Tracking Unemployment in the North West Through Recession and Forecasting Recovery

New Economy Working Papers

Tracking Unemployment in the North West Through Recession and Forecasting Recovery

Michael Artis / Marianne Sensier

February 2010

NEWP 02

New Economy Working Papers

New Economy Working Papers are designed both to produce robust pieces of analysis that stimulate the long-term sustainable economic growth of the Manchester city region and to act as a vehicle for economic development professionals to further their personal development. Papers are intended to invigorate intellectual and challenging debate on the key economic issues and ideas of the time. Overall responsibility for developing the Working Papers lies with an independent Editorial Board consisting of: Michael Artis, Ed Cox, Mike Emmerich, Baron Frankal (Editor-in-Chief), Liz Goodger, Alan Harding, Cathy McDonagh (Editor), Neil McInroy, Tim Newns, Adrian Nolan, Lucy Powell, Kram Sadiq, Martin Turner.

For further details contact:
Cathy McDonagh
Editor
New Economy Working Papers
6th Floor
Churchgate House
56 Oxford Street
Manchester
M1 6EU

T: **0161 237 4077**
F: **0161 245 4835**
W: **www.neweconomymanchester.com**

The authors would like to thank Mike Doocey for producing the maps presented in Figure 4.

Design: **TYPOCOM.net**

Abstract

This is a technical paper that assesses turning points in the economic cycle of sub-regions by applying a business cycle dating methodology to monthly North West local authority district claimant count. We date the transition of all districts of the North West into recession beginning in June 2007. By utilising manufacturing and service sector survey information in a modelling exercise, we forecast the continuation of the recession for the North West region's employment cycle into 2010. A longer term forecast with the Land Registry's house price index predicts a transition to an expansion phase in the fourth quarter of 2010.

Table of contents

Executive summary

In this paper we study the North West business cycle, measured at the regional level by employment data and the sub-regional and district level by the unemployment claimant count.

We date the classical business cycle turning points in North West district claimant count in order to compare and assess the economic cycle of the sub-regions. We discover that, as at June 2009, Greater Manchester and indeed all parts of the region had entered recession and none had yet left this phase of the cycle. Burnley and Rossendale in Lancashire were the first districts to enter recession in June 2007, a full year before the official start of the national recession. Whilst these areas have a higher than average concentration of manufacturing jobs, we do not find this to be a significant factor in the early entry to recession. However, there is some evidence that areas with a higher concentration of financial and business services had an earlier entry to this credit-crunch recession.

This paper makes a useful contribution in dating business cycles at the local authority district level. This shows a greater occurrence of recessions than when the larger picture is considered. Bolton and Oldham, for example, experienced small recessions at the end of the 1990s, but this is lost when looking only at the whole of Greater Manchester North. Policymakers may conclude that there is value in considering such data at this level. Policy could target those areas more prone to recessions, for example by introducing structural policy to ease labour market frictions.

Finally, we perform a forecasting exercise for the North West economy. Our preferred model combines house price inflation, service and manufacturing sector survey information. We predict cycles in the employment series from the Labour Force Survey. We discover that employment entered the current recession earlier than the claimant count in September 2006. Our model indicates that the recession in employment that started in the North West in 2006 was led by job losses in the manufacturing sector ahead of those in the service sector caused by the financial crisis in 2008.

We forecast that the recession will continue in the first half of 2010 in the North West region. Furthermore, we predict the transition to an expansion phase in the fourth quarter of 2010.

Tracking Unemployment in the North West Through Recession and Forecasting Recovery

Michael Artis / Marianne Sensier
February 2010

Introduction

Business cycles are of interest to policy makers, businesses and, at a regional level, Development Agencies. They enable the assessment of how a local economy is progressing through a recession.

In this paper we study business cycles for areas of the North West as measured by the unemployment claimant count – the only timely, localised, high frequency series of data available. We apply an econometric methodology to date the classical business cycle of monthly district and sub-regional/county level claimant count data in order to compare and assess turning points in the economic cycle of areas.

We also perform a forecasting exercise for the North West region's employment cycle using the Land Registry's house price index and survey data (from the British Chamber of Commerce and the Confederation of British Industry) as leading indicators of regional economic activity.

2

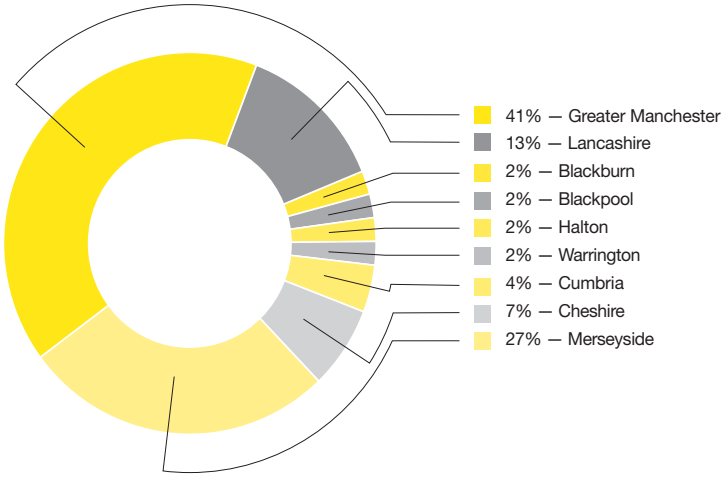
Business cycle turning points in North West claimant count

In order to place the current cycle in perspective, we examined how parts of the region fared in the last national recession during the early 1990s. This analysis starts from January 1988[1] using monthly data until June 2009. A list of all the areas analysed across the North West is presented in a table in Appendix A.

The claimant count obtained from the NOMIS website records the number of people claiming Jobseeker's Allowance (prior to October 1996 it included all unemployment-related benefits). We seasonally adjusted the data[2], and the graphs of these series are shown in Appendix B. We observe a marked seasonal pattern for areas that rely on the tourist trade such as Blackpool and South Lakeland, Cumbria.

In Figure 1 it is shown that the largest share of claims is from the Greater Manchester area which has the highest concentration of population in the North West.

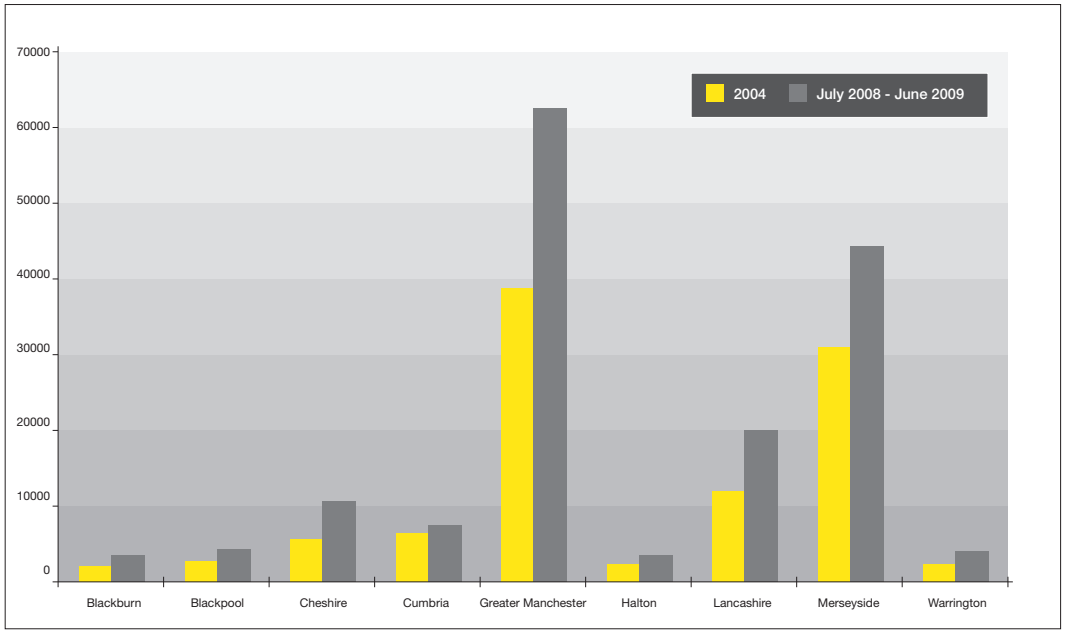
Figure 1: Percentage of North West claims, average over July 2008-June 2009



[1] The claimant count included 16 year olds in the series up until the end of 1987. From 1988 a rule change to the benefits system meant that only 18 year olds and over were included.

[2] At the district level, the data is seasonally unadjusted. We filtered the data using the X12 seasonal adjustment method from Givewin, Doornik and Hendry (2001).

Figure 2: Comparing average claims over business cycle expansion (2004) and recession phases (2008-9) for areas in the North West



How these sub-regions have fared between the business cycle expansion in 2004 (when claims were at a lower level) and the current recession (over the last year) is shown in Figure 2. Here we can see that Greater Manchester claims have increased between 2004 to 2008/9 by 64%, Cumbria by 21%, Halton by 68%, Merseyside by 40%, Lancashire by 66%, Blackburn by 56% and Blackpool by 59%. In Cheshire and Warrington, claims have more than doubled between these two phases by 104% and 115% respectively.

