

Housing Wealth, Business Creation and Dissolution, in the U.K. Regions*

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ABSTRACT. A number of recent studies have suggested that access to collateral in the form of housing assets may be an important factor in the process of new firm formation. In particular, it has been suggested that variations in housing wealth may be able to account for a substantial proportion of the variation in rates of business creation within and between the U.K. regions. Re-examining this issue, the paper finds that once appropriate allowance is made for the presence of dynamics in the formation process, the evidence for a positive relationship between housing wealth and regional rates of new business creation disappears. However, there is evidence in favour of the proposition that access to external collateral in this form may help established firms to stay in business.

1. Introduction

The 1980s witnessed a remarkable increase in the number of businesses registered for VAT in the U.K. economy, driven to a large extent by an increase in the rate of new registrations.¹ One suggested explanation for this phenomenon which has attracted increasing attention in recent years, is that rising levels of personal wealth, particularly in the form of housing assets, have enabled an increasing number of individuals to raise the finance necessary to start up in business. Housing assets, it is argued, provide an important source of collateral for would-be entrepreneurs seeking external debt finance for new business ventures. At the same time, businesses which are currently experiencing short-term financial difficulties may find the availability of external collateral in this form helpful in gaining access to additional lines of credit which may be used to stave off pressures for closure.

Studies by Black, de Meza and Jeffreys (1992)

and Robson (1993) find the real value of net housing wealth to be a significant determinant of the rate of new VAT registrations in the U.K., with the former also reporting evidence which suggests that variations in housing wealth can account for much of the observed inter-regional variation in rates of new business formation. The purpose of the present paper is to re-examine this particular issue and to look again at the role of housing wealth in the process of business creation and dissolution in the U.K. regions. A principal finding is that once the model specification adopted by Black *et al.* is amended to allow for the presence of appropriate dynamics in the process of new firm formation, the evidence for a positive effect from the real value of net housing wealth disappears. If anything, the effect turns out to be negative. Housing wealth does, however, appear to be of some significance in reducing the regional rate of deregistration from VAT. The evidence from this paper suggests, therefore, that the principal influence of housing wealth in the determination of regional small firm dynamics is through its effect on the ability of established businesses to gain access to additional lines of credit, rather than in enabling new firm founders to overcome the capital barriers to entrepreneurship.

The pattern of the paper is as follows. Section 2 presents a brief discussion of regional variations in the rate of new registrations for VAT in the U.K., followed by a re-assessment of the model of Black, de Meza and Jeffreys. An attempt is then made to produce a 'preferred' model of regional VAT registrations, incorporating a wider set of explanatory variables than that considered in the Black *et al.* analysis. Section 3 reports the results of a similar exercise examining the determinants of regional variations in the rate of deregistrations from VAT. Finally, section 4 offers some concluding remarks.

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2. Regional variations in rates of business creation

Table I depicts the average annual rate of new registrations for VAT (measured as a percentage of the labour force) in each of the U.K. regions over the period 1980–92, together with the associated coefficient of variation. The numbers suggest a significant degree of dispersion in regional rates of new business creation,² with the average registration rate in the South-East being almost 1.75 times greater than that in the lowest ranked region, which is the North. There is evidence too of a north-south divide in rates of new firm formation, with the regions with the six highest registration rates all lying below a line drawn between the Mersey and Humber estuaries. There is much greater uniformity across the regions in the variability of rates of new firm formation over time. Only Northern Ireland stands out as having a significantly more stable pattern of new registrations for VAT than elsewhere in the U.K.

TABLE I
Regional rates of new registrations for VAT, 1980–92. New registrations for VAT relative to labour force (%)

	Annual average	Coeff. of variation
SE	0.874	14.8
EA	0.780	12.9
SW	0.833	15.3
EM	0.691	13.9
WM	0.655	12.6
YH	0.625	13.2
NW	0.639	13.7
NO	0.501	13.9
WA	0.681	14.1
SC	0.515	17.1
NI	0.532	6.6
U.K.	0.666	22.5

Source: See Data Appendix.

Using data for the period 1980–90, Black, de Meza and Jeffreys (1992) (henceforth, BDJ) seek to explain regional variations in the level of new VAT registrations by reference to variations in per capita rates of GDP growth, regional unemployment rates and a measure of housing wealth.³ Underlying their analysis is the hypothesis that housing wealth provides would-be business founders with an important source of collateral

which may be used to gain access to external debt finance, and hence enable them to overcome potential capital barriers to entrepreneurship. On this basis, one would expect to observe a positive relationship, other things being equal, between levels of housing wealth and regional rates of new firm formation.

