on this and, in our sample of 192 associations, 81 were part of a group.

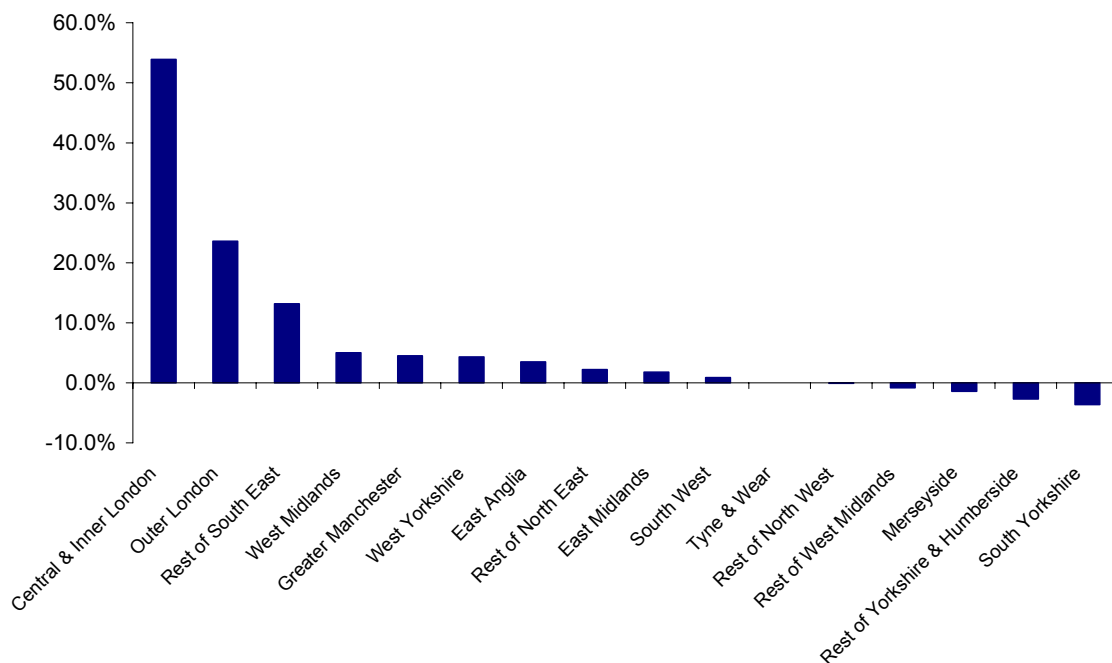
Normalised regional wage

The variation in regional wages is likely to be a cost driver for those labour costs that must be incurred close to the stock. Statistics on regional wages are available but do not provide a like with like comparison since worker characteristics and occupations differ by location.

To obtain a measure of underlying wage relativities we have used normalised wage data allowing for observable and recorded characteristics of the workforce, such as occupation, age, qualifications etc.

We used estimates⁵ of underlying private sector regional wage relativities, combined with information on the location of owned stock⁶, to derive an index of regional wage relativities for each association. The regional wage relatives we used are shown in Figure II.ii.

Figure II.ii: Normalised regional wage relatives (base is Tyne and Wear)



⁵ Blanchflower, Oswald and Williamson. February 2002. "Estimated regional wage relativities for England."

⁶ Location data were not available for owned and managed stock



Appendix III – Relationships tested and summary of econometric results

Relationships tested

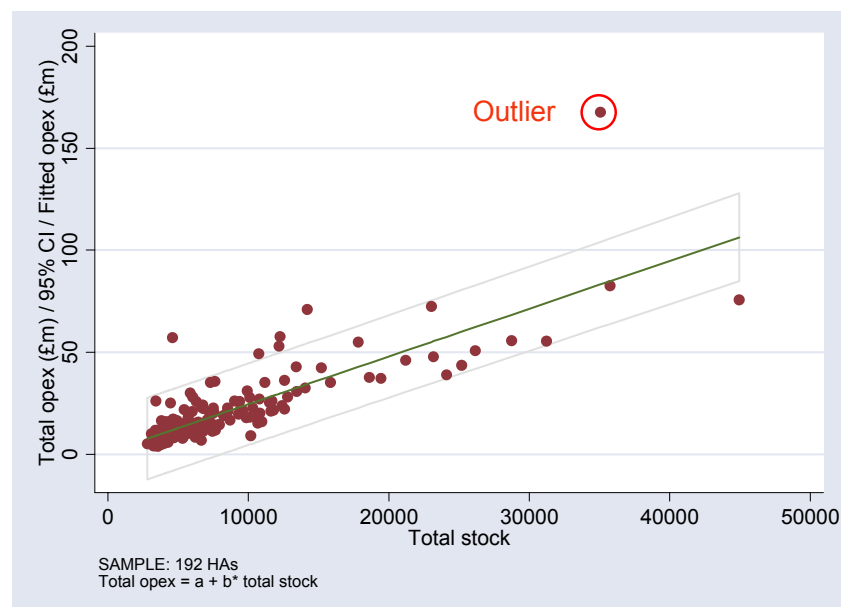
The relationships we tested were as follows.

- Simple one variable relationship. A linear relationship for all associations with the number of units as the only cost driver. We present this for illustrative purposes. The statistics indicated it was not a good specification.
- Multi variable relationship – all associations. A relationship for all associations that included several statistically significant cost drivers.
- Separate multi variable relationships for sub groups of associations consisting of LSVTs and traditional associations.

Simple one variable relationship

The illustrative single variable linear relationship is shown in Figure III.i.

Figure III.i: Linear relationship with one explanatory variable (number of units)



Points above the fitted line have higher than average predicted costs after differences in the number of owned and managed units are taken into account. One particular association, the “outlier” labelled, has actual costs that are far from the predicted. In the more sophisticated relationships, this association ceases to be an outlier.

This relationship is not particularly good in statistical terms. While it explains 68% of the variation, the tests suggest, unsurprisingly, that significant variables have been omitted and that non-linearities might be present. We analysed alternative formulations involving several variables identified in the literature and discussions with stakeholders.



