

Research Bulletin 19/7 | Exploring Regional Unemployment Rate Differences in the UK

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August 2019

Summary

Regional unemployment differences are disadvantageous for a country's economy and society. This research bulletin uses regression analyses to assess when UK regional unemployment rate differentials have decreased (converged) or increased (diverged) during different time periods and economic cycles from 1999-2018. The analyses undertaken allows for the strength of the convergence/divergence to be measured and also compared with the figures derived representing the combined effect (aggregate) for each of these forces.

The results generally suggest that in periods of strong economic growth regional unemployment rates converge. On the other hand in periods with negative shocks to output, regional unemployment rates diverge. They tend to remain constant in periods of economic stagnation.

Introduction

Northern Ireland's unemployment rate reached a record low at the start of 2019 (2.9%) and is now, at the time of writing, only 0.2pps higher at 3.1%. The latest UK unemployment rate is also relatively low and over the past year eight of the UK's other 11 regions recorded their lowest unemployment rates in over 25 years. This has led to regional unemployment rate differences sitting at a historic lows.ⁱ

Regional differences in unemployment have significant implications for the economy, society and labour market policies at the UK-wide level. If some regions have labour shortages while other regions have high unemployment, the UK economy will suffer from restrictions to its productive potential, reduced tax collection and increased pressure on government spending in the form of social benefitsⁱⁱ. This in turn will cause increasing inflationary pressures and the persistence of an unemployment problem. Due to all of this, regional imbalances in unemployment themselves contribute to unemployment at the UK levelⁱⁱⁱ. Regional differences in unemployment also lead to rising inequality and can contribute to growing levels of discontent.

This research bulletin analyses different time periods from 1999-2018 using a regression analysis to determine whether regional unemployment rate differences have increased or decreased. The regression analysis also allows for the strength of the aggregate convergent and divergent forces that contribute to the changes in regional

unemployment differences during these periods to be measured, while the possible factors behind these forces are also considered.

Regional unemployment rate differences over time

Running a regression with the annualised percentage change in the unemployment rate for each UK region from the start date to the end date as the dependent variable and the initial unemployment rate of each region as the independent variable makes it possible to observe if convergence between the UK regions as a whole has occurred during the time periods assessed.

Whether convergence or divergence occurs between UK regional unemployment rates matters for policy reasons as well as economic and societal reasons. There are two explanations provided by economic theory on the 'nature and significance of regional unemployment disparities'^{iv}.

The first explanation is related to specific equilibrium mechanisms found within each region. This explanation states that economic and social barriers as well as factors such as climate and culture etc. separate labour markets at a sub-national level^v. Therefore, variances in unemployment between regions will permeate where there are these differences as workers will be motivated not just by the forces of the labour market but also by their 'underlying preferences' for specific regions. This can be taken as the divergent view of regional unemployment.

The second explanation takes the neoclassical view that, with the removal of frictions impeding the free flow of labour, unemployment rates should converge as regions with strong labour demand will attract workers from regions with high unemployment. This means that in the short run there may be regional disparities reflecting frictions in the labour market, but in the long run differences will disappear through the movement of labour between regions. This can therefore be seen as the convergent view of regional unemployment.

If the former explanation is true then policies orientated to reduce regional disparities in unemployment will ultimately be ineffective if the underlying equilibrium conditions remain unchanged.

The average annualised percentage change in the unemployment rate is the average rate for all the regions at which their unemployment rates fell or increased over the time period analysed i.e. if the average annual percentage change was -12.0% over a four year period this means that on average every year, for four years, the rate of decline for each region's unemployment rate was 12%^{vi}.

Table 1 shows that for 1999-2018 regional unemployment rate differences decreased. This is because regions with higher initial unemployment rates were inclined to have their unemployment rates decrease at a faster rate than they were for regions with initially lower unemployment rates (causing regional unemployment rates to converge over time). This means that the aggregate forces causing regional unemployment differences to decrease over the period (such as the movement of labour and labour demand increasing in regions with higher unemployment) were greater

than the aggregate forces causing regional unemployment rate differences to increase (such as asymmetric shocks to regional labour markets and a lack of labour mobility) over the period.