Column (1) of Table II attempts to reproduce BDJ's results, whilst column (2) updates the analysis to include data up to 1992. The attempted replication of BDJ's analysis is largely successful, although the t-ratio of the coefficient on $\ln H$ (my notation) is somewhat less than the one which they report.⁴ Most notably, the results from both columns appear, at first glance, to lend fairly strong support to the notion that housing wealth may be an important determinant of regional variations in new firm formation. An inspection of the diagnostic statistics for the two equations, however, reveals evidence of important statistical problems which call into question their validity as a basis for inference. From a theoretical point of view also, there are weaknesses with the equation specification which warrant some attention.

The first of these weaknesses concerns the specification of the dependent variable, which makes no allowance for variations between the regions in the size of the incubator population for new firm formation. It could be argued that these will be captured by the regional fixed effects that are included in the model, but a better strategy would arguably be to incorporate them explicitly by specifying the model in terms of variations in rates of new firm formation as measured by, say, the number of new VAT registrations relative to the labour force. This is the strategy adopted in column (3) of Table II, and it can be seen that the effect is immediately to reduce the significance of the coefficient attached to $\ln H$, though it remains a significant determinant of new VAT registrations. The obvious implication of this finding is that there is a positive correlation between real house values and the size of the regional labour force which is not entirely captured by the regional fixed effects in columns (1) and (2).

The second weakness lies in the use of real house values as a measure of housing wealth, as this takes no account of the value of any out-

TABLE II
Housing wealth and new VAT registrations in the U.K. regions^{a, b}

Sample	(1) 1980–90 (<i>n</i> = 121)	(2) 1980–92 (<i>n</i> = 143)	(3) 1980–92 (<i>n</i> = 143)	(4) 1980–92 (<i>n</i> = 143)	(5) 1980–92 (<i>n</i> = 143)
Dep. var.	lnREG _{it}	lnREG _{it}	lnREGR _{it}	lnREGR _{it}	ΔlnREGR _{it}
Constant	–3.065 (1.63)	–2.955 (1.81)	–4.890 (2.61)	–0.770 (2.02)	–0.012 (0.05)
ΔlnY _{it}	0.333 (0.86)	0.204 (0.61)	0.392 (1.13)	0.382 (1.09)	0.374 (1.74)
lnU _{it}	0.068 (0.71)	0.064 (0.89)	0.054 (0.65)	–0.001 (0.01)	0.025 (0.48)
lnH _{it}	0.326 (3.21)	0.305 (3.50)	0.248 (2.47)		
lnNHW _{it}				0.107 (1.43)	–0.071 (1.77)
lnREGR _{it-1}					–0.270 (3.43)
$\bar{R}^2$	0.996	0.996	0.936	0.933	0.794
AR1	75.81	87.83	98.37	110.27	0.20
RESET	15.08	16.98	0.19	0.23	4.61
ARCH1	0.12	6.85	4.86	3.67	3.37

^a Coefficients are OLS estimates with heteroskedasticity – robust variance – covariance matrix. *t*-ratios are given in parentheses. Each equation includes a full set of region and time dummies.

^b AR1 is an *F*-test statistic for the presence of first order autocorrelation in the annual disturbances for each region, where the autocorrelation coefficient is assumed to be common across regions. ARCH1 denotes a similar *F*-test statistic for first order autoregressive conditional heteroskedasticity. RESET is an *F*-statistic for testing the joint significance of the squared and cubed fitted values of the equation when these are included as additional regressors.

See text and Data Appendix for variable definitions.

standing mortgage debt which individuals may have accumulated in order to finance their house purchases. Clearly, however, it is the value of housing assets net of outstanding mortgage debt which potential lenders will seek to take account of when assessing their value as loan collateral. BDJ are correct in pointing to the lack of available data at the regional level on levels of outstanding mortgage debt. It is, however, possible to construct a proxy for the level of debt by using the method outlined in Carruth and Henley (1993). This essentially assumes that each region's share of outstanding debt is the same as its annual share of new mortgage advances (see Data Appendix for details). Using estimates of outstanding mortgage debt constructed in this way, it is possible to calculate for each region a measure of the real value of housing equity. This in turn may be

deflated by the number of owner-occupied dwellings to give a measure of the average value of housing collateral per household. Substituting this measure for the measure of real house values used in the previous regression produces the results shown in column (4) of Table II. Here, although housing wealth is still found to have a positive effect on regional rates of new VAT registrations, this is no longer statistically significant.⁵