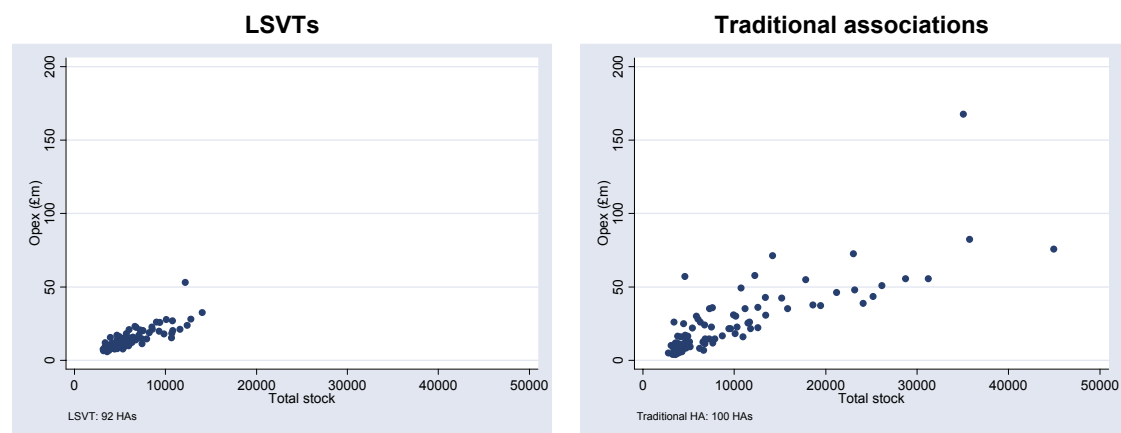
Multi variable relationship – all associations

The most general relationship we tested had 14 explanatory variables.

- Three variables represented the ownership status of housing units - owned and managed stock, owned stock, and managed stock - to see whether these should be included as separate variables or whether a single total stock variable would suffice.⁷
- Stocks squared, a non-linear term to test whether there were scale effects with respect to owned and managed stock, owned stock, and managed stock.
- Each association's proportion of supported housing, non-social housing and shared ownership stock.
- Index of regionally normalised labour costs
- Index of stock concentration.

The test statistics revealed that the error terms were not normally distributed, as is required for the OLS regression method to give reliable results. The plots in Figure III.ii show the spread of units for LSVTs and traditional associations and that LSVTs are concentrated in the smaller size range. Given the test result, we concluded that we should consider splitting the sample and analysing the LSVTs and the traditional associations separately.

Figure III.ii: Size range of LSVTs and traditional HAs



Separate relationships for sub-divisions of the sample

For each sub-division, we specified a relationship equation that as well as the cost drivers as such, also allowed for interactions between the cost drivers. For the LSVTs, we started with a relationship that included

- age of LSVT: less than 5 years (1 for Yes; 0 for No) and between 5 and 12 years (1 for Yes; 0 for No)

⁷ For this and the next two sets of variables, we allowed for differential parameters for the group and LSVT distinctions.



- units owned, managed and owned and managed for all LSVTs together
- ditto for LSVTs aged less than 5 years
- ditto for LSVTs aged between 5 and 12 years
- stocks squared for all LSVTs
- stocks squared for LSVTs aged less than 5 years
- stocks squared for LSVTs aged between 5 and 12 years
- the proportions of supported housing, non-social housing and shared ownership stock.
- index of regionally normalised labour costs
- index of stock concentration.

To arrive at the preferred relationship, we adopted an iterative process known as “testing down”. This reduces the number of variables based on joint significance tests on the estimated parameters. The preferred relationship explained 71% of the variation, but other statistical tests indicated that the relationship was still not fully specified. This will need further attention when additional data are available.

For the traditional associations, we started with a relationship that included

- group membership (1 for Yes; 0 for No)
- units owned, managed and owned and managed for all traditional HAs
- units owned, managed and owned and managed for traditional HAs that are part of a group
- stocks squared for all traditional HAs
- stocks squared for traditional for HAs that are part of a group
- the proportion of supported housing, non-social housing and shared ownership stock for all HAs
- the proportion of supported housing, non-social housing and shared ownership stock for HAs that are part of a group
- index of stock concentration.

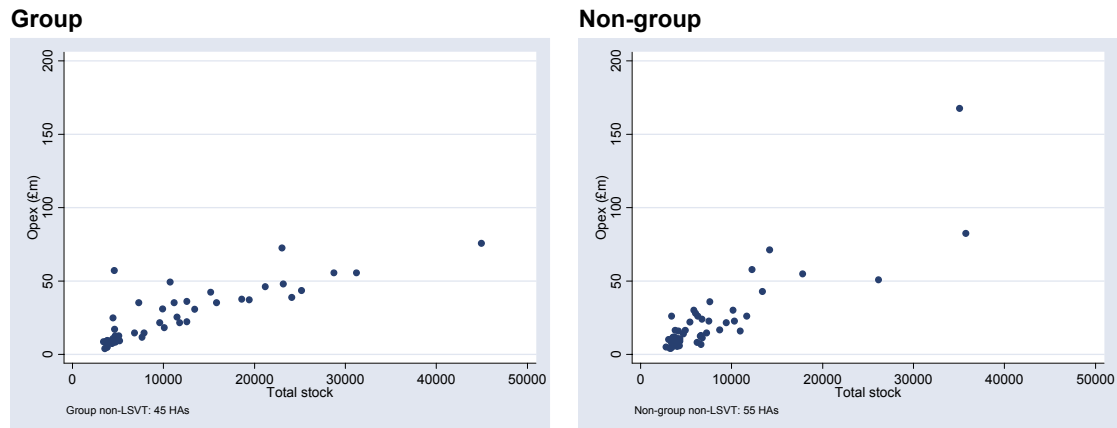
The significance tests showed that the group status affected the coefficients not only of the linear variables (number of units, proportion of other housing types), but also of the non-linear variables. We therefore further divided the traditional HAs into those that were part of a group structure and those that were not.

The relationships we tested for traditional housing associations, both explained over 90% of the variation in costs.

The intercept of the equation is usually interpreted as an estimate of the fixed cost of operation. In both of the preferred relationships the intercept was negative. This is counterintuitive.

