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A Conjecture on the Explanation for High Unemployment
in the Industrialized Nations: Part 1

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**A Conjecture on the Explanation for High Unemployment
in the Industrialized Nations: Part I**

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Abstract

The paper conjectures that the high unemployment of the Western economies has been produced by the decline of the private house-rental market and the rise of home-ownership. Evidence is provided for the developed nations, the states of the USA, and the regions of the UK, Italy, France and Sweden. Although its calculations should be viewed as tentative, the paper's results imply that a 10 percentage point rise in the owner-occupation rate is associated with an increase of approximately 2 percentage points in the unemployment rate. This would be sufficient to explain a significant part of the rise in joblessness in the industrialized countries.

A Conjecture on the Explanation for High Unemployment in the Industrialized Nations: Part I

1. Introduction

Approximately 30 million people are officially unemployed in the OECD economies. This is more than ten per cent of the workforce, and many times the figure of the early 1960s. Explaining the secular rise in unemployment has proved difficult.

The problem seems worth solving. Although a few economists may believe that people are content to live on the dole, much anecdotal evidence suggests that joblessness is a large source of unhappiness in society. This view is supported by most of the recent cross-section and panel estimation of 'happiness equations' (the literature includes Bjorklund, 1985; Clark and Oswald, 1994; Blanchflower et al, 1993). These reveal, as commonsense indicates, that being without a job appears to be associated with markedly low levels of well-being.

A successful solution to the puzzle of unemployment demands that a number of requirements be met.

1. The explanation should make theoretical sense.
2. It ought to explain why a small number of Western countries, such as Switzerland and the USA, managed to escape almost any rise in unemployment between the end of World War II and the 1990s.
3. It should help us understand why countries such as Spain, Finland and Ireland have especially high rates of unemployment (of around 15%-20%).
4. It needs to make sense of the fact that unemployment rates have increased relative to vacancies, and that it is unemployment durations, rather than inflow rates, that have risen.
5. It must explain -- harking back to Robert Hall's question in 1970 -- why Canada and the USA used thirty years ago to have approximately the highest rates of unemployment among the industrialized countries, and why the US is now a low-unemployment nation and Canada in the

middle of the unemployment ranking.

6. It should draw upon, and in turn help explain, the reason why unemployment differs across the regions *within* a country (Lindbeck, 1990, p.300).
7. The answer should probably be a supply-side one -- perhaps the discovery of a "wage pressure" variable.
8. It should tell us whether the intensively-studied Nordic countries successfully had low unemployment in the 1980s because of their centralized pay systems, and make sense of Bentolila and Blanchard's (1990) observation that the economic structure of high-unemployment Spain and low-unemployment Portugal appear puzzlingly similar.
9. It ought to be consistent with both time-series and cross-section evidence.
10. It should offer implications for unemployment policy.

The paper tries to address these concerns.

The paper conjectures that mass unemployment exists because of a secular change that has happened in all but a few Western housing markets -- the rise of home ownership and the decline in private renting. Damage to the labour market is then what might be expected if workers in owner-occupied homes are relatively immobile. Western governments' long-running attempts to raise the degree of home-ownership may thus inadvertently have worsened the efficiency of labour markets. In almost any model of the labour market, a decline in labour mobility, or rise in 'mismatch', can be expected to raise the equilibrium rate of unemployment.

There turn out to be difficulties in collecting long runs of appropriately comparable international data on home ownership rates. That may account for the lack of research along the lines proposed in later sections. The paper has instead to combine evidence from a number of fairly small data sets.

2. Background

Research on unemployment has over recent years been dominated by two approaches. The

first is the decade's worth of work of Richard Layard, Steve Nickell and Richard Jackman (as especially in Layard, Nickell and Jackman, 1991). The second is the work on unemployment dynamics by authors such as Blanchard and Summers (1986). Closely related to these strands of thought come the analysis of insiders and outsiders by Lindbeck and Snower (1988) and the non-competitive models of Phelps (1994). Papers like Grossman and Hart (1981) show how unemployment can be generated in a partial equilibrium 'contract' setting, and this is involuntary in the real-world case where unemployment insurance is less than complete (Oswald, 1986); but it is not clear how such models would predict secularly rising unemployment. Newer approaches include Bentolila and Bertola (1990). Bean (1994) provides an overview of the field; Junankar and Madsen (1994 and Manning (1994) offer critiques of established work.

A theme through most of this research is the idea of hysteresis. While every economist accepts that unemployment follows an autoregressive process, it might be believed that the profession has turned to hysteresis models as a last resort. The evidence for them is slender. First, hysteresis models that rely on the disenfranchisement of the long-term unemployed appear to have the counter-factual prediction that unemployment should have climbed steadily over the last thousand years. The same is true of some insider-outsider union models. Second, those who argue for hysteresis reasons that the European nations could, if sufficiently determined, permanently reflate their way out of recession, need to explain why the pan-European expansion in the late 1980s, which in some countries (such as the UK) was so strong that it created the greatest house price-spiral since the 1950s, failed to cut unemployment substantially. Third, the econometric evidence for long-term unemployment variables in wage equations is largely confined to small time-series regressions. Inherently more powerful cross-sections tests, using jobless rates across regions, have not produced much support for the theory (Christofides and Oswald, 1992; Blanchflower and Oswald, 1994). Fourth, an extended period of anti-union legislation in countries like the UK has not had dramatic effects on unemployment. These points raise doubts about the ability of hysteresis theory to provide a complete explanation for the history of unemployment.

Evidence for a number of other pieces of the unemployment puzzle is presented in Oswald (1995). One is that data from the Eurobarometer Surveys suggest that the reported well-being of the unemployed has not increased, relative to those in jobs, since the early 1970s. Another is that microeconomic research seems to indicate that the degree of wage flexibility is approximately the same across nations. These findings make it hard to accept a number of theories of high unemployment. If it were true that generous levels of unemployment benefit were causing voluntary joblessness in the West, then it is not clear that those without jobs would systematically report (much) lower well-being levels than those in work. A more subtle way to argue is that unemployment is involuntary but unemployment benefits have made it easier to be jobless. Secularly rising unemployment might then have been induced -- perhaps thanks to an increasingly sophisticated welfare state -- by secularly declining unpleasantness from being unemployed. But reported well-being data, on hundreds of thousands of randomly sampled Europeans in the Eurobarometer Surveys, do not support that view. The 'unhappiness gap' appears to have stayed constant since the early 1970s. Further evidence comes from research described in Blanchflower and Oswald (1994a, b). If it were really different degrees of wage-flexibility that explained, say, Japan's good unemployment performance, the US's reasonable unemployment performance and Britain's poor unemployment performance, there would be no reason to think that estimates of wage rigidity in the three countries would come out identical. Yet with microeconomic methods apparently they do.

Given the above arguments, it might be argued that wage flexibility is similar across countries, unemployment is involuntary, and the rise in unemployment is not easily attributed to some change in the levels of unemployment benefits.

3. An Alternative Approach

If hysteresis models are not the answer, it is necessary to consider other approaches. An alternative way to think is that there is some missing secularly-trended variable. A natural

possibility is that somehow the labour markets of the West have become ossified by a reduction in the ability of firms and workers to 'match', or by some growing impediment to mobility.

The difficulties with such a view are practical rather than conceptual. First, no such variable seems to have been found. Perhaps the main candidate at the time of writing (favoured by, for example, Richard Layard) is unemployment benefit levels or durations. These are difficult to define consistently across nations. One of the most systematic attempts has been made by the OECD in their 1994 Jobs Study, and it reveals that low-unemployment Switzerland has a benefit replacement ratio in excess of that in, for example, high-unemployment Great Britain. The British replacement ratio was also calculated to have declined since the mid-1970s. Moreover, the persuasiveness of all kinds of benefit-rooted arguments is hampered by the evident distress suffered by unemployed people, and many nations have recently been cutting real benefits but have not wrought obvious transformations of their labour markets. Finally, even if some positive correlation between benefits and unemployment rates is found, there are reasons to believe that causality might be difficult to determine. Di Tella and MacCulloch (1996) show that in the industrialized countries the generosity of benefits is moulded, through a political process, by the amount of unemployment. Second, given the cyclical shocks from oil prices and other forces that hit the major economies in the period, it is not easy to disentangle cycle from time trend. Third, if the aim is to uncover a trended variable that rises more strongly in some nations than others, researchers do not have access to a large number of degrees of freedom. In a sense, there is only a single observation for each country. Here, however, looking across regions within a country might be able to help.

One way to conceptualize equilibrium is to adopt the framework proposed by writers such as Rowthorn (1997), Shapiro and Stiglitz (1984), and Layard, Nickell and Jackman (1991). In one log-linear efficiency-wage variant, for example, there are three equations:

$$\ln w = \ln b + g(\phi U) \qquad \text{No-shirking condition} \qquad (1)$$

$$\mu = c(w, r, p^0) \qquad \text{Zero profit condition} \qquad (2)$$

$$b = b(\mu) \qquad \text{Government benefit rule} \qquad (3)$$

where w is the wage, b is unemployment benefits, ϕ is a search-effectiveness parameter, U is the unemployment rate, μ is the level of technology, r is a rental rate on capital, p^O is the price of energy or other inputs, $g(\cdot)$ is the structure of a no-shirking condition, $c(\dots)$ is a unit minimum cost function, and $b(\mu)$ the government's unemployment-benefiting rule. This particular variant follows Carruth et al (1996).