Neither of these theoretically motivated amendments to the equation specification successfully remedies the statistical problems alluded to earlier. The most damaging of these is the evidence, indicated by the regression diagnostics, of a positive relationship between successive values of the disturbance term for each region.⁶ This finding, which is suggestive of omitted dynamics in the equation specification, implies that the coefficient

standard errors and their associated *t*-ratios will be biased. The estimates reported in columns (1)–(4) of Table II would therefore seem to form an unreliable basis for inferring the significance, or otherwise, of housing wealth for regional variations in rates of new firm formation.

To try to overcome this problem, column (5) of the table reports an 'error correction' specification of the model in column (4) estimated over the period 1981–92, with $\Delta \ln \text{REGR}_{it}$ as the dependent variable and with $\ln \text{REGR}_{it-1}$ included as an additional regressor. It can be seen that this amendment to the equation specification successfully solves the autocorrelation problem. The problem now, however, is that the equation no longer shows evidence of a positive relationship between housing wealth and regional rates of new firm formation. Instead, the relationship appears, if anything, to be negative.⁷

This finding clearly poses a problem for those favouring the housing wealth-as-collateral story of new firm formation. There is, however, one possible escape route. The equations estimated in Table II could be said to omit a number of potentially relevant explanatory variables. It is therefore possible that a correctly specified model of regional VAT registrations would indeed produce evidence of a significantly positive effect from

variations in housing wealth. Unfortunately, this does not obviously seem to be the case.

Table III presents the results of a modelling exercise aimed at producing just such a model. The reported equation represents a data-admissible parsimonious form of an initial specification which included, in addition to the variables depicted, terms in: (i) the level and growth of real GDP per capita; (ii) real net housing wealth per owner-occupied dwelling; (iii) the combined share of construction, distribution, hotels and catering, etc. and banking and finance, etc. in regional GDP; (iv) the level and growth of average earnings; (v) the proportion of the population of working age aged 45+; (vi) the proportion of the labour force with degrees or equivalent qualifications; and (vii) the proportion of the unemployed who are long-term.

The variable (iii) was included on the grounds that these industry groups are characterised by relatively low minimum efficient scales of operation and exhibit relatively high rates of self-employment. Regions in which these industry groups are particularly prominent might therefore be expected to provide relatively favourable environments for new firm formation. The level of average earnings provides an indication of both the opportunity cost of setting up in business and

TABLE III
Regional variations in new VAT registrations: 'Preferred' Model^{a, b}

$\Delta \ln \hat{\text{REGR}}_{it} = 1.797 - 0.364 \ln \text{REGR}_{it-1} - 0.055 \Delta \ln(U/V)_{it} + 3.587 \Delta \ln \text{DEN}_{it} - 0.366 \ln \text{DEN}_{it-1} + \text{fixed effects}$					
(1.52)	(5.11)	(2.47)	(2.69)	(1.71)	
$\bar{R}^2 = 0.820$; AR1 = 0.24; RESET = 2.88; ARCH1 = 0.88;					
FTIME(10, 106) = 21.78; FREG(10, 106) = 14.81; FGEN(15, 91) = 1.56					
<i>Region Dummies:</i> ^c					
SE = 0.443 (2.20)		EA = -0.142 (1.48)		SW = -0.045 (0.75)	
WM = 0.171 (1.78)		YH = 0.068 (1.40)		NW = 0.461 (1.76)	
NO = -0.178 (2.83)		WA = -0.227 (1.69)		SC = -0.563 (1.88)	
NI = -0.390 (2.23)					
Sample: 1981-92 (n = 132)					

^a OLS estimates; *t*-ratios based on heteroskedasticity-consistent standard errors are given in parentheses below – or in the case of the region dummies, alongside – the coefficients.

Variable definitions: REGR = new registrations for VAT as a percentage of the labour force; (U/V) = ratio of unemployment to vacancies; DEN = population density. See Data Appendix for further details.