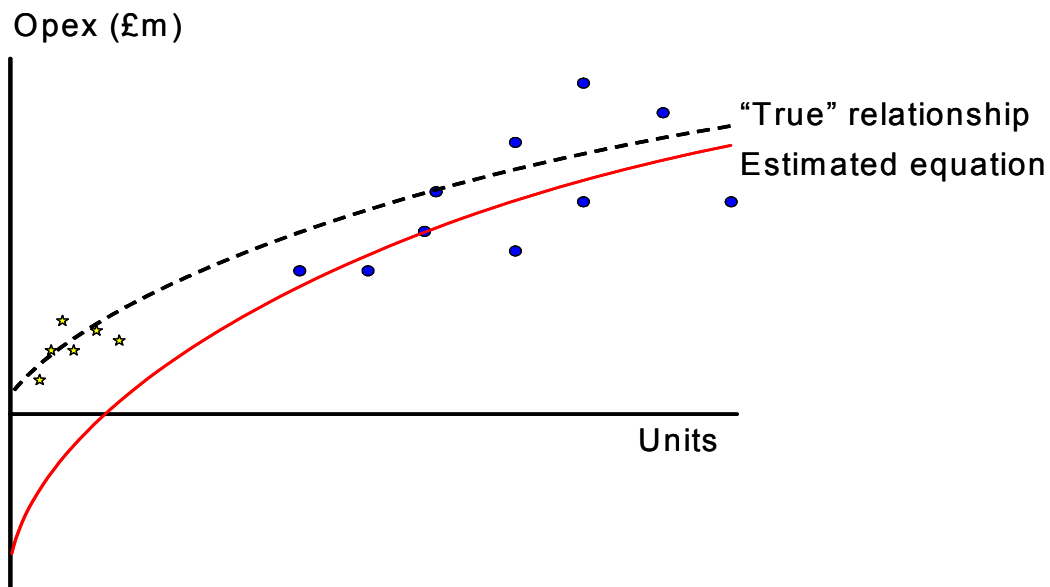


Figure III.iii: Plot of group and non-group traditional HAs



The position and a likely explanation are illustrated in Figure III.iv. The red line is a non-linear relationship estimated using data for larger associations (represented by the blue dots). If the relationship is extrapolated beyond the range of the sample to the vertical axis, the intercept, in this example, is negative. A 'true' relationship estimated on a sample that includes smaller associations (shown by the yellow stars), on the other hand, retains non-linearity but indicates a positive intercept. This illustrates the general point that it is problematic to extrapolate such relationships beyond the range of the data on which they were estimated. As we have noted elsewhere, this case indicates the need to extend the sample to include smaller associations.

Figure III.iv



Summary of cost drivers considered and analysed

Table III.i contains a list of the cost drivers we used in the econometric analysis and their statistical significance for two sub-divisions: LSVTs and traditional associations. Table III.ii



shows other cost drivers we considered but did not include in the analysis and gives the reasons why we were unable to use them.

Table III.i: Cost drivers analysed

Cost driver	Measure/variable	LSVT	Traditional
Group status	Member of group – Yes/No	Significant	Significant
Duration of LSVT	Up to 5 years, 5-12 years, >12 years	Significant for LSVTs <5 years	Not applicable
Ownership status of units	Units owned, managed and owned & managed	Not significant	Significant
Total units	Sum of owned, managed and owned and managed stock	Significant	Not significant
Regional wages	Labour price index normalised for worker characteristics	Not significant	Significant
Stock concentration	Number of LAs where stock owned Herfindahl index	Not significant Not significant	Not significant Not significant
Type of housing	Proportion of supported, shared ownership and non social housing	Not significant	Supported significant, others not
Economic activity	Various indicators	Not significant	Not significant
Services provided	Other services or not	Not significant	Not significant

Table III.ii: Cost drivers considered but not analysed

Cost driver	Comment
Type of asset	Information, e.g. houses or flats, not available
Size of units	Information on number of bedrooms not available
Asset age	Not available
Asset condition	Asset register information not available Decent home standard information incomplete
Location	Unclear how location, independent of regional wage effect, should be specified
Capital value	Specification of impact not clear
Quality of output	Incomplete data. Available indicators do not measure value of output (tenant satisfaction does not necessarily measure quality or value of output)
Financing cost	Not relevant to operating costs. Benchmark separately.
Market conditions	Specification of impact not clear

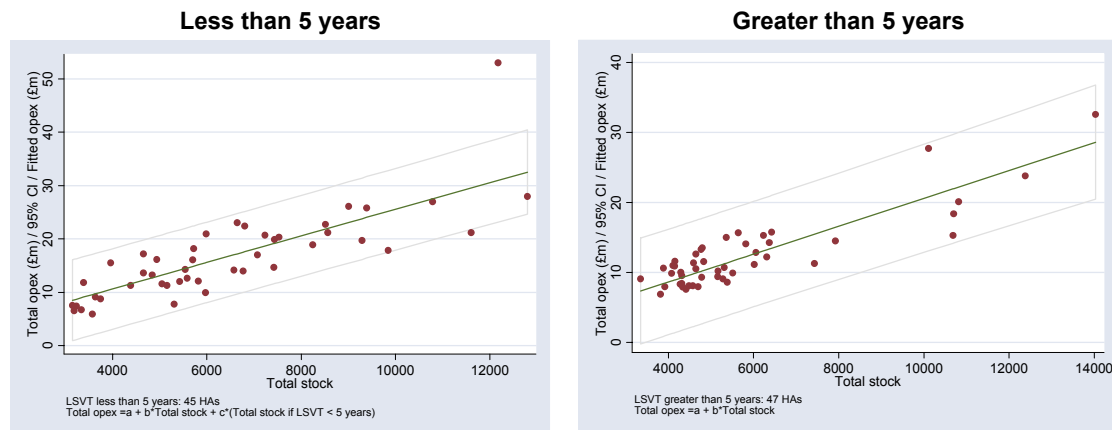


Summary of results

Figures III.v and III.vi shows a visual overview of the results for the four sub-divisions.