These equations are all in real terms. First, a no-shirking condition must hold. Second, employers must be earning zero supernormal profits. Third, real unemployment benefits, perhaps financed by lump sum taxes, must be adjusted in line with some measure of the level of the economy's technology.

This model implies that the equilibrium unemployment rate, U^* , is given by a function of the structural characteristics and real prices in the economy. In particular, the equilibrium rate of joblessness depends upon search effectiveness, the real interest rate, real oil price, and the real value of being unemployed. Hence the 'natural rate' of unemployment is

$$U^* = U^*(\phi, r, p^O, b(\mu)) \quad \text{Equilibrium unemployment} \quad (4)$$

A rise in the first variable will reduce unemployment. A rise in any of the last three variables will increase unemployment. In the case of the real interest rate and real oil price, this is because, in order to restore zero profits after an upward shock to r or p^O , the wage has to be bid down, and this in turn requires in long run equilibrium an increased rate of unemployment. Some economists argue that even r and p^O drop out in the long run.

The search effectiveness parameter, ϕ , is essentially an inverse wage pressure variable. As it falls, the equilibrium unemployment rate rises.

4. Some Elementary Evidence for Nations

One factor that is likely to influence job search and mobility, and thus the ϕ parameter, is the type of housing in which a worker lives. It is known that those who live in rented public-sector housing are less likely to move regions or leave the pool of unemployment (see the long line

of research by Hughes and McCormick, 1981, 1985, 1987, and McCormick, 1983; see also Bover, Muellabauer and Murphy, 1988, who study links between housing and the labour market, though concentrating on house prices). Intuition suggests that the same might be true of home-owners. If owning a house reduces an individual's mobility -- as this paper was being written-up I received a copy of Henley (1996) which appears to find exactly that -- then the consequences for the labour market of secularly rising home-ownership could be profound. A small piece of evidence consistent with this way of thinking is in the work of Wadsworth (1995) which reveals, in the author's Table 6, that private renters have a notably fast outflow rate from unemployment into jobs.

Most industrialized nations have recently experienced growth in home-ownership. Two exceptions are Switzerland and the US. Ireland, Finland, Greece and Spain currently have among the highest rates of owner-occupied housing in the world. The unemployment rates in Table 3 suggest these facts are the simplest reason to wonder whether there is some link between the housing and labour markets.

It is natural to begin with the early 1960s, when there was not thought to be a problem with the labour market (except in North America, paradoxically, which failed to have the 2%-3% unemployment rates of the European countries). Figure 1 reveals a simple pattern. It covers a dozen representative nations; comparable data could not be obtained on others. A line of best fit is included. Although the Table has fewer countries than would be desirable, there is a simple positive correlation between the amount of home ownership, h , in a nation and its unemployment percentage, u . The slope of the line, namely, du/dh , is 0.14, which means that a 10 percentage point rise in home ownership would be associated with an increase of approximately 1.4 percentage points in joblessness. Given the small data set that has to be used in this kind of calculation, the paper does not report standard errors.

Table 1 tabulates the raw data. The two countries in the sample with the highest owner-occupier percentages *in the 1960s* had, at that time, the highest and third-highest unemployment rates, respectively. These nations are Canada and the US.

Some alternative correlations with unemployment are shown in Table 2. The literature's main contenders as explanatory factors in the puzzle of high unemployment are the degree of corporatism, the unemployment benefit replacement ratio, the density of unionism, and the duration of unemployment benefits offered by countries. Discussions are provided by McCallum (1983), Freeman (1988), Layard, Nickell and Jackman (1991), and Calmfors (1993, 1994). For the 1960s, however, these factors are statistically weak.

Today's data reveal the same general pattern as thirty years ago. In Figure 2, a cross-section correlation for the 1990s is shown. There are now 18 countries and thus eighteen points on the Figure. A best-fitting line allows the gradient of unemployment to owner-occupation (that is, du/dh) to be calculated. It is 0.22, compared to 0.14 in the previous Figure. This means that, in principle, an increase of 10 percentage points of owner-occupation would tend to add another 2.2 percentage points on to joblessness. Table 3 gives the raw information. It also has statistics on employment-to-population rates by country. Figure 3 is a plot. This is a useful check on the two other Figures, because it could be argued that male labour force participation is a cleaner indicator of the demand for labour than is the unemployment rate. Countries with high home-ownership have low male employment-to-population ratios. Figure 3's findings are much the same as with the unemployment variable. For good measure, Figure 4 ascertains that the suspiciously helpful-looking Swiss data point is not contributing too much to the negative correlation.

A more interesting kind of evidence would be to establish the same relationship in changes rather than levels. This is for the usual reason that cross-section patterns are likely to be dominated by fixed effects. Figures 5 and 6 do this. Figure 5 plots the 20-year decline in (male) employment/population for each nation against the 20-year change in owner occupation. Figure 6 plots the 20-year change in unemployment for each nation against the 20-year change in owner occupation.

Figure 5 reveals that the countries with the largest rises in home ownership also had the largest falls in male employment/population ratios. What is noticeable about Figure 6 is the

gradient rather than the not-unexpected spread of the observations. As the estimated equation is $unemployment\ rate = 3.1 + 0.19\ home\ owner\ rate$, its slope du/dh is almost the same as for the pure cross-section for 1990 in Figure 3. While it is possible this is chance, or some artifact of omitted variables, it seems of interest.

Is it possible, it might be asked, that this effect of du/dh is big enough to explain the secular increase in joblessness in many Western countries? A natural example to consider is the United Kingdom. The facts for that nation are plotted in Figure A1 of the appendix, which shows the upward movement in both series over three decades. As can be seen from the appendix, the last few decades have witnessed a rise of nearly 30 percentage points in the extent of owner-occupation in the UK. If the appropriate multiple is one of 0.2, therefore, this might explain nearly 6 percentage points of extra unemployment.

A hypothetical home-ownership effect is thus insufficient to explain the whole of the rise in joblessness in a country like the UK, but enough to explain the bulk of it. That may appear a paradoxical conclusion when UK unemployment exceeded 11% at its peak. But some joblessness is attributable to temporary shocks like the high real oil price that prevailed through the beginning of the 1980s; sources include Bruno and Sachs (1985), Layard, Nickell and Jackman (1991), and Carruth, Hooker and Oswald (1995). The aim here is instead to uncover an underlying trend variable.

5. Evidence for the US States and UK Regions: Plots and Panel Data Estimates

Following the kind of methodology advocated in Blanchflower and Oswald (1994) and Blanchard and Katz (1997), it may be possible to address these macroeconomic issues by using regional data (thereby viewing areas as mini macroeconomies).

The Statistical Abstract of the United States makes that possible. Figure 7 presents the scatter of observation between the 20-year change in State unemployment and State home-ownership. In this case, with 51 observations, it is worth recording the t-statistic on the coefficient

of home ownership, which is slightly greater than 2. The gradient of the equation is $du/dh = 0.12501$. This is only a little smaller than in earlier estimates for other countries.

A similar picture is provided in Figure 8, which looks at changes in UK regional unemployment. Again 20-year differences are employed. Hence the change in East Anglia's unemployment rate between 1971 and 1990 is charted against the change in East Anglia's owner occupation rate between those two years, and so on for each area. There are few data points, so Figure 8 cannot be taken too seriously. Nevertheless, the estimated gradient is 0.21.

A more formal kind of evidence is contained in Tables 4 and 5, which provides regressions on panels of US states and UK regions. There appears to be a case for estimating such equations by simple LSDV, or an equivalent, rather than a simultaneous equations method. It is not easy to see why home ownership might be a positively increasing function of unemployment. If anything, the reverse seems more plausible, so LSDV may even give downward-biased estimates. It is not clear what an appropriate instrument for home ownership might be in an unemployment equation. Issues of simultaneity may, however, have to be tackled in future research.

In Table 4, the data are for the 51 States from the mid-1980s to the middle of the 1990s. For reasons of data consistency, the period is different from that in Figure 7. After dropping some observations to allow for lags, there are 510 observations. The estimation method is fixed effects LSDV, where a separate dummy is included for each state. Year dummies are also incorporated. A lagged dependent variable (U_{t-1}) is included, along with three lags on the home ownership rate in the state. GMM results were similar.