The national recession was led by the financial crisis and those areas in the North West with the largest increase in claims have high amounts of people working in the sector "finance, IT and other business activities" as reported by the National Statistic's Annual Business Inquiry (ABI), see Table 2.

We used established methodologies to compute the classical business cycle turning points[3]. This seeks to identify business cycles and omits random fluctuations in the data (which might be due, for example, to a strike). The dating rules impose a minimum duration of a phase of 5 months and the minimum length of the entire business cycle (from peak to peak) to be 30 months. Whilst our analysis of the cycle in the highly localised areas will necessarily rely on claimant count data, employment data are available for analysis of the region and the major sub-regions.

The turning point dates from this analysis are listed in Table 1[4] and a chart illustrating these turning points for the North West is in Figure 3. The first column of Table 1 details the turning points dates of the North West employment cycle[5] we use these dates for the forecasting exercise in the next section.

Table 1: Cycle turning points for North West and areas, 1988m1-2009m6

Turning Point	North West Employment	North West Claims	Greater Manchester South	Greater Manchester North	Blackburn	Halton
Peak	1990m10	1990m5	1990m5	1990m6	1990m6	1990m6
Trough	1995m10	1992m12	1992m12	1992m12	1992m12	1992m12
Peak	1997m2		2001m9		1997m11	2001m8
Trough	1998m4		2003m3		1999m6	2002m8
Peak		2005m1	2005m2	2004m10	2004m10	2004m1
Trough		2006m10	2006m10	2006m10	2006m6	2006m6
Peak	2006m8	2008m2	2008m2	2008m1	2008m3	2008m1

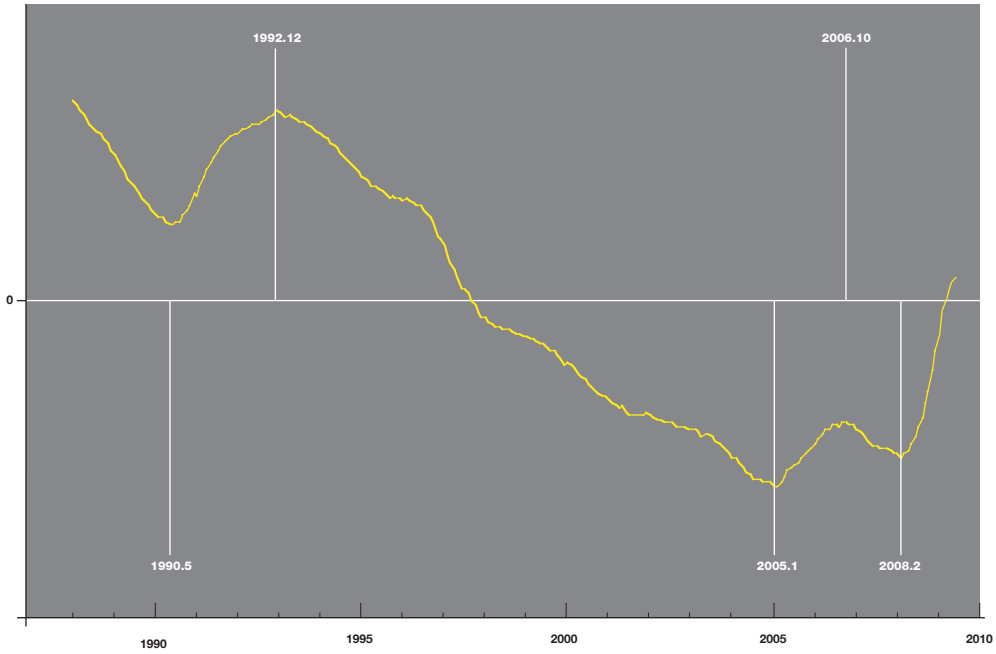
Turning Point	Greater Manchester	Blackpool	Cheshire	Cumbria	Lancashire	Mersyside	Warrington
Peak	1990m6	1990m6	1990m6	1990m6	1990m6	1990m8	1990m6
Trough	1992m12	1993m9	1992m12	1993m9	1992m12	1992m12	1992m12
Peak	2004m11	2004m9	2004m12	2005m2	2004m11	2004m12	2005m1
Trough	2006m10	2006m9	2006m12	2006m6	2006m6	2006m9	2006m6
Peak	2008m2	2007m11	2008m2	2008m2	2008m1	2008m1	2007m12

[3] We did this by applying the algorithm detailed in Artis, Marcellino and Proietti (2004) to the natural logarithms of the claims. We use code produced by Tomasso Prioretti in OX.

[4] Note that we date peaks in claimant count data at local minima and troughs at the local maxima as unemployment is inversely related to output and movements in it are a contra-cyclical measure of the business cycle.

[5] See Artis and Sensier (2009) where all the UK Government Office Regions employment cycles are dated.

Figure 3: North West Claimant Count classical turning points



Comparing the first two columns of Table 1, it can be seen that the start of the 1990s recession [6] is five months earlier at June 1990 in the North West claimant count data than in the employment data at November 1990. The recession phase for claims lasts just over two years, whereas the recession in employment is dated to last five years followed by a smaller downturn in 1997-98.

North West claims again experience an increase during 2005-06 which we date as a further recession in this series and for all other areas. The current recession is dated to start in September 2006 in the employment data, much earlier than the claims start date in March 2008. This is closer to the start of the national business cycle as dated by the Economic Cycle Research Institute (ECRI: www.businesscycle.com) at June 2008.

We have divided the large Greater Manchester sub-region into North and South, and here we see some differences. The North enters the 1990s recession one month later in July 1990 but one month earlier for the current recession in February 2008. A further recession is dated for Greater Manchester South in 2001-03. Dates for the districts within these areas and the tables of these dates can be found in Appendix C.

[6] Recessions are dated as beginning in the month following the peak.

Table C.1 shows the business cycle turning point dates for the ten districts of Greater Manchester and here we can see the 2001-03 increase in claimant count is found for most South Manchester districts apart from Trafford. Further small recessions are found in Bolton and Oldham in 1998-9 but these are lost when these districts are aggregated to the North measure. Northern Greater Manchester as a whole generally entered the current recession earlier, with Bury being the first in September 2007.

Table 2 details the percentage of employees in the manufacturing and service sectors of each district and lists them in the order that they enter recession. The index (t) signifies when the North West claims data enters recession and the districts are shown to either lead – for example Chorley leads by 7 months (t-7) – or lag (t+1 for Preston).

The earliest districts in the North West to enter recession are within Lancashire – Burnley and Rossendale in June 2007 (t-9). These two districts have a higher percentage of employees in manufacturing jobs according to the ABI than the North West average of 12.4%. Burnley has 21% and Rossendale 25%.

The 1990s recession lasts for just over two years in the claims data for most North West areas in Table 1, apart from Blackpool and Cumbria where it lasts just over three years (areas both reliant on the tourist trade). Both have the recession trough dated as September 1993. We can see that within Cumbria most districts (apart from Carlisle) also date the trough of the 1990s recession in 1993. Copeland was the earliest district in Cumbria to enter the current recession in September 2007 (t-6). This area has a high concentration of employment in the nuclear industry and its share of employees in manufacturing is very high at 36.4%.

The last district to enter the current recession is Barrow-in-Furness which starts in July 2008. Barrow is a district which lost many jobs from the ship building industry during the 1980s and 1990s and a case study by Beatty and Fothergill (2002) suggests this area has a large number of hidden unemployed who have been moved from the claimant count to incapacity benefits. However, in a more recent study of Fothergill (2009), Barrow is shown to have a small reduction in the numbers of hidden unemployed between January 2007 and August 2009[7].

[7] Urban regeneration projects may be working, see www.westlakerenaissance.co.uk.