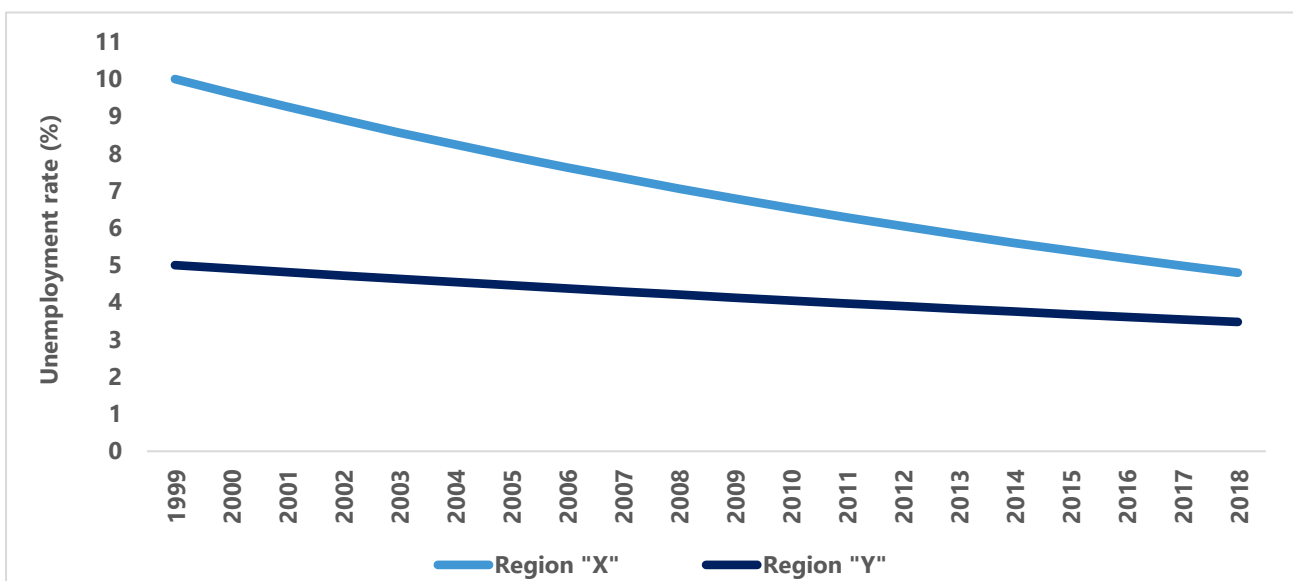
Table 1: Regression Results - Estimating Regional Convergence/Divergence Over Time

Time period	Brief economic history of time period ^{vii}	Effect of a percentage point increase in a region's unemployment rate on the annualised percentage change for its unemployment rate	Average annualised percentage change rate for regional unemployment over time period	Explanatory power of region's initial unemployment rate on its end unemployment rate (Adjusted R-squared)	P-value
1999-2018	Strong growth, recession, recovery, strong and then subdued growth	-0.47 percentage points	-2.1%	57.7%	0.00
1999-2007	Strong growth	-1.20 percentage points	-2.0%	45.3%	0.01
2008-2009	Recession	-5.46 percentage points	35.3%	33.1%	0.03
2008-2013	Recession and recovery	-1.19 percentage points	6.5%	33.9%	0.03
2008-2018	Recession, recovery, strong and then subdued growth	-0.56 percentage points	-3.2%	41.2%	0.01

Regional labour market data from the ONS. All regressions were calculated using StataSE 15

For all the time periods assessed the convergent forces, causing regional unemployment differences to decrease, were present. However, increases in regional unemployment differences still sometimes occurred when the forces causing regional unemployment rates to diverge outweighed the forces causing them to converge. Over the full period assessed (1999-2018) an initial 1.0pps increase in a region's unemployment rate in 1999 was associated with a 0.47pps increase in the annualised rate of decline (vis-à-vis a 0.47pps decrease in the annualised growth rate) for that region's unemployment rate over the period (this is a large effect as the change represents over a fifth of the average annualised rate of decline (**Table 1**)). Figure 1 uses an example to show how this effect for 1999-2018 works in practice. Region "X" starts off with an initial unemployment rate of 10% in 1999 while Region "Y" starts off with an initial unemployment rate of 5%. Because every percentage point increase in a region's initial unemployment rate in 1999 causes the annualised rate of decline to increase by 0.47pps this means that the annualised rate of decline for Region "X" is 3.8% while in Region "Y" it is 1.9%. When accounting for the constant in the regression this means that by 2018 Region "X"'s unemployment rate will decrease to 4.8% while Region "Y"'s will decrease to 3.5%.