Column 1 of Table 4 reveals that, as expected, there is a substantial amount of autoregression in unemployment. The lagged dependent variable enters with a coefficient of approximately 0.75. The largest coefficient on housing, h , is that on period $t-2$, which is two years earlier. The implied long-run gradient in Table 4, column 1, can be examined by solving for the steady state. It is $(1 - 0.7527)^{-1}(0.0028 + 0.0490)$, which is approximately 0.21. That is the same kind of relationship between unemployment and home ownership as emerged from the

simpler method, namely, the 20-year differences in Figure 7. The F test on the significance of the area fixed effects suggests that there could be a case for omitting them. This might be viewed as consistent with the finding in various parts of the paper that cross-section and differenced estimates give similar results.

Equation 2, the second column of Table 4, is estimated partly in logs but has similar implications. The long-run elasticity of u with respect to h is approximately 2. Hence an increase of a half in the proportion of owner-occupiers would be associated with a doubling of unemployment.

For the UK, there are equivalent results. One idea is needed. By definition, where h is the percentage of home owners, r is the proportion of private renters, and s is the proportion of social-housing renters, the differential linking changes is $dh + dr + ds = 0$. Neglecting ds , then, dh can be treated as equivalent to $-dr$. Because of the large degree of publicly-rented housing in the United Kingdom, the regressions use the private renting proportion, r , rather than the home-ownership proportion, h . The data run from 1973 to 1994, and cover thirteen regions. As in the US case, there is a high degree of autoregression in unemployment. When estimated with a single lagged dependent variable, the coefficient on U_{t-1} was 0.9. The data favoured an AR(2) model, however, which is what is reported in Table 5. The two lagged dependent variables enter with coefficients of approximately 1.6 and -0.7 respectively. Equation 1 of Table 5 uncovers a coefficient on private renting, r , of -0.0357 with a standard error of 0.027. This is not an especially well-defined coefficient. However, the implied long-run coefficient of 0.21 is surprisingly like that obtained for the UK using the simpler plots, and earlier for other countries.

As in the previous United States results, in the second column of Table 5 the largest coefficient on housing enters lagged rather than current. This is r_{t-1} , with coefficient -0.12 and a standard error of 0.4. The implied long-run gradient in Table 5, column 2, can be examined by solving for the steady state of an equation with two lagged dependent variables and two renter variables. The gradient is a large 0.398. It is not easy to know how to interpret this estimate; it would imply considerable effects of home ownership upon the labour market. The F test on the

significance of the area fixed effects once again suggests that there could be a case for omitting them.

6. Further Evidence for Other Nations' Regions

Some modern data were also obtained, from Eurostat, for the regions of Italy, France and Sweden. Although cross-section correlations are inherently less reliable than those that allow country fixed-effects to be differenced out, Figures 9-11 plot for these nations the simple regional correlation between home ownership and unemployment. The estimated gradients should not be taken too seriously because of the small samples, but they are 0.12 for France, 0.14 for Italy, and 0.15 for Sweden. Before being swept away by the similarity across these it is useful to know that for the US and the UK this regional cross-section correlation in levels does not hold (though it does in time-differences).

Figure 12 does the same for the UK. However, the UK has unusually large amounts of social housing organized by the public sector. That has been growing. Social housing may generate the same immobilities as home ownership. Figure 12 therefore plots the scatter of points linking unemployment by region with the extent of private renting by region. There is again evidence consistent with the paper's thesis. Regions of the United Kingdom with large private rental sectors have low unemployment. This is not inconsistent with the general ideas in a recent overview paper by McCormick (1996), although the focus there is on how the existence of social housing ("council housing" in the UK) might impede the mobility of workers.

7. Possible Objections and Overview

This section consider objections.

A natural concern is simultaneity. In a satisfactory general equilibrium model, home ownership is determined endogenously alongside unemployment. If high unemployment tends to

discourage people from purchasing their own homes -- perhaps because they fear job-loss would interrupt their mortgage payments -- then an econometric model of unemployment may have to instrument the home-ownership rate. On such a view, the estimates in this paper could understate the impact of housing tenure on equilibrium joblessness.

A further difficulty is omitted-variable bias. As the paper largely studies simple bivariate correlations, such bias is likely to be relevant here, although it may be less important in the fixed-effects estimation where region dummies can be expected to catch many of the potential variables. Working with international cross-sections, however, inherently restricts what can be done. One approach, which is that taken in Layard, Nickell and Jackman (1991), is to estimate regressions with large numbers of independent variables despite a small number of observations. This can be justified intellectually but suffers from practical problems. It has not been adopted here.

An attraction of the paper's thesis is that it appears to provide possible answers to the ten questions raised in the Introduction. Explaining the Swiss case simply, which has long created intellectual problems for investigators, is a particular advantage. Number 8 on the list, however, is not answered wholly convincingly. Spanish home-ownership is considerably greater than that in Portugal, which is a start, but the difference is not sufficient to explain the whole contrast in the nations' jobless rates. For the Nordic countries, the paper's ideas offer an alternative to the traditional view that unemployment has been low because of the nations' wage-setting practices. The explanation offered in this paper might be helpful in understanding why a country like Sweden had a low unemployment rate for so long. That nation has traditionally had a relatively low and stable owner-occupation rate (particularly if ownership cooperatives are excluded). Sweden is unusual in that it actually has a law that prevents the sale of apartments into owner occupation (Lundqvist 1988, p.111). It is an intriguing thought that such a law might accidentally have helped the behaviour of the labour market. Holmlund's (1996) evidence suggests that Sweden's now-8% unemployment probably reflects a change in the equilibrium rate rather than a temporary demand shock. It remains to be seen whether the time-series movement of Swedish home ownership can help explain the 1990s.

Norway and Canada are potential problems. Norway has only a modest amount of unemployment but on the face of it a large amount of owner-occupation. However, as noted beneath Table 3 and following McCrone and Stephens (1995), pure owner-occupation in Norway is a more normal 60% (excluding cooperatives). The Canadian case is less easily explained. In the latter part of the period, it does not appear to fit the story especially well.

In 1960, mean unemployment in the countries in the sample was approximately 3% and the mean home-ownership rate was approximately 46%. In 1990, mean unemployment was 8.5% and the owner-occupation rate had reached 62%. The numbers in the paper would then ascribe more than half of the OECD's unemployment rise to home-ownership. If the relation between unemployment and home-ownership were convex (so that it became dangerous to approach 80% owner-occupation, say), which, though it has not been explored here, some of the evidence can support, the estimated effect would be somewhat greater.

8. Conclusions

This paper is an attempt to explain the high unemployment rates of the industrialized nations. The paper's conjecture is that the rise in joblessness has been caused in part by the increase in home ownership and the decline of the private rental market. Evidence is given for a range of countries, the states of the US, and the regions of the UK, Italy, Sweden and France.

If home ownership reduces workers' mobility, it might thereby raise the equilibrium rate of unemployment. This theoretical idea is a simple one. Assembling a convincing empirical case is less straightforward. Some elementary facts, however, seem to be on the side of the paper's argument. At the time of writing, in 1996, Spain, Ireland and Finland have the highest unemployment rates in the Western world. These countries also have approximately the highest proportions of home ownership. Switzerland has the lowest unemployment rate in Europe. It has the smallest amount of home ownership. In the 1960s, North America had the greatest proportion of people unemployed. At that time, it had the highest concentration of owner-occupied housing in

the industrialized world. From the 1960s to the present day, the US and Switzerland are unusual in that they have had little or no increase in home ownership. They have had almost no rise in unemployment.

These kinds of statistical patterns are also found, the paper shows, in international correlations of changes. This is encouraging, because country fixed-effects are differenced out in such work. The same basic correlation emerges in regional data. Nevertheless, these kinds of patterns are not in themselves more than mildly suggestive. With data of this sort, spurious correlations are common.

Perhaps the most persuasive piece of evidence comes from an examination of the estimated gradient of the function linking unemployment to home ownership (du/dh). It is approximately the same in different settings. The key estimates are as follows.