Table 2: Proportion of Employee Jobs by Industry in the North West, 2007

Recession Date	Areas	Manufacturing	Services	Finance, IT, other business activities
2007m6 (t-9)	Burnley	21%	75.1%	12.2%
	Rossendale	25.1%	67.3%	13.3%
2007m7 (t-8)	Hyndburn	19.5%	74.6%	9.5%
2007m8 (t-7)	Chorley	7.5%	84.5%	24.8%
2007m9 (t-6)	Bury	12.7%	82.8%	12.5%
	Copeland	36.4%	58%	12%
2007m11 (t-4)	Eden	10%	75.8%	9.9%
2007m12 (t-3)	Blackpool	6.6%	90.1%	10.8%
	Bolton	15%	77.6%	17.7%
	Sefton	6.1%	89.2%	15%
	St. Helens	12.8%	78%	12.3%
2008m1(t-2)	Allerdale	18.5%	71.8%	10.6%
	Oldham	16.7%	75.3%	13%
	Rochdale	16.6%	76.5%	16%
	Trafford	9.1%	83.8%	31.6%
	Warrington	8.2%	82.6%	25.8%
	West Lancs.	17%	74.2%	14.1%
	Wirral	10.9%	84.3%	16.6%
2008m2 (t-1)	Halton	13.5%	81.1%	21.4%
	Lancaster	6.1%	85.2%	13%
	Liverpool	5.2%	91.5%	21.7%
	Stockport	10.8%	81.4%	22.9%
	Tameside	20.8%	72.9%	11%
	Wigan	14.7%	76.4%	15.3%
	Wyre	10.7%	80.6%	11.1%
2008m3 (t)	North West	12.4%	81.6%	19.4%
	Carlisle	12.4%	80.9%	13.9%
	Cheshire East	16.9%	77.1%	21.6%
	Cheshire West	10.5%	82.8%	22.9%
	Manchester	4.5%	93.4%	30%
	Salford	8.2%	85.4%	26.8%
	South Lakeland	10.9%	80.8%	12.3%
	South Ribble	16.3%	73%	13.8%
2008m4 (t+1)	Blackburn	21.7%	74.8%	13.8%
	Fylde	31.9%	63.6%	18.8%
	Knowsley	20.7%	74.7%	15.7%
	Pendle	34.5%	60.8%	11%
	Preston	10.2%	85.2%	19.7%
2008m7 (t+4)	Barrow-in-Furness	22.2%	71.9%	11.4%
	Great Britain	10.6%	83%	21.6%

Source: Nomis, ONS Annual Business Inquiry (survey of 78,000 businesses in December each year at location of employees workplace). Employee jobs excludes self-employed, government supported trainees and HM Forces. (t=NW Recession).

Within Merseyside, Liverpool claims led the North West by one month and here we have a high amount of employees in the finance sector at 21.7%. Knowsley, with a larger share of manufacturing (20.7%), lags the cycle by one month.

We investigate if there is a significant statistical relationship between districts leading the way into recession and the concentrations of sectoral employment. Table 3 details the results of our analysis[8] where the recession order and share of sector employment is taken from Table 2. Here we can see there is a strong negative association between manufacturing and service sectors which is expected, and to a lesser extent this is also the case for manufacturing and the finance sector. We estimate a positive relationship between recession order and higher concentration of people employed in financial services so we can accept (at 13% significance level) that districts with more financial services entered recession earlier.

Table 3: Spearman's Rank Correlation Coefficients

	Recession order	Manufacturing	Service Sector
Manufacturing	0.0762 (0.6494)		
Service Sector	-0.0328 (0.8450)	-0.9307 (0.0000)	
Finance Sector	0.2486 (0.1323)	-0.4438 (0.0053)	0.5357 (0.0005)

Note: correlation coefficients reported with significance level in brackets.

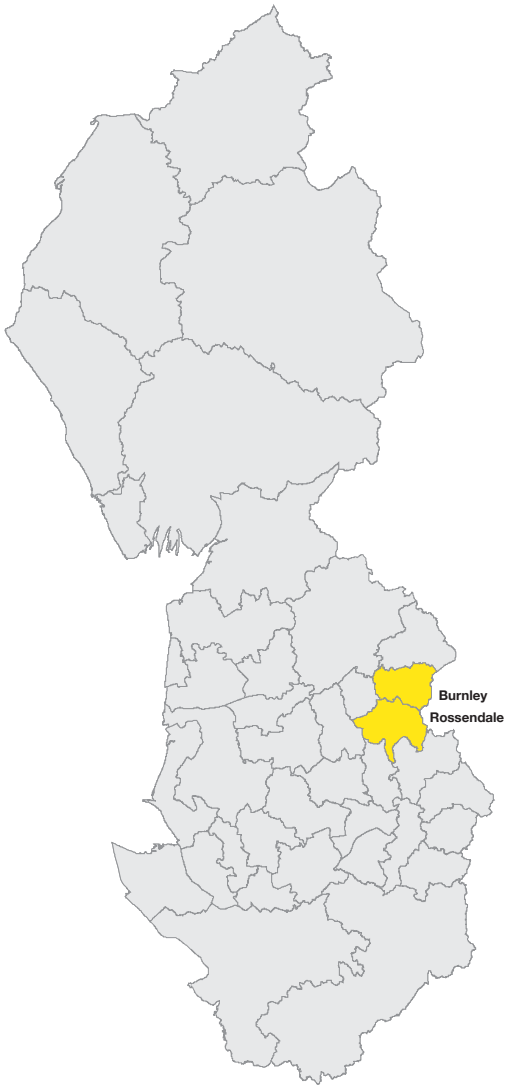
To illustrate how the districts move into recession through the North West, we chart the progression over time in a sequence of maps in Figure 4. Initially our maps progress at a quarterly frequency as a few districts fall into recession. Then the first quarter of 2008 is split over two maps as the majority of districts join the recession. Finally, Map 6 shows the last few districts to have entered recession by September 2008. Barrow is the last district in July 2008.

The role of industrial structure in affecting the timing of the cycle in the different districts and sub-regions deserves more extensive investigation, which would best be conducted in a nationwide study.

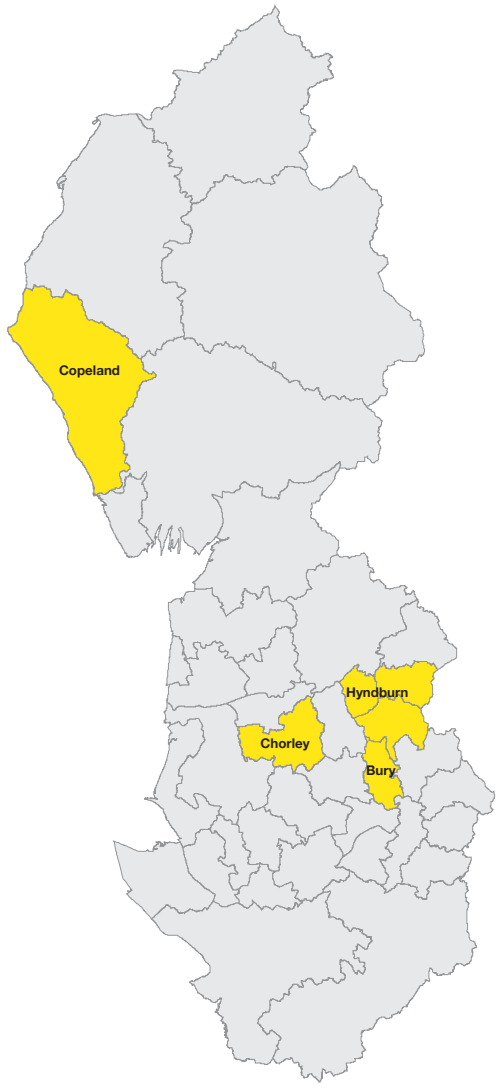
[8] We calculate the Spearman's rank correlation coefficients in Stata 11. This test computes a significance level for the correlation coefficient between the order districts enter recession and the proportion of labour employed in the different sectors.

The role of industrial structure in affecting the timing of the cycle in the different districts and sub-regions deserves more extensive investigation, which would best be conducted in a nationwide study.

