DISCUSSION PAPER SERIES

IZA DP No. 3199

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December 2007

Forschungsinstitut
zur Zukunft der Arbeit
Institute for the Study
of Labor

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ABSTRACT

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This paper presents an analysis of housing conditions amongst the British urban working class in 1904, using a re-discovered survey.[1] We investigate overcrowding and we find major regional differences. Scottish households were more overcrowded despite being less poor. Investigating the causes of this overcrowding, we find little support for supply-side theories, and none for the idea that Scottish households experienced particularly great variations in income, causing them to commit to overly modest accommodation. However, the Scottish tenancy and local tax laws are probably important in explaining the overcrowding. We provide evidence that Scottish workers generally spent their rent reduction entirely on food, rather than saving.

JEL Classification: N33

Keywords: poverty, rent, overcrowding, Scotland, 1904, Bowley

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[1] The data which are discussed in this paper were found by the Archivist of the Library of the University of Bangor, Mr E. W. Thomas, in response to our questions about another of his holdings. We thank him and his team for all their help with this project. We also thank Gemma Mills and Theresa Jennings for invaluable research assistance and the Nuffield Foundation for their Social Science Small Grant SGS/1220, which funded the translation of the data into spreadsheet form.

1. Introduction

This article introduces a newly-discovered set of data on food and rent expenditures, wages, employment and family structure for just over 1,000 working class families from a century ago. The original enquiry, involving nearly 2,000 working class families, was carried out in 1904 by the Labour Department of the Board of Trade. The summary results and analysis of this enquiry were published in British Parliamentary Papers in 1905 (Cd 2337). This was the first large-scale official national survey of household expenditures in Britain.

This article uses the recovered Board of Trade data (hereafter BoTR) to investigate overcrowding in British urban areas in 1904. A fuller discussion is provided in Gazeley and Newell (2007) which also investigates the incidence of poverty in Britain. Nearly half of the BoTR cases are Scottish households, most of whom were living in large cities (primarily Glasgow, Edinburgh, Aberdeen and Dundee). Contemporary investigators noted the high incidence of over-crowding amongst poor urban households. They also noted a clear correlation between over-crowding and higher morbidity and mortality levels. This was especially true of infant mortality rates. The most over-crowded households in the BoTR data are those from Scotland. It is very well-known that Scottish cities were exceptionally overcrowded, see, for instance, Butt (1987), Gibb (1983) and Rodger (1985, 1992) Interestingly, as Gazeley and Newell (2007) show, the great majority of the Scottish families in the BoTR sample were not living below a contemporaneously defined poverty-line, as they were overwhelmingly artisan-headed households.

This paper is organised as follows. Section 2 briefly reviews the salient features of the BoTR data and reports our findings on the incidence of contemporaneously defined poverty. Section 3 examines the results of a number of contemporary attempts to ascertain the extent of over-crowding in British cities and we use the most sophisticated of these methods (due to Bowley) to examine the extent of over-crowding in the BoTR data. We find a very marked difference in the incidence of over-crowding between Scotland and the rest of Britain and Ireland. Section 4 provides a review of the existing literature concerned with housing conditions and over-crowding in Scotland and identifies both demand and supply-side explanations. We find little evidence in support of supply-led explanations for Scottish overcrowding. On the demand side, we do not find evidence for higher levels of income insecurity in Scotland. We conclude that systematic institutional differences relating to the legal framework governing the market for rental accommodation probably led to Scottish households choosing relatively over-crowded living conditions. This finding is consistent with the observation that Scottish artisan households spent their rent reduction on food expenditure.

2. The 1904 Board of Trade data

During July-September 1904 the Board of Trade conducted an expenditure survey of working class households for one week during July-September 1904, from all parts of the British Isles, including southern Ireland. In total 2,283 returns were collected via workmen's organisations, co-operative societies and individuals, who in some cases

were asked to obtain information from 'fellow-workmen'.[2] This creates sampling biases, for instance Newell and Gazeley (2007) find that households headed by skilled manual workers are heavily over-represented. Despite these limitations, this survey provides the most representative record of economic life amongst working households in Britain at the turn of the twentieth century.