<u>Form of data</u>	<u>du/dh</u>
<i>Cross-section of countries in the 1960s</i>	<i>0.14</i>
<i>Cross-section of countries in the 1990s</i>	<i>0.22</i>
<i>Cross-section of countries' 20-year changes</i>	<i>0.19</i>
<i>Cross-section of UK regions' 20-year changes</i>	<i>0.22</i>
<i>Cross-section of US states' 20-year changes</i>	<i>0.13</i>
<i>Cross-section of the regions of France: 1990s</i>	<i>0.12</i>
<i>Cross-section of the regions of Sweden: 1990s</i>	<i>0.15</i>
<i>Cross-section of the regions of Italy: 1990s</i>	<i>0.14</i>
<i>Panel estimation of UK regions, 1970s-1990s</i>	<i>0.20</i>
<i>Panel estimation of US states, 1986-1995</i>	<i>0.21</i>

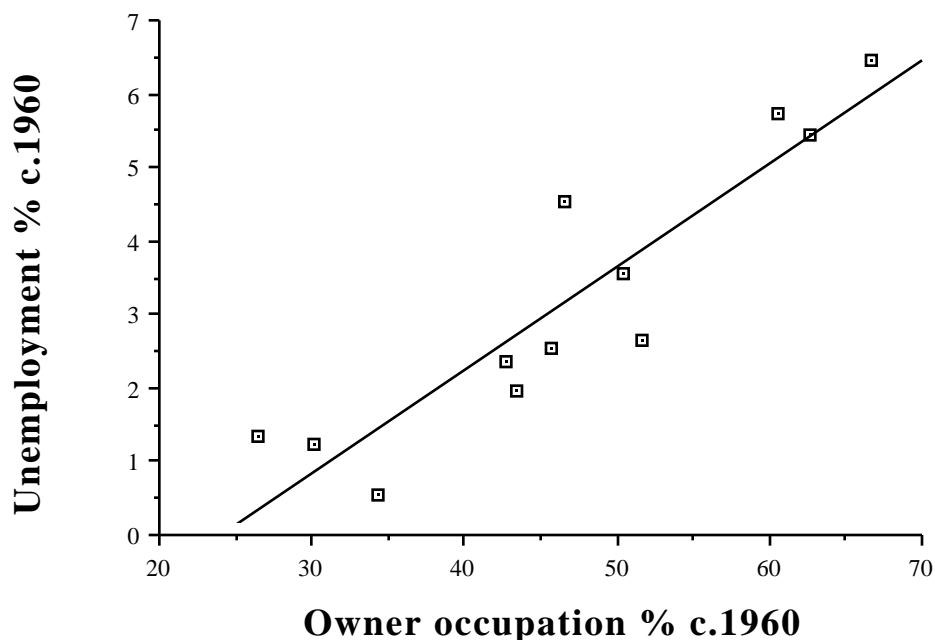
While the smallness of data sets in this kind of research makes inference difficult, the similarity of these coefficients seems of interest. Corroborative evidence comes from male employment-population ratios. For example, in both an international 1990 single cross-section and a set of

1970-90 nations' changes, the gradient of employment/population with respect to home-ownership is -0.3.

The results in the paper should be treated as exploratory rather than definitive. Nevertheless, they are consistent with large effects. A 10 percentage point rise in owner-occupation is associated, according to these calculations, with approximately a 2 percentage point increase in the unemployment rate. If such an estimate proved correct, it would account for a considerable part of the secular rise in joblessness in the industrialized nations. This explanation has not, to my knowledge, been considered by other economists. It may deserve attention.

Figure 1**Unemployment and Home-Ownership across Countries in the 1960s**

$$y = - 3.4010 + 0.14006x \quad R^2 = 0.830$$



The countries covered here are Canada, Ireland, USA, Italy, Belgium, Spain, Denmark, UK, France, Netherlands, Germany and Switzerland. The owner-occupation rates are taken partly from the UN Annual Bulletin of Housing and Building Statistics, and partly from information kindly supplied to me by Mr Mark Stephens of the University of Glasgow Centre for Housing Research and Urban Studies. The unemployment rates are taken from p.526 of Layard, Nickell and Jackman (1991).

'Home-owners' throughout the paper is taken to mean owner-occupiers.

Note

There is an owner-occupation figure for Finland for 1960 in the UN Statistical Yearbook. The difficulty with this is knowing what unemployment rate to combine with it. Page 204 of OECD Employment Outlook, July 1995, reveals that in 1973 Finland had the lowest male employment/population ratio -- only 78% -- of the 22 countries on which data are given. This suggests unusually high 'unemployment'. However, Layard, Nickell and Jackman's Table A3 on p.526 records an unemployment figure for Finland at the start of the 1970s of approximately 2%, which was relatively low even in the 1960s. I have omitted Finland from the Figure.

Table 1
Unemployment and Owner-Occupation Data
 (from Figure 1)

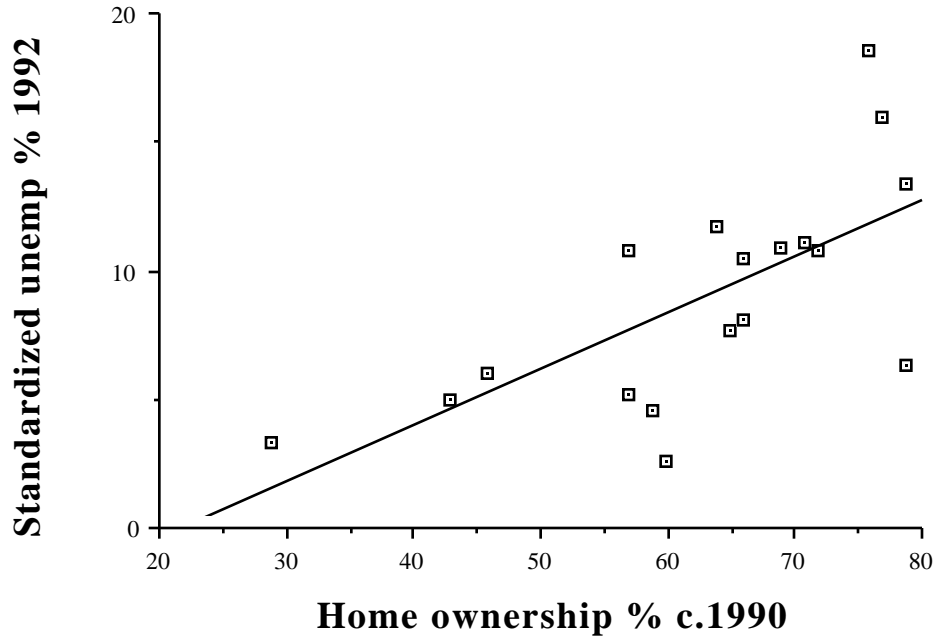
<u>Country</u>	<u>c.1960 unemployment rate</u>		<u>c.1960 owner-occupation rate</u>
Canada	6.3		66
Ireland	5.6		59.8
USA	5.3		61.9
Italy	4.4		45.8
Belgium	3.4		49.7
Spain	2.5		51
Denmark	2.4		45
UK	2.2		42
France	1.8		42.7
NL	1.2		25.7
Germany	1.1		29.4
Switzerland	0.4		33.7

Table 2
Other Correlates Suggested in the Literature

<u>Country</u>	<u>'Corporatism' rank</u> <u>from Calmfors-Driffil</u>	<u>Standardized benefit replacement</u> <u>ratio from OECD (1994)</u>	<u>Union density</u> <u>circa 1960s</u>
Canada	4	22.1	0.28
Ireland	12	16.8	0.31
USA	5	7.1	0.28
Italy	11	4.0	0.32
Belgium	14	42.2	0.68
Spain	16	9.4	n/a
Denmark	2	19.5	0.53
UK	12	24.0	0.46
France	16	24.6	0.20
NL	13	13.2	0.36
Germany	9	30.4	0.32
Switzerland	6	1.6	0.29

Figure 2**Cross-Section Correlation Between Home-Ownership and Unemployment:
Countries in the 1990s**

$$y = - 5.0876 + 0.22084x \quad R^2 = 0.455$$



The countries covered in the figure are Australia, Belgium, Canada, Finland, France, West Germany, Ireland, Italy, Japan, The Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, UK and USA. The unemployment data here are the standardized OECD rates from p.204 of OECD Employment Outlook, July 1995. The home-ownership rates are from the Glasgow Centre for Housing Studies, the Council of Mortgage Lenders, and the UN Annual Bulletin of Housing and Building Statistics, 1992.

The outlier at 78% unemployment and 5.9% unemployment is Norway. Its data are open to debate: see Notes to Table 3.

Table 3
Unemployment and Owner-Occupation Data
 (from Figure 2)

Country	Employment/Pop ratio (males) in 1992	Standardized unem. % in 1992	Home owner % c.1990
Australia	75.7	10.7	70
Austria	77.8		54
Belgium	67.3	7.7	65
Canada	69.5	11.3	63
Denmark	80.7		55
Finland	66.6	13.0	78
France	68.5	10.4	56
W. Germany	74.0	4.6	42
Greece	69.1		79
Ireland	67.8	15.5	76
Italy	72.9	10.5	68
Japan	87.8	2.2	59
Luxembg.	76.8		68
Netherlands	76.5	5.6	45
N. Zealand	74.0	10.4	71*
Norway	77.3	5.9	60/78
Portugal	79.4	4.1	58
Spain	64.6	18.1	75
Sweden	76.7	4.8	43/56
Switzerland	91.4	2.9	28
UK	73.6	10.1	65
US	78.8	7.3	64