Figure 4: Progression of Recession in the North West



Districts in recession - June 2007



Districts in recession - September 2007

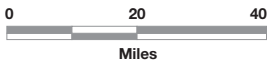
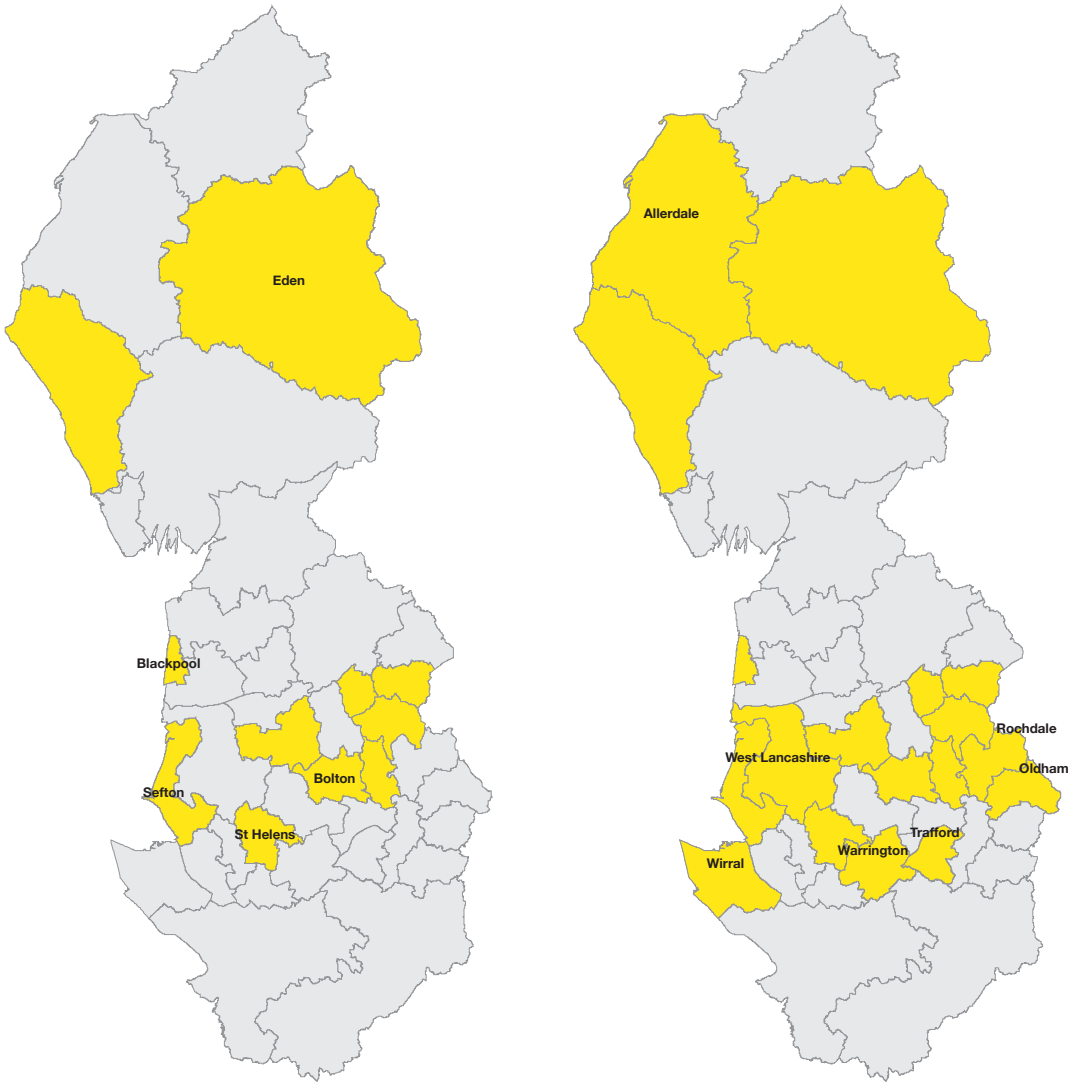


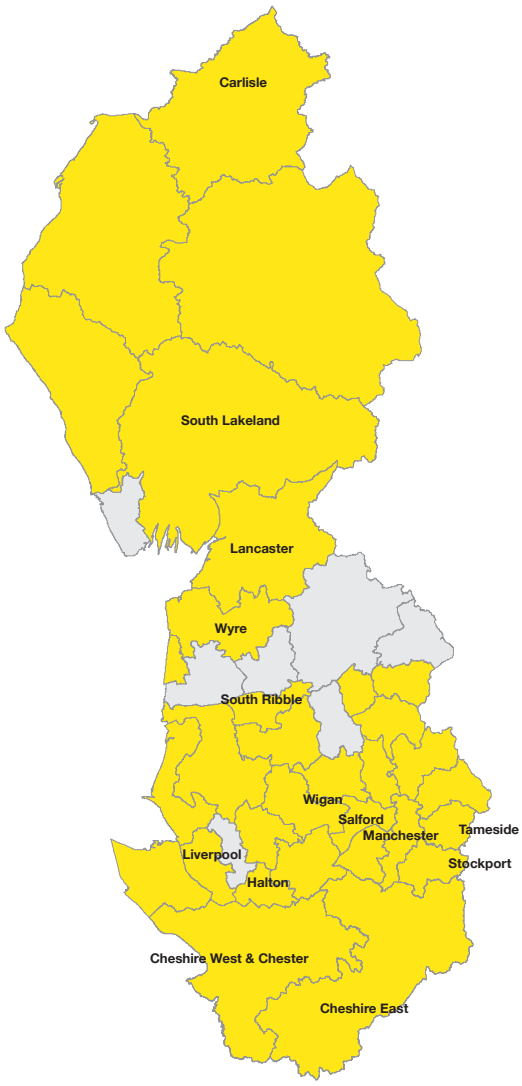
Figure 4: Progression of Recession in the North West



Districts in recession - December 2007

Districts in recession - January 2008

Figure 4: Progression of Recession in the North West



Districts in recession - March 2008

Districts in recession - September 2008

0 20 40

Miles

3

Forecasting the North West Economy

We want to conclude this paper by forecasting the date when the employment cycle of the North West region as a whole will make the transition to expansion[9]. To do this we produce a composite indicator based on combining a range of individual leading indicators at the quarterly frequency over the sample 1990-2009[10].

Property indicators

Taylor and Bradley (1994) find strong interaction between the housing market and the labour market for Great Britain's counties. Their research suggests that in the 1990s recession, counties with the largest fall in house prices and the highest amount of home ownership subsequently experienced the largest increase in unemployment. Cameron and Muellbauer (2001) also identify a strong link between the housing market and unemployment for ten GB regions. They find a rise of 10% in relative house prices raises the relative unemployment rate by 0.16 percentage points with a lag of three years[11].

We therefore analysed house price index data from the Land Registry[12] which begins in 1995. We combined this with the Nationwide[13] index which goes back to 1990. The Land Registry house price index is only available seasonally unadjusted so we take the annual difference of this to proxy house price inflation in the North West.

Survey indicators

Survey data is useful as a leading indicator and can provide an indication of future expectations for businesses in a region. We used two business surveys: the Confederation of British Industry (CBI) / Experian Regional Trends Survey and the British Chamber of Commerce (BCC) Quarterly Economic Survey.

The Chamber of Commerce's Quarterly Economic Survey[14] is found to give the most reliable results in our forecasting model. This is the UK's largest and most representative survey of commerce. The last survey used in our sample is Q3 2009 with results lagged by one and two quarters in our model. Businesses are surveyed using postal and on-line questionnaires for a three week period towards the end of the quarter of interest. The questions in the survey take the form of "Excluding seasonal variation, domestic sales over the past 3 months are: up/same/down", the response from this question is what we refer to as the variable "HomeSalesM" in Table 4 (the "M" refers to the manufacturing sector and "S" to services). The BCC reports balance figures in response to the questions which are determined by subtracting the percentage of companies reporting decreases from those reporting increases.

9 Note that forecasting is not an exact science and we may have problems of serial correlation in our model with our binary dependent variable, which is unity in expansion and zero in recession. Our aim is to predict the probability that a specific future period will be within an expansion, with the recession probability being one minus the expansion probability. For further details of our forecasting model see Sensier, Artis, Birchenhall and Osborn (2004).

10 This analysis commences when survey data is available for the North West region.

11 Cameron and Muellbauer (2001) suggest that two housing market channels are affecting unemployment: the cost of location effect when land price rises discourage potential movers to the region and the wealth effect on restricting regional spending, via the collateral role of housing equity on credit constrained households and firms.

12 See http://www.landreg.gov.uk/houseprices/

13 Data from http://www.nationwide.co.uk/hpi/historical.htm.

14 See http://www.britishchambers.org.uk/zones/policy/reports/quarterly-economic-survey.html

Figure 5: Annual change of North West Employment and Land Registry House Price Inflation

The dates of our recession phases are shown in Figure 5 as index lines, along with the annual change employment and house price index. These are converted to quarterly dates so the first recession runs from Q1 1991 to Q4 1995, the small late 1990s recession is from Q2 1997 to Q2 1998 and the current recession commences in Q4 2006.

Table 4: One quarter ahead forecast for the North West with survey information

	Model 1	Model 2	Model 3	Model 4
Variables:	**CBI only Manufacture Survey**	**HPI & BCC Manufacture Survey**	**HPI & BCC Service Survey**	**Combination Manu. & Service**
Intercept	0.498	0.378	0.896	1.142
D4(LandRegistryHPI) (-1)		3.632	3.37	4.47
D4(LandRegistryHPI) (-12)		-3.727	-2.062	-4.358
(CBI_ExportsFuture) (-1)	-0.689			
(CBI_ExportsFuture) (-8)	-0.714			
(BCC_HomeSalesM) (-2)		-3.088		-3.456
(BCC_InvestPlantM) (-2)		2.751		
(BCC_EmployPastS) (-1)			3.225	3.205
(BCC_ExportSalesS) (-2)			-1.545	
(BCC_ConfProfitS) (-2)			-1.951	
Summary Statistics:				
RMSE Sample	0.4433	0.2984	0.2464	0.2610
Log Likelihood	-35.29	-16.48	-13.9	-13.13
SIC	82.95	53.6	52.56	46.89
Errors In-Sample:				
Expansion	22% (8/37)	11% (4/37)	5% (2/37)	8% (3/37)
Contractions	52% (13/25)	20% (5/25)	16% (4/25)	8% (2/25)
Errors Out-of-Sample:				
Expansion	33% (1/3)	100% (3/3)	33% (1/3)	100% (3/3)
Contractions	100% (13/13)	(0/13)	31% (4/13)	(0/13)
Prediction:				
Forecast 2010q1	0.7971	0.0105*	0.2945*	0.0034*

Notes: In sample data set: 1990q3-2005q4 and out of sample data set: 2006q1-2009q4. * Indicates a warning of recession, as the forecast probability is less than 0.5.

