

Benefit Reforms in Great Britain

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Abstract

Sir William Beveridge (1942) had good ideas while proposing universal benefit system but the tax and transfer system often overstretched it. Basing arguments on theories of the conditional general equilibrium with benefits, natural rate of unemployment and Markov process of transitions, current study identifies factors that determine the number of benefit claimants among British counties. It rises with unemployment rate and the numbers of working age population across counties. Higher weekly, monthly or annual pays lower the number of claimants. The explanatory variables have larger influence shorter the time the claimants' spells on benefits.

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1 Introduction

Sir William Beveridge (1942) had thought of six groups of individuals in the society and recommended six principles on which the benefit system should operate as it is universal and affects everyone in the society in one or another way. Six groups of people - employees, employers, housewives, others of working age, below working age and retired ones - differ in ability to make contributions and need for the benefits. The six principles, aimed at overall fairness of the system to everyone, include flat rate subsistence benefits, flat rate contribution, unification of administration, adequacy of benefits, comprehensiveness of it and no regards of social classification either in provision of cash benefits (transfers) or in raising contributions (taxes). Amount of cash benefits adequate to fulfill the basic needs of recipient individuals for a decent life has changed over last seven decades. Tax and transfer system has evolved quite systematically and become an integral part of the economy and society in the UK. However, efforts to implement these good ideas into practice have often stretched to their limits and resulted in a complex system of benefits.

In principle the benefit entitlements are aimed to fit to individual circumstances: the number children at home, lone parent or married couple status, hours of work being either less than or exceeding 30 hours per week, cost of child care or non-labour income of the household or the labour market experience. The benefit calculator of the Department of Work and Pension (DWP) for i th household are mean tested as:

$$B_i = E_i - t_b (y_i - \bar{y}) \quad (1)$$

where B_i is amount of annual benefit, E_i is the total entitlement that constitutes of child tax credit and working family tax credit and t_b is the tax back rate, y_i is the annual household income that includes income of husband y_i^{hs} and wife y_i^{wf} and other incomes y_i^o such as the interest rate earning and the \bar{y} threshold income. If income y_i is below the threshold \bar{y} the household gets more benefits and if y_i is sufficiently above then household is better off by not taking the benefit. The child tax credit (CTC) and the working family tax credit (WFTC) components of benefit entitlements for a family with dependent children can be calculated as

$$E_i = E_{F,i} + E_{CH,i}N_{CH,i} - 0.7CC_i + E_{B,i} + (E_{cp,i} \text{ or } E_{Lp,i}) + E_{30k,i} \quad (2)$$

where $E_{F,i}$ is the family entitlement, $E_{CH,i}$ the entitlement per child the number of dependent children in the family, CC_i child care cost, $E_{B,i}$ entitlement for family, $E_{cp,i}$ or $E_{Lp,i}$ the entitlement for couples or lone parent and $E_{30k,i}$ the

entitlement for working more than 30 hours. For instance for a family with y_i^{hs} equal to £15,000, y_i^{wf} equal to £10,000 and y_i^o net of £60 with three dependent children the DWP's benefit entitlement for fiscal year 2007 is calculated as

$$\begin{aligned} E_i &= E_{F,i} + E_{CH,i}N_{CH,i} - 0.7CC_i + E_{B,i} + (E_{cp,i} \text{ or } E_{Lp,i}) + E_{30k,i} \\ &= 545 + 3 \times 1690 + 1620 + 1595 + 660 = \text{£}9490 \end{aligned} \quad (3)$$

Thus the annual amount of benefit is

$$B_i = E_i - t_b(y_i - \bar{y}) = 9490 - 0.37(25060 - 5220) = \text{£}2149.20 \quad (4)$$

which amounts to £41.33 per week. Generally WFTC provides more benefits to a couple with many children and implicitly encourages at least one parent to remain at home to take care of children. The DWP also administers many other benefits including armed force allowance (£62.25-£41.65), bereavement entitlement (£84.25), care taker allowance (£46.95), disability allowance (£62.25), housing benefit (7.5% to 25%), incapacity benefit (£78.50), income support (single £57.45; couple £90.10), hospital rates (£46.75), industrial injuries (£127.10), job seekers' allowance (£34.60 to £45.58), maternity allowance (£108.85), pension credit (£114.05), state pension (£84.25), severe disablement allowance (£47.45), widow benefit (£84.25), winter fuel allowance (lump sum £200), national insurance (£84.01 - £97.00).

