Resolution Foundation

Creditworthy

Assessing the impact of tax credits in the last decade and considering what this means for Universal Credit

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Summary

The development and significant expansion of the system of family-based tax credits over the late-1990s and 2000s represented one of the cornerstones of the Labour government's approach to social policy. Today's credits reach around six million families, providing substantial support for working low and middle income households hit first by the stagnation in typical earnings that took place during the economic growth years of the mid-2000s and secondly by the falling real earnings associated with economic downturn. Yet changes in the political, economic and policy environments, and the imminent migration to Universal Credit, mean that the policy faces significant new challenges over the coming decade.

In this paper we assess the impact of tax credits in a range of areas over the past 15 years or so. We focus both on direct outcomes relating to incomes and poverty and on whether or not the system of credits has put any downward pressure on wage growth or raised employment as economic theory suggests it might. We also consider the policy implications associated with the changing nature of some of the problems tax credits are designed to tackle.

The development of tax credits

The introduction of the current generation of tax credits in 2003, incorporating Working Tax Credits (WTC) that are available to low income in-work families with and without children and Child Tax Credits (CTC) that are available to in- and out-of-work families with children, built on the experiences of the Working Families Tax Credit (WFTC) system that had been in place since 1999. As with its predecessor, the new system had two explicit goals.

- To reduce **child poverty**. UK poverty rates had risen sharply during the 1980s, such that more than one-in-four children lived in households with incomes below the standard poverty threshold (60 per cent of the national median income) by the mid-1990s. In part this was a product of changing family structures; in part it flowed from the growth of workless households; and in part it reflected sharp increases in wage inequality, such that lower earning families fell further behind the rest of society.

- To **make work pay**. Changes in the system of welfare payments through the 1970s and 1980s increasingly targeted support on out-of-work families and reduced work incentives among non-earning households. Despite a relatively steady overall employment rate, families became increasingly polarised between having no one in work and having both members of a couple in work. By the mid-1990s, one-in-five children lived in a household in which no one was currently in work.

In retrospect, the significant expansion of tax credit coverage associated with the introduction of WTC/CTC can be considered to have helped meet a third objective.

- To provide a **tax rebate for families with children**. With a steady decline in the extent to which the family was recognised in income tax calculations in the 1970s and 1980s and the final shift to individual assessment in 1990, the tax system became less progressive with respect to the family. That is, whereas the tax system had once made adjustments for family size, an individual supporting a family of five now faced the same tax bill as a person living alone with the same earnings, resulting in families falling down the adjusted income distribution.

Assessing the impact of tax credits

In meeting these goals, tax credits work most obviously by providing direct support for the incomes of in-work families in the lower half of the income distribution. The provision of such support also increases the incentives associated with moving into work. However, the means-tested nature of the payments inevitably increases marginal tax rates for those already in work and on the taper and there is some concern that tax credits can produce wider behavioural changes among claimants and employers that undermine their basic purpose by depressing wage growth and by encouraging further increases in single parenthood.

In order to understand the aspects of the tax credit policy that have proved successful – and should therefore be retained or refined in the coming world of Universal Credit – and the aspects that haven't, we assess the impact of the tax credit systems in place between 1999 and 2008 across five areas: child poverty reduction; supporting incomes among low paid in-work households; boosting employment; the interaction with wages; and patterns of family formation.

We find evidence of several successes in relation to poverty reduction, income support and overall employment, along with a predictably negative impact on work incentives for recipients subject to the tapering of their award. However, we find little sign of any *unintended* negative consequences.

- There is a **clear inverse link between spending on tax credits** (and child cash transfers more generally) **and child poverty rates**. From its mid-1990s peak, relative child poverty fell sharply between 1998 and 2004, coinciding with the introduction of, and major investment in, WFTC and WTC/CTC. Progress subsequently faltered, reflecting the decline in the relative level of support provided via tax credits.

- Average after-tax earnings in low to middle income households – that is, working households in the bottom half of the income distribution – flat-lined in the mid-2000s, reflecting stagnation in pay across much of the earnings distribution. The major extension of tax credit support up the earnings and income distributions that took place in 2003 therefore provided **vital support for the incomes of low paid in-work households**, helping to secure a small but steady improvement in average net incomes and therefore living standards. This support also provided some insulation from the very sharp decline in household earnings among members of this group from 2008 onwards.

- A variety of studies have identified a **small but direct boost to employment** following the introduction of WFTC. While employment was generally strong during this period, these studies isolate the impact of tax credits and find a positive effect. The impact was particularly marked for single parents and contributed to a steady decline in the number of children living in workless households. While worklessness in the UK remains high compared to most other countries, it has not increased during the recession in the way it has in countries such as Spain, Italy and Ireland.

- The provision of means-tested support has the inevitable consequence of increasing marginal effective tax rates. That is, the net benefit associated with earning an additional £1 is reduced not just by income tax and NICs, but also by gradual withdrawal of the means-tested support. The broad coverage provided by the WTC/CTC expansion therefore produced a **significant increase in the number of people subject to marginal effective tax rates approaching 70 per cent** (i.e. keeping just 30p of each additional £1 of earnings). Affected workers face reduced incentives for boosting their earnings – by working more, moving to a better paid job or investing in skills and training – compared to their situation before the introduction of these credits. While Universal Credit is set to

remove the very highest marginal tax rates, an increase in the taper rate will produce a slight increase in disincentives for most in-work recipients.