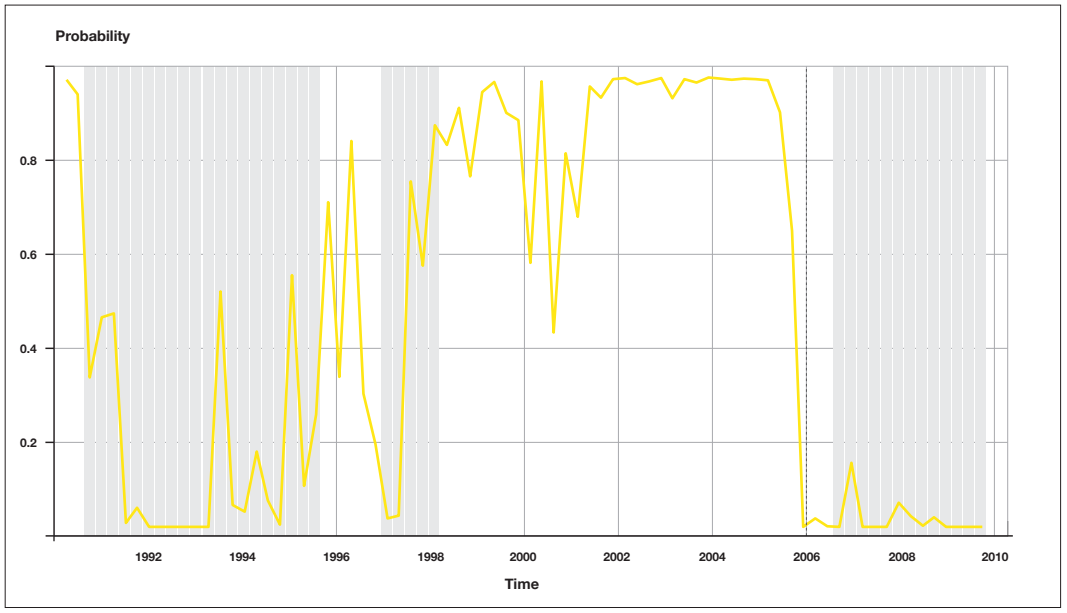
The results of our forecast model are presented in Table 4 where four models are compared with slightly different variables selected. The first model searches over CBI manufacturing survey data only, the second model uses the house price inflation (HPI) and BCC manufacturing surveys, the third model utilises HPI and BCC service industry survey data and the final model combines all information.

The Schwarz Information Criterion (SIC) in Table Four rates the models, with the smallest value signalling the best model.

The first model shown uses only CBI survey data because when the HPI data are included the CBI series are not selected. The probability chart for this model is not shown as it poorly predicts the phases of the business cycle in and out of sample. It also forecasts a return to an expansion in Q1 2010 which currently seems unlikely for the North West with a recent release of unemployment data in Q3 2009 still increasing year on year (see the ONS Labour Market Statistics Bulletin Table 18(1), January 2010) and the annual employment change still falling.

The second model searches over HPI and the BCC manufacturing survey information. Here we uncover a positive relationship at one quarter lag with HPI, indicating a fall in annual house price inflation before the onset of the recession and a significant rise three years before the recession. Two variables are selected from the BCC manufacturing survey. Home sales has a negative coefficient so actually increases two quarters before a recession and investment in plant and machinery declines two quarters before the downturn. Figure 6 shows the expansion probabilities for this model which predicts the start of the current recession too early. The forecast for Q1 2010 is a continuation of the recession phase.

Figure 6: Expansion Probabilities for HPI & BCC Manufacturing Survey Model



The third model presented in Table 4 includes the BCC service sector survey data along with house prices. The variables selected are employment from the last three months, export sales and confidence in business profit. There is a positive relationship with past employment which falls one quarter before the recession. Export sales and confidence in profit in the service sector increase two lags before the onset of a recession (possibly due to a falling exchange rate). The expansion probabilities are shown for the third model in Figure 7 where we can see that this model predicts the early 1990s recession well and some of the late 1990s recession. For the current recession we get a double-dip with the beginning of the phase correctly forecast, then emerging briefly in 2008 to plunge back in during 2009 with a forecast for Q1 2010 for a continuation of the recession phase.

Figure 7: Expansion Probabilities for HPI & BCC Service Sector Survey Model

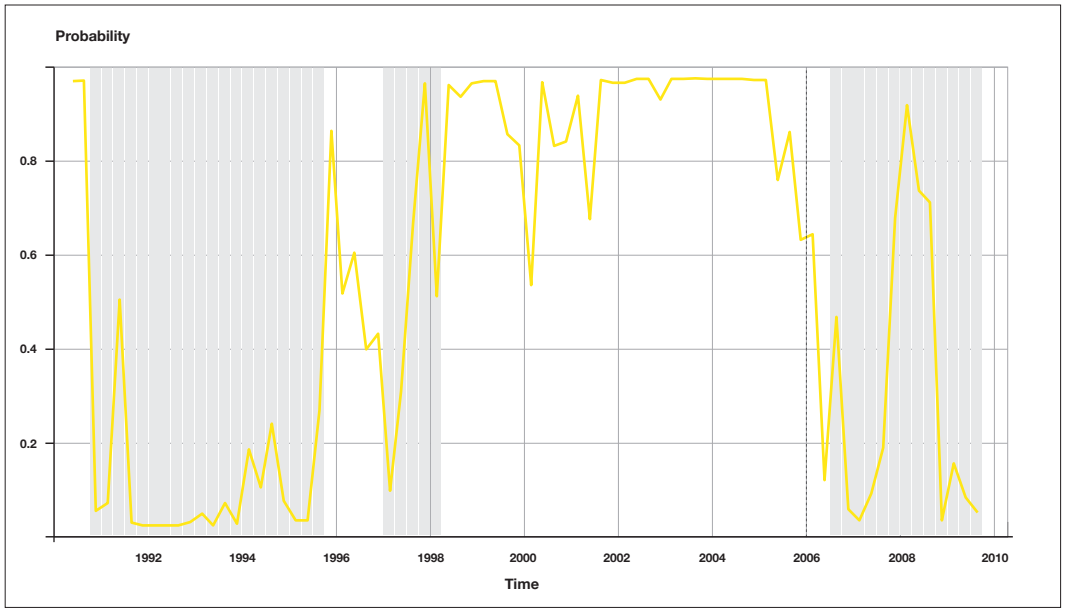
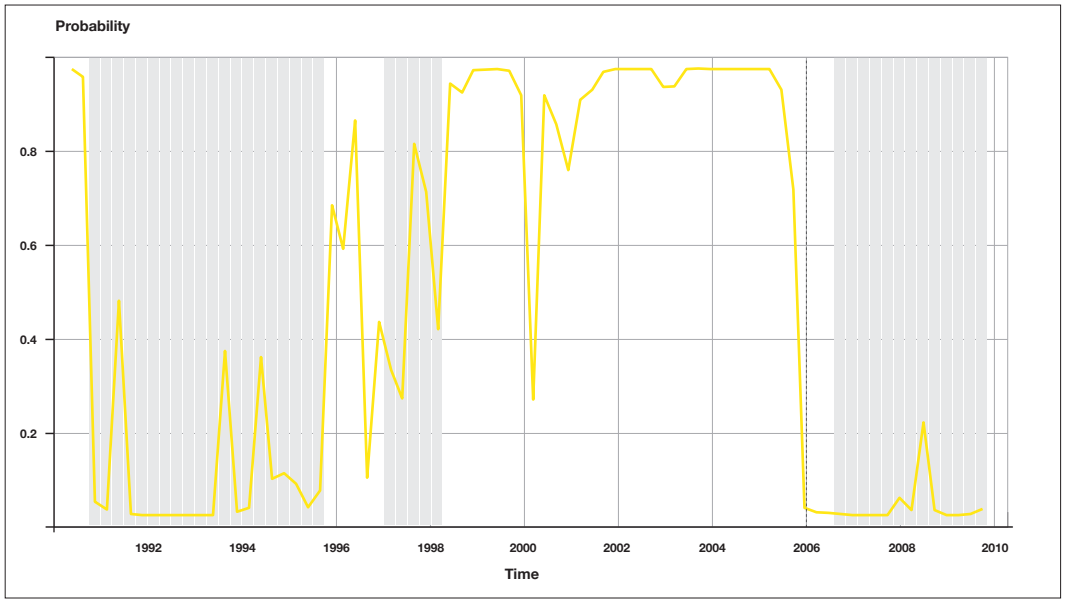


Figure 8: Expansion Probabilities for HPI & BCC Surveys Model



The fourth model includes a combination of HPI and BCC manufacturing and service sector survey data. The variables selected are home sales from the manufacturing sector and, from the service survey, past employment. Manufacturing sales again appear to increase two quarters before the downturn with past employment in services falling one quarter before. The expansion probabilities for this model are shown in Figure 8 with a continuation of recession forecast for Q1 2010.