The universality of social insurance system over year has resulted in some stylized facts regarding the coverage or spread of benefits and their impacts on the livelihood of many people who either take or contribute towards it. It is natural that the sheer amount of benefit payments that stands around 85 billion pounds a year currently and the staggering number of 12 million households who receive the benefit raises some eye brows but more studies are required on why one in four working age adult need benefit and why more than 2.6 million people have spent at least half of their working time in some form of benefit in the last ten years (DWP 2000). While the social insurance system like this is a symbol of the level of civilization as every citizen of the country has minimum guaranteed income, the cost maintaining the system should be reasonable and contribute towards higher level of employment and economic growth.

Current government aims to reform the benefit system to make it appropriate for the economic realities of the 21st century (DWP (2010)). It is argued that the current system provides incentives to stay on benefits rather than moving into the employment. Marginal benefits of a transition from unemployment to employment are very small as existing level of benefits raise the reservation wage rate reducing labour supply substantially of the benefit recipients. Blundell (2001) has succinctly summarised how the withdrawal of benefits and in kind supports to low income families result in implicit tax rate of almost 100 %. A number of benefit models to taper universal benefit rates are considered for integrating the major elements of benefits that include income and child tax

credits, housing and council tax benefits, job seeker or working tax credits. In the UK context Blundell et al. (2009), Brewer et al. (2009) Mortensen and Pissarides (1994) Layard and Nickell (1986) , Blundell and Walker (1988) , Meade(1978) Mirlees (1971) have discussed issues evidences and principles extensively. For simplification existing multi-tier benefit system is to be replaced by universal credit system with single unified taper rate. Proposed reform aims to guarantee that work always pays and thus provide more work incentives by withdrawing benefits as income rise at a single reasonable rate. Government's stated objective is to assure that right money goes to right people.

2 Theoretical Aspect

Three elements need to be clear from the theoretical analysis on benefit. First, why is it optimal for people to take benefits? Secondly how these relate to the equilibrium rate of unemployment? Finally what explains transition between employment and unemployment?

Individual choose to remain in benefits comparing levels of utilities in presence or absence of benefits. While individual take prices and wages and level of benefits as given at the time of individual decision, general equilibrium impacts of these individual actions is to raise the reservation wage rate and prices in the economy. Ultimate welfare gains to recipients is far less than what they think at the first place. Bhattarai and Whalley (2009) argue that real value of benefit of £1 is just about 0.17 pence for reasonable values of elasticities of substitution between skilled and unskilled workers and when costs associated with conditional benefits are incorporated into the general equilibrium system of the economy. This model essentially involves optimal choice of level of consumption and leisure taking the maximum of income from work and/or benefit in line of working family tax credit (WFTC) rules existing UK. Households maximise utility from consumption and leisure $\max U(C_i, L_i)$ subject to the budget constraint

$$P_i C_i = \max \left[\{w_i (1 - t_i) (\bar{L}_i - L_i^e) + R_i\}, \{w_i (1 - t_i) (\bar{L}_i - L_i^e) + B_i + R_i\} \right] \quad (5)$$

Individual takes benefit if the level of income under the benefit regime is much higher than when not taking the benefit. In utility terms a typical household chooses to remain in the benefit regime if utility from remaining in the benefit is higher than not receiving the benefit $U_B(p, w) > U_{NB}(p, w)$. These consumption side choices need to be consistent to the production side of the economy where output is produced by highly skilled and unskilled labour $C = F(L_H, L_L)$. The market clearing conditions require that output equals consumption by two types of households $C = C_H + C_L$. Labour market clears across skill categories $\bar{L}_H = L_H^e + L_H$ and $\bar{L}_L = L_L^e + L_L$. The public sector balances require expenses on benefit and transfer payments equal to the revenues from income taxes and withdrawal of benefits (tax-backs) as recipients start working,

$$\sum_{i=H,L} B_i N_i + \sum_{i=H,L} R_i = \sum_{i=H,L} (1 - N_i) t_1 w_i L_i + \sum_{i=H,L} N_i t_2 w_i L_i.$$