The enquiry made use of a fixed format questionnaire. The forms provide information on: locality (often given very precisely); number and age of children; occupation and average weekly earnings of father; average additional weekly family income; weekly house rent and number of rooms occupied. Fully half the questionnaire is concerned with expenditure and quantity of food consumed by the household, but no details of non-food expenditures were requested (other than rent).[3]

The full BoTR sample is 1,078, but as Gazeley and Newell (2007) show, this is not a random sub-sample of the 1,944 expenditure records used in Cd 2337. Other information on the provenance of the returns is provided by the annotations to the originals made by Board of Trade officials shortly after they were collected. Most of the records in the BoTR sample indicated whether the form was received in time for analysis, or whether it was too late. Officials sometimes also investigated and expanded on the information given by the household head with regard to income and rent. Finally, a proportion of the BoTR returns were rejected by the Board of Trade for being incomplete. Table 1 illustrates the strong presence of returns from Scotland and Ireland in the BoTR sample relative to the original. The fifth and sixth columns

[2] Cd 2337 1905 p.3

[3] This 'comments' space was also used by a number of respondents to complain that the survey design did not recognise the importance of non-food items in the household budget. Some households volunteered details of non-food expenditures in the 'comment' section.

of Table 1 give the regional distribution of what we call the 'useable BoTR sample'. These are selected on the basis of having reliable income and total food expenditure data.

Table 1: Regional Distributions of households

	As used in Cd 2337		Full BoTR Sample		Useable BoTR Sample	
	number	*%*	*Number*	*%*	*number*	*%*
North of England	439	*22.6*	140	*13.0*	123	*12.4*
Midlands	262	*13.5*	87	*8.1*	82	*8.3*
London and Suburbs	347	*17.8*	39	*3.6*	41	*4.1*
Rest of England and Wales	318	*16.4*	114	*10.6*	106	*10.7*
Scotland	455	*23.4*	504	*46.8*	501	*50.6*
Ireland	123	*6.3*	138	*12.8*	132	*13.3*
region not given			56	*5.1*	5	*0.5*
Total	1944	*100*	1078	*100*	990	*100*

Source: Gazeley and Newell, (2007, Table 1)

The weekly household income distributions of the Cd 2337 and useable BoTR samples are given in Table 2. The BoTR sample has a few more households in both extremes of the distribution, but otherwise the match between the samples is close.

Table 2: Distributions of households by income

	As used in Cd 2337		Useable BoTR Sample	
Income in shillings	*Number*	*%*	*number*	*%*
Under 25s	261	13.1	152	15.4
25s and under 30s	289	14.5	143	14.4
30s and under 35s	416	20.9	210	21.2
35s and under 40s	382	19.7	173	17.5
over 40s	596	29.9	312	31.5
Total	1994	100	990	100

Source: Gazeley and Newell, (2007, Table 2)

In order fully to explore the extent of the biases in the BoTR sample, we made careful comparison of the sub-set of budgets for Scotland. The Scottish BoTR sample is not identical to that used in Cd 2337, as Table 3 reveals. From the 501 usable BoTR

budgets for Scotland, we filtered out those that were marked as rejected or received late. 454 budgets remained, compared with 455 in Cd 2337. Despite the closeness in the total number of budgets, small differences remain between Cd 2337 and filtered BoTR samples for Scotland. There are minor differences in the numbers of households in the various income cohorts, as well as in average numbers of children and average total food expenditure by income class. Additionally, these differences may be due to transcriptional and arithmetical errors made in 1904-5.

Table 3: Number of children and food expenditure by income class in Scotland

	As used in Cd 2337			Filtered useable BoTR Sample		
Income in shillings	*N*	*No. of children*	*Average food expenditure*	*N*	*No. of children*	*Average food expenditure*
Under 25s	48	3.4	191.0	49	3.5	195.08
25s and under 30s	77	3.2	239.5	81	3.1	224.08
30s and under 35s	117	3.2	251.25	123	3.4	259.59
35s and under 40s	83	3.3	267.75	79	3.3	264.61
over 40s	130	5.0	389.25	122	5.1	401.32
Total	455	3.7	283.75	454	3.8	285.25

Source: Gazeley and Newell, (2007, Table 3)

In summary, there are differences between the BoTR data the sample used to inform Cd 2337. In the BoTR data we only have about one-third as many households in England and Wales as in the original survey, and London is barely represented at all. Household size is larger in the BoTR than in Cd 2337, though this might be due to differences of the definition of children. We have defined children as those less than 16 years old. The Board of Trade might have used some other age, or defined children by their relationship to the head of household. When we compare results for Scotland, there are only minor differences between the results published in Cd 2337 and the BoTR sample.