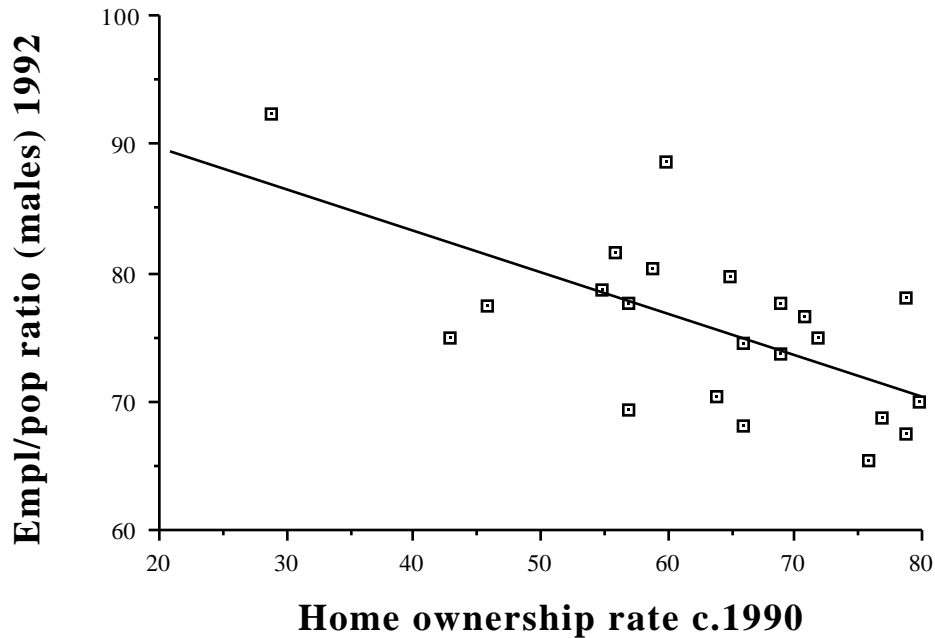
Notes

Norway and Sweden have two numbers. In each case, the second and larger number includes "co-ownership or ownership cooperatives". The first number is pure owner-occupation in the sense of McCrone and Stephens (1995). These are low-unemployment countries. All the calculations in the paper are deliberately done with the second and larger home-ownership numbers, because this is the approach that is intrinsically less favourable to the paper's thesis.

*This is the 1981 figure because of missing comparable data. Sources are as in Figure 2.

Figure 3**The Cross-Section Correlation Between Home-Ownership and (Male) Employment-to-Population Ratios: The 1990s**

$$y = 94.992 - 0.32268x \quad R^2 = 0.389$$



The countries covered in the figure are Australia, Austria, Belgium, Canada, Denmark, Finland, France, West Germany, Greece, Ireland, Italy, Japan, Luxembourg, The Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, UK and USA.

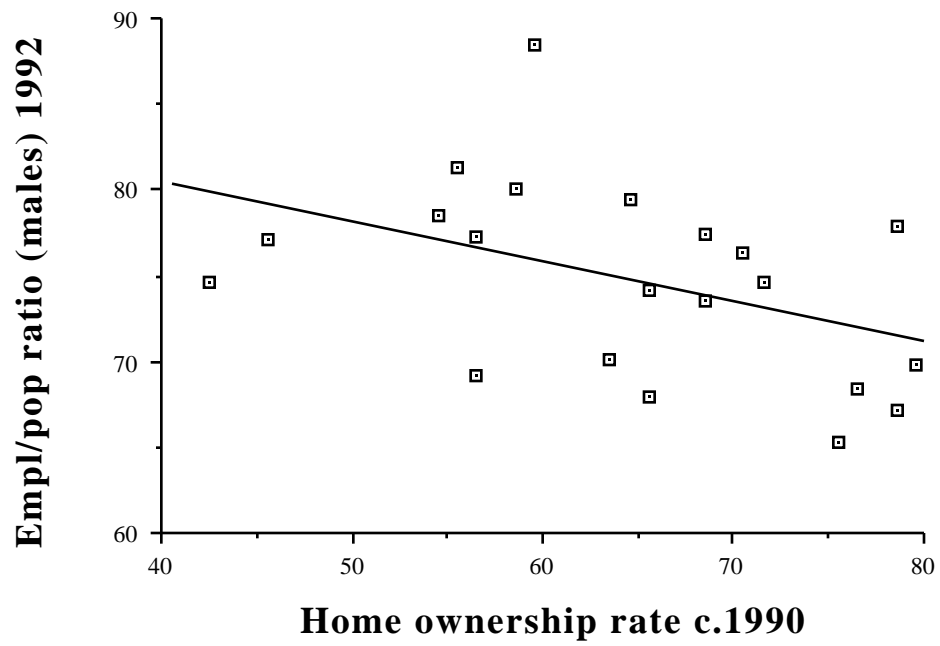
The outlier in the top north-west corner is Switzerland. However, the next figure shows that the estimated gradient is not especially sensitive to the removal of this observation.

The outlier at 78% home ownership and 5.9% unemployment is Norway. Its data are open to debate: see Notes to Table 3.

Source for the employment/population data: OECD Employment Outlook, July 1995.

Figure 4**The Previous Figure without Switzerland**

$$y = 89.065 - 0.23418x \quad R^2 = 0.190$$

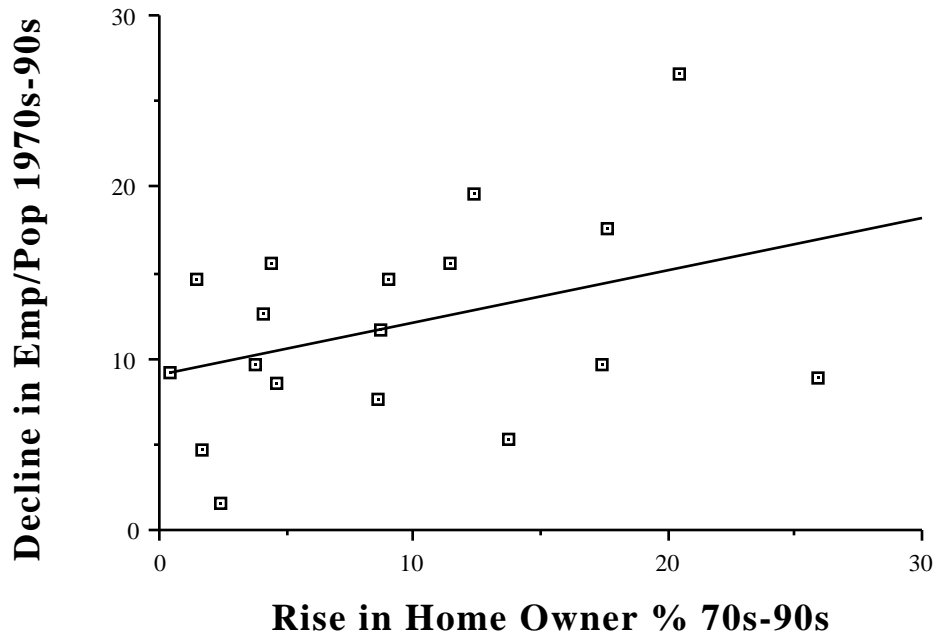


Sources are as in Figure 3.

Figure 5

**The Correlation Between the Increase in Owner-Occupation
and Decline in (Male) Employment/Population: 18 Countries
from the 1970s-1990s**

$$y = 8.5049 + 0.30748x \quad R^2 = 0.142$$



The axes are 20-year changes, that is, they take the 1990 figure minus the 1970 figure. The vertical axis is decline (that is, the negative of the 90-70 figure).

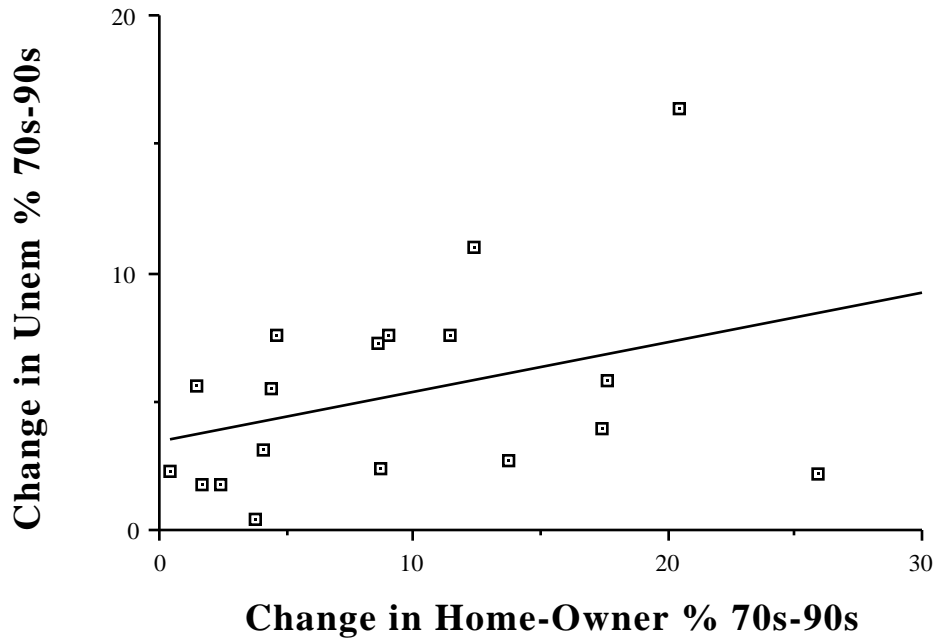
These countries are Belgium, Finland, Sweden, Austria, Norway, Switzerland, USA, Denmark, France, Netherlands, UK, Japan, Canada, Spain, Germany, Australia, Italy. The owner occupation figures are from the UN Annual Bulletin of Housing and Building Statistics, 1992, the UN Statistical Yearbooks and UN World Housing Survey, 1974, and Social Indicators for the European Community 1960-78, p146. The 1970s years for some countries vary from 1968 to 1972. Most are for 1970. The source of the employment data is the OECD Employment Outlook, July 1995, p.204.

