

What Effect has Working Family Tax Credit had on the Wage Growth of Recipients?

Abstract

This paper looks to see whether Working Family Tax Credit has had an effect on the wage growth of recipients in light of the recent emphasis placed on work as an alternative to welfare. If workers are simply moving into dead end jobs then the welfare effects may not be as positive as generally thought. WFTC subsidises general training and the accumulation of experience but taxes future wage gains as the credit is phased out making theoretical analysis of the incentives for human capital accumulation and wage growth ambiguous. Using data from the Labour Force Survey we find evidence that WFTC has helped subsidise training but that wage growth is only fuelled for individuals who have limited exposure to the marginal tax on wage gains.

1. Introduction

In recent years significant emphasis has been placed on work as an alternative to welfare. In their 1997 election manifesto New Labour pledged to “*examine the interaction of the tax and benefits systems so that they can be streamlined and modernised, so as to fulfil our objectives of promoting work incentives, reducing poverty and welfare dependency, and strengthening community and family life.*” Working Family Tax Credit (WFTC) built on the previous Family Credit (FC) scheme and hoped to encourage unskilled low wage workers into the labour market, relieve the burden on the welfare system and provide incentives for individuals to work themselves out of poverty. Similar policies exist around the world: the Earned Income Tax Credit in the US and SSP experiments in Canada are two well known examples.

Such “welfare to work” schemes have been shown extensively to increase labour market participation (Eissa & Leibmann, Blundell et al). By definition however, WFTC recipients are in low wage unskilled employment and wage growth among these professions is much lower than among the “best jobs.”¹ If WFTC simply encourages individuals to move into badly paid dead end jobs then the welfare implications may not be as favourable as generally thought.

¹ Goos & Manning (2003), “McJobs and Macjobs” in The Labour Market Under New Labour

Recent literature however has suggested that under the right conditions, unskilled workers can escape the low wage cycle. Low wage jobs may simply be a “stepping stone” to better paid positions (Gottschalk 2000). If in-work benefit programmes can help propel these workers onto a path of earnings growth then the long term effects of WFTC may be very favourable. Any effect that such schemes have on long term earnings growth has however been largely ignored by the literature. Only Connolly and Gottshalk (2002) and Card et al (2001) have looked at wage progression in the context of the Canadian SSP experiments.

The effect of in work benefit programmes on human capital accumulation and wage growth is theoretically ambiguous. The literature suggests that workers finance general human capital through reduced wages (Becker 1964). By subsidising these low training wages, such schemes may create incentives to undertake general training. By increasing labour market participation they also help workers accumulate experience. Both training and experience have been shown to contribute to wage growth (Becker, Mincer.) On the other hand such schemes impose a marginal tax on wage gains as the subsidy is phased out which may reduce incentives to develop human capital. The effect on any individual is likely to depend on the extent to which they are affected by the marginal tax.

We find that WFTC had very little effect on average wage growth. The advantages of subsidised human capital accumulation and training were offset by the marginal tax imposed on earnings by the taper. Furthermore the reduced taper post reform did not fuel wage growth because the taper simply extended further over the wage distribution. However very low earners (those receiving maximum credit) for whom the longer taper is irrelevant saw faster wage growth as a result of the reform. We also find that individuals who will soon be ineligible (those with older children and at the end of the taper) have faster wage growth as they will soon be unaffected by the marginal tax on wage gains. These results suggest that although WFTC had little impact on wage growth,

in work-benefit schemes could be designed through manipulation of the taper, maximum and eligibility limits, to provide incentives for accelerated wage growth.

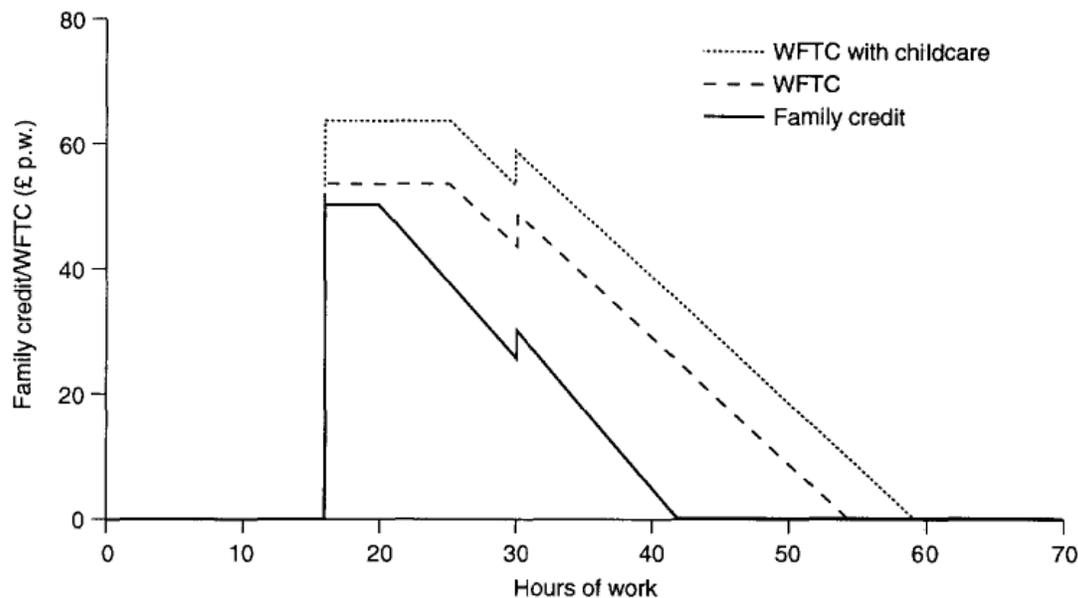
The next section outlines in more detail existing literature and the theoretical and empirical issues to be considered. Subsequent sections describe the data used in analysis, present results and conclusions and offer suggestions for further research.