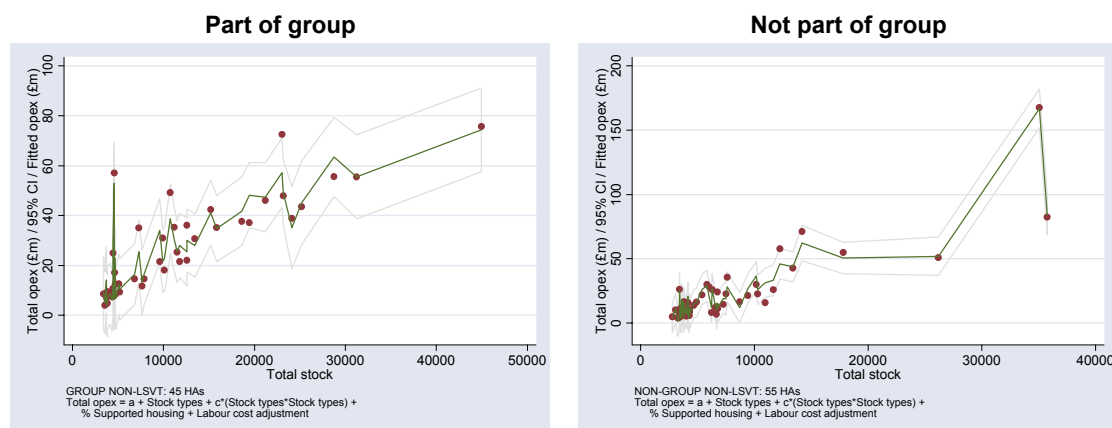
The relationships for the LSVTs are straight lines since no cost drivers other than total units (and age) were statistically significant. Note, however, that the slope for the LSVTs that are less than 5 years old is steeper than the slope for the older LSVTs. This is consistent with the prior hypothesis.

Figure III.v: Estimated relationships for LSVTs



The relationships for the traditional associations are no longer; as was the case in the single variable relationship in Figure III.i, straight lines, rather they have several wiggles. This is because cost drivers other than the number and ownership status of units are significant and therefore the relationships cannot be fully represented in two dimensions. The association marked as an outlier in Figure III.i is no longer an outlier now that other explanatory factors have been taken into account.

Figure III.vi: Estimated relationships for traditional associations



The parameters of the preferred relationships and the statistical tests of their validity are presented in Tables III.iii to III.vi.



For each sub-division, these show the following.

- Estimated coefficients of the significant cost drivers and the t-statistic for each. The latter shows the statistical significance of each coefficient. As a general rule, a t-statistic of 2 or more indicates that the coefficient is significant.
- The “p-value” for each of the coefficients. This is the probability that the estimated coefficient is equal to zero. Standard inference uses a 95% confidence criterion and accepts a variable as significant if its p-value is less than 5%.
- The adjusted R² for each relationship. Adjusted R² measures goodness of fit, taking into account the number of variables included in the relationship. An adjusted R² of 70% means that 70% of the variation between the data points is explained by the estimated relationship.⁸
- For the statistical inference to be valid, the variance of the residuals for the smaller associations must be the same as that of larger associations. This assumption can be tested statistically, and the conclusion from this test is shown for each relationship.
- The results of the RESET test. This tests the likelihood that some cost drivers have not been included in the analysis but provides no guidance as to what the omitted cost drivers might be.

The significant variables and preferred relationships for traditional housing associations are given in the following tables.

Table III.iii: Traditional housing associations that are not part of a group structure

	Estimated coefficient	t-statistic	P-value
Constant (£m)	-£36.99	7.76	0%
Owned & managed stock (O&M) (£)	£3,732	1.06	29%
Owned stock (O) (£)	£5,892	2.7	1%
Managed stock (M) (£)	£6,724	3.58	0%
O&M * O&M (£)	£0.06	-8.71	0%
O&M * O (£)	-£2.43	-2.92	1%
O&M * M (£)	-£0.79	-0.34	74%
O * O (£)	-£0.50	3.97	0%
O * M (£)	£22	-1.84	7%
M * M (£)	-£1.57	4.7	0%
Labour cost adjustment (£m)	£23.78	4.72	0%
Proportion of supported housing (£m)	£44.00	-5.7	0%
Adjusted R ²	96%		
Test of constant variance	Constant variance		
Test of omitted variables	Evidence of omitted variables		

⁸ The fact that efficiency differences can show up in the residual means we do not have a complete relationship of costs. A low adjusted R² would not necessarily indicate a poor relationship since differences in efficiency might be significant in explaining cost differences.



Table III.iv Traditional housing associations that are part of a group structure

	Estimated coefficient	t-statistic	P-value
Constant (£m)	-£25.44	-2.92	1%
Owned & managed stock (O&M) (£)	£2,229	3.49	0%
Owned stock (O) (£)	£5,288	2.25	3%
Managed stock (M) (£)	£3,856	2.48	2%
O&M * O&M (£)	£0.02	0.48	64%
O&M * O (£)	-£0.28	-1.54	13%
O&M * M (£)	-£0.25	-2.45	2%
O * O (£)	-£0.11	-1.44	16%
O * M (£)	£0.69	2.08	5%
M * M (£)	-£0	-1.2	24%
Labour cost adjustment (£m)	£19.70	2.46	2%
Proportion of supported housing (£m)	£45.66	6.72	0%
Adjusted R ²	90%		
Test of constant variance	Constant variance		
Test of omitted variables	No evidence of omitted variables		

The two sets of results include some variables that are insignificant. However, the statistical tests show that the linear term on the number of units (units owned and managed, units owned, and units managed) is jointly significant. More importantly, for a properly specified quadratic term on the number of units, all the cross-product terms have to be included. Thus even though individual components may be insignificant, they are jointly significant.



The relationships for the LSVTs are given in tables III.v and III.vi. Both relationships are linear, with the only significant term, other than age, being total stocks - the sum of owned, owned and managed stock and managed stock.