Benefit system influences the natural rate of unemployment in the economy as it affects both supply and demand sides of the labour market. While by increasing the reservation wage rate benefits reduce the supply of labour, it also makes costlier to hire workers. Natural rate of unemployment is determined by balancing the rate of creation and destruction of jobs. In Pissarides (2000) the natural rate of unemployment rate rises when rate of job destruction $\lambda(1 - u)$ is higher than the rate of job creation $\theta q(\theta) u$, where λ is the rate of idiosyncratic shock of job destruction, θ the ratio of vacancy to unemployment rate ($\theta = \frac{V}{U}$); $f(\theta)$ probability filling a vacancy and $(1 - f(\theta))$ is not filling it.

$$\dot{u} = \lambda(1 - u) - \theta q(\theta) u \quad (6)$$

Equilibrium unemployment rate (Beveridge curve):

$$u = \frac{\lambda}{\lambda + \theta q(\theta)} \quad (7)$$

In the dynamic context transition from employment (e_t) to unemployment (u_t) and then to the benefit could be explained by a Markov process of the system as:

$$\begin{pmatrix} e_{t+1} \\ u_{t+1} \end{pmatrix} = \begin{pmatrix} (1 - \alpha) & \beta \\ \alpha & (1 - \beta) \end{pmatrix} \begin{pmatrix} e_t \\ u_t \end{pmatrix} \quad (8)$$

Using the undetermined coefficient method and using the initial conditions the complete time path of e_t and u_t are given by

$$e_t = \frac{\beta}{(\alpha + \beta)} + \frac{\alpha e_0 - \beta u_0}{(\alpha + \beta)} (1 - \alpha - \beta)^t \quad (9)$$

$$u_t = \frac{\alpha}{(\alpha + \beta)} - \frac{\alpha e_0 - \beta u_0}{(\alpha + \beta)} (1 - \alpha - \beta)^t \quad (10)$$

By influencing the behavioral parameters α and β of the transition equations benefit system influences course of unemployment and inflation. In theory it is possible to go back to 1942 and study all transition paths by calibrating e_t and u_t historical time series. The main focus of the current paper is on finding cross section of benefit claimants on 2009 leaving dynamic considerations for further extension of the study.

Above theoretical aspects are relevant for the discussion of benefit reforms being proposed recently for improving efficiency of the tax and transfer system as the real value of benefits are economically a lot less than thought by benefit recipients. Evaluation of income and substitution effects of price and wages with and without benefit creates non-convexity of the budget set and requires a more complicated procedure for the computation of equilibrium as heterogeneity of skills and labour supply behavior influenced by conditional choices also enter into the picture. This paper aims to provide more recent empirical evidence on

determinants of benefit claims, work-hours and unemployment rate across 201 counties in Great Britain. To my knowledge the number of benefit claimants has not been assessed in this context and is very pertinent issue at the moment given commitments of current government to reform the benefit system as a part of budget deficit reduction programme.

3 Basic Statistics on Pay, Unemployment and Benefit

Provision of benefits in UK is an integral part of the social security system that started from the Beveridge report in 1942 which states "Social insurance should aim at guaranteeing the minimum income needed for subsistence". Summary statistics of the data constructed from the current population survey, 2009 (<https://www.nomisweb.co.uk/Default.asp>) presented in Table 1 reveals some important features of benefit and payment system across 201 British counties. Average population (working age population) per county was 297,173 (193,175) with a range of 1,384, 900 (871,500). Similarly the number of benefit claimants on average was 7404 with a quite high range of 48, 600. Among these claimants 64 percent were in benefit up to six months, 20 percent for about a year and 13 percent for two or more years. This year had experienced worst recession since 1930s and the average unemployment rate across counties was 8.4 percent with average number of employed individuals being 146,673 per county. Average annual pay per county was 31, 303 but varied between 20,303 and 83,969. Average pay per week was 577 and had a range of 740.