2. Theoretical Framework and Literature

2.1. Earnings Supplement Programmes in the UK

Earnings supplements have existed in the UK since the 1971 Family Income Supplement (FIS). In 1988 this was replaced by Family Credit followed by Working Family Tax Credit in October 1999. WFTC was fully operational by March 2000. In April 2003 WFTC was replaced by Working Tax Credit and Child Tax Credit. By subsidising low wages, such schemes aim to lower reservation wages, encourage low wage individuals into the labour market and increase labour market participation. Policy makers hope these schemes will help people work themselves away from poverty and welfare dependence. Early evidence (Gregg & Harkness) suggests that WFTC has increased labour market participation particularly among single mothers and is beginning to have an impact on poverty.

Individuals working more than 16 hours a week with dependant children and who earned up to a maximum threshold income (£79 per week in 1998-1999) were offered a maximum amount of family credit with extra payments for additional children and full time work. For every pound earned above the threshold, the available credit was reduced by 70 pence effectively taxing wage gains by 70%. WFTC raised the maximum credit and raised the threshold to £90 per week. Additionally under WFTC the reduction in entitlement was only 55 pence for every additional pound earned. WFTC also included childcare support of 70% of childcare costs up to £150 per week.

Figure 1 The Changing Structure of Tax Credits in the UK²

The increased length of the taper meant that there were a number of people who hadn't been eligible for FC but were suddenly eligible for WFTC. These people experienced the largest cash gains from the reform but were also hit by an additional 55% marginal tax.

2.2. Literature on Wage Growth Among Low Skilled Workers

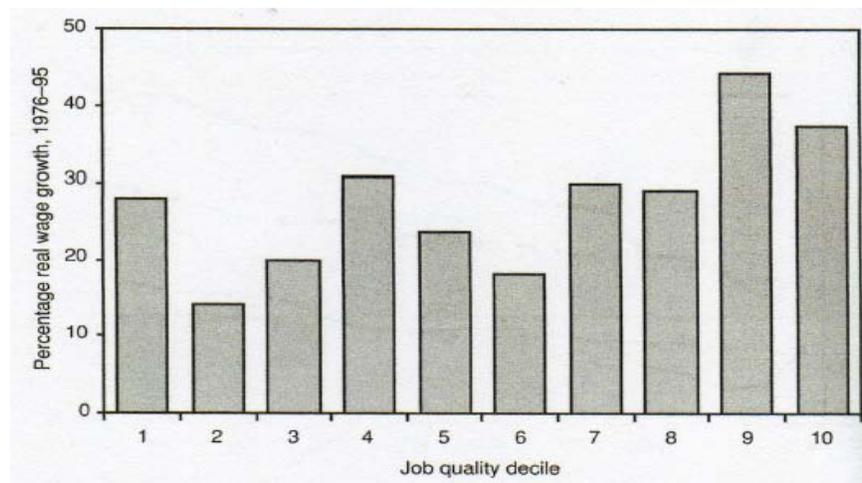
Wage growth is generally attributed to the development of human capital and the accumulation of labour market experience (Mincer 1974). As individuals improve their human capital they become more productive and wages should reflect this improved productivity. Experience and job tenure gives workers a chance to accumulate job specific human capital while general and job specific training also contribute to wage growth. Gottschalk (2001) proposes that job mobility also contributes to wage growth by allowing workers to move to jobs which better “match” their skills enabling them to be more productive and demand higher wages.

Unskilled low wage workers are often thought to face flat earnings profiles and be stuck in “dead end” jobs. Imperfect capital markets make it difficult for them to invest in the

² Recent reforms in 2003 extend tax credits to low income individuals without children (WTC and CTC). It is still too early to evaluate wage growth after this latest reform so this study considers the reform from FC to WFTC late 1999 early 2000.

training and human capital development necessary to break out of the low wage cycle. Connolly and Gottshalk (2000) find that less educated, low skill workers have significantly smaller between job wage growth and returns to experience and tenure. Figure 2 plots the growth in average wages over the period 1976-95 by job decile in the UK. One can readily see that wage growth has been lowest in the “worst” jobs.

Figure 2 The Relationship Between Real Wage Growth and Job Quality Decile.



Data from the NES

Source: Goos & Manning (2003), “McJobs and Macjobs” in The Labour Market Under New Labour, Dickens, Gregg & Wadsworth Eds.

A number of recent papers have however emphasised the role that these low wage initial jobs may have as “stepping stones” to better jobs. Connolly, Gottshalk and Newman (2003) looked at wages for a number of workers previously thought to have been “hopelessly stuck flipping burgers” and found that a significant number experienced upward mobility in wages. Gladden and Taber (1999) found that unskilled workers could have comparable wage growth to other workers. They emphasise the importance of labour market attachment to allow unskilled workers to reap the returns to experience and of job flexibility. Stewart (1997) uses the BHPS to investigate this idea in the UK but concludes that in the period up to 1997 “low paid jobs are more likely to act as a blind alley than as stepping stones to positions higher up the pay distribution.” If the positive effects of WFTC on labour market participation described by Blundell and Gregg simply reflect more workers moving into these dead end jobs then the welfare implications are less favourable than these papers suggest. Individuals just swap low income

unemployment for jobs with low wages. It is possible however that WFTC may have created suitable conditions for unskilled UK workers to be able to use these low paid jobs as the stepping stones described by Gladden and Taber. None of the papers above consider the contribution that in-work benefit schemes may have on the ability of unskilled workers to break out of the cycle of dead end jobs. If such schemes do help unskilled workers move onto a path of earnings growth, welfare implications could be very favourable.