^b Test statistics: FTIME and FREG are *F*-tests for the omission of the region and time dummies, respectively. FGEN is an *F*-test of the validity of the restrictions imposed on the general error-correction model to produce the 'preferred' specification shown in the table. See notes to Table II for details of the other test statistics.

^c The omitted region is East Midlands.

the cost of employing labour. It might therefore be expected to have a negative effect on the regional rate of new firm formation. The justification for the inclusion of (v) and (vi) stems from evidence from both the United Kingdom and the United States which points to the existence of a positive relationship, other things being equal, between age and years of education and an individual's propensity to be self-employed.⁸ Variables (v) and (vi) attempt to translate these individual characteristics to the regional level.

The long-term unemployed proportion was included on the grounds that although there is evidence to show that the unemployed make up a disproportionate number of new entrants to self-employment (Daly, 1991), not all of the unemployed will be particularly suited to entrepreneurship. The long-term unemployed in particular are likely to find themselves short of the entrepreneurial skills necessary to succeed in running their own business. To the extent, moreover, that their unemployment duration may in part be attributable to the de-motivating effects of unsuccessful job-search, it is likely too that the long-term unemployed will be relatively slow to identify and act upon entrepreneurial opportunities. One might therefore expect to observe relatively low rates of new firm formation in regions with a relatively high long-term unemployed proportion.

The message from Table III, however, is that each of these variables – including, notably the terms in housing wealth – may be excluded from a model of regional VAT registrations without a significant loss of explanatory power.⁹ The only variables remaining in the equation depicted in Table III – aside from the region and time dummies – are the growth in the regional ratio of unemployment to vacancies (the possibility of a level effect having been allowed for in the initial specification) and regional population density. The former was initially included as a measure of 'recession-push' effects on the incentives for individuals to set up in business, in preference to the unemployment rate variable used by BDJ.¹⁰ As can be seen, however, the sign of the coefficient on the UV ratio is contrary to that which would be predicted by the 'recession-push' hypothesis. This finding – which is consistent with the results of Robson (1993) concerning the determination of

the aggregate rate of new VAT registrations – suggests that a rising ratio of unemployment to vacancies acts as a deterrent to, rather than a catalyst for, new business creation. The most likely explanation for this finding is that the UV ratio is picking up the effects of regional variations in demand which were not adequately captured by the terms in the level and rate of growth of per capita GDP which were initially included in the model.¹¹

The positive relationship which is observed between the rate of new VAT registrations and the growth of regional population density most probably reflects the demand-pull effects of local population growth on the incentives for new business formation. Alternatively, some of the effect may perhaps be attributable to the supply-side impact of regional migration flows on the pool of potential entrepreneurs.¹²

In contrast to the short-run picture, population density appears in the long-run to have a negative effect on rates of new VAT registrations. This may reflect a number of possible influences. One possibility is that land prices – and hence office and factory space rents – may be higher in more densely populated areas, providing a deterrent to new business formation. Another is that the size structure of firms in more densely populated areas may be relatively unfavourable to the emergence of new entrepreneurial talent.¹³ Problems of data availability unfortunately inhibit further exploration of this issue.¹⁴

In the absence of an effect on new business formation, is there any evidence of a relationship between housing wealth and regional small firm dynamics? In order to answer this question in the affirmative, it is necessary to turn to a model of regional variations in VAT deregistrations.

3. Modelling regional rates of business dissolution

Housing wealth may have a significant influence on rates of deregistration from VAT if, by serving as external collateral, it can facilitate access to additional lines of credit for firms currently experiencing short-term financial difficulties, and thereby enable them to stave off pressures for closure. By raising the survival rate of firms in this way, one might expect housing wealth to exert a

negative effect, other things being equal, on regional rates of VAT deregistration.

In an attempt to investigate this issue, terms in the real value of net housing wealth are entered into a model of regional rates of deregistrations from VAT, for the years 1983–92. The time period covered is shorter than that used for the analysis of new registrations in order to allow for a possible effect on current deregistrations from lagged rates of new registrations (up to three years); the intention being to try to capture the well-known phenomenon that young firms are particularly vulnerable to closure.¹⁵ In addition to these variables, the initial specification includes terms in: the growth and level of per capita real GDP; real average earnings and the regional UV ratio (to capture the incentives for business owner-managers to quit and seek alternative employment); and population density. Deletion of insignificant terms leads fairly quickly to the specification shown in Table IV.