3. Crowding and overcrowding.

The BoTR survey asks two questions about accommodation. First it asks how many rooms are rented (almost no-one in the survey is an owner-occupier) and secondly it asks what weekly rent is paid. Table 4 compares measures of crowding (people per room) in the BoTR sample with those given by Bowley in his study of industrial English towns. The BoTR sample contains a much larger share of households with two of more people per room than any of Bowley's town surveys. In his study Bowley used two 'overcrowding' or 'space poverty' lines. First, he defined all households with two or more persons per room as overcrowded and he tabulated the percentage overcrowded alongside his poverty percentage by town. Secondly, Bowley constructed a more subtle overcrowding measure which weighted boys aged 14 to18 and girls aged 14 to16 at 0.75 of an adult, children aged 5 to14 at 0.5 of an adult and infants at 0.25 of an adult. His second definition defined an over-crowded household as having more than one equivalent adult per room. For reference, Bowley found sixty such cases of 693 households in Northampton in 1913 (8.7%).

Table 4: The distribution of crowding among households (percent)

	BoTR 1904	Bowley Northampton 1913	Bowley Warrington 1913	Bowley Stanley 1913	Bowley Reading 1912
People per room, mean (s.d.)	2.0 (1.1)				
The percentage distribution of the number of people (N) per room:					
$N \leq 1$	23.7	78.4	57.1	35.1	71.2
$1 < N \leq 1.5$	20.7	18.5	26.6	20.3	19.1
$1.5 < N \leq 2$	20.7	3.1	13.0	27.2	8.2
$2 < N \leq 2.5$	12.4	0	2.8	6.4	1.1
$2.5 < N \leq 3$	9.5	0	0.5	6.4	0
$3 < N$	12.9	0	0	4.6	0

Source: Authors' calculations from the BoTR data and derived from Bowley and Hurst 1915, Table II, p.59, p102, p143 and p.162

In Table 5 we compare the incidences among households of Bowley poverty, defined in the note to the table, and the Bowley equivalent-adult overcrowding index. The left-hand side of the table shows that income poverty and overcrowding both increase, quite predictably, with household size. The right-hand side of the table gives regional data and offers insight into why the BoTR data have much more overcrowding than Bowley recorded. The key is the large proportion of Scottish industrial workers in the BoTR sample. These Scottish workers' households have the lowest income poverty, but much the highest overcrowding proportion. Urban Scottish households lived in much more cramped conditions than workers in the rest of Britain at similar income levels, see, for instance, Gibb (1983). Glasgow was especially overcrowded. To illustrate this, we have added, at the bottom of the table, poverty and overcrowding for the 132 households from the city Glasgow in the BoTR. Almost none of these households are in poverty, yet almost all are overcrowded. Note that Scottish estimated rents per room are high. This is for two main reasons. Firstly, there is a large city premium and secondly rents *per room* fall with the size of accommodation and are thus high for these small Scottish dwellings. The nearest comparator in the table for these Scottish cities is London, although dwellings in London were larger on average.

Table 6 shows that it is in the size of accommodation, rather than in household structures, that these Scottish households were unusual. In the last line of the table we see that the distribution of household size among Scottish households in the sample is almost identical to that of households from the rest of the British Isles. The major difference is in the size of accommodation. In the Scottish sample, 85 percent of

households lived in three or fewer rooms, while among the rest of the BoTR sample this percentage was only 19 percent.