From Table 4 we can see that the last model, which combines all information, is the preferred model in terms of minimising the SIC and having the smallest number of errors in sample. It also matches the out of sample performance with the model which uses just manufacturing data. These results indicate that the recession in employment that started in the North West in 2006 may have been led by job losses in the manufacturing sector ahead of job losses in the service sector created by the crisis in UK financial markets in the second half of 2008.

Finally, we analyse longer term forecasts from a model eliminating one quarter lags from our data search to forecast two quarters ahead and forecasting one year ahead with house price inflation. Table 5 presents the results from this analysis.

The first model in Table 5 is similar to the model with the manufacturing survey data in Table 4, but past employment is selected instead of home sales. This also increases two quarters before the recession.

The model with just service sector survey data in Table 5 selects the percentage of businesses working at full capacity variable, which falls before the downturn. Combining all variables we find a role for manufacturing export orders, past employment and service sector export sales and percent working at full capacity. Manufacturing export orders fall but service sector export sales increase two quarters before the recession. All models predict a continuation of the recession phase for the first half of 2010. The final model, with just house price inflation data, predicts return to an expansion phase for the last quarter of 2010.

Table 5: Long-term Forecast for the North West

Variables:	HPI & BCC Manufacture Survey	HPI & BCC Service Survey	Combination Manu. & Service	Four Quarters Ahead
Intercept	-0.039	0.324	0.676	0.460
D4(LandRegistryHPI) (-2)	3.692	1.397	2.075	
D4(LandRegistryHPI) (-4)				5.676
D4(LandRegistryHPI) (-6)				-3.687
D4(LandRegistryHPI) (-12)	-4.895	-1.817	-2.106	-1.93
(BCC_InvestPlantM) (-2)	2.044			
(BCC_EmployPastM) (-2)	-2.377			
(BCC_ExportOrderM) (-2)			1.44	
(BCC_ExportSalesS) (-2)			-1.755	
(BCC_%FullCapyS) (-2)		1.375	1.998	
Summary Statistics:				
RMSE Sample	0.3163	0.3191	0.2828	0.3495
Log Likelihood	-18.62	-20.15	-15.87	-23.3
SIC	57.88	56.81	56.51	63.12
Errors In-Sample:				
Expansion	14% (5/37)	11% (4/37)	11% (4/37)	8% (3/37)
Contractions	20% (5/25)	22% (6/25)	12% (3/25)	28% (7/25)
Errors Out-of-Sample:				
Expansion	100% (3/3)	100% (3/3)	(0/3)	100% (3/3)
Contractions	(0/13)	15% (2/13)	38% (5/13)	(0/13)
Prediction:				
Forecast 2010q1	0.0052*	0.0231*	0.0089*	0.0017*
Forecast 2010q2	0.0020*	0.0005*	0.0000*	0.0075*
Forecast 2010q3				0.2082*
Forecast 2010q4				0.9027

Notes: see Table 4.

Conclusions

All sub-regions of the North West have now entered a recession which began in 2007 in the claimant count data, but was dated in the employment data to have commenced in 2006, two years before the start of the national recession. The speculation that areas intensive in financial and related business services have led the way in the current recession has some support from Spearman's rank correlation coefficients using data from the Annual Business Inquiry of 2007.

This paper makes a useful contribution in dating business cycles at the local authority district level where we can see a greater occurrence of recessions. When we analyse the business cycles of districts we generally find more recessions than in the sub-regions, for example Bolton and Oldham experience small recessions at the end of the 1990s but in the Greater Manchester North aggregate these cycles are lost. Regional policy could target those areas more prone to recessions and introduce structural policy to ease labour market frictions in those areas.

The strongest predictions for the North West business cycle come from house price inflation in the Land Registry's house price index and from British Chamber of Commerce manufacturing and service industry survey data. We uncover a prominent role for house price inflation in the North West leading the employment cycle by three years. We find that our model, which only includes the CBI manufacturing survey, forecasts expansion for the first quarter of 2010. Using just manufacturing information in the North West region, where 82% of people are employed in the service sector, is unrealistic.

We get stronger results when we include information from the Chamber of Commerce service sector survey. Our best model combines house prices, manufacturing and service sector survey information and we report a high probability for the continuation of the recession for the first half of 2010.

When looking at a longer forecast horizon with house price inflation, we predict a return to an expansion phase for the North West in the fourth quarter of 2010.

References

Artis, M.J., Marcellino, M. and Proietti, T. (2004), "Dating Business Cycles: A Methodological Contribution with an Application to the Euro Area", *Oxford Bulletin of Economics and Statistics,* vol. 66(4), pp. 537-565.

Artis, M.J. and Sensier, M. (2009), "UK Regional Employment Cycles", University of Manchester working paper.

Beatty, C. and Fothergill, S. (2002), "Hidden Unemployment Among Men: A Case Study", Regional Studies, vol. 36.8, pp. 811-823.

Cameron, G. and Muellbauer, J. (2001), "Earnings, Unemployment, and Housing in Britain", *Journal of Applied Econometrics,* vol. 16, pp.203-220.

Clements, M.P. and Hendry, D.F. (1999), *Forecasting Non-Stationary Economic Time Series.* Cambridge, Massachusetts: The MIT Press.

Doornik, J.A. and D.F. Hendry (2001), Givewin: *An Interface for Empirical Modelling,* (Timberlake Consultants Press, London).

Fothergill, S. (2009), "The Impact of Recession on Unemployment in Industrial Britain", Industrial Communities Alliance Report.

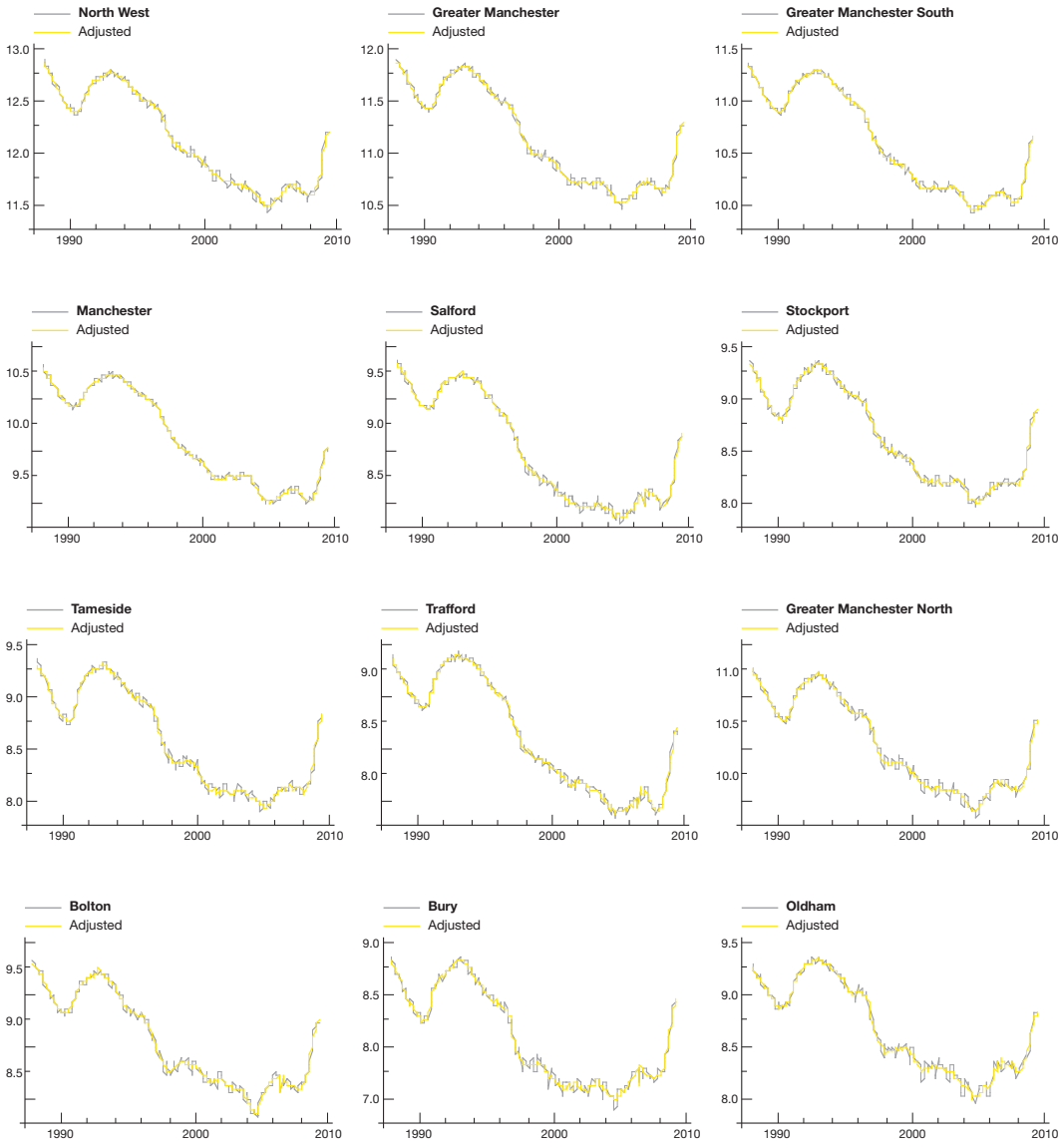
Sensier, M., Artis, M., Birchenhall, C.R., and Osborn, D.R. (2004). "Domestic and International Influences on Business Cycle Regimes in Europe", *International Journal of Forecasting,* vol. 20, pp. 343-357.