The results lend support to the notion that collateral availability in the form of housing wealth may help firms to sustain their operations in the face of short-term financial difficulties. Housing wealth does therefore appear to have an influence on regional small firm dynamics, but not

in the way that is usually supposed. Of course, an alternative interpretation of the negative coefficient attached to $\ln \text{NHW}$ in this regression is that housing wealth is simply acting as a proxy for regional variations in the level of demand. However, three factors mitigate against this: (i) as with the analysis of new VAT registrations, the regional UV ratio would appear to be playing the role of local demand proxy; (ii) the negative effect of housing wealth is present even when the terms in the level and growth of real per capita GDP are included in the equation; and (iii) our failure, earlier, to find a positive effect of housing wealth on the rate of new registrations for VAT. Each of these factors suggests that it is the collateral interpretation which is appropriate for the finding reported here.

Elsewhere in the equation, the main points of interest concern the negative coefficient found for average earnings and – echoing the result from the earlier analysis of new VAT registrations – the divergence between the short and long run effect of population density. The former finding runs counter to the effect which would be expected if the level of average earnings is interpreted as a measure of the opportunity cost of running one's own business, and suggests that this variable too

TABLE IV
A model of regional VAT deregistrations^{a, b}

$$\Delta \ln \hat{\text{DRT}}_{it} = 0.177 + 0.233 \ln \text{REGR}_{it-3} + 0.051 \Delta \ln (\text{U/V})_{it} + 0.098 \ln (\text{U/V})_{it-1} - 0.064 \ln \text{NHW}_{it} - 1.847 \Delta \ln \text{DEN}_{it} \\ (0.13) \quad (4.68) \quad (1.64) \quad (4.35) \quad (2.05) \quad (2.71) \\ + 1.055 \ln \text{DEN}_{it-1} - 0.638 \ln \text{E}_{it-1} + \text{fixed effects} \\ (3.92) \quad (2.91)$$

$$\bar{R}^2 = 0.977; \text{AR1} = 0.78; \text{RESET} = 0.04; \text{ARCH1} = 1.59; \\ \text{FTIME}(8, 83) = 10.39; \text{FREG}(10, 83) = 81.19; \text{FGEN}(7, 76) = 0.58$$

Region Dummies:^c

$$\text{SE} = -0.59 (2.58) \\ \text{WM} = -0.45 (3.73) \\ \text{NO} = 0.28 (4.15) \\ \text{NI} = 0.10 (0.47)$$

$$\text{EA} = 0.46 (3.52) \\ \text{YH} = -0.21 (3.33) \\ \text{WA} = 0.54 (3.24)$$

$$\text{SW} = 0.30 (3.71) \\ \text{NW} = -1.13 (3.44) \\ \text{SC} = 1.48 (4.03)$$

Sample: 1983–92 ($n = 110$)

^a OLS estimates; t -ratios based on heteroskedasticity-consistent standard errors are given in parentheses below – or in the case of the region dummies, alongside – the coefficients.

Variable definitions: DRT = deregistrations from VAT as a percentage of the beginning of period stock of VAT registered businesses; (U/V) = ratio of unemployment to vacancies; NHW = real value of net housing wealth per owner-occupied dwelling; DEN = population density; E = real average earnings per employee. See Data Appendix for further details.

^b See notes to Tables II and III for description of test statistics.

^c The omitted region is East Midlands.

may be picking up the effects of variations in the level of demand. The positive long-run effect of population density is consistent with the notion expressed earlier that business fixed costs – in the form of floorspace rents – may be higher in more densely populated areas.

Finally, the finding of a positive relationship, other things being equal, between regional rates of VAT deregistration and prior rates of new registrations three years earlier is consistent with the notion that young firms are particularly vulnerable to closure.¹⁶ Alternatively, some of the observed effect may be attributable to the displacement effect of new firm formation on existing enterprises.

4. Conclusions

This paper has set out to examine the influence of housing wealth on regional variations in rates of business formation and dissolution. Work by Black, de Meza and Jeffreys (1992) has suggested that in providing individuals with a source of collateral which may be used to secure access to start-up finance, housing wealth may play an important role in the process of new firm formation. As part of the portfolio of empirical evidence which they present in support of their case, BDJ appear to show that variations in real house values – their proxy for housing wealth – can account for much of the observed variation in rates of new firm formation between and within the U.K. regions during the 1980s. The evidence produced in this paper suggests otherwise. Closer inspection of BDJ's specification reveals evidence of an autocorrelated disturbance term, making the equation an unreliable basis for inference. If the equation is re-specified by introducing appropriate dynamics, the evidence for a positive effect of housing wealth on rates of new firm formation disappears – even when a more suitable proxy for housing wealth than that used by BDJ is employed.