Table 5: Poverty and equivalent-adult overcrowding by household size and by region

Number of children under 16.	*Bowley poverty incidence, % of households*	*Bowley crowding incidence, %*	*Region*	*Bowley poverty incidence (%)*	*Bowley crowding incidence, % of households*	*Average weekly rent per room (pence)*
0	4.8	28.9	North of England	16.8	26.1	13.6
1	2.7	51.8	Midlands	11.1	15.3	12.7
2	5.6	56.4	London & Suburbs	27.0	64.8	28.8
3	6.0	61.8	Rest of E & W	22.2	19.2	13.7
4	16.3	66.7	Scotland	7.6	87.0	24.0
5	25.2	75.6	Ireland	13.5	50.4	17.0
6	26.0	80.0	Total	12.1	60.9	18.0
7	60.0	85.0				
8	50.0	100	Glasgow	3.9	96.9	29.8
total	12.1	60.9				

Source and notes: Authors' calculations from the BoTR data. Bowley's was a minimum needs definition of poverty, with a line drawn at 133 pence (d) for a couple, 57d for an additional adult, and smaller amounts, declining with age for children. See Gazeley and Newell (2007) for a fuller discussion. Rent per room includes estimated weekly rates for Scotland and is inclusive of rates for the rest of Britain and Ireland.

Table 6: Summary of the distribution of accommodation and household size in BoTR

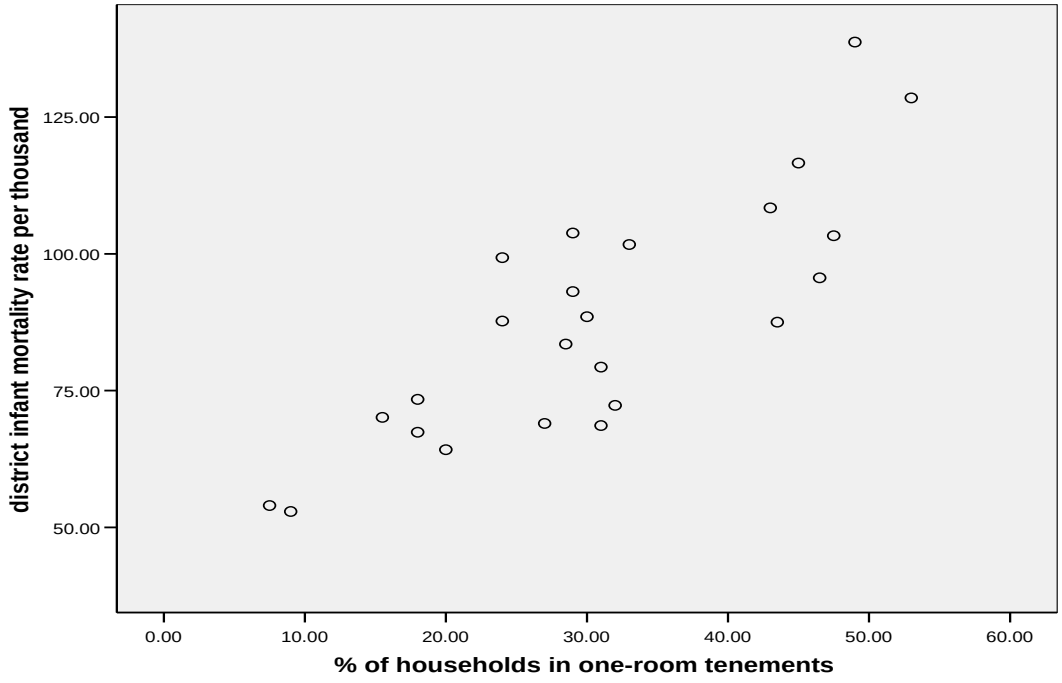
Percentage of households living in n rooms:	*Scotland*	*Rest of Britain and Ireland*
One	2	4
Two	53	6
Three	30	9
Four	9	21
Five	2	22
Six	4	28
More than six	1	10
Mean and standard deviation of persons per household	5.8 (2.0)	5.8 (2.2)

Source: Authors' calculations from the BoTR data.

4. Working class housing in Scottish cities

In the mid-nineteenth century, the second round of highland clearances and the Scottish and Irish potato famines caused large-scale migration into Scotland's urban centres. The incomers would have been largely unskilled rural workers. Urban centres in England, London and Liverpool for instance, also experienced influxes, but Glasgow's population growth was probably the most rapid, making it the fourth largest city in Europe by the early 1900s: 'By 1914 no fewer than 700,000 people resided within three square miles of Glasgow Cross and created the most densely populated, central-urban area in Europe.' [4]

Chart 1: Infant mortality and overcrowding in the districts of Glasgow in 1881



Source: Gibb, A. (1983), *Glasgow: The Making of a City*, (Beckenham), Table 6.v., page 131. Data originally compiled from Russell, J.B. (1886), The Vital Statistics of the City of Glasgow, Pt. 1. pp. 13-47.