2.3. Literature on In Work Earnings Supplements and Wage Growth

The literature focuses on the labour supply effects of in-work earnings supplements (Blundell et al, Gregg et al) with almost no discussion of the dynamic effects on wage progression. Recently however a couple of studies have considered this issue in the context of the Canadian SSP experiments. The Self Sufficiency Project offers an earnings supplement of 50% of the difference between actual monthly earnings and a target income to single parents who had been unemployed for at least 12 months in the past and work at least 30 hours a week. Receipt is limited to 36 months. The project was set up as a formal experiment with randomly assigned treatment and control groups.

Connolly and Gottschalk (2002) estimate a search model which investigates the effect the earnings subsidy has on the choice between jobs with different wage profiles. They predict that *“if the post-wage subsidy wage is an increasing multiple of the pre-subsidy wage, then the subsidy makes high wage growth jobs more attractive.”* This would be the case if an individual moved above the earnings threshold once eligibility expired. They find wage growth to be similar for controls and experimentals and argue that the SSP earnings threshold is so high that recipients are unlikely to experience enough wage growth to move beyond it. Consequently they argue that the subsidy is linear in its effective range and will have no effect on the attractiveness of jobs with wage growth. They also argue that the subsidy reduces reservation wages so that individuals accept lower paid jobs. From this low base it will be easier to find a new job with higher wages so recipients can expect significant wage growth between jobs.

Card, Michalopoulos & Robins (2001) concentrate on the wages of those induced to work assuming that the expected wage growth for the induced programme group is equal to the growth rate of the control group plus a differential and hypothesise that any wage differential is due to selection. Their model relies on the highly unrealistic assumption that SSP has no effect on those already in work. By restricting their study they look exclusively at the effect of the treatment on the treated and results cannot be generalised across other groups. They find however that wage growth for those induced to work is similar to that of other welfare leavers and consistent with the wage growth of low skilled US workers.

Whilst highlighting important issues about job choice and selection neither paper addresses the issue of how earnings subsidies may help individuals improve their human capital and fuel wage growth. By increasing labour market participation earnings supplements subsidise the accumulation of labour market experience. The literature also suggests that employees pay for their own general training in the form of lower wages and share the costs of specific training with the firm (Becker). The improvement in human capital and productivity as a result of the training is reflected in higher future wages. Therefore the decision whether to undertake training will depend on whether the individual places greater value on higher wages today or in the future. An earnings subsidy will subsidise the lower “training” wage, reducing the current wage penalty and *increasing* the incentives to undertake general training. As wages rise however, the earnings subsidy is phased out, effectively imposing a marginal tax on wage gains. This reduces the future payoffs from training and experience *reducing* the incentive to accumulate experience and undertake training. Thus the effect of earnings subsidies appears ambiguous.

Gottshalk and Connolly can look at average effects because everyone on SSP experiences the same marginal effects. The WFTC maximum imposed a kink in the budget constraint and it may be that those on the maximum and those on the taper were affected differently. Individuals receiving the maximum were unaffected by the taper and may have been less concerned with the negative effects of the marginal tax. For very low wage workers

therefore WFTC may indeed have helped fuel human capital accumulation and wage growth.

Similarly if entitlement is nearly exhausted (the individual is close to the end of the taper, has older children or in the case of SSP has been on the scheme for nearly 36 weeks) future wage gains will not be affected by the marginal tax and we would expect earnings subsidies to fuel wage growth as all future benefits will be appropriated by the individual. The existing literature does not explicitly consider the role of eligibility limits.

The existing literature would suggest that while low wage workers may not be stuck in dead end jobs, they are not likely to experience rapid wage growth. The effect that WFTC may have had on wage growth is unclear. Subsidised training and experience could be expected to be offset by the effect of the marginal tax on future wage gains. Theory is ambiguous and the evidence from the SSP experiments suggests that any effects on wage growth are small. We might therefore expect recipients to have wage growth similar to that of other workers. I argue however that there should be a positive effect for those expecting to soon be free of the taper because the future benefits of wage growth will be unaffected by marginal taxes but they will still gain the benefits of subsidised training and labour market experience. The overall effect on wage growth will therefore depend on the level of subsidy received and whether the recipient has long term eligibility.

3. Empirical and Methodological Considerations

In a simple OLS regression (1) β_1 should tell us the wage growth attributed to WFTC receipt.

$$\text{Wgth} = \alpha + \beta_1 \text{WFTC} + \varepsilon \quad (1)$$

Receipt of WFTC is however endogenous to wage growth so the coefficient on the WFTC variable will also pick up the effect of other factors which are correlated with WFTC and affect wage growth.

$$\text{Cov}(\text{WFTC}, \varepsilon) \neq 0$$

Thus β_1 will be a biased estimator of the effect of WFTC on wage growth unless we can find a suitable instrumental variable.

There is no obvious instrumental variable for WFTC receipt as the determinants of WFTC receipt can all affect wage growth. A bad instrument can cause worse bias than the endogeneity it was meant to remove. Consequently this investigation uses differencing to remove the effects of the endogeneity bias. We compare individuals with the same general characteristics, some of whom receive WFTC and some don't. As the individuals are otherwise the same, any differences in wage growth between recipients and non recipients can be attributed to WFTC receipt.

Recipients of WFTC are not typical individuals; WFTC is not randomly assigned. A vector of 100's of additional individual characteristics would be required in equation (1) to accurately control for individual characteristics. The selection bias incurred from investigating a non representative group leads to the endogeneity bias discussed above and makes it critical to find a suitable control group to compare recipients against. The problem arises because it is impossible to observe the same individual in both states. We do not know what the individual would have earned if they had not received WFTC. We must construct this "missing counterfactual" by calculating wage growth for an otherwise identical individual.