Further analysis, employing a wider range of explanatory variables than that considered by BDJ fails to overturn this finding. The only variables which appear to be significantly related to regional rates of new firm formation, other than region and

time-specific fixed effects, are population density and the ratio of unemployment to vacancies. If housing wealth is added to the preferred specification, it takes on a counter-intuitive negative sign.

Greater support for the housing wealth-as-collateral hypothesis comes from the analysis of regional variations in rates of deregistrations from VAT. Here, it is found that, other things being equal, regions with higher levels of housing wealth will tend to exhibit lower rates of VAT deregistration. This is consistent with the notion that the availability of external collateral in the form of housing assets enables businesses to gain access to additional lines of credit, and thereby stave off pressures for closure, at least in the short-term.

The analysis of regional data is not the only evidence which BDJ present in support of their hypothesis. A number of subsequent studies have, moreover, produced evidence in favour of a positive relationship between housing wealth and either the level of self-employment or rates of new firm formation.¹⁷ How is one to reconcile the findings of those papers with the results presented here? This is not an easy question to answer, though we note first of all that the finding of a positive relationship between housing wealth and self-employment is not inconsistent with the results of this paper if it stems from an association of housing wealth with higher rates of business survival rather than new firm formation. Secondly, it is possible that in some studies housing wealth may simply be serving as a proxy for the general level of demand; though Robson (1993) and (1994a) explicitly rules this possibility out. Finally, it is worth noting the evidence of Cressey (1993), who finds in a study of overdraft lending for business start-ups that loans are typically not collateralised. In many cases, the amounts of lending involved are too small for the bank to warrant incurring the costs associated with a request for the provision of loan collateral. Above all, the results presented here suggest that the findings of previous analyses should be treated with some caution and that further research into this important issue is required.

Data Appendix

REG – New Registrations for VAT.

Source: 1980–91 figures were obtained from *Business Briefing*, 23/10/92; 1992 data from *Regional Trends (RT)*, 1993.

REGR – New VAT Registrations Relative to the Labour Force.

Regional labour force figures for 1980–91 were obtained from *Employment Gazette (EG)* Historical Supplement No. 3, June 1992; data for 1992 were obtained from *RT*.

Y – Real GDP per Capita.

Figures for GDP per capita, obtained from various editions of *RT*, were deflated by the regional index of consumer prices published by the Reward Group (The Reward Group 1993) (base = Jan. 1982).

U – Unemployment Rate.

Seasonally adjusted June unemployment figures for 1980–88 are taken from *EG* Historical Supplement No. 1, April 1989. Remaining data are from various editions of *EG*. The unemployment figures are divided by Workforce data, obtained as above.

H – Real House Values.

Average Dwelling Price For Building Societies' Mortgage Advances (Source: *Housing and Construction Statistics*), deflated by the regional index of consumer prices.

NHW – Real Net Housing Wealth Per Owner-Occupied Dwelling.

Figures for gross housing wealth for each region are obtained by multiplying average dwelling prices by the number of owner-occupied dwellings (Source: *Housing and Construction Statistics*). Figures for net housing wealth are then obtained by deducting the estimated value of outstanding mortgages, calculated as follows:

$$\text{outstanding mortgages in region } i, \text{ year } t = \text{OMDUK}_t \cdot \frac{\text{AMA}_{it} \cdot (\text{MAUK}_t \cdot \text{MOPC}_{it}/100)}{\text{AAUK}_t \cdot \text{MAUK}_t}$$

where: OMDUK = total mortgage debt outstanding in U.K.; AMA = average mortgage advance in region *i*; MAUK = number of mortgages advanced in U.K.; MOPC = percentage of total U.K. mortgages advanced in region *i*; AAUK = average mortgage advance in U.K. See Carruth and Henley (1993). Source for all data: *Housing and Construction Statistics*, various editions. The net housing wealth series is deflated by the regional consumer price index and then divided by the number of owner-occupied dwellings.

U/V – Ratio of Unemployment to Vacancies.

The unemployment series was obtained as above. Vacancy figures (June) are taken from various editions of *EG*.

DEN – Population Density.