The outlier in the south-east corner is Norway.

Figure 6

The Correlation Between the Change in Unemployment and Change in Home-Ownership: 18 Countries from the 1970s-1990s

$$y = 3.1193 + 0.19448x \quad R^2 = 0.131$$

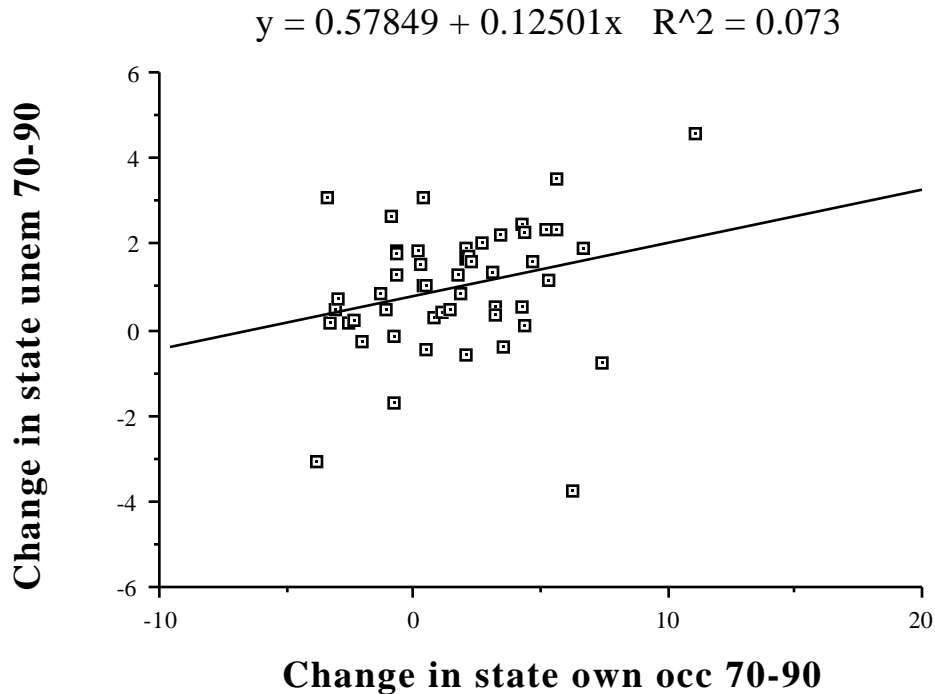


The axes are 20-year changes, that is, they take the 1990 figure minus the 1970 figure.

The countries are Belgium, Finland, Sweden, Austria, Norway, Switzerland, USA, Denmark, France, Netherlands, UK, Japan, Ireland, Canada, Spain, Germany, Australia, Italy.

The graph plots changes in the unemployment % and owner-occupation % from the 1970s to the 1990s. The data are in numbers of percentage points. In two cases -- Japan and Canada -- figures from the 1980s had to be used instead of the 1990s. The unemployment changes are Layard, Nickell and Jackman figures for 1969/73 to 1986/90. The owner occupation figures are from the UN Annual Bulletin of Housing and Building Statistics, 1992, the UN Statistical Yearbooks and UN World Housing Survey, 1974, and Social Indicators for the European Community 1960-78, p146.

The outlier in the south-east corner is Norway.

Figure 7**The Correlation Between Changes in Unemployment and Owner-Occupation: The US States 1970-1990s**

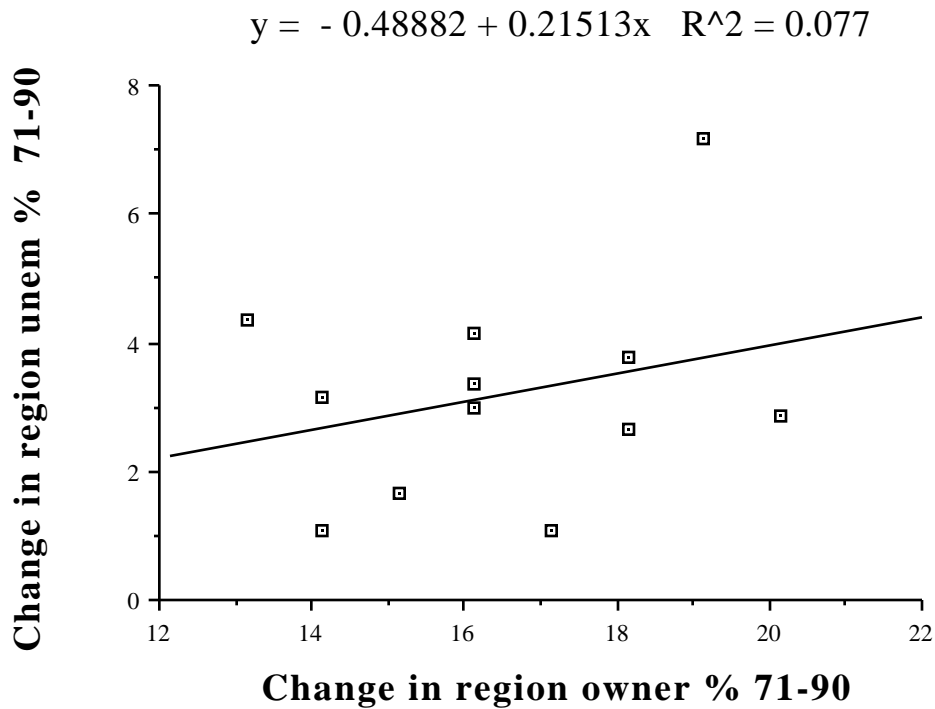
The axes are 20-year changes, that is, they take the 1990 value minus the 1970 value. The data are for the 51 states of the US. The coefficient on the owner occupation variable is statistically significantly different from zero at the 5% level.

Notes

The source of the data is the Statistical Abstract of the US, 1993, Labor Statistics.

Figure 8

The Cross-Section Correlation Between Unemployment Changes and Owner-Occupation Changes: The UK Regions 1970s-90s.



The axes are 20-year changes, that is, they take the 1990 figure minus the 1971 figure. The regions are Greater London, Rest of South-East, East Anglia, South West, West Midlands, East Midlands, Yorkshire and Humberside, North West, Wales, Scotland, Northern Ireland. In the case of Greater London and Rest of South-East, it was not possible to get exactly comparable figures, so the change for both unemployment and owner occupation is taken, for these two regions only, to be the 1990-1975 change.

Table 4
Fixed Effects Estimates: State-level US Unemployment Regressions with Housing
Owner-Occupation as an Independent Variable, 1986-1995.

Standard errors are in parentheses. Dependent variable U_t is unemployment in percentage points as a level or log; home ownership, h_t , is in levels. The equations do not instrument the lagged dependent variable with itself lagged; doing so and estimating with GMM made only a slight difference to the results.

	<i>Eqn 1</i>	<i>Eqn 2</i>
# of observations	510	510
# of states	51	51
Dependent variable	U_t	$\ln U_t$
 <i>Regressors</i>		
U_{t-1}	0.7527 (0.0301)	
$\ln U_{t-1}$		0.7719 (0.0305)
h_t	0.0029 (0.0273)	-0.0030 (0.0048)
h_{t-1}	-0.0001 (0.0329)	0.0023 (0.0057)
h_{t-2}	0.0490 (0.0266)	0.0096 (0.0046)
State dummies	yes	yes
Year dummies	yes	yes
<i>Implied long-run h coefficient</i>	0.205	n/a
F(13, 446)	86.00 [p = 0.000]	84.33 [p = 0.000]
F(50, 446)	1.052 [p = 0.382]	1.229 [p = 0.145]

Notes

F(13, 446) is a joint test of the insignificance of the explanatory variables.

F(50, 446) is a joint test of the insignificance of the state dummies.

Table 5
Fixed Effects Estimates: Region-level UK Unemployment Regressions with
Proportion of Housing Privately Rented as an Independent Variable, 1973-1994.

Standard errors are in parentheses. Dependent variable U_t is unemployment in percentage points as a level or log; private sector renting, r_t , is in levels.