Nineteenth century social investigators and health officials were concerned with the adverse health implications of Scottish urban overcrowding. Chart 1 illustrates this

[4] Pacione, 1979, p297

relationship. While the chart does not demonstrate the direction of causation, contemporary investigators were in no doubt that overcrowded conditions caused increased morbidity and mortality:

> Glasgow stands alone with the highest death-rate, the highest number of persons per room, the highest proportion of her population occupying one-apartment houses, and the lowest occupying houses of five apartments and upwards… These facts prove beyond doubt that the predominant factor in the health of cities is the proportion of house-space to inhabitant.[5]

The response of housing supply to the rapid increase in population was mostly undertaken by the private sector. For example, Butt (1987) paints a picture of Glaswegian retailers and other small businessmen commissioning the building of tenements, or buying them from builder-speculators, often to house their own workers.[6] The builders typically retained the right to a fee, the *feu*, in perpetuity. Some argue this lead to dense tenement development.[7] However tenements themselves, that is spatially dense housing, cannot be the cause of overcrowding, which reflects the use of building rather than the density of dwellings per hectare. It was the division of these tenement blocks which led to overcrowding.

What caused this division? The immigration of predominantly low-skilled workers was likely to have lead to an increase in demand for very low cost housing. If these demand pressures were combined with any kind of adjustment cost on the supply side,

[5] Russell, J. B. (1887) 'The House in Relation to Public Health', *Transactions of the Insurance and Actuarial Society of Glasgow*, 2nd series, No. 5, p11, quoted in Gibb (1983) , p136.
[6] John Butt 'Housing' in R. A. Cage, ed. *The Working Class in Glasgow*, 1750-1914, Croom Helm, 1987
[7] Rodger (1992), page 115.

one might expect landlords to see division as a way of maximising profits from a development.[8] If these supply-side factors persisted, they could combine to cause overcrowding and high rents. One way to investigate whether these supply conditions were causing overcrowding is to examine if there were excess demand for larger dwellings in Scotland. Given the similarity of household structures in Scotland and the rest of Britain and the prevalence of small dwellings in Scotland, *ceteris paribus* there should be regional differences in the relative rents earned by dwellings of different sizes. In particular, if there were a relatively large supply of small dwellings in Scotland, one might expect this to be reflected in higher premia for rare, larger dwellings. Tables 7 and 8 give the evidence from the BoTR data on rent differences between Scotland and the rest of Britain and Ireland. In Table 7 we can see that rents for smaller dwellings were lower in Scotland on average, but these differences are not statistically significant.

Table 7: Rent by region and number of rooms
Each cell contains an average rent in pence with the standard deviation in brackets.

	Scotland	*Rest of Britain and Ireland*
One room	28 (9.5)	37 (7.8)
Two rooms	43 (11.8)	51 (22.2)
Three rooms	54 (17.8)	58 (28.7)
Four rooms	58 (25.2)	56 (23.1)
Five rooms	65 (26.8)	66 (18.3)

Source BoTR.

In Table 8 we test the hypothesis that the relationship between dwelling size and rent is different in Scotland using a hedonic rent regression. The dependent variable is the log of weekly rent for the dwelling, which is regressed on dummy variables indicating the number of rooms in the dwelling and also regional dummies and allows the rent

[8] This might be especially so if, as employers of their tenants they were able to exert some degree of monopsony power.

premia in Scotland to differ from the rest of the sample. These last coefficients are reported in the table. We find that rents of one- and two-room dwellings are lower in Scotland, but not significantly so. Similarly rents for three- and four-room dwellings are not significantly higher in Scotland. Thus the profile of rents with respect to size of dwellings in Scotland is at best marginally different from that prevailing in the rest of the sample. This gives little support to the idea that the pattern of accommodation supplied in Scotland was strongly out-of-line with the pattern of demand. In other words, we find little statistical support for the theory that supply constraints played a major role in Scottish urban overcrowding.