Figure 1: Example of Convergence in Unemployment



Strong economic growth period (1999-2007)

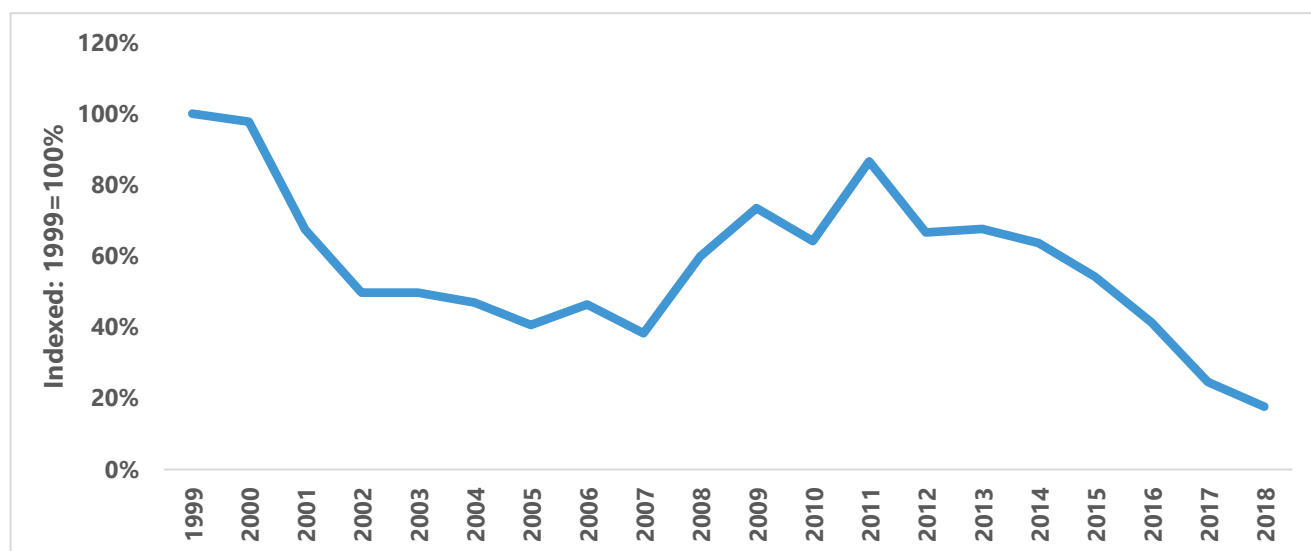
The regression for 1999-2007 observes how regional unemployment differences were affected by a period of strong economic growth in the UK. It shows the convergent forces that cause regional unemployment differences to decrease (by causing regions with higher initial unemployment rates to have their rates decrease at a faster rate than regions with lower unemployment rates) were stronger during this period than they were for the complete twenty year period. This is as an initial 1.0pps increase in a region's unemployment rate was associated with the annualised rate of decline for its unemployment rate increasing by an additional 1.20pps during this period compared to an additional 0.47pps for the overall time period (the greater the increase in the rate of decline, the faster the rates will fall). This can partly be explained due to economic growth having a positive causal relationship with employment^{viii}. Regions with higher unemployment rates have higher levels of spare human capital that can be put to use compared to regions that are closer to full employment. This means it is easier for their unemployment rates to fall at a faster rate when there is an increase in demand for human capital at a regional/national level (when this is supported by internal migration, the data for which during this time period isn't available).

Recession (2008-2009)

The period 2008-2009, covering the Recession, recorded the largest measured effect of an initial percentage point increase in a region's unemployment rate on its annual growth rate (**Table 1**). One of the reasons the forces causing regional unemployment rates to decrease were at their strongest during this period is because regions with lower than average unemployment rates tend to have greater unemployment sensitivities to changes in output^{ix}. However, this seemingly large convergent effect, representing the aggregate of converging forces (which should cause unemployment rate differences to decrease), has to be considered in relation to the context of the period. For most

of the periods assessed unemployment rates decreased by 2-3% each year, on average. For 2008-2009, however, unemployment rates increased at an average rate of 35.3%. This coincided with the regional variance increasing: the variance in 2007 was 38% of what it was in 1999 which increased in 2009 to it being 73% of what it was in 1999 (**Figure 2**). Regional unemployment rate differences increasing over this period can be explained due to the forces causing the regional unemployment differences to decrease, despite them being at their strongest during any time period measured in this analysis, being lesser than the forces causing them to increase, spurred by the 2008-2009 recession^x, during this period.