Table III.v: LSVTs that are less than 5 years old

	Estimated coefficient	t-statistic	P-value
Constant	£648,041	0.6	55%
Total stock (O&M + O + M) (£)	£1,994	11.02	0%
Age effect	£497	4.1	0%
Adjusted R ²	71%		
Test of constant variance	No evidence of constant variance		
Test of omitted variables	No evidence of omitted variables		

Table III.vi: LSVTs that are more than 5 years old

	Estimated coefficient	t-statistic	P-value
Constant	£648,041	0.6	55%
Total stock (O&M + O + M) (£)	£1,994	11.02	0%
Adjusted R ²	71%		
Test of constant variance	No evidence of constant variance		
Test of omitted variables	No evidence of omitted variables		



Appendix IV – Data set and results for the individual associations

RSL	Total operating costs less depreciation (£m)	Total stock	Owned & managed stock	Owned stock	Managed stock	Labour cost adjustment factor	Proportion of supported housing	Residual (Actual opex – predicted opex) (£m)	Rank by residual	Residual per unit (£)	Rank by residual per unit
Accord HA Ltd	12.628	5,114	4,493	459	162	1.049	9.7%	0.3	108	61	109
Acis Group Ltd	9.112	3,638	3,638	0	0	1.018	0.0%	-0.6	92	-165	81
Acton HA Ltd	27.977	6,026	4,478	80	1,468	1.383	5.8%	8.2	184	1355	189
Airways Housing Society Ltd	10.781	4,448	3,498	162	788	1.194	6.3%	-1.3	73	-281	61
Anchor Trust	167.660	35,057	33,973	0	1,084	1.058	13.3%	0.8	119	23	104
Aragon HA Ltd	15.269	6,237	6,199	34	4	1.034	1.5%	2.2	146	350	144
Arena HA Ltd	26.057	11,659	9,777	415	1,467	0.988	8.4%	-7.3	6	-628	21
Aspire Housing Ltd	19.731	9,289	9,056	233	0	1.049	0.4%	-4.1	28	-437	37
Beacon HA Ltd	9.532	4,313	4,128	161	24	1.126	3.0%	0.3	106	65	110
Beaver Housing Society Ltd	7.585	3,420	3,313	103	4	1.350	2.4%	-1.4	67	-409	42
Bedfordshire Pilgrims HA Ltd	15.274	10,684	9,890	769	25	1.037	6.3%	-6.7	12	-625	22
Boston Mayflower Ltd	13.609	4,656	4,633	23	0	1.018	1.2%	1.4	134	293	137
Bournville Village Trust	11.644	3,772	3,140	60	572	1.049	2.3%	7.8	183	2072	192
Bradford & Northern HA Ltd	30.710	13,454	12,160	1,050	244	1.006	4.1%	2.8	155	208	126
Bristol Churches HA Ltd	7.692	3,444	1,821	328	1,295	1.009	15.2%	-6.9	9	-1990	1
Broadacres HA Ltd	8.106	4,483	4,482	0	1	1.018	2.1%	-1.5	64	-331	51
Broadland HA Ltd	6.212	3,545	3,422	112	11	1.034	9.5%	1.2	127	324	140
Bromford Carinthia HA Ltd	15.883	10,953	10,235	314	404	1.049	6.3%	-15.3	1	-1397	6
Broomleigh HA Ltd	32.596	14,029	13,917	41	71	1.386	2.3%	4.0	168	283	136
Burnley and Padiham Community	11.577	5,049	5,044	5	0	0.999	27.7%	-1.7	58	-327	53



RSL	Total operating costs less depreciation (£m)	Total stock	Owned & managed stock	Owned stock	Managed stock	Labour cost adjustment factor	Proportion of supported housing	Residual (Actual opex – predicted opex) (£m)	Rank by residual	Residual per unit (£)	Rank by residual per unit
CDS HA Ltd	11.673	7,636	4,901	162	2,573	0.986	1.7%	-1.6	59	-211	72
Central Sunderland Housing Co.	20.293	7,528	7,522	5	1	0.978	0.9%	0.9	122	118	117
Chelmer Housing Partnership Ltd	19.903	7,434	7,391	43	0	1.034	1.0%	0.7	115	99	115
Chester & District Housing Trust	23.001	6,645	6,645	0	0	0.999	1.1%	5.8	178	873	175
Chiltern Hundreds HA Ltd	12.188	6,308	0	6,308	0	1.125	0.4%	-1.0	81	-165	80
Circle Thirty Three Housing Trust	37.100	19,419	10,373	1,906	7,140	1.327	8.1%	-11.1	3	-570	26
Coast & Country Housing Ltd	21.185	11,606	11,594	10	2	0.978	3.2%	-8.4	4	-722	16
Collingwood HA	12.820	6,657	6,442	167	48	0.998	6.1%	-1.8	55	-268	66
Community HA Ltd	11.769	3,630	2,869	612	149	1.386	22.0%	-6.8	10	-1884	2
Dane Housing (Congleton) Ltd	10.613	3,889	3,889	0	0	0.999	2.6%	2.2	147	568	158
de Montfort HSL	4.742	3,823	3,218	601	4	1.018	0.0%	0.2	105	47	108
Derwent and Solway HA Ltd	5.928	3,575	3,575	0	0	0.999	0.4%	-3.6	31	-1014	12
Derwent HA Ltd	8.185	6,230	5,676	178	376	1.020	1.9%	-3.7	30	-594	25
Devon & Cornwall HA Ltd	14.577	7,849	7,591	253	5	1.009	7.2%	-1.8	54	-231	70
Drum HA Ltd	11.355	4,589	4,530	0	59	1.131	3.0%	1.6	136	339	143
Ealing Family HA Ltd	35.086	7,299	5,854	979	466	1.336	13.4%	9.6	188	1316	188
East Midlands HA Ltd	11.152	6,782	6,148	497	137	1.018	5.5%	-0.8	89	-115	87
East Northamptonshire	11.837	3,386	3,383	3	0	1.018	0.3%	2.8	154	813	172
East Thames HA Ltd	21.561	9,577	6,438	1,940	1,199	1.372	15.1%	-12.5	2	-1303	7
Eastleigh HA Ltd	9.312	4,787	4,376	218	193	1.131	15.1%	-0.9	85	-184	77
Elgar HA Ltd	10.193	5,171	5,007	154	10	1.049	3.2%	-0.8	90	-148	83
Elmbridge Housing Trust Ltd	17.154	4,653	4,648	0	5	1.131	0.0%	4.9	174	1056	184