	<i>Eqn 1</i>	<i>Eqn 2</i>
# of observations	244	244
# of regions	13	13
Dependent variable	U_t	U_t
 <i>Regressors</i>		
U_{t-1}	1.6048 (0.0570)	-0.7337 (0.0542)
U_{t-2}	-0.7719 (0.0540)	1.5730 (0.0539)
r_t	-0.0357 (0.0273)	0.0604 (0.0425)
r_{t-1}		-0.1243 (0.0423)
Region dummies	yes	yes
Year dummies	yes	yes
<i>Implied long-run r coefficient</i>	-0.213	-0.398
F1	814.65	839.47
F2	3.02	3.21

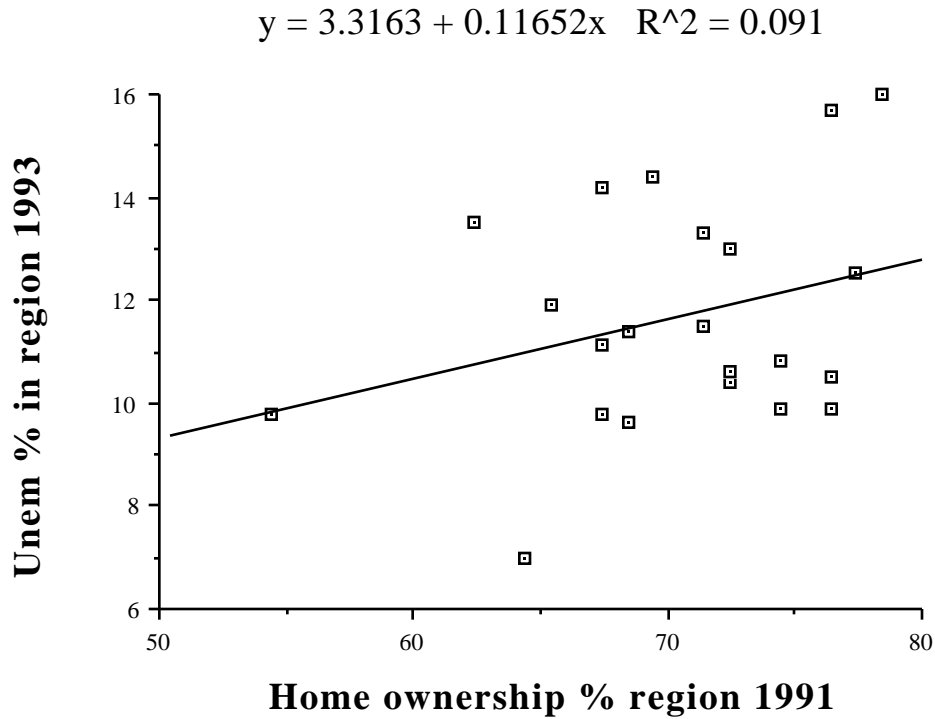
Notes

F1 is a joint test of the insignificance of the explanatory variables.

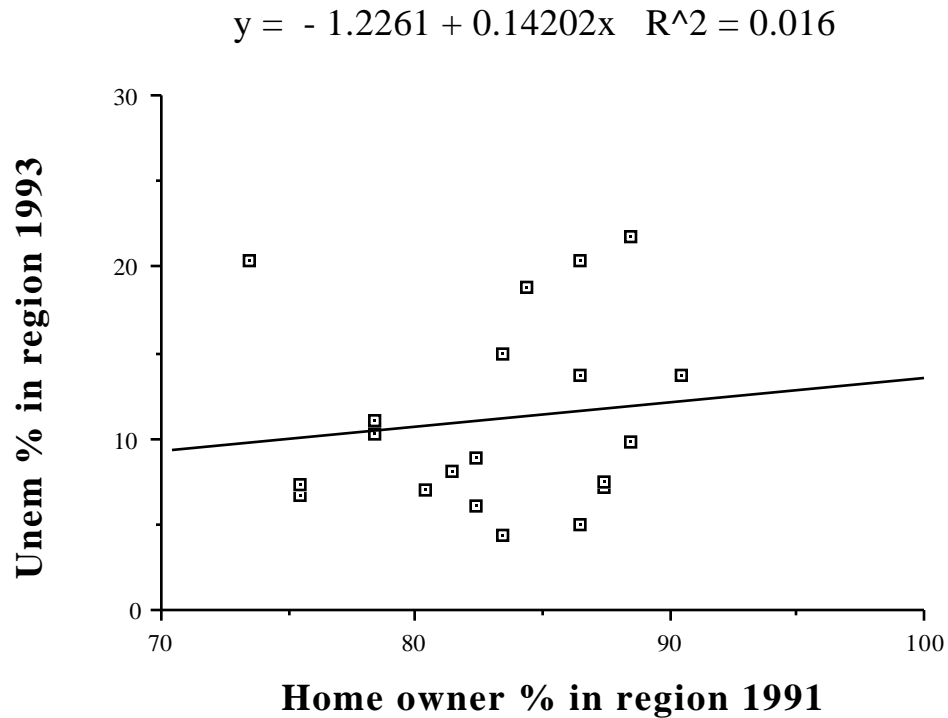
F2 is a joint test of the insignificance of the region dummies.

Notes

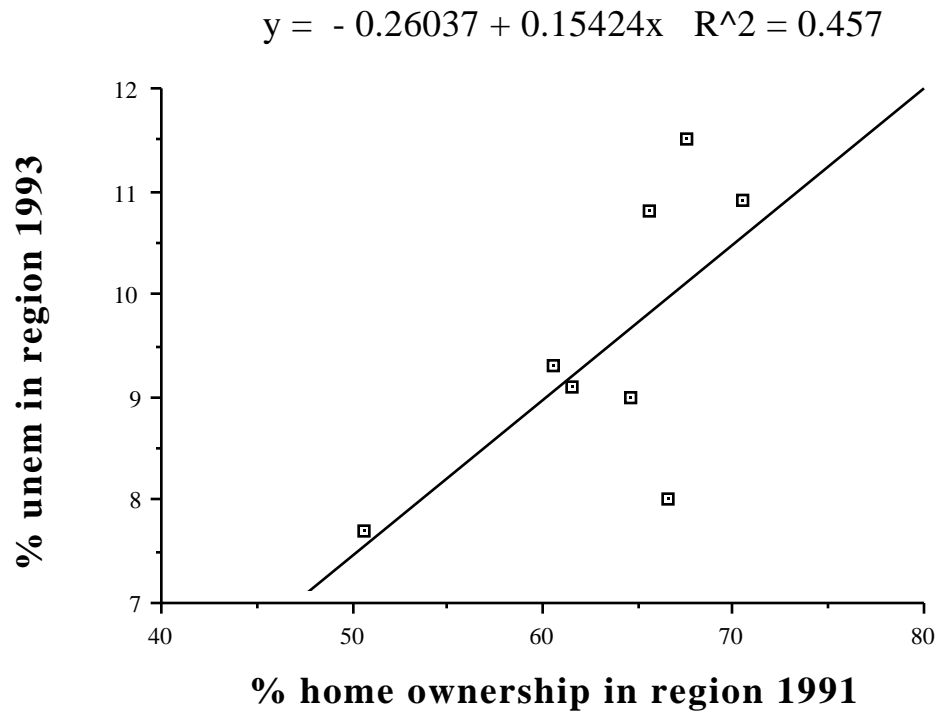
Private sector renting figures were kindly supplied by the Department of the Environment. The regional unemployment figures are from Roberts (1996). The thirteen regions are North, Yorkshire and Humberside, East Midlands, East Anglia, South East, Greater London, South East excluding London, South West, West Midlands, North West, Wales, Scotland, Northern Ireland. There is no 1994 observation available for Northern Ireland. Because of missing data: (i) for years before 1983 it has had to be assumed that the proportion of houses rented from Housing Associations remained at 1983 levels, and (ii) the 1973-75 private renting figures for Greater London and the South East excluding London have had to be calculated by extrapolation.

Figure 9**The Cross-Section Correlation for the Regions of France in the 1990s**Source: Eurostat Statistical Yearbook

Regions are Ile de France, Champagne-Ardenne, Picardie, Haute-Normandie, Centre, Basse-Normandie, Bourgogne, Nord Pas de Calais, Lorraine, Alsace, Franche-Comte, Pays de la Loix, Bretagne, Poitou-Charentes, Aquitaine, Mid Pyrenees, Limousin, Rhones-Alpes, Auvergne, Languedoc-Roussillon, Provence-Alpes-Cote d'Azur, Corse.