Table 8: Hedonic rent equations for the BoTR

Dependent variable: Log rent, adjusted	
Estimated gaps between Scotland and the rest of Britain in rent premia by number of rooms	
One	-0.20 (1.5)
Two	-0.11 (1.0)
Three	0.04 (0.4)
Four	-0.01 (0.1)
R-sq	0.39
s.e.	0.33
N	896

Notes: Authors' calculations from the BoTR data, method of estimation, OLS, see text for a discussion of the adjustment made to rents, absolute robust t-ratios in brackets. The equation also included size of dwelling and regional indicator variables.

Rodgers gives a useful characterisation of the standard demand-side explanation of Scottish overcrowding.[9] It has two components. First, there were important differences in rental law between Scotland and the rest of Britain and Ireland. The Scottish rental system required the vast majority of tenants to sign up for a year, committing four months before the beginning of the term with release only allowable with penalty payments. Secondly, there was a high concentration in urban Scotland of

[9] Rodgers ('Employment, wages and poverty in the Scottish cities 1841-1914' in G. Gordon (ed.) 'Perspectives on the Scottish City', Aberdeen University Press, Aberdeen, 1985)

low-skill casual work, so that workers were faced with dealing with highly variable income streams. Workers with uncertain income flows, faced with long-term tenures may have chosen to reduce the risk of eviction for non-payment by taking smaller and cheaper accommodation. In what follows, we explore these two arguments.

In the BoTR data most of the Scottish households are headed by skilled artisans. This makes it impossible for us to judge whether Scottish unskilled workers were particularly vulnerable to income variation. Nevertheless, these Scottish artisans live in far more overcrowded conditions than would be expected given their income levels. In Table 9 we establish that Scottish households in the BoTR sample have almost identical average income, but with much lower variance, than those from the rest of Britain and Ireland. Workers with highly variable income over time would also be expected to demonstrate high cross-section income variance. This table also shows that the Scottish households spend a smaller share of their income on rent.

Table 9: regional variation in average household earnings and the ratio of rent to income

	Household income gap and standard error gap	*Ratio of rent to income and standard error*
North of England	-0.015 (0.049)	0.135 (0.066)
Midlands	0.009 (0.071)	0.171 (0.193)
London and suburbs	-0.127 (0.075)	0.229 (0.110)
Rest of England and Wales	-0.019 (-0.031)	0.170 (0.058)
Scotland	0.007 (-0.269)	0.114 (0.039)
Ireland	0.040 (0.0256)	0.138 (0.071)
Whole sample		0.139 (0.067)

Author's calculations from BoTR data.

Is the lack of low and variable incomes in Scotland a product of the nature of our sample? In other words, are these Scottish artisan household incomes more variable, once we control for skill and household characteristics? Table 10 reports regressions

of log household income on skill and household characteristics. The statistic of interest is the standard error of the regression equation, which is a little smaller for the Scottish data than it is for the rest of the sample. Thus, there is lower income variability in the Scottish households in the BoTR data than in the rest of the data, whether we take the raw data or we control for skill and household structure. We cannot find evidence consistent with the idea that the severe overcrowding in Scotland is due to especially high income variability.

Table 10: family income regressions
Dependent variable: log household income

	Scotland	*Rest of Britain and Ireland*
Skill of head of household (default: skilled manual)		
Unskilled	-0.29 (0.04)	-0.32 (0.04)
Semi-skilled manual	-0.15 (0.04)	-0.07 (0.05)
Clerical	0.19 (0.08)	0.17 (0.06)
Professional	0.11 (0.10)	0.20 (0.07)
Family structure		
Number of adults	0.19 (0.01)	0.14 (0.02)
Oldest child over 14	0.07 (0.03)	0.07 (0.04)
R-sq	0.56	0.51
s.e.	0.22	0.26
N	475	433

Notes: Method of estimation: OLS, robust standard errors in brackets, industry dummies included but not reported.