A number of policy reforms such as the minimum wage and new deal were introduced simultaneously with WFTC. In equation (1) β_1 may pick up the effect of these reforms as well as WFTC so it is important that the comparison group also experienced the same external shocks so that the effect of WFTC alone can be extrapolated.

The SSP experiment has formal treatment and control groups by design but no obvious control group exists for WFTC recipients. This investigation looks at a number of

possibilities, discussing the problems associated with each to try to identify the most reliable comparison group.

4. Data

The analysis in this paper is based on the five quarter rolling panel of the UK Quarterly Labour Force Survey (LFS) which interviews circa 138,000 individuals in 59,000 households every quarter providing data on the labour market and related topics such as qualifications, training, income and welfare receipt. Each quarter includes 5 waves of 12,000 households and each household can be tracked through 5 quarters offering panel data over a year.

Since spring 1997, earnings information has been reported in the 1st and 5th waves allowing us to measure wage growth over a year. Using data from winter 1997 to spring 2002 two datasets were constructed each containing information on 9 cohorts of individuals. The later dataset includes 88,664 individuals over the period spring 2000 to spring 2002; from the introduction of WFTC to when it was replaced by WTC and CTC, while the first dataset includes 100,397 individuals over a period covered by the old FC scheme. In line with earlier studies the self employed and economically inactive are dropped due to the unreliable nature of their earnings information. Individuals with missing data for crucial variables such as wage and hours are also dropped.³ Descriptive statistics of the key variables suggest that while the majority of variables appear sensible gross hourly pay has some abnormally high values⁴. The LFS literature suggests limiting gross hourly pay to between £0-£99. When individuals with reported pay outside this range are excluded we are left with a FC dataset of 44,046 individuals (21,601 male and 22,445 female) and a WFTC dataset of 36,830 individuals (17,751 male 19,079 female.)

³ Dropping data may cause selection bias if the individuals dropped were particular types of people. Comparisons of the distribution of several descriptive variables; age, sex, average wage, hours, tenure, region, welfare receipt etc indicate however, that the distribution of the smaller sample is broadly similar to the whole sample although there were slightly fewer single individuals. Data available on request

⁴ Gross hourly pay of £234 was unlikely

The LFS has recorded WFTC receipt since its introduction in spring 2000 enabling recipients and non recipients in the WFTC dataset to be identified. It is immediately apparent in a comparison of the two groups that WFTC recipients are not typical members of the population (appendix 1). By design recipients are parents and have lower wages. Recipients are also far more likely to be female, separated, young and have lower educational achievement. They are also concentrated in key regions across the country.

5. Results

5.1. WFTC Recipients vs. Non recipients

Table 1 shows the mean percentage change in wage rate between waves 1 and 5. The wage rate is the observed hourly wage recorded in the LFS.⁵

Table 1 Wage Growth of Recipients, Non Recipients and Eligible Non Recipients

	Wage Growth	Standard Deviation
On WFTC⁶	0.08958	0.3826
Never on WFTC⁷	0.06564	0.3471
Eligible but Never on WFTC	0.06802	0.3675

WFTC recipients have average wage growth 2.4% higher than non recipients. But as identified in the previous section recipients are not typical members of the population. If the specific characteristics of recipients have no affect on wage growth then this is not a problem. There is however considerable literature concerning the effect of initial wage levels, family background, education and experience (often proxied by age) on wage growth. When broken down by sex while the wage growth of female recipients is positively affected by WFTC, the effect on male recipients is negative. Male recipients have wage growth 1.0% lower than non recipients while female recipients have wage growth 3.7% higher. Further breakdowns by sex, marital status and highest qualification

⁵ Estimated wage growth is inline with estimates in the National Earnings Survey of 5% a year

⁶ Individuals who receive WFTC in both wave 1 and wave 5

⁷ Individuals who never receive WFTC

indicate that WFTC has very different effects on single and married parents and varies according to educational achievement. This suggests that several of the recipients' characteristics other than WFTC receipt affect their wage growth. Their position on the earnings distribution also makes recipients more likely to have been affected by the other policy reforms. To compare recipients and non recipients is not comparing otherwise identical individuals.

5.2. WFTC Recipients vs. Eligible Non Recipients

The LFS provides enough information about earnings, dependant children and hours worked in order to make an estimate of WFTC eligibility using eligibility rules provided by the Inland Revenue. Eligibility also depends on savings and childcare spending which is not recorded in the LFS so our estimates assume savings and childcare spending is zero. Dropping the ineligible from the WFTC sample leaves a sample of 10,699 individuals of whom 41% take up⁸. Eligible non recipients are prospectively a better control group as they will be parents on the same part of the earnings distribution as recipients. Appendix 2 shows that the distribution of observable characteristics is now much more consistent across the two groups although there remains some bias in terms in marital status.⁹

If we reduce the control group to eligible non recipients, recipients now have wage growth 2.16% higher than non recipients. The positive effect on wage growth has been marginally reduced and the coefficient should be less biased as additional characteristics become less important. It would appear from this analysis that WFTC helps to fuel wage growth despite conflicting incentives of subsidised human capital accumulation and a

⁸ Our estimates of take-up of WFTC among the eligible are considerably lower than formal estimates from the FRS. Our eligibility estimates are likely to be overstated because by assuming zero levels of saving we are probably understating household income. The complicated nature of the LFS means that partners income may not always have been picked up further understating household income. This report however does not attempt to accurately measure take up of WFTC. The motivation for estimating eligibility is to find a suitable control group to compare recipients against. So long as characteristics between our measure of eligible non recipients and recipients are the same it should not matter that our measure of eligibility is not 100% accurate

⁹ This may be due to errors in measurement of eligibility or because households who have been through divorce proceedings are more aware of entitlement and availability of welfare

marginal tax. Breakdowns show male recipients have wage growth 1.5% lower than non recipients while female recipients experience wage growth 3.6% higher.