Source: *RT*, various.

DRT – Rate of Deregistrations From VAT.

Annual number of deregistrations from VAT as percentage of beginning of year stock of VAT registered businesses. Source as for new registrations figures.

E – Average Weekly Earnings.

Average weekly earnings (excluding overtime) of full-time male employees. The figures, which are based on New Earnings Survey data, are taken from various editions of *RT*.

Variables not appearing in tables

CDSH – combined GDP share of construction; distribution, hotels & catering, etc; and banking & finance, etc. Figures obtained from various editions of *RT*.

FFPLUS – percentage of working age population aged 45+. Figures obtained from various editions of *RT* and *Population Trends*.

LTU – proportion of long-term unemployed. Proportion of unemployed out of work for 52+ weeks. Source: *EG*, various editions.

DEGREE – percentage of economically active working age population with degrees or equivalent. Source: *RT*, various editions. Figures for 1982, 1987 and 1989 are obtained by interpolation.

Notes

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¹ For detailed evidence, see Daly (1990).

² Rates of new registrations for VAT and of VAT deregistrations are assumed throughout the paper to be reasonable proxies for regional rates of business creation and dissolution, respectively. For a discussion of the potential measurement errors involved in these approximations, see for example, Robson (1993).

³ Black, de Meza and Jeffreys (1992), Table 6. Their analysis of regional data is part of a much wider investigation of the relationship between housing wealth and rates of new firm formation and business survival.

⁴ This may perhaps be explained by the fact that, unlike BDJ, we deflate nominal house values by a region-specific price index. Note, moreover, that the apparent discrepancy between the coefficient reported here for per capita income growth and that found by BDJ can largely be explained by noting that growth is here measured in proportionate terms, whilst they employ a percentage measure.

⁵ A similar picture emerges if instead of net housing wealth per owner-occupied dwelling, we use net housing wealth per capita; although here the effect remains marginally statistically significant ($t = 2.01$).

⁶ The reported AR1 test statistic tests the null hypothesis of zero autocorrelation against the alternative of a regionally uniform first order autocorrelation coefficient between disturbance terms in successive years.

⁷ A similar picture emerges if the original BDJ specification is adopted and the equation estimated with $\ln H$ as an explanatory variable instead of $\ln NHW$.

⁸ Evidence for a positive effect of age on self-employment in the U.K. may be found in Blanchflower and Oswald (1991), whilst Rees and Shah (1986) find a positive effect from years of education. Blanchflower and Oswald in fact find in favour of a quadratic relationship between age and the propensity to be self-employed, but in all but one of their probit equations, the overall effect of age is positive for individuals of working age. For US evidence on these issues, see Evans and Leighton (1989).

⁹ At least, at the 5% significance level.

¹⁰ On the grounds that the probability of successful job search for an individual currently seeking employment will be more closely related to the UV ratio than to the unemployment rate.

¹¹ A test for the inclusion of the current and one period lagged value of the rate of per capita GDP growth plus the log of the current level of real per capita GDP produces an F -statistic, $F(3, 103) = 0.305$, which is well below conventional levels of significance. The finding of a significant negative relationship between the growth of the UV ratio and the rate of new VAT registrations is unaffected by the inclusion of these three variables.

¹² These arguments are also put forward by Keeble and Walker (1994) in support of their finding that cross-section variations in county-level VAT registrations are positively related to rates of local population growth. Keeble and Tyler (1995), moreover, find that small business creation in Britain's

rural areas is strongly associated with previous population in-migration.

¹³ Studies of the relationship between the size structure of existing firms or plants and spatial variations in new firm formation typically find formation rates to be highest, *ceteris paribus*, in areas characterised by relatively high concentrations of employment in small-scale enterprises. See, for example, the various national studies cited by Reynolds and Storey (1993).

¹⁴ Here, the reported result is at variance with the findings of Keeble and Walker (1994). They find that county-level rates of new VAT registrations are positively related to local population density. It may be relevant to note in this context that, in contrast to the present study, Keeble and Walker are able in their analysis to control for the effects of local firm size structure.

¹⁵ Daly (1987) reports that the hazard rate for deregistrations from VAT reaches a peak in the period 12–18 months after registration.

¹⁶ One and two year lagged values of the rate of new VAT registrations were found to be insignificant.

¹⁷ See, for example, Robson (1993), (1994a), (1994b) and Keeble and Walker (1994).

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