RSL	Total operating costs less depreciation (£m)	Total stock	Owned & managed stock	Owned stock	Managed stock	Labour cost adjustment factor	Proportion of supported housing	Residual (Actual opex – predicted opex) (£m)	Rank by residual	Residual per unit (£)	Rank by residual per unit
English Churches Housing Group	57.702	12,250	11,134	268	848	1.137	24.1%	11.6	190	950	180
Erewash Housing Ltd	16.086	5,701	5,701	0	0	1.018	0.0%	1.2	128	217	127
Evesham and Pershore HA	7.591	4,415	4,109	223	83	1.048	3.0%	-1.9	52	-422	41
Family HA	35.258	11,164	8,686	1,213	1,265	1.386	4.0%	4.7	172	417	149
Family HA (Manchester) Ltd	9.453	3,849	3,600	156	93	0.999	7.2%	2.7	153	713	171
FCH Housing and Care	11.717	3,558	3,368	18	172	1.037	6.7%	7.2	181	2010	191
Fosseway HA Ltd	10.878	4,147	4,129	0	18	1.009	1.1%	2.0	143	472	150
Gallions HA Ltd	16.378	4,914	4,914	0	0	1.386	0.0%	0.6	114	125	118
Hanover HA	25.340	11,512	10,417	263	832	1.072	6.9%	-0.2	100	-18	101
Harden HA (Midlands) Ltd	8.518	3,422	1,471	1,922	29	1.049	3.2%	-0.6	94	-163	82
Hereward HA Ltd	9.999	4,292	4,096	164	32	1.034	7.6%	0.8	117	184	124
Hermitage HA Ltd	10.989	4,106	3,790	165	151	1.131	0.6%	2.2	145	524	155
Hexagon HA Ltd	10.132	3,082	2,439	539	104	1.385	10.6%	-1.5	65	-476	33
High Weald HA Ltd	15.681	5,644	5,518	95	31	1.131	2.3%	3.8	167	669	165
Home Group Ltd	55.525	31,239	0	31,239	0	1.017	4.3%	0.0	102	-1	102
Home HA Ltd	43.520	25,197	0	0	25,197	0.978	1.7%	-1.6	60	-64	93
Homezone Housing Ltd	7.937	4,703	4,697	6	0	1.049	0.4%	-2.1	47	-445	36
Houghton & Hetton Housing Co.	18.176	5,720	5,718	0	2	0.978	0.5%	3.3	160	573	159
Housing 21	42.775	13,405	13,014	175	216	1.065	2.5%	-0.9	83	-66	91
Huntingdonshire H Partnership	14.176	6,576	6,524	52	0	1.034	1.2%	-2.9	38	-434	38
Hyde HA Ltd	55.619	28,731	14,195	3,572	10,964	1.279	8.2%	-7.8	5	-272	63
Irwell Valley HA Ltd	12.278	6,570	6,155	329	86	0.999	6.3%	-0.3	99	-39	98



RSL	Total operating costs less depreciation (£m)	Total stock	Owned & managed stock	Owned stock	Managed stock	Labour cost adjustment factor	Proportion of supported housing	Residual (Actual opex – predicted opex) (£m)	Rank by residual	Residual per unit (£)	Rank by residual per unit
James Butcher HA Ltd	8.627	4,234	4,234	0	0	1.110	0.0%	2.3	149	553	157
Jephson Homes HA Ltd	16.610	8,701	7,949	746	6	1.043	2.0%	4.6	171	534	156
Johnnie' Johnson Housing Trust	8.783	4,226	4,135	91	0	0.999	2.1%	5.0	175	1189	185
Kingfisher HA Ltd	10.506	4,644	4,639	5	0	1.131	0.1%	0.6	113	128	119
Knightstone HA Ltd	22.729	10,292	8,856	894	542	1.015	12.4%	-3.2	35	-312	57
L&Q Bexley Homes Ltd	8.417	4,318	4,297	21	0	1.386	0.5%	-0.8	86	-195	76
Leeds Federated HA Ltd	8.945	4,298	3,496	456	346	1.018	16.8%	-2.8	39	-649	19
Leicester HA Ltd	14.639	7,259	6,047	334	878	1.019	7.4%	-4.5	24	-618	23
Linx Homes	11.274	5,156	5,154	0	2	1.018	0.0%	-2.2	43	-430	39
Liverpool Housing Trust Ltd	30.915	9,900	8,954	787	159	0.986	8.8%	9.2	187	931	178
London & Quadrant Housing	50.815	26,173	23,559	1,713	901	1.328	8.6%	-1.1	78	-43	97
Longhurst HA Ltd	8.416	4,732	4,400	94	238	1.019	2.0%	1.7	137	361	146
Magna HA Ltd	14.271	6,377	6,228	49	100	1.010	4.9%	0.9	123	142	121
Maidenhead and District HA Ltd	9.048	3,350	3,239	0	111	1.131	1.6%	1.7	138	513	154
Manchester and District HA Ltd	18.153	10,112	6,657	1,993	1,462	0.999	3.3%	-4.6	23	-451	35
Maritime HA Ltd	8.278	4,597	4,400	41	156	0.986	3.9%	1.8	141	394	147
Martlet Homes Ltd	12.008	5,421	5,421	0	0	1.131	0.0%	-2.1	44	-396	45
Mendip Housing Ltd	11.293	4,386	4,369	0	17	1.009	7.2%	-0.3	98	-64	92
Mercian HA Ltd	5.240	3,521	2,811	376	334	1.049	2.2%	1.7	139	492	152
Metropolitan Housing Trust Ltd	42.371	15,207	12,885	1,683	639	1.292	13.4%	1.3	130	83	112
Midland Area HA Ltd	9.072	4,093	3,495	559	39	1.049	6.7%	0.3	107	71	111
Moat Home Ownership Ltd	3.954	3,567	3,480	0	87	1.131	0.0%	-1.1	79	-309	58