Finally, we investigated two other questions. First, we tested to see whether differences in household characteristics and/or parameters help explain Scottish overcrowding. Secondly, we examined how the Scottish households spend the income not devoted to rent. We modelled demand for space and found no significant differences in characteristics or parameters between the Scotland and the rest of Britain and Ireland. Our preferred regression is the first column of Table 11. We find that demand for space rises with income per capita and over and above this, household structure matters with lower space requirements for younger children. Our measure of

job security has the hypothesised positive effect (households with relatively secure occupations, rented more space).[10] As expected, mining households live, ceteris paribus, in smaller accommodation. Being in Scotland lowers demand, of course. To test whether these characteristics and their parameters help explain the housing gap between Scotland and the rest of Britain and Ireland, we perform a likelihood ratio test. This is the 'test for Scotland', and we find we are unable to reject parameter stability. Thus demand for housing in Scotland is not differently responsive to household structure and income than it is in the rest of Britain and Ireland.

Table 11: Modelling the demand for housing and food in BoTR

	1	*2*	*3*	*4*
Dependent variable	Number of rooms	Share of rent	Share of food	Share of food and rent
Method	*Poisson*	*OLS*	*OLS*	*OLS*
Log household income	0.28**			
Log family size	0.10			
Log income per capita		-0.05**	-0.16**	-0.21**
Number of adults	0.08**	-0.01**	-0.01**	-0.02**
Number of children under 5	-0.03*	-0.00	0.02**	0.02**
Number of children aged 5 to 10	0.07**	-0.01**	-0.02**	-0.03**
Number of children aged 11 to 16	0.11**	-0.01**	-0.01	-0.02**
Income security	0.04**		-0.01**	-0.01*
Scotland	-0.75**	-0.05**	0.05**	0.00
Test for Scotland	χ^2_7= 2.7	F(5, 870)=2.6*	F(5, 870)=0.7	F(5, 870)=0.9
R^2/ Pseudo R^2	0.13	0.36	0.33	0.30
N	882	882	899	899
s.e.		0.05	0.12	0.13

Notes: * and ** denote conventional significance at the 5% and 1% levels respectively, using robust standard errors. All regressions also contained controls for Ireland, and regions of England and Wales. We also control for the occupations likely to be living in tied accommodation. Test of Scotland is a test of the assumption of parameter constancy between Scotland and the rest of the sample.

[10] Job security is an index based upon the sum of two indicator variables. The most insecure occupations were those that were in export trades and/or amongst those likely to be casualised.

The investigations carried out so far have sought and failed to find systematic differences between individuals in Scotland compared to the rest of Britain and Ireland that causes the major difference in patterns of accommodation. However, Scotland had a distinctive framework of laws and customs governing the rental market for housing. First, the permitted length of let differed in Scotland from the rest of the Britain. While weekly or monthly rentals were fairly commonplace in the rest of the British Isles, that was not so in urban Scotland, except for properties whose annual rental value was below £5. Properties valued above £10 a year, about 80 percent of the working class housing stock, were all let by the year in Scotland. Properties rented at between £5 and £10 per annum were let monthly, quarterly, half-yearly or yearly. A unique feature of the Scottish market was the severe limitation, to only two days in the year, when rentals were allowed to start or finish, with the majority being yearly rentals commencing on 28th May.[11] This was not the case in England, where rental terms could start all year round.[12] As the *Report of Committee on Letting of Working Men's Dwellings in Scotland* makes clear, the rules governing letting in Scotland were an impediment to mobility:

> ……occasions arise, from time to time, in a working man's life, warranting, or even requiring him, or, on this death, his family, to remove from one house to another between terms. The usual cause is change of employment, involving removal from one district of the same town to another or from one town to another. [13]

[11]The BoT survey was carried out in the summer, mid way between the May moving date and November rate collection date in Scotland.
[12] These dates were 28th May and 28th November. 1907 [Cd. 3715] Report of the Departmental Committee on House-letting in Scotland. Vol. I. Report, page 3.
[13] Cd.3715 p.13

Secondly, in Scotland, local taxes called rates were levied directly on the occupiers, and therefore not included in rent.[14] These taxes were legally due on the 11th of November each year.[15] In Scotland the occupiers' rates were equal to about 5s in the pound of rental. [16] The imposition of yearly lump-sum payment of rates was seen as an exceptional financial burden on working-class households that was unique to Scotland (and dependent upon the annual rental of the property):

> …payment of rates is demanded from occupiers in November, at the period of the year when work in many occupations is slackest, when expenses in the way of extra clothing and fire and light are heaviest, and such payment is demanded in one sum. …..No doubt the best class of working men look forward through the year to the incidence of the rates in the end of the year, and provide for their payment by admirable plans are not systematically followed by the average working man, who, although respectable, lives to a large extent from hand to mouth, and they are, of course, unknown among the class whose habits are bad.[17]

Thirdly, landlords were indemnified against non-payment of rent by an urban *hypothec*, which gave the landlord the legal right to sell the possessions of defaulters.