Taylor, J. and Bradley, S. (1994), "Spatial disparities in the impact of the 1990-92 recession: an analysis of UK counties", *Oxford Bulletin of Economics and Statistics,* vol. 56(4), pp. 367-382.

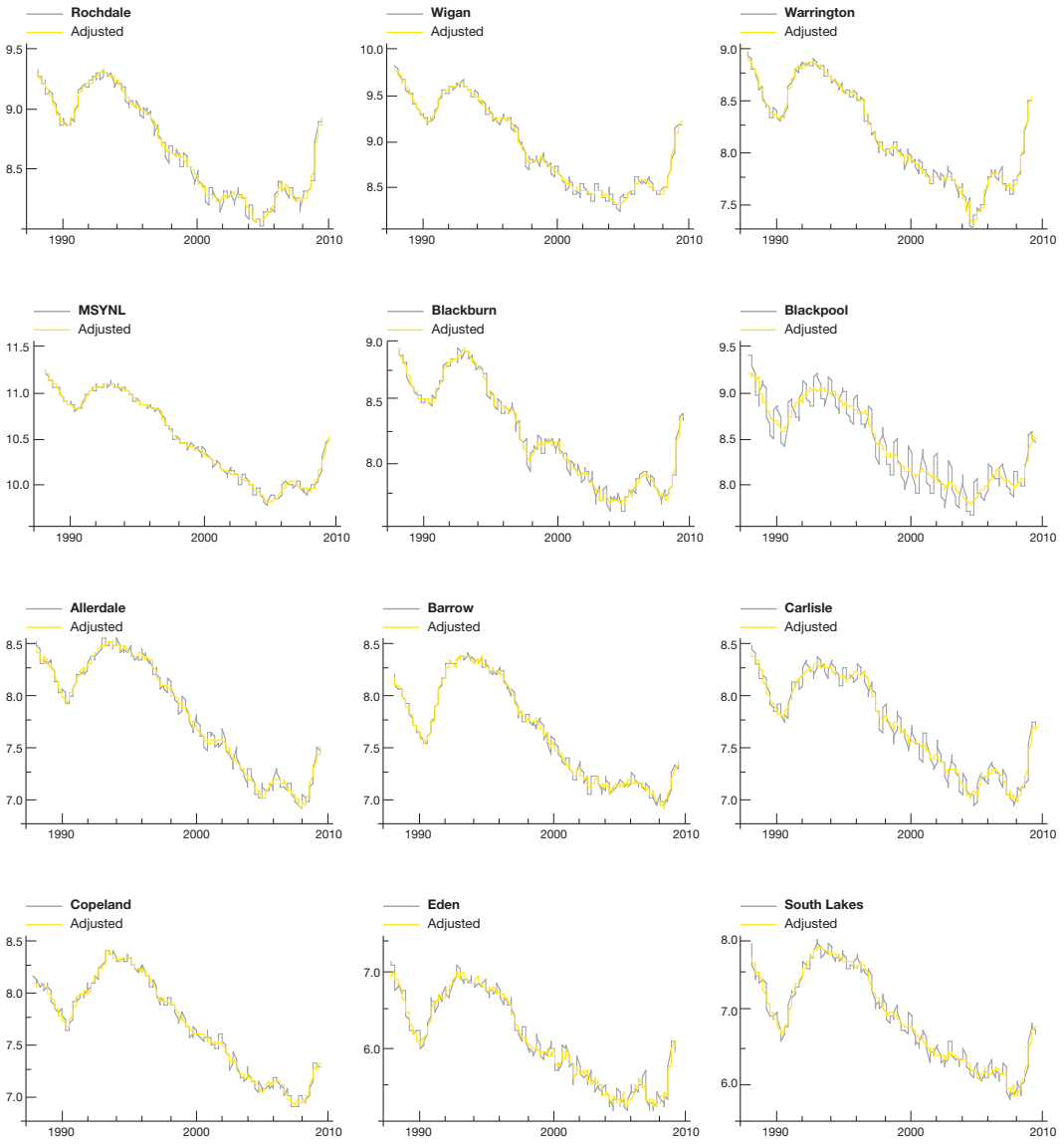
Appendix A:
North West Areas

Areas / County	Districts/ Unitary Authorities
Blackburn with Darwen	Blackburn with Darwen
Blackpool	Blackpool
Cheshire	Cheshire East
	Cheshire West and Chester
Cumbria	Allerdale
	Barrow-in-Furness
	Carlisle
	Copeland
	Eden
	South Lakeland
Greater Manchester	Bolton
	Bury
	Manchester
	Oldham
	Rochdale
	Salford
	Stockport
	Tameside
	Trafford
	Wigan
Halton	Halton
Lancashire	Burnley
	Chorley
	Fylde
	Hyndburn
	Lancaster
	Pendle
	Preston
	Ribble Valley
	Rossendale
	South Ribble
	West Lancashire
	Wyre
Merseyside	Knowsley
	Liverpool
	Sefton
	St Helens
	Wirral
Warrington	Warrington

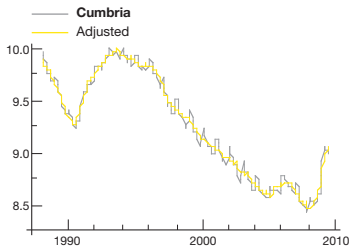
Appendix B:
Seasonal Adjustment Graphs

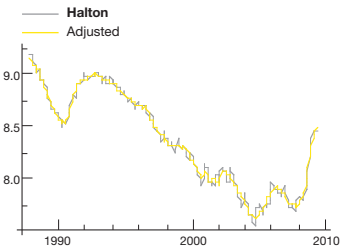


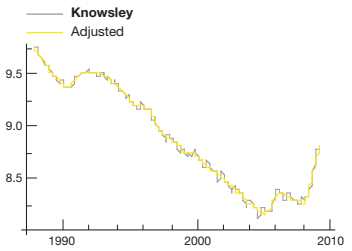
Appendix B:
Seasonal Adjustment Graphs (continued)

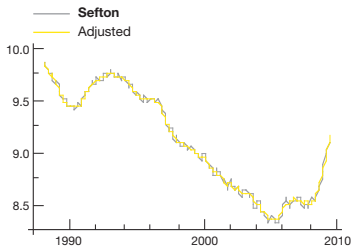


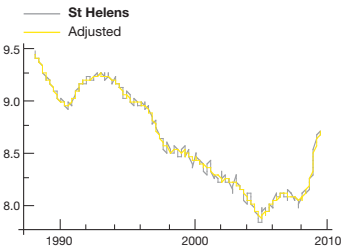
Appendix B:
Seasonal Adjustment Graphs (continued)