RSL	Total operating costs less depreciation (£m)	Total stock	Owned & managed stock	Owned stock	Managed stock	Labour cost adjustment factor	Proportion of supported housing	Residual (Actual opex – predicted opex) (£m)	Rank by residual	Residual per unit (£)	Rank by residual per unit
Moat Housing Society Ltd	12.508	4,721	4,244	282	195	1.185	11.2%	-2.0	49	-424	40
Muir Group HA Ltd	10.540	4,311	4,023	84	204	1.007	7.4%	3.6	163	844	174
New Charter Housing (North) Ltd	18.906	8,242	8,242	0	0	0.999	0.3%	-2.3	41	-276	62
New Charter Housing (South) Ltd	14.650	7,422	7,422	0	0	0.999	0.0%	-4.5	25	-605	24
New Downland HA Ltd	27.699	10,111	9,705	139	267	1.131	6.9%	6.9	180	681	167
New Islington & Hackney HA	25.936	6,280	5,678	410	192	1.360	21.8%	-0.9	84	-142	84
New Leaf	24.995	4,456	414	827	3,215	1.014	37.3%	-4.9	20	-1089	11
New Progress HA Ltd	7.951	3,917	3,727	11	179	0.999	0.0%	-0.5	96	-130	85
Newlon Housing Trust	15.904	4,179	3,294	367	518	1.386	15.4%	-4.8	21	-1143	10
Nomad Housing Group Ltd	4.029	3,349	2,930	105	314	0.978	7.2%	1.3	133	395	148
North British Housing Ltd	75.607	44,962	39,251	5,299	412	1.042	4.1%	1.2	129	28	106
North Devon Homes Ltd	7.403	3,234	3,229	0	5	1.009	0.0%	-1.3	70	-402	44
North Sunderland Housing Co.	20.667	7,235	7,232	0	3	0.978	1.3%	2.0	144	276	133
Northern Counties HA Ltd	37.644	18,598	18,316	280	2	1.008	2.2%	-4.0	29	-217	71
Notting Hill Home Ownership Ltd	5.362	4,025	3,931	94	0	1.386	0.0%	-5.9	15	-1456	4
Notting Hill Housing Trust	71.100	14,200	10,540	782	2,878	1.386	10.4%	8.9	186	625	161
Nottingham Community HA Ltd	24.107	6,756	5,871	725	160	1.018	18.0%	8.5	185	1260	186
Oakfern HA Ltd	9.869	4,079	4,051	0	28	1.131	1.3%	1.1	125	266	132
Octavia Housing and Care	11.096	3,599	3,249	124	226	1.373	4.8%	-0.6	91	-178	79
Orbit Bexley HA Ltd	13.268	4,767	4,235	0	532	1.386	0.3%	3.1	157	653	164
Orbit HA	38.789	24,093	14,477	752	8,864	1.090	3.3%	3.6	162	150	122
Paddington Churches HA Ltd	72.578	23,029	8,652	2,110	12,267	1.364	4.2%	15.4	191	670	166



RSL	Total operating costs less depreciation (£m)	Total stock	Owned & managed stock	Owned stock	Managed stock	Labour cost adjustment factor	Proportion of supported housing	Residual (Actual opex – predicted opex) (£m)	Rank by residual	Residual per unit (£)	Rank by residual per unit
Pavilion HA Ltd	11.124	6,022	5,621	102	299	1.132	0.3%	-1.5	63	-255	68
Peabody Trust	54.885	17,821	16,915	817	89	1.386	5.3%	4.3	170	242	128
Peddars Way HA Ltd	14.505	7,923	7,044	845	34	1.034	2.7%	-1.9	50	-245	69
Pennine Housing 2000 Ltd	52.986	12,174	12,113	33	28	1.018	1.3%	22.0	192	1808	190
Penwith HA Ltd	6.876	3,820	3,765	55	0	1.009	6.0%	-1.4	69	-364	47
Poplar HARCA Ltd	11.547	4,827	3,755	894	178	1.386	0.0%	1.3	131	264	131
Portico HA Ltd	8.845	4,394	4,172	187	35	0.999	5.9%	1.5	135	331	141
Portsmouth HA Ltd	9.584	3,788	3,195	511	82	1.131	14.6%	0.6	112	151	123
Presentation HA Ltd	10.875	3,479	2,958	384	137	1.295	2.4%	3.3	161	946	179
Raglan HA Ltd	21.503	9,421	9,166	165	90	1.075	3.2%	-5.3	19	-564	28
Reigate & Banstead	16.139	4,936	4,908	8	20	1.131	2.1%	3.2	158	647	163
Richmond Housing Partnership	22.691	8,516	8,497	19	0	1.386	0.3%	0.8	120	97	114
Ridgehill HA Ltd	12.614	4,650	4,626	0	24	1.034	0.5%	2.7	152	579	160
Riverside Housing	47.829	23,162	20,755	1,782	625	0.991	7.6%	-1.4	66	-61	94
Riversmead HA Ltd	7.363	4,333	3,645	0	688	1.034	1.8%	1.3	132	294	138
Rother Homes Ltd	6.535	3,187	3,070	0	117	1.131	0.0%	-2.1	48	-644	20
Salvation Army HA	26.117	3,426	1,404	2,022	0	1.095	63.4%	0.9	121	251	130
Sanctuary HA	82.500	35,763	29,329	1,243	5,191	1.100	5.4%	-1.2	76	-34	100
Sarsen HA Ltd	8.614	5,382	5,231	65	86	1.009	2.9%	-2.8	40	-514	32
Saxon Weald Homes Ltd	13.241	4,838	4,818	20	0	1.131	1.4%	0.5	111	112	116
Servite Houses	29.949	10,171	9,731	57	383	1.167	11.4%	-6.7	11	-659	18
Severnside Housing	12.612	5,580	5,522	58	0	1.049	2.9%	-1.9	51	-347	49



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Shaftesbury HA	35.743	7,624	7,447	177	0	1.149	20.6%	7.4	182	968	181
Shepherds Bush HA Ltd	16.486	3,815	2,967	230	618	1.386	8.8%	0.2	104	47	107
Signpost HA Ltd	7.904	4,339	3,860	59	420	1.009	1.5%	-1.4	68	-322	54
SLFHA Ltd	22.651	7,500	5,870	0	1,630	1.376	0.0%	3.7	165	493	153
Soha Housing Ltd	13.491	4,799	4,789	10	0	1.131	0.8%	3.3	159	682	168
Somer Community Housing Trust	17.881	9,845	8,977	768	100	1.009	0.2%	-7.3	7	-741	15
South Liverpool Housing Ltd	15.543	3,960	3,952	5	3	0.986	2.1%	5.0	176	1270	187
South Somerset Homes Ltd	21.160	8,562	8,523	27	12	1.009	5.8%	-0.8	88	-95	90
South Staffordshire HA Ltd	10.701	5,315	5,315	0	0	1.049	0.3%	-0.6	95	-103	88
South Sunderland Housing Co.	22.436	6,801	6,800	0	1	0.978	1.0%	4.9	173	712	170
South Warwickshire HA Ltd	14.081	5,819	5,777	23	19	1.049	2.1%	1.8	142	314	139
South Yorkshire HA Ltd	29.953	5,844	3,568	435	1,841	1.018	22.5%	0.8	118	135	120
Southern Housing Group Ltd	36.129	12,589	11,567	813	209	1.264	1.8%	6.1	179	480	151
Sovereign HA Ltd	23.798	12,380	12,233	147	0	1.098	1.6%	-1.5	62	-124	86
Spelthorne HA Ltd	8.078	4,575	3,980	595	0	1.131	1.0%	-1.7	57	-370	46
Springboard HA Ltd	21.917	5,413	4,554	132	727	1.178	31.9%	-4.2	26	-781	14
St Pancras & Humanist HA	13.835	4,687	4,316	197	174	1.286	8.8%	-1.2	75	-259	67
Stadium HA Ltd	49.251	10,758	5,237	3,275	2,246	1.361	7.6%	10.5	189	978	182
Stonham HA Ltd	57.067	4,585	2,489	313	1,783	1.078	96.9%	4.1	169	883	176
Stort Valley HA Ltd	8.937	3,733	3,636	16	81	1.086	1.4%	3.7	166	994	183
Suffolk Heritage HA Ltd	11.247	7,431	7,243	101	87	1.034	4.4%	-4.2	27	-568	27
Swale HA Ltd	18.395	10,701	7,164	206	3,331	1.131	2.3%	-3.6	32	-336	50