Figure 2: UK Regional Unemployment Variance (1999-2018)



Source: ONS regional labour market statistics

The Recession and the economic recovery (2008-2013)

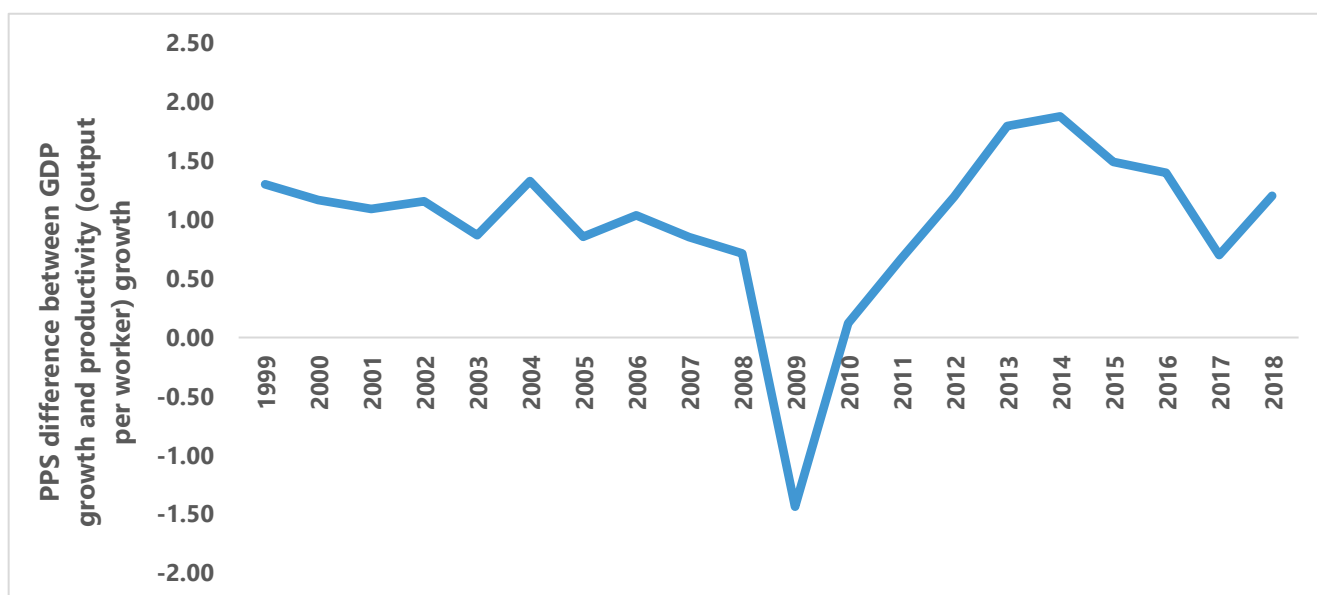
During the period 2008-2013, which covers the 2008-2009 recession and then the economic recovery, the effect of a percentage point increase in the initial unemployment rate of a region on the annualised percentage change of its unemployment rate was very similar to what it was in the period 1999-2007 (**Table 1**). However, the variance of the UK's regional unemployment rates during 2008-2013 was largely stagnant (in 2008 it was 60% indexed to 1999 which increased to 68% in 2013 (**Figure 2**)). Again, this lack of convergence despite the aggregate convergent forces clearly being present is due to the relative weakness of these forces in comparison to the aggregate of the divergent forces, which were again due to the 2008-2009 recession and its aftermath^{xi}.

Recession, economic recovery, strong and then subdued growth (2008-2018)

The regression that was run for 2013-2018 was not statistically significant, which prevents a valid comparison with the other time periods. The shortest time period that could be analysed with 2018 as the end date was 2008-2018. The aggregate convergent forces which cause regional unemployment differences to decrease were lower for 2008-2018 than what they were for the 1999-2007 period (an initial percentage point increase in a region's unemployment

rate caused their annualised rate of decline to increase by 0.56 percentage points compared to 1.20 percentage points, respectively). However, this doesn't necessarily mean that convergence was subdued in 2008-2018 when compared to 1999-2007. The 2008-2018 time period (due to limitations) includes the divergence that occurred due to the 2008-2009 recession. In 2007 the variance of regional unemployment rates was 62% lower than what it was in 1999, whereas in 2018 the variance of regional unemployment rates was 71% lower than what it was in 2008 (**Figure 2**). The reason for this can be partly explained by the removal of frictions from the labour market which allow for greater regional convergence as discussed previously in the bulletin. Over this period job searches have become more sophisticated due to the increased use of the internet and the rise of recruitment through online methods^{xii} and there was also an increase in labour market flexibility as the number of people employed in self-employed occupations increased^{xiii} while the number of zero-hour contracts also rose significantly. Like in the 1999-2007 period, this convergence can also be explained by the productivity and economic growth of the period. Although economic growth was higher in 1999-2007 when compared to 2008-2018, so was productivity growth. Because employment is inclined to increase when GDP growth is higher than productivity growth (as production will have to be more labour intensive to keep up with increasing demand) this means that lower productivity growth during the 2008-2018 period was partly responsible for increasing the employment rate and decreasing the unemployment rate, despite somewhat subdued GDP growth during this period (**Figure 3**).