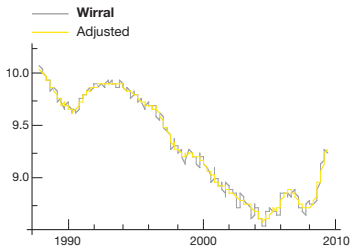


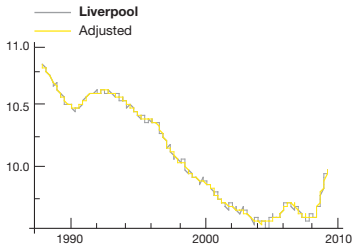


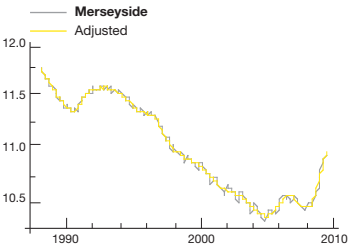


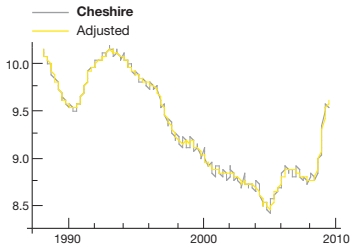


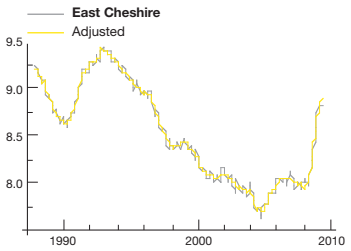


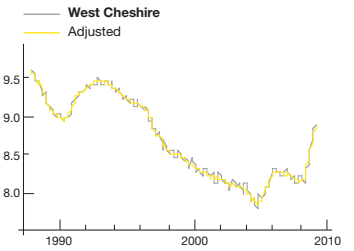


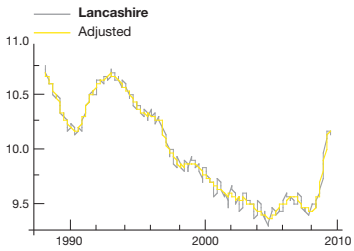




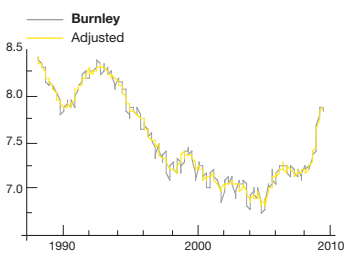


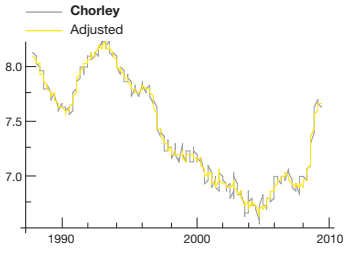


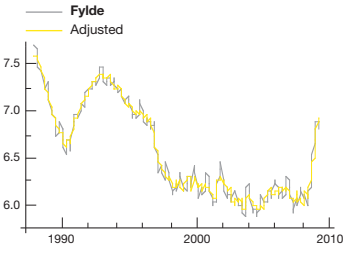


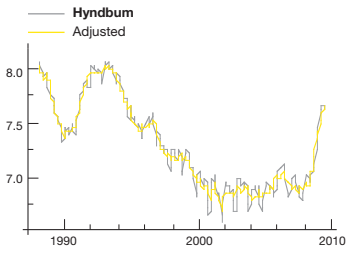


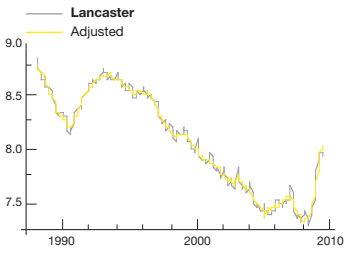
Appendix B:
Seasonal Adjustment Graphs (continued)

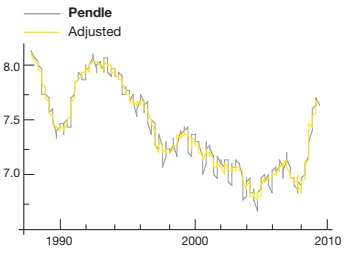


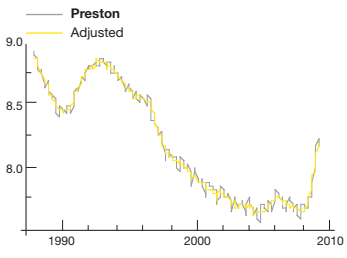


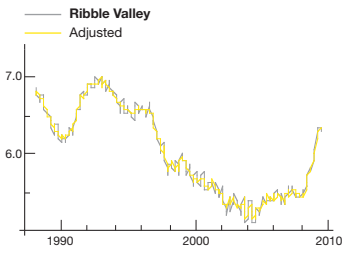


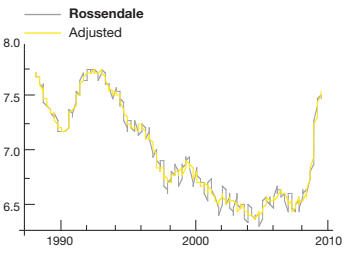


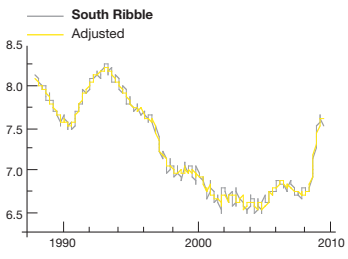


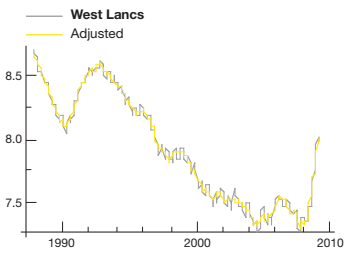


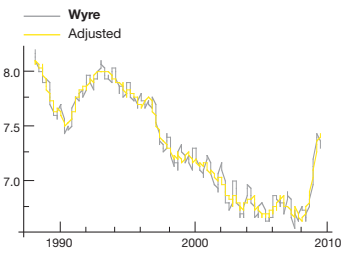












Appendix C:
Classical Cycle Turning point dates for North West districts

Table C.1: Cycle turning points for Greater Manchester Authorities Claimant Count for 1988m1-2009m6

Turning Point	Manchester	Salford	Stockport	Tameside	Trafford	Bolton	Bury	Oldham	Rochdale	Wigan
Peak	1990m5	1990m4	1990m5	1990m6	1990m5	1990m6	1990m5	1990m3	1990m4	1990m6
Trough	1992m12	1992m12	1992m11	1992m12	1992m12	1992m12	1993m4	1992m12	1992m12	1992m12
Peak						1998m5		1998m2		
Trough						1999m6		1999m7		
Peak	2001m9	2001m11	2002m5	2002m8			2001m1		2001m8	
Trough	2003m5	2003m2	2003m5	2003m2			2003m6		2002m10	
Peak	2005m2	2004m12	2005m1	2005m3	2004m11	2004m9	2004m11	2004m8	2004m6	2004m11
Trough	2006m9	2006m10	2007m4	2007m1	2006m10	2006m6	2006m10	2006m10	2006m6	2006m9
Peak	2008m2	2008m2	2008m1	2008m1	2007m12	2007m11	2007m8	2007m12	2007m12	2008m1

Table C.2: Cycle turning points for Cumbria Claimant Count for 1988m1-2009m6

Turning Point	Allerdale	Barrow-in-Furness	Carlisle	Copeland	Eden	South Lakeland
Peak	1990m4	1990m6	1990m6	1990m8	1990m4	1990m5
Trough	1993m9	1993m9	1992m12	1993m8	1993m5	1993m2
Peak			1995m4			
Trough			1995m10			
Peak	2004m12	2004m5	2004m7	2005m3	2005m4	2005m4
Trough	2005m12	2005m11	2005m11	2006m3	2006m9	2005m9
Peak	2007m12	2008m6	2008m2	2007m8	2007m10	2008m2

Appendix C:
Classical Cycle Turning point dates for North West districts

Table C.3: Cycle turning points for Cheshire and Merseyside Claimant Count for 1988m1-2009m6

Turning Point	Cheshire East	Cheshire West & Chester	Knowsley	Liverpool	Sefton	St. Helens	Wirral
Peak	1990m5	1990m6	1990m8	1990m8	1990m5	1990m7	1990m7
Trough	1992m12	1992m12	1992m6	1992m12	1992m12	1992m12	1992m12
Peak							
Trough							
Peak	2004m12	2004m12	2005m3	2004m5	2005m5	2004m12	2004m9
Trough	2006m12	2006m12	2006m6	2006m7	2006m10	2006m11	2006m10
Peak	2008m2	2008m2	2008m3	2008m1	2007m11	2007m11	2007m12

Table C.4: Cycle turning points for Lancashire Claimant Count for 1988m1-2009m6

Turning Point	Burnley	Chorley	Fylde	Hyndburn	Lancaster	Pendle	Preston	Ribble Valley	Rossendale	South Ribble	West Lancs	Wyre
Peak	1990m2	1990m5	1990m6	1989m12	1990m9	1990m6	1990m3	1989m12	1990m3	1990m6	1990m6	1990m6
Trough	1992m10	1993m4	1992m12	1992m12	1993m7	1992m12	1992m10	1992m12	1992m12	1993m4	1992m12	1993m5
Peak	1998m7		1999m3			1998m3		1995m5	1998m1		1998m3	
Trough	1998m12		1999m8			1999m6		1995m11	1999m6		1998m8	
Peak			2001m7	2001m10	2005m2					2001m11		2003m9
Trough			2002m2	2003m7	2007m1					2002m8		2004m6
Peak	2004m10	2004m11	2005m1	2004m1		2004m10	2004m7	2004m5	2004m8	2004m7	2004m9	2005m2
Trough	2006m6	2006m10	2006m7	2006m5		2007m2	2006m6		2006m6	2006m6	2006m5	2006m7
Peak	2007m5	2007m7	2008m3	2007m6	2008m1	2008m3	2008m3		2007m5	2008m2	2007m12	2008m1

Notes:

Development of the Working Paper series has in-part been supported by the North West Improvement and Efficiency Partnership and has the support of the University of Manchester.

The production of this Working Paper has been sponsored by Work Solutions (www.work-solutions.org.uk) and Greater Manchester Chamber of Commerce (www.gmchamber.co.uk).


Greater
Manchester
Chamber
of Commerce


work
solutions