Table 1: Benefit Claimants and Related Variables in Great Britain 2009

	Mean	Std. Dev	Min	Max
Pay per week	576.8	103.5	392.3	1132.2
Pay per hour	14.80	2.9	9.8	29.6
Pay per year	31302.8	7861.5	20303	83969
Hours per week	39.02	0.617	37.5	41.2
Unemployed	11764.2	9135.3	800	61400
Employed	146673.1	122273.2	12800	697300
Unemployment rate	8.4	2.6	2.1	16.7
Benefit Claimants	7404.4	5804.4	360	48900
Claimants-6 months	4772.9	3537.2	260	25060
Claimants-1 year	1506.6	1255.0	60	11590
Claimants-2 years	962.8	857.4	40	8120
Working age 14-64	193175.1	156612.4	16100	887600
Total population	297172.6	245597.6	26200	1411100

The frequency distributions of number of benefit claimants, work-hours and unemployment rates and annual average pays are as shown in Figures 1,2,3 and 4 respectively.

Figure 1

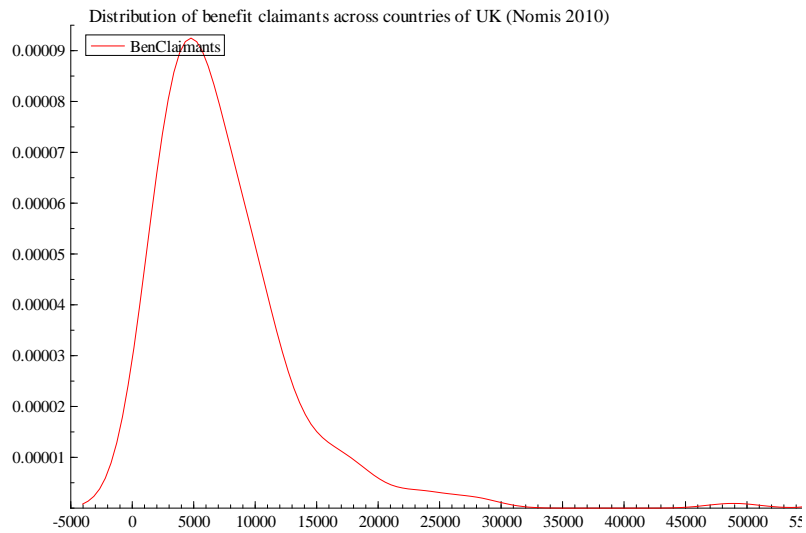


Figure 2

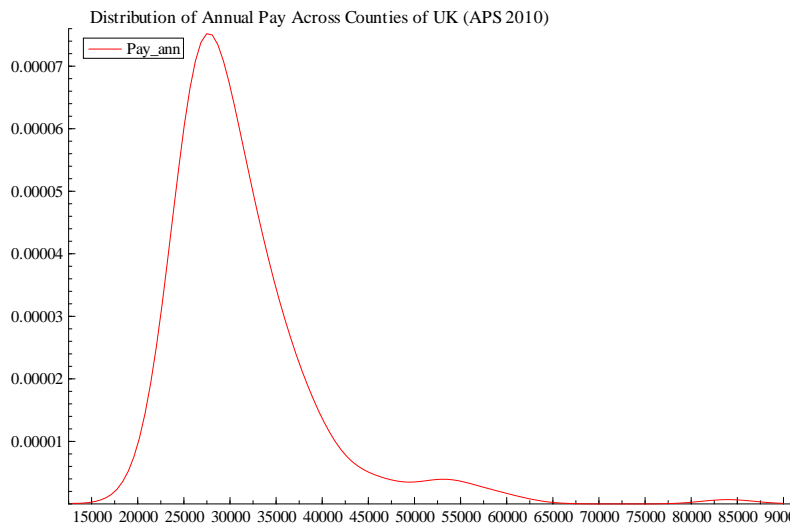


Figure 3

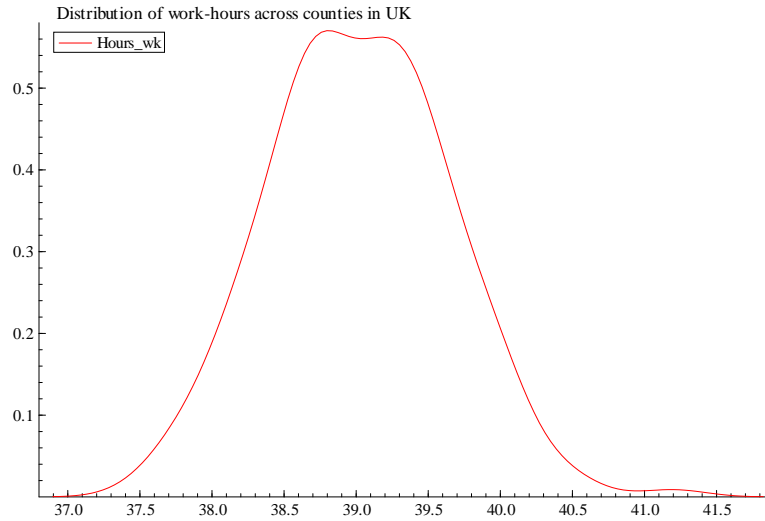
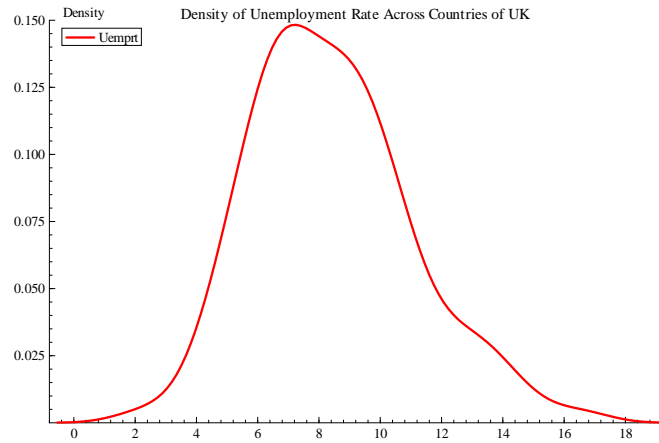


Figure 4



4 Determinants of Benefit Claimants

Multiple regression analysis is used here to investigate the determinants of benefit claimants among 201 UK counties. Let Y_i measure the number of benefit claimants in county i , $X_{1,i}$ the rate of unemployment in that county, $X_{2,i}$ be working age (16-64) population and $X_{3,i}$ total population, $X_{4,i}$ be pay per week in that county.

$$Y_i = \beta_0 + \beta_1 X_{1,i} + \beta_2 X_{2,i} + \beta_3 X_{3,i} + \beta_3 X_{3,i} + \varepsilon_i \quad i = 1 \dots N \quad (11)$$