Figure 10**The Cross-Section Correlation for the Regions of Italy in the 1990s**Source: Eurostat Statistical Yearbook

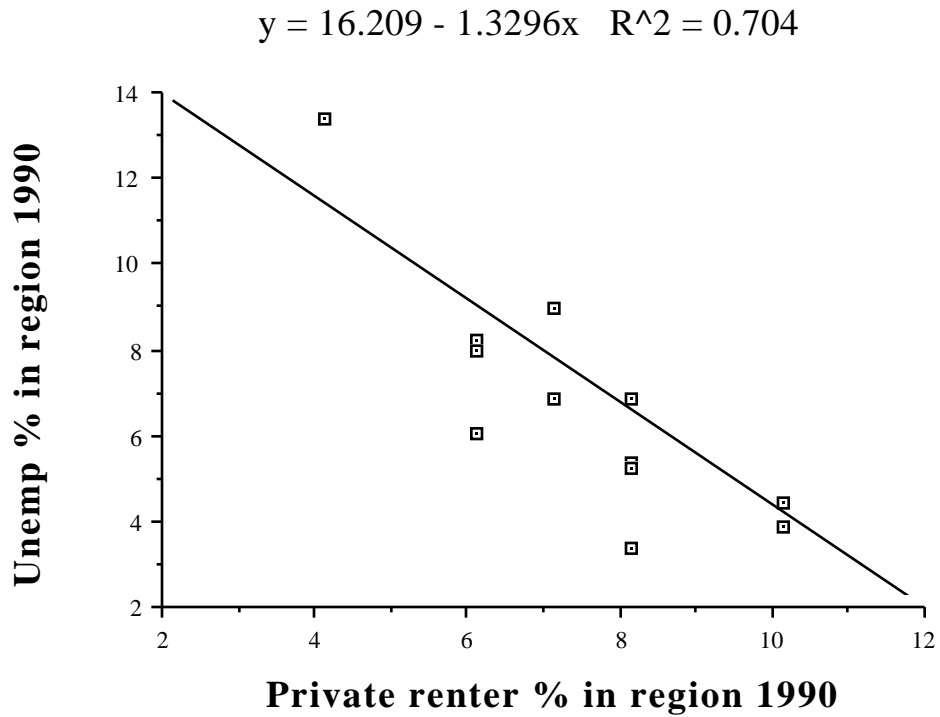
The regions here are Piemonte, Valee d'Aosta, Liguria, Lombardia, Trentino-Alto Adigie, Veneto, Friuli-Venezia Giulia, Emilia-Romagna, Toscana, Umbria, Marche, Lazio, Abruzzi, Molise, Campania, Puglia, Basilicata, Calabria, Sicilia, Sardegna.

Figure 11**The Cross-Section Correlation for the Regions of Sweden in the 1990s**Source: Eurostat Statistical Yearbook

The regions covered here are Stockholm; Ostra Mellansverige; Smaland me oarna; Sydsverige; Vastverige; Norra Mellansverige; Mellersta Norrland; Ovre Norrland.

Figure 12

The UK Regional Correlation Between the Unemployment Rate and the Proportion of Private Renters in the 1990s



The regions here are North, Yorkshire and Humberside, East Midlands, East Anglia, Greater London, South-East excluding Greater London, South West, West Midlands, North West, Wales, Scotland and Northern Ireland. The rental data were kindly supplied by the Department of Environment.

Appendix

An Illustration of the Collapse of a Rented Housing Market: The Case of Britain

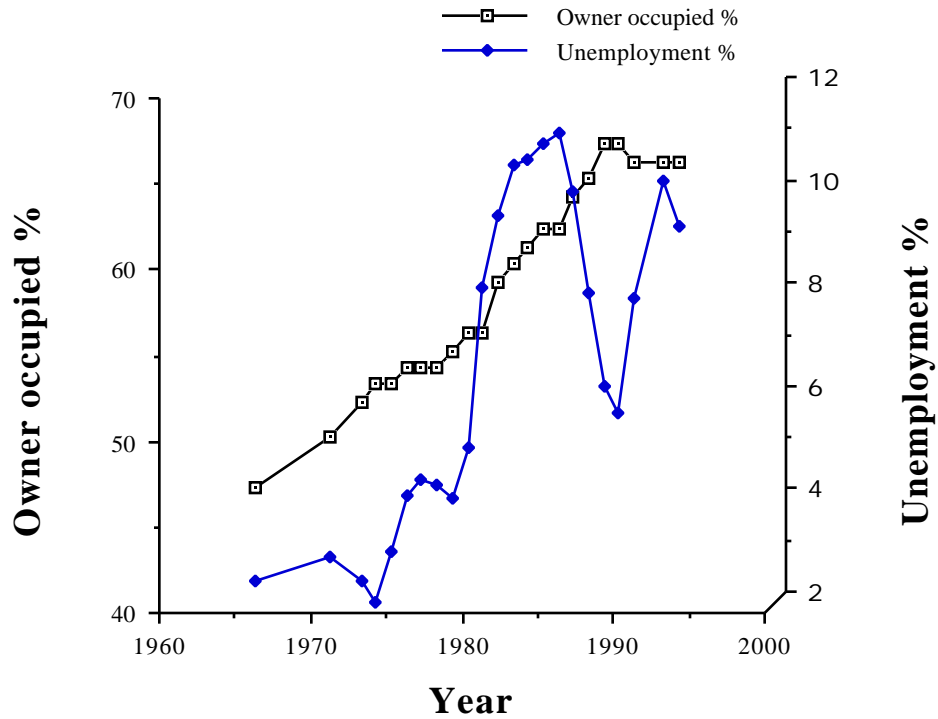
The end of the First World War saw the introduction of the Rent and Mortgage Interest Restriction Act of 1915. This fixed rents, gave tenants security against eviction, and restricted mortgage interest rates. The Housing Acts of 1919 and 1923 introduced subsidies to private builders and on houses built for private owners. In 1938 there were 11 million dwellings in England and Wales, of which 32% were owner-occupied, 10% were rented from the public sector and 58% were privately rented.

After World War Two there was initially little private building but much public building. In 1948, for example, 33,000 private houses were completed while 195,000 were built by the public sector. In 1949 a housing act removed the requirement that local authorities concentrate on providing homes only for the working class. In 1954, the private sector built 91,000 homes and the public sector 257,000. In 1957 the Rent Act freed most privately owned homes from rent control. By 1960 public sector housing accounted for a quarter of Britons. The private rented sector continued to decline through the 1960s.

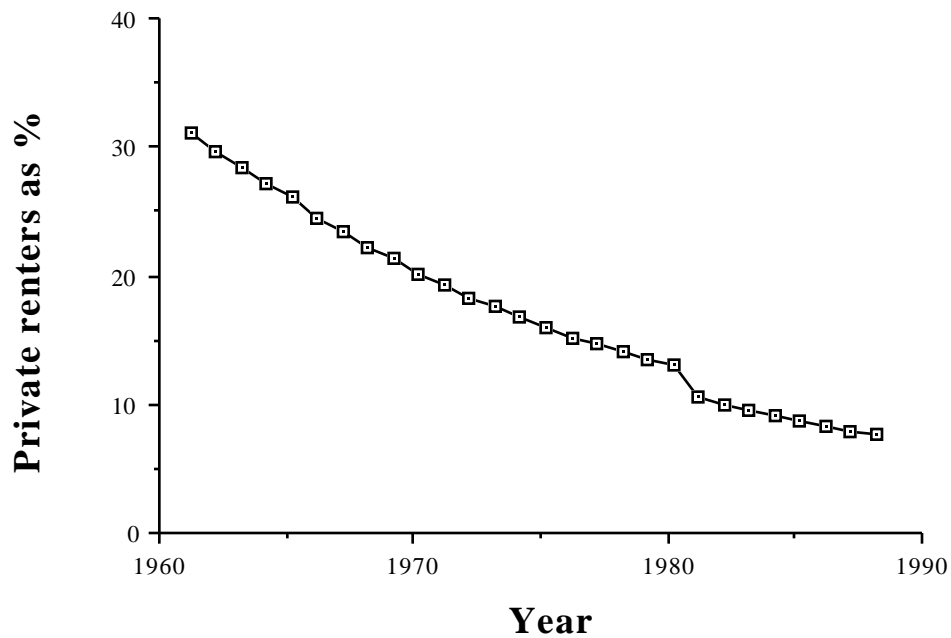
In 1974 the Labour government introduced a new Rent Act which provided more security to those lived in furnished rented accommodation. A 1977 green paper (Housing Policy) strongly supported the trend towards home ownership. It recommended that more local authority homes be provided to make up for the decline in private renting.

A right-to-buy policy was introduced by the Conservative government that was elected in 1979. This was implemented mainly in the Housing Act of 1980. Public sector tenants were given security of tenure. Fixed-term rental contracts were encouraged in the private sector. There were further grants to owner-occupiers. A 1987 white paper continued to recommend expansion of home ownership.

By the early 1990s, the owner-occupation rate had reached approximately 70%, compared to 29% in 1950. The privately-rented proportion of homes had thus declined from 53% in 1950 to less than 10% at the start of the 1990s.

Figure A1**UK Time-Series of Owner-Occupied % and Unemployment %**

The home ownership data come from Table G1 p.185 of A Compendium of Building Society Statistics, 8th Edition. They are for Great Britain.

Figure A2**The Decline of the Privately-Rented Housing Sector in Great Britain**

The data come from Table G1, p.185, of A Compendium of Building Society Statistics, 8th Edition, published by The Building Societies Association.

Note

Early data from the UK Council of Mortgage Lenders show:

<u>Year</u>	<u>Owner-Occupied Dwellings %</u>	<u>Public-sector rented %</u>	<u>Private-sector rented %</u>
1938	32	10	58
1951	31	17	52
1960	44	25	32

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