Whilst the results from this comparison of recipients with eligible non recipients should be more reliable because observable characteristics are more consistent there are still some important differences. Recipients are more likely to be single (although in breakdowns marital status does not appear to affect the results.) Furthermore there are almost certainly *unobservable differences* between the two groups. There must be some reason that the control group has not taken up WFTC while the recipients have. Thus although we put more credence in these results the differences in wage growth could still be influenced by factors other than WFTC receipt.

5.3. Difference in Differences

The increased generosity of WFTC compared to FC meant that a number of people who hadn't been eligible for FC became newly eligible for WFTC. Using the rules for FC eligibility¹⁰ these individuals can be identified as can individuals in the FC dataset who would have been eligible for WFTC had it existed but were ineligible for FC. These two groups are effectively the same; the individuals come from the same part of the wage distribution¹¹. By measuring average wage growth for each group we can compare wage growth in the WFTC period and the FC period, thus identifying the effect of WFTC receipt on wage growth. Other groups can also be identified.

¹⁰ Available from the Inland Revenue

¹¹ Data in appendix 3

Table 2 Wage Growth before and After the WFTC Reform Broken Down by Receipt

	FC Period		WFTC Period		Difference
	Mean	Std Dev.	Mean	Std Dev.	
<u>Takeup Group</u>					
FC>0 R>0	0.075	0.496	0.075	0.923	0.000
FC>0.9*max R>0	0.086	0.586	0.102	1.210	0.016
0<FC<0.9*max R>0	0.066	0.379	0.058	0.660	-0.008
<u>Non Takeup Group</u>					
FC>0 R=0	0.073	1.399	0.073	0.009	0.000
FC>0.9*max R=0	0.085	1.557	0.094	0.693	0.009
0<FC<0.9*max R=0	0.090	1.295	0.047	1.185	-0.043
<u>Newly Entitled</u>					
FC=0 WFTC>0	0.048	0.545	0.056	0.592	0.008
<u>Never Entitled</u>					
FC=0 WFTC=0	0.075	1.463	0.065	1.238	-0.009

FC=FC Eligibility: amount individuals eligible for

R=Receipt: includes all individuals who received tax credits in one or both of the waves

WFTC= WFTC Eligibility

The non takeup group were unaffected by the WFTC reform as they never received tax credits. Average wage growth among this group was unchanged between the WFTC and FC periods suggesting that there was little change in the macro environment.

The takeup group were affected by an increase in the maximum and a reduction in the marginal tax from 70% to 55%. These individuals also experienced no change in average wage growth between the two periods suggesting that the potential positive effects on wage growth from the increased generosity of WFTC are offset by the longer taper. Whilst the average effect is negligible, changes in the taper and maximum do appear to have effects on certain individuals.

Those on the maximum (FC>0.9*max) saw a 1.6% increase in wage growth probably because the increase in maximum and reduction in the taper raises incentives for human capital accumulation and wage growth. Individuals have longer on the maximum before hitting the penal effect of the taper and then the marginal tax is lower. The increased length of the taper is less important to this group because they have the lowest initial

wages and are unlikely to progress to the point on the wage distribution where the longer taper has an effect.

Those on the taper ($0 < FC < 0.9 * \max$) saw a 0.8% fall in wage growth. The increased length of the taper appeared to outweigh the positive effect of a reduction in the marginal tax rate.

Newly entitled individuals were affected by WFTC for the first time and show us how WFTC as a whole affected wage growth. They receive a subsidised wage for the first time but were also affected by an additional 55% marginal tax. These individuals experienced a 0.8% increase in wage growth as a result of the policy reform while other groups experienced no change between the same two periods. The benefits of subsidised wages seem to outweigh the negative incentives for wage growth induced by the 55% tax. By definition this group is at the end of the taper so their chances of quickly moving beyond its penal effects are high. As the future costs in terms of the tax are limited, individuals have an incentive to take jobs with wage growth.

All three groups can also be broken down by the age of the youngest child.

Table 3 Wage Growth before and After the WFTC Reform Broken Down by Age of Youngest Child

	<u>FC Period</u>		<u>WFTC Period</u>		<u>Difference</u>
	<u>Mean</u>	<u>Std Dev.</u>	<u>Mean</u>	<u>Std Dev.</u>	
<u>Takeup Group</u>					
FC>0 R>0	0.075	0.496	0.075	0.923	0.000
Depchildren 16-18	0.100	0.269	-0.099	0.302	-0.200
Depchildren 0-15	0.074	0.504	0.082	0.938	0.008
<u>Non Takeup Group</u>					
FC>0 R=0	0.073	1.399	0.073	0.009	0.000
Depchildren 16-18	0.085	0.738	0.080	0.821	-0.004
Depchildren 0-15	0.072	1.455	0.072	1.030	0.000
<u>Newly Entitled</u>					
FC=0 WFTC>0	0.048	0.545	0.056	0.592	0.008
Depchildren 16-18	0.093	0.267	0.119	0.791	0.025
Depchildren 0-15	0.047	0.550	0.053	0.579	0.006

Depchildren 16-18 includes all individuals whose youngest child is between 16-18

Again there was no change in wage growth among those unaffected by the reform. Among the group who received tax credits in both periods there was a small increase in wage growth for those with younger children whilst the wage growth of those with older children fell by 20%. Whilst the increase in wage growth amongst those with younger children may be explained by improvements in childcare allowances introduced as part of the WFTC reform we would expect a reduction in the taper such as experienced by this group to fuel wage growth for those with older children. The longer taper shouldn't concern them too much as they will soon be ineligible thus a 20% fall seems unlikely. Further analysis shows that the sample cell is very small and wage growth in the WFTC period is insignificant so we attach little weight to the result.