Thus in terms of rent and property-based taxes, Scottish workers were required to practise much greater medium term financial discipline than their counterparts in the rest of Britain. If these Scottish workers were risk averse, these institutional

[14] This only applied in the main to dwellings with a rental value in excess of £4 a year, which were the vast majority.
[15] Cd. 3715, page 4.
[16] Cd. 3715, page 4
[17] Cd. 3715 p.15

differences alone would generate incentives to economise more intensely on space. But even without invoking attitudes to risk, it is very likely, as noted above by the *Report of Committee on Letting of Working Men's Dwellings in Scotland*, that saving was quite difficult in the face of short-run exigencies.

Our empirical work supports this conjecture. Columns 2, 3 and 4 of Table 11 report Working-Leser semi-log form Engels curves for rent, food and combined food and rent. Note that a 95% confidence interval for the mean combined share of food and rent is contained between 0.75 and 0.78, so the vast bulk of spending is on these two items. We find that controlling for income and household characteristics, Scottish households tended to spend about 5 percent less of their income on rent. They also tended to spend about 5 percent more on food, so that, in column 5 we find no significant difference between Scottish households and the rest of the sample when the dependent variable is the combined share of food and rent. If these Scottish households were spending, on average, the rent reductions from taking smaller dwellings on food, then they were not saving them. This suggests that these predominantly artisan families were not rich enough to make medium-term financial plans.

Earlier we referred to the abundance of contemporary evidence that shows a correlation between over-crowding and indicators of mortality, especially with the infant mortality rate. If the tenure system in Scotland was responsible for increased overcrowding, which is consistent with the empirical evidence we have presented here, then it is likely responsible, *ceteris paribus*, for higher rates of infant deaths. The most compelling evidence for this case relates to the co-incidence of overcrowding in

one room apartments and higher infant mortality rates. This may be for a number of reasons, but the lack of physical separation between eating, sleeping and toileting would have challenged even the most hygiene-conscious households. We have also shown that these overcrowded Scottish households spent their rent windfall on extra food, which may have led to improved nutrition and a greater resistance to disease among these early twentieth century city dwellers. However, it is clear from the disaggregated data in contemporary reports on overcrowding, housing density and infant mortality by region in Glasgow that the negative health effects of overcrowding more than offset any possible positive nutritional impact of greater food expenditures.

Conclusion

In conclusion, the BoTR data show that Scottish working families were crammed into relatively tiny dwellings. This is very well known, though the explanations have not, to our knowledge, been empirically tested. We investigate whether there was a constrained supply of large dwellings, caused by the building of tenement blocks in Scotland, and find little supporting empirical evidence in the structure of rents. Our results show that the profile of rents in Scotland is not strongly consistent with the idea of unsatisfied demand for larger dwellings.

There are two main demand-side arguments: on the one hand, the variable nature of incomes and on the other hand, the impact of laws with respect to rental contract durations and payment frequencies for rents and rates. In the BoTR data, the Scottish workers happen not to be casualised unskilled workers in the main, but better-off

artisans, though they still live in overcrowded conditions. Since these workers do not have higher measurable income insecurity than others in BoTR data and they live in much smaller dwellings, the income insecurity argument is weakened. We are left with the other demand-side causes: longer rental contracts and annual rates payments. It seems likely these were major influences, but it is not possible to establish the impact directly using the BoTR data. Similar conclusions were reached by contemporary investigations into the housing conditions of Scottish workers.

Our final results show that Scottish workers spent their rent savings on food. These artisan households are not below contemporary poverty levels of income, yet they are still sufficiently poor to make their day-to-day lives a continued struggle for existence. If the difficulty of saving for exigencies through long-period rental contracts is the underlying explanation Scottish overcrowding then extra spending on a basic necessity like food is the predicable outcome.

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