Figure 3: GDP Growth Minus Productivity Growth (1999-2018)



Sources: ONS GDP growth data & ONS productivity growth data

This has implications for today, as prolonged EU Exit uncertainty has meant that some investment decisions have been put on hold in the UK, leading to stagnant investment in the UK^{xiv}. This may have encouraged increased hiring in the UK, with recent employment levels in NI at a record high and unemployment levels at a record low^{xv}, at least partly due to reasons to do with productivity, as previously discussed.

Conclusion

The findings from this bulletin show that regional unemployment differences change over time mainly due to different economic cycles. Generally speaking, these differentials decrease in periods of economic growth and increase when there are declines in output. Furthermore, low growth, unless accompanied by weaker productivity growth, makes regional unemployment differences harder to decrease over time.

HM Government's published analysis around EU Exit show a lower level of output when compared to the projected status quo, with NI being one of the most affected regions.^{xvi} The findings from the regression analysis in this paper show that during the 2008-2009 recession the impact of an economic shock filters through to lower economic activity and thus regional unemployment rate divergence. Based on this analysis, and with the recent quarterly contraction in UK GDP, one of the impacts arising from EU Exit could include a divergence of regional unemployment rates. If the UK's exit from the EU resulted in economic disruption in the short term then this could result in the UK having a lower growth rate over the long run^{xvii}. This may result in regional unemployment differences taking longer to decrease, as the regression results in Table 1 above suggest that economic growth is a key factor in regional unemployment rate differences decreasing over time.

This could mean potentially that after an impact to economic output that regional unemployment rate differences will take less time to increase than they have done in previous periods where output declined.

Regional differences in unemployment have significant implications for the economy, society and labour market policies. With growth weakening nationally, and as we move forward to exit the EU, based on the evidence of this paper, differential economic impacts on the UK regions are likely to have knock on consequences for regional unemployment differentials.

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For further information or queries please contact analyticalservices@economy-ni.gov.uk

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- ⁱ [ONS: Regional Labour Market Statistics \(2019\)](#)
- ⁱⁱ [Castells-Quintana, D. and Royuela, V. \(2012\). Unemployment and long-run economic growth: The role of income inequality and urbanisation. *Investigaciones Regionales*, 12\(24\), pp.153–173.](#)
- ⁱⁱⁱ [OECD: Regional unemployment in OECD Countries¹](#)
- ^{iv} [Rios, V. \(2016\). What drives unemployment disparities in European regions? A dynamic spatial panel approach. *Regional Studies*, 51\(11\), pp.1599-1611.](#)
- ^v [Marston, S. \(1985\). Two Views of the Geographic Distribution of Unemployment. *The Quarterly Journal of Economics*, 100\(1\), 57-79.](#)
- ^{vi} For example a region with an initial unemployment rate of 10% would on average have its unemployment rate fall to 6% [$10.0\% \times (1.0 - 0.12) = 8.8\%$, $8.8\% \times (1.0 - 0.12) = 7.744\%$, $7.744\% \times (1.0 - 0.12) = 6.815\%$, $6.815\% \times (1.0 - 0.12) = 6.0\%$]
- ^{vii} [ONS: Gross Domestic Product: Year on Year growth: CVM SA % \(2019\)](#)
- ^{viii} [Congressional Research Service: Economic Growth and the Unemployment Rate \(2013\)](#)
- ^{ix} [Bell, D. \(1981\). Regional Output, Employment and Unemployment Fluctuations. *Oxford Economic Papers*, 33\(1\), new series, 42-60.](#)
- ^x [Economic & Social Research Council: Recession Britain \(2009\)](#)
- ^{xi} [Blanchflower, D. \(2015\). As Good as it Gets? The UK Labour Market in Recession and Recovery. *National Institute Economic Review*, 231\(1\), pp.F76-F80.](#)
- ^{xii} [Forbes: 10 Ways The Jobs Search Has Changed \(2013\)](#)
- ^{xiii} [ONS: EMP01 SA: Full-time, part-time and temporary workers \(seasonally adjusted\) \(2019\)](#)
- ^{xiv} [ONS: EMP17: People in employment on zero hours contracts \(2019\)](#)
- ^{xv} [NISRA: NI Labour Market Report May 2019 \(2019\)](#)
- ^{xvi} [HM Government: EU Exit Long-term economic analysis \(2018\)](#)
- ^{xvii} [Fingleton, B., Garretsen, H. and Martin, R. \(2012\). Recessionary Shocks and Regional unemployment: Evidence on the Resilience of U.K. Regions. *Journal of Regional Science*, 52\(1\), pp.109-133.](#)