Despite the effect of an additional 55% tax, the newly eligible with older children had wage growth 2.5% higher after the WFTC reform. These people will soon become ineligible so the marginal tax is relatively unimportant but the potential benefits from subsidised human capital accumulation are large. Among those with younger children there was still a small 0.6% increase in wage growth but the positive effect is lower for those who have to wait and move off the taper through wage gains rather than expired eligibility.

The LFS also asks whether training has been offered or received over the last year.

Table 4 Training before and after the WFTC Reform Broken Down by Receipt

	FC Period		Difference
	Proportion Receiving Training	Proportion Receiving Training	
<u>Takeup Group</u>			
FC>0 R>0	0.473	0.541	0.068
FC>0.9*max R>0	0.409	0.521	0.112
0<FC<0.9*max R>0	0.539	0.555	0.016
<u>Non Takeup Group</u>			
FC>0 R=0	0.571	0.608	0.037
FC>0.9*max R=0	0.560	0.605	0.046
0<FC<0.9*max R=0	0.578	0.611	0.033
<u>Newly Entitled</u>			
FC=0 WFTC>0	0.650	0.642	-0.008
<u>Never Entitled</u>			
FC=0 WFTC=0	0.591	0.621	0.030

Long term recipients receive less training than non recipients probably because the types of job held by recipients are less predisposed to training. However the increase in training as a result of the policy reform is much greater for recipients than non recipients. The increased generosity of WFTC makes recipients more likely to take training jobs by subsidising the low initial wages. The effects on training are especially large for those individuals who are on the maximum and so are less concerned by the longer taper affecting future wage gains.

A slightly smaller proportion of the newly eligible receive training. Their position on the wage distribution meant that they received considerable training pre reform. The marginal tax post reform reduces the incentive to take training jobs by eating into wage gains but as these individuals are near the end of the taper the tax is a minor concern and the effect is small.

6. Conclusions and Suggestions for Further Research

The results of our difference in differences analysis suggest that WFTC had little effect on average wage growth. Incentives to take advantages of subsidised human capital

accumulation were offset by the marginal tax on future wage gains imposed by the taper. Furthermore the advantages of taking home a greater proportion of a wage gain as a result of the WFTC reform and associated reduction in the taper were offset by the disadvantages of the taper extending over a longer period. This result is inline with findings from the SSP experiments. There are indications however that the increased generosity of WFTC helped to fuel wage growth among the lowest earners. Those on the maximum were allowed to achieve greater wage gains before being affected by the taper and even then the marginal tax was reduced. Their very low initial wages meant they were unlikely to move to the point where the increased length of the taper became an issue. For this group the gains from subsidised human capital accumulation outweighed the future costs.

Training also rose among recipients suggesting that WFTC did help subsidise the costs of general training. It would appear that WFTC didn't simply encourage workers into dead end jobs but instead offered them real opportunities to improve their human capital. Whilst past UK evidence suggested that low wage workers were stuck in dead end jobs our research indicates that WFTC helped to change this at least among the lowest paid.

Limiting eligibility appears to fuel wage growth by reducing the impact of the marginal tax on future wage gains. Individuals at the end of the taper (the newly eligible) and individuals whose youngest child is aged between 16 and 18 benefit from subsidised human capital development today but will not face the future costs in terms of marginal tax as their wages rise.

These results suggest that by creating the right incentives for human capital accumulation accelerated wage growth among low wage workers can be achieved. Through manipulation of the maximum, taper and eligibility limits, work incentive schemes can fuel wage growth among low wage workers who have traditionally been trapped with little upward wage mobility.

These conclusions suggest that recent changes to WFTC to include non parents should have a positive effect on the wage growth of low earners receiving the maximum and on those who will soon cease to be eligible, but that the taper will hold back wage growth of those higher up the wage distribution.

This work has however, simply identified that earnings supplement programmes could be manipulated so as to fuel wage growth among low wage workers. A useful extension would be to model the level of receipt, taper and eligibility limits and try to find an ideal tax credit design. The study would also benefit from multivariate analysis to see more accurately how WFTC receipt interacts with other factors. We have witnessed differential effects for men and women. It would be interesting to investigate why this may be so. Furthermore the LFS only offers a year over which to measure wage growth. Longer measures of wage growth may pick up additional trends.

Finally we have merely speculated how the 2003 reforms may affect wage growth among low wage workers without children. It would be extremely useful to analyse the effect on non parents as data becomes available and see if results conform to the expectations of this analysis.