First determinant of the number of benefit claimant is the unemployment rate. UK government provides jobseeker and other unemployment related allowances to all eligible individuals. One percentage point increase in unemployment is likely to raise more than 625 people in the benefit in a certain county. The econometric evidence clearly supports that counties with higher rate of unemployment had larger number of benefit claimants.

Second determinant of benefit claimants is pay per week. Claimant rate was lower for counties with higher weekly pay. Richer regions had more income and fewer claimants of benefits. Increase in weekly pay also raises the cost of remaining in unemployment. People are likely to take jobs than remaining unemployed and claiming the benefits. If pay rises by one pound it is likely to bring about nine people out of doles.

4.1 Underlying Econometric Method

Number of working age population in the region has positive impact on the number of benefit claimants. Larger number of people in the workforce raises the number of people looking for jobs, this is likely to make getting job more difficult. More remain unemployed and claim the benefit. However for an advanced economy with good mobility of labour across counties this effect can be expected to be small as shown by coefficient of 0.12.

The OLS estimator $\left(\hat{\beta} = (X'X)^{-1} X'Y\right)$ here measures the influence of explanatory variable (X) on the number of benefit claimants across 201 counties of Great Britain. The Gauss Markov theorem establishes that this estimator is linear $\left(\hat{\beta} = aY; a = (X'X)^{-1} X'\right)$, unbiased $\left(E\left(\hat{\beta}\right) = \beta\right)$ and most efficient among all estimators, $cov(b) > cov\left(\hat{\beta}\right)$. Reliability of the OLS estimates depend on the variance of errors $\left(\hat{\sigma}^2 = \frac{\sum \hat{e}_i^2}{N-k}\right)$ and the covariance matrix for the coefficients:

$$cov\left(\hat{\beta}\right) = (X'X)^{-1} \hat{\sigma}^2 \quad (12)$$

Whether particular coefficient $\hat{\beta}_i$ is significant depends on $SE\left(\hat{\beta}_i\right)$ and associated t values $\left(t\left(\hat{\beta}_i\right) = \frac{\hat{\beta}_i - \beta_i}{SE\left(\hat{\beta}_i\right)}\right)$. How well data fits to the model is indicated by $\left(R^2 = \frac{\sum \hat{y}_i^2}{\sum y_i^2}\right)$ and the level of significance of the overall model is given by $F = \frac{RSS/(K-1)}{ESS/(N-k)}$ statistics. While white test $n.R^2 \sim \chi_{df}^2$ could detect the existence of heteroskedasticity, the Durbin-Watson statistics

$$\left(DW = \frac{\sum_{t=1}^T (e_t - e_{t-1})^2}{\sum_{t=1}^T e_t^2}\right)$$

detects any evidence for autocorrelation though this is less serious problem of cross section analysis reported in the next section.

5 Analysis of Empirical Findings

Four sets of regressions are estimated to establish the factors that determine benefit claims among British counties. First one is the general model without any distinction taken on the duration of payment received. Results in Table 1 show that unemployment rate and the working age population are major determinants of number of benefit recipients across these counties. While increase in unemployment rate by one percent is likely to raise the number of benefit claimants by 625, increase in population by 100 person is likely to add 12 claimants into the benefit system. Both these factors are statistically very significant as the null hypothesis is rejected by highly significant t-statistics. Overall fit of the model is quite good as indicated by R^2 ($R^2 = 0.86$) and F-statistics ($F = 496.7$). Further these estimates do not have autocorrelation problem as DW statistic of 1.83 is above the critical limit of the DW-table.

Table 2: Determinants of Benefit Claimants in Great Britain

	Coefficient	Standard Error	t-value
Intercept	496.7	1329.0	0.4
Unemployment rate	624.6	69.0	9.05
Pay Per week	-8.7	1.8	-4.9
Population	-0.05	0.01	-4.65
Working age populaiton (16-64)	0.12	0.02	6.45
$R^2 = 0.86$, $F = 496.7$ (0.00) , $DW = 1.83$, $N = 201$.			

Do these determinants of claimant counts vary in their influences on the claimants according to the duration of benefit taken by the individuals? Theoretically one can argue that benefit system protects against cyclical factors but not structural factors of the economy. UK economy shrank by more than 5 percent in 2009 , the year of study. One could expect higher unemployment rate as well as larger benefit take in this year. Those who have been taking benefits for more than one year or two years were taking benefits even when economy was prospering. Separate regressions of the number of benefit claimants for six months, one year and two years thus can indicate to the cyclical and long run factors behind the claimants. Results presented in Table 2 clearly prove this intuition. The influence of above determinants was far greater on and more pronounced on benefit claimants in six months than for ones who have been claiming benefits of one year or two years.

Those who have been claiming benefits more than one or two years may be doing it not just for cyclical reasons. Globalisation process has caused structural transformation of the economy with manufacturing jobs being transferred overseas. Service industries have not been able to create as many jobs are growing work force would require. Rates of job destruction recently have been higher

Table 3: Determinats of Six Month Benefit Claimants

	Coefficient	Standard Error	t-value
Intercept	2511.4	322.5	7.79
Unemployment rate	0.337	0.161	21.0
Pay Per week	-3.891	0.557	-6.99
Population	-0.011	0.004	-2.85
Working age populaiton (16-64)	0.20	0.007	3.01
$R^2 = 0.96$, $F = 1208$ (0.00) , $DW = 1.81$, $N = 201$.			

than the rate of job creation. For individuals claiming more than a year benefit spell started long before 2009 recession. Higher rate of unemployment and larger size of working age population have further aggravated this problem.

Table 4: Determinants of One Year Benefit Claimants

	Coefficient	Standard Error	t-value
Intercept	572.4	176.6	3.24
Unemployment rate	0.183	0.009	20.7
Pay Per week	-0.951	0.310	-3.12
Population	-0.003	0.002	1.34
Working age populaiton (16-64)	0.001	0.004	0.260
$R^2 = 0.90$, $F = 474.8$ (0.00) , $DW = 1.87$, $N = 201$.			

People taking benefits for more than two years clearly have more serious problems - long term injuries or incapacities. Despite that in average higher pay per week deters these people to remain in the long term benefit so does the population of the county. Unemployment rate and working age population are still very dominant factors for number of long term claimants across British counties.