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Tees Valley Housing Group Ltd	4.881	3,794	3,420	114	260	0.979	2.2%	0.9	124	245	129
Ten Sixty Six HA Ltd	8.337	4,277	4,250	20	7	1.131	2.6%	-0.8	87	-197	75
Testway Housing Ltd	7.767	5,306	5,115	0	191	1.131	0.5%	-6.1	14	-1150	9
Thames Valley Charitable HA Ltd	8.990	3,796	0	3,796	0	1.226	4.6%	-0.4	97	-98	89
Thames Valley HA Ltd	6.787	6,661	2,886	117	3,658	1.273	2.1%	-3.2	36	-475	34
The Beth Johnson HA Ltd	7.679	4,067	3,490	100	477	1.045	6.0%	1.1	126	277	135
The Guinness Trust	46.100	21,211	19,727	597	887	1.108	3.5%	-1.3	71	-61	95
The Havebury H Partnership	9.915	5,973	5,949	21	3	1.034	0.4%	-5.6	18	-940	13
The Swaythling Housing Society	9.300	5,187	4,810	153	224	1.115	3.4%	-1.1	80	-210	73
The Wrekin Housing Trust Ltd	27.959	12,795	12,704	63	28	1.049	1.0%	-4.6	22	-357	48
Threshold Housing and Support	17.098	4,642	3,340	892	410	1.371	18.6%	-5.9	16	-1260	8
Tonbridge and Malling HA Ltd	15.778	6,428	6,427	0	1	1.131	2.1%	2.3	148	359	145
Tor Homes	7.509	3,151	3,144	7	0	1.009	0.0%	-1.0	82	-314	56
Touchstone HA Ltd	21.522	11,778	10,254	1,397	127	1.046	10.5%	-6.4	13	-544	29
Tower Homes Ltd	4.084	3,243	2,554	619	70	1.161	0.0%	2.7	151	824	173
Trent & Dove Housing Ltd	14.259	5,542	5,540	0	2	1.049	1.3%	-0.2	101	-35	99
Twin Valley Homes Ltd	26.102	9,007	9,007	0	0	0.999	0.9%	3.0	156	335	142
Tynedale Housing Ltd	6.704	3,339	3,339	0	0	0.978	0.0%	-2.3	42	-678	17
Ujjima HA Ltd	10.703	4,094	3,480	127	487	1.378	10.0%	-5.8	17	-1407	5
Vale HA Ltd	9.384	5,157	5,157	0	0	1.131	1.5%	-1.6	61	-300	59
Wandle HA Ltd	7.182	3,730	3,533	197	0	1.386	7.4%	-7.0	8	-1875	3
Warden HA Ltd	22.105	12,556	7,925	127	4,504	1.170	3.1%	-3.4	34	-268	65



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Washington Housing Co. Ltd	16.979	7,072	7,070	0	2	0.978	1.0%	-1.3	72	-182	78
Waterloo HA Ltd	5.802	4,286	4,260	3	23	1.049	0.9%	0.4	109	88	113
Weaver Vale Housing Trust Ltd	13.986	6,765	6,740	10	15	0.999	1.2%	-3.5	33	-520	31
West Kent HA	9.908	5,514	5,483	26	5	1.131	5.5%	-1.7	56	-315	55
West Oxfordshire Housing Ltd	8.754	3,747	3,743	2	2	1.131	1.7%	-1.2	74	-328	52
West Pennine HA Ltd	4.980	2,787	2,269	493	25	0.999	18.7%	0.8	116	277	134
West Wiltshire Housing Society	15.003	5,358	5,230	52	76	1.009	4.1%	3.7	164	685	169
Westcountry HA Ltd	6.745	3,918	3,656	97	165	1.009	13.1%	-1.1	77	-287	60
Western Challenge HA Ltd	14.553	6,823	5,758	665	400	1.049	9.3%	-1.8	53	-270	64
Westlea HA Ltd	12.857	6,055	6,009	24	22	1.009	1.2%	0.1	103	22	103
Wherry HA Ltd	9.062	5,286	4,932	73	281	1.034	6.5%	-2.1	46	-403	43
Whitefriars Homes North Ltd	25.797	9,391	9,168	223	0	1.049	4.5%	1.8	140	187	125
Whitefriars Homes South Ltd	26.940	10,785	10,635	150	0	1.049	4.1%	-0.6	93	-53	96
William Sutton Trust	35.222	15,840	15,840	0	0	1.060	0.0%	0.4	110	27	105
Willow Park Housing Trust Ltd	20.931	5,987	5,966	21	0	0.999	0.8%	5.4	177	897	177
Windsor and District HA Ltd	11.578	4,155	4,061	59	35	1.131	1.3%	2.6	150	636	162
Wyre Forest Community Housing	12.075	5,822	5,804	16	2	1.049	2.5%	-3.1	37	-528	30
Yorkshire Community Housing	20.091	10,817	9,145	210	1,462	1.018	1.9%	-2.1	45	-197	74