7. Bibliography

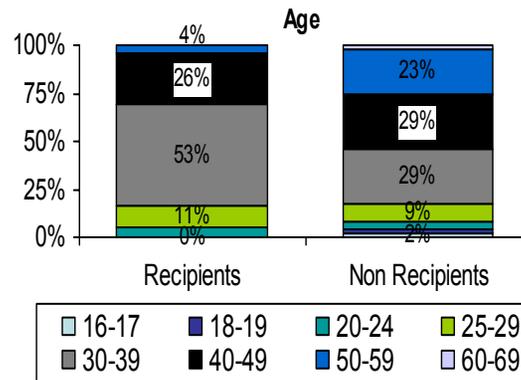
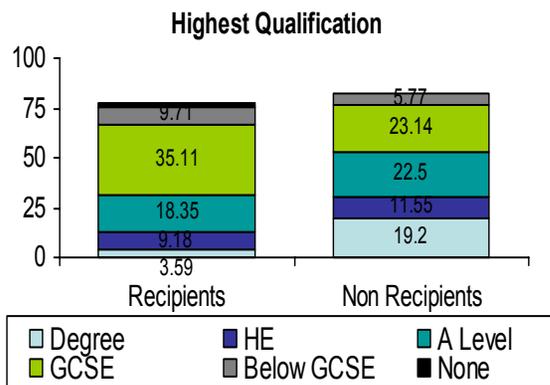
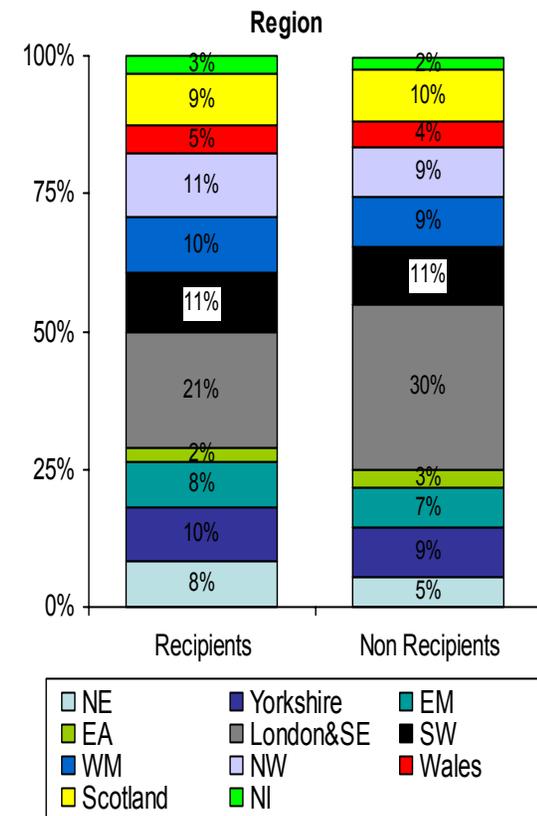
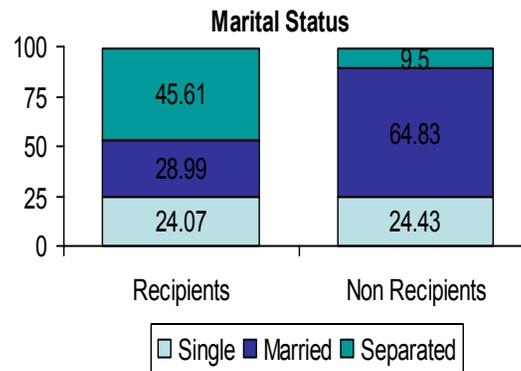
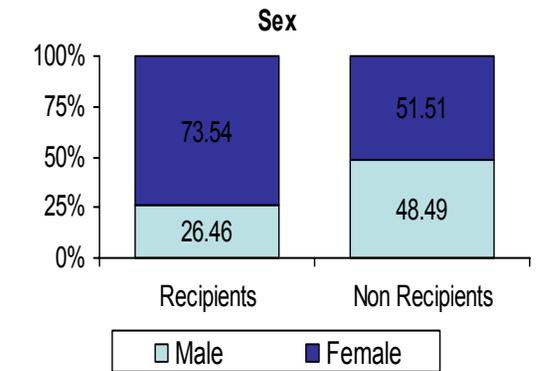
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Appendix 1: Selected Characteristics of WFTC recipients compared to the rest of the population.

Average Wage

Recipients: £6.40/hour

Non recipients: £9.81/hour

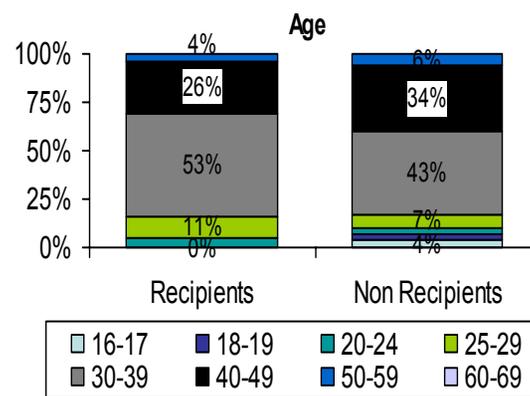
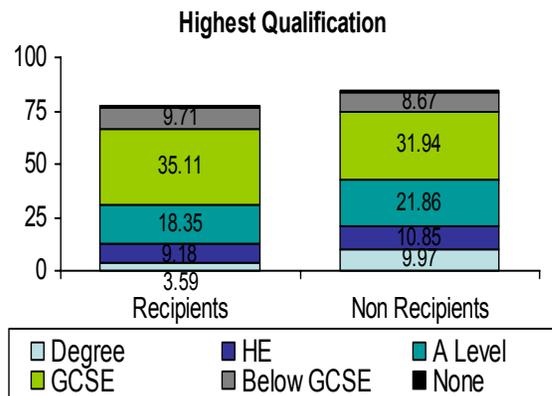
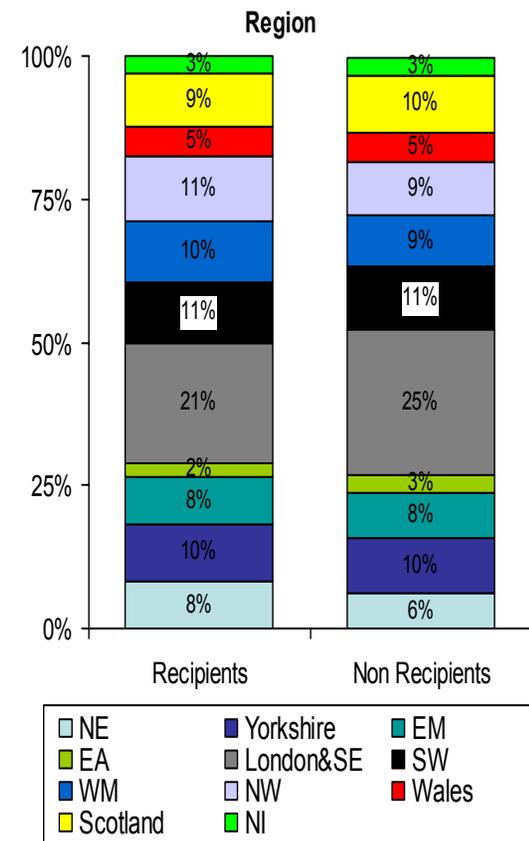
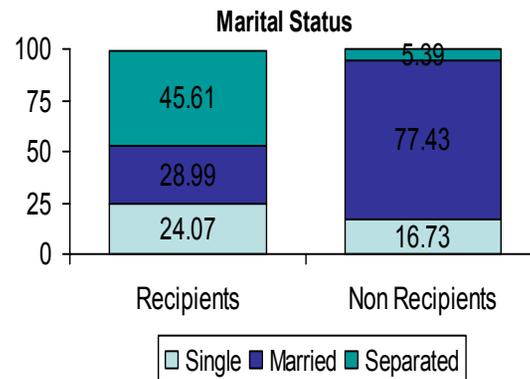
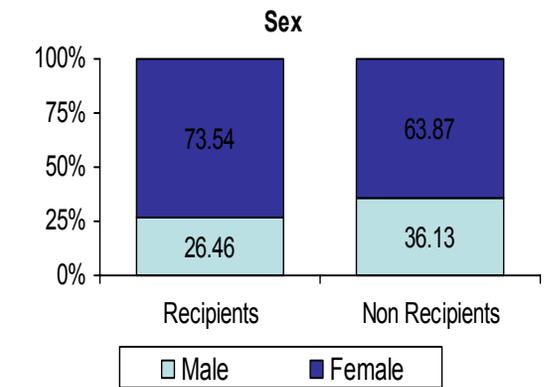