Table 5: Determinants of Two Years Benefit Claimants

	Coefficient	Standard Error	t-value
Intercept	-141.1	266.1	-0.53
Unemployment rate	119.8	13.81	8.67
Pay Per week	-1.340	0.353	-3.80
Population	-0.008	.002	-3.53
Working age populaiton (16-64)	0.017	0.004	4.69
$R^2 = 0.73$, $F = 135.5$ (0.00) , $DW = 1.9$, $N = 201$.			

There are three ways to provide benefits: 1) direct cash payments for the vulnerable individuals in the form of social security insurance 2) in kind public services such as health and education and 3) efficient private sector for higher

rate of growth and job creation. Public private partnership seems to be a crucial factor for achieving higher standards of living in the country.

Cash benefit payment is a means to meet the public objective to achieve fairness and provide opportunities for all. Tax-transfer system is designed to create fair society in Britain. Job Centre plus and employment programmes had helped more than 3.2 million people leave the unemployment spell in the last government. Similarly 18-24 year old claiming jobseeker's allowances for six months were guaranteed a job, work replacement or work related training. Free school meals to all children of low income families from September 2010. Basic state pension had increased by 2.5 percent and threshold of inheritance tax was kept at £325,000. Weekly minimum income guarantee schemes were in operation for working households and number of benefit recipients who were affected by marginal deduction rates (MDR) in excess of 70 percent while entering to work had been halved since 1997. Schemes were in operation to eliminate the child poverty by 2020 by adopting comprehensive measures stated in Ending Child Poverty: Making it Happen. On tax front government expected fair contribution from everyone to the taxes that fund public spending without bending the tax rules. Various measures such as new disclosure opportunity (NDO) were taken to minimise leakages of revenues in the form of offshore tax haven and tax evasion and avoiding hidden and fraudulent activities coordinating with EU and other trading partners. Provision of affordable housing, support to home owners and home buyers, support to pensioners and vulnerable families by supporting ISA savings were other parts of the cash benefits.

In kind benefits complement cash benefits and are provided by maintaining high quality front-line public services including health (NHS) education and security (policing). Hospital treatment within 18 months, referral to a cancer specialist within 2 weeks, A &E treatment within 4 hours were achievements of past investments in the NHS. Number of schools with less than 30 percent pupils achieving less than five good grades in GCSEs including English and mathematics that reduced from 1600 to 270 in the last 12 years followed from investment in education. Safer communities require additional police officers in the street.

Through various measures of macroeconomic stability and growth government has been supporting businesses and helped recovery of various industries by ensuring finances, promoting innovations and skill, enhancing enterprises and maintaining open and competitive markets and investing in low carbon infrastructures. Schemes like Skill for Growth, Digital Britain, Life Sciences Blue Print, Low Carbon Industrial Society, Building Britain's Future: New Industry, New Jobs support small, medium and large scale businesses and brings higher rate of growth into the economy. Prosper private sector creates more jobs and helps more individuals to transit from unemployment to employment and from life in doles to a decent life of work and higher income.

6 Conclusion

Sir William Beveridge (1942) had thought of six groups of individuals in the society and recommended six principles on which the benefit system should operate. Over last seven decades tax and transfer system with benefit has evolved and has become an integral part of the social security system in the UK. Benefit is the main source of income for working age people who are unemployed. This study has identified factors that determine the number of benefit claimants among British counties. Higher the rate of unemployed in a county, larger the number of benefit claimants. As numbers of working age population rise, there is more labour supply relative to the demand for demand. Greater number working age individuals end up claiming the benefits because of the higher reservation wage rate due to existence of the benefit system. Greater influences from explanatory variables, unemployment rate and working age population, on the number claiming the benefits up to last six months were mainly because of the recession of 2008/2009. Short run business cycles were less relevant for people who have been claiming benefits over one year or two years. In all cases higher the average weekly pays in a county lower was the number of benefit claimants. Higher weekly pay clearly indicates shortage of labour in that county, lower unemployment rate, and smaller number of benefit claimants. In general total population was found negatively related to number of benefit claimants as more densely populated counties should have larger markets and more jobs and hence fewer benefit claimants.

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