Appendix 2: Selected Characteristics of Recipients Compared to Eligible Non Recipients

Average Wage

Recipients: £6.40/hour

Eligible non recipients: £7.30/hour



Appendix 3: Selected Characteristics of the FC and WFTC Datasets

	Average Wage £/hour	Sex		Marital Status			Qualifications						
		% Male	% Female	% Single	% Married	% Divorced	% Degree	% HE	% A Level	% GCSE	% Below GCSE	% None	
FC DATASET													
Takeup Group	4.93	16.50	83.50	25.43	29.25	56.21	2.89	6.63	15.90	34.69	12.24	1.28	
Non Takeup Group	6.31	37.67	62.36	17.00	76.17	6.34	7.30	9.62	21.28	31.92	9.49	1.54	
Newly Entitled	9.35	72.56	27.44	10.51	82.41	6.67	15.28	14.97	30.21	20.15	6.77	1.44	
Never Entitled	9.41	52.26	47.48	26.39	61.88	10.31	19.89	11.59	22.08	20.37	5.29	0.88	
WFTC DATASET													
Takeup Group	5.92	30.17	69.83	21.86	43.78	32.82	3.33	6.34	19.58	34.85	9.79	1.05	
Non Takeup Group	6.25	23.17	76.83	19.72	75.00	4.80	6.69	9.20	19.01	36.72	9.77	0.86	
Newly Entitled	9.22	62.99	37.01	12.06	78.05	9.44	14.33	13.48	27.89	24.06	6.68	0.80	
Never Entitled	10.52	52.31	47.69	26.80	60.94	10.77	22.06	11.77	22.69	20.42	4.87	0.52	
Region													
	% NE	% Yorkshire	% EM	% EA	% London&SE	% SW	% WM	% NW	% Wales	% Scotland	% NI	% Outside UK	
FC DATASET													
Takeup Group	9.18	13.18	5.78	3.23	27.72	8.16	4.76	6.04	6.80	12.33	2.81	0.00	
Non Takeup Group	5.99	9.06	7.78	3.45	34.18	9.40	4.40	6.01	5.84	10.56	3.32	0.00	
Newly Entitled	5.79	9.49	6.82	3.74	38.67	9.38	4.77	6.10	4.72	8.21	2.31	0.00	
Never Entitled	5.24	9.00	6.83	3.65	41.02	9.48	3.92	5.12	4.32	9.59	1.83	0.00	
WFTC DATASET													
Takeup Group	7.57	11.21	8.07	3.08	20.14	9.91	10.41	11.76	5.30	9.91	2.65	0.00	
Non Takeup Group	6.34	9.90	7.97	3.22	24.52	11.72	8.79	8.85	5.10	10.23	3.02	0.02	
Newly Entitled	6.26	9.30	7.57	3.16	27.01	9.44	9.60	9.57	5.94	9.41	2.67	0.00	
Never Entitled	5.10	8.87	6.94	3.29	31.61	10.53	8.95	9.15	4.22	9.62	1.68	0.03	
Age													
	% 16-17	% 18-19	% 20-24	% 25-29	% 30-39	% 40-49	% 50-59	% 60-69					
FC DATASET													
Takeup Group	0.09	0.68	4.34	13.78	53.74	23.55	3.74	0.09					
Non Takeup Group	4.30	3.33	3.95	9.25	41.54	31.93	5.52	0.19					
Newly Entitled	0.00	0.15	1.90	13.64	51.74	28.97	3.44	0.15					
Never Entitled	1.67	1.73	5.66	10.50	24.11	26.96	26.76	2.53					
WFTC DATASET													
Takeup Group	0.00	0.31	5.23	10.78	50.55	28.26	4.56	0.31					
Non Takeup Group	5.51	4.46	4.14	6.32	41.27	32.71	5.51	0.07					
Newly Entitled	0.08	0.27	2.81	7.86	48.77	34.52	5.45	0.24					
Never Entitled	1.35	1.40	5.30	9.25	24.09	27.13	28.81	2.66					