- Economic theory, and emerging evidence from studies in the US, suggests that tax credits can depress wage growth in the lower part of the earnings distribution in two ways. First there may be a *general wage effect*, with tax credits encouraging a lot more people to seek work at lower wages. Secondly there may be a *relative wage effect*, with the wages of eligible workers growing less quickly than the wages of non-eligible workers in the same part of the earnings distribution because the presence of high marginal effective tax rates discourages movement into higher paid work and investment in skills by those benefiting from tax credits. In relation to both potential effects, **we find no evidence to support the hypothesis that tax credits have put downward pressure on wage growth**.

- In relation to any potential *general wage effect*, we can distinguish between the WFTC period – in which tax credit coverage was relatively concentrated among the lowest paid workers – and the WTC/CTC period – in which coverage extended across all of the bottom half of earners. In direct contrast to the years preceding its introduction, wages became more compressed in the bottom half of the earnings distribution during the WFTC period, with a narrowing of the pay gap between the bottom quarter of workers and those in the middle and just above. Wages at the very bottom continued to gain ground in subsequent years, but the WTC/CTC period was most noticeable for the absence of any difference in wage growth across the bulk of the earnings distribution. Relatively strong wage growth at the bottom of the earnings distribution across the past decade or so is likely to reflect the introduction and relatively rapid increase in the National Minimum Wage, rather than any positive spill over from tax credits. It suggests, however, that **there has been no general wage slippage in the part of the earnings distribution where tax credits bite**.

- In relation to any potential *relative wage effect* within the bottom half of the earnings distribution where tax credit receipt is highest, there **does not appear to be any significant divergence in wage growth between eligible (parents) and non-eligible workers (non-parents).** If anything, we find that workers with children experienced slower wage growth than their childless peers in the pre-WFTC period, but enjoyed stronger growth following the introduction of tax credits. **Nor does there appear to be any difference in wage growth between parents in the lower half of the earnings distribution** (who are most likely to face high effective tax rates) **and those in the upper half** (who are less likely to face such potential work disincentives).

- Traditional means-tested benefits are typically associated with penalties on couples, because they raise incomes when a parent is out of work or unpartnered relative to having a working partner. In relation to tax credits, however, the impacts are more ambiguous, with low-earning men becoming (financially) more attractive since a woman can be entitled to tax credits on the basis of her partner's earnings. Overall, a range of studies suggest that **any impact on family formation is very small**, with alterations in other benefits in any case tending to cancel out any specific tax credit effect.

Future challenges

Despite these broadly encouraging outcomes, tax credit policy needs looking at again. Most obviously there is a question over whether the gains set out above represent value for money. With the advent of fiscal consolidation and the steady reduction in tax credit expenditure proposed for the coming years (from a peak of £28.6 billion in 2009-10 to £25.4 billion in 2016-17), the effectiveness of the payments and the appropriateness of the very goals associated with the policy will come under closer scrutiny. The government has recently announced its intention to broaden the set of indicators used to measure child poverty, for example, weakening the focus on the relative income measure.

The scope and ambition of the programme is also being squeezed by a broader shift in the political environment. The introduction of Universal Credit will merge tax credits with other benefits, significantly reducing the distinction between in-work and out-of-work support and targeting assistance more narrowly on lower income families. Other family support – most notably Child Benefit – is also set to both become more restricted and fall in value relative to earnings (assuming real wage growth resumes).

Thus in some respects the new status quo will look more like the model that existed under WFTC, with more targeted support and the removal of the ambition to use tax credits as a form of tax rebate for families. Instead, the coalition Government favours increases in the personal tax allowance as a means of boosting the after-tax incomes of low to middle earners – irrespective of the level of their household income and whether or not they have children. As with the issues surrounding the original individualisation of income tax in 1990, this shift is inevitably less well targeted on families and is likely to reduce the overall progressivity of the tax system with respect to the greater financial needs of families with children.

With the benefit of hindsight however, it could be argued that tax credits were never likely to prove the most efficient mechanism for restoring the recognition of families to the tax system. The three objectives we have identified in relation to the third generation of tax credits may therefore always have been going to prove too much for one policy; not just because of the associated cost but also because of the level of bureaucracy required.

Even in relation to the two original objectives – those of reducing child poverty and making work pay – the findings in this paper suggest that changes in the nature of the problems under consideration may require new policy approaches.

- While child poverty has fallen from its mid-1990s peak as a direct result of tax credits, the spread of coverage across a broad sweep of families with children means that using tax credits to reduce poverty further is likely to become increasingly costly. Perhaps more pertinently, **the nature of child poverty has altered**, with a growing share of those families with children below the poverty threshold containing someone who is in work. Much of the success of tax credits in reducing poverty levels has been associated with the sizeable increases in employment produced among single parents and by boosts to non-working single parent incomes. While future tax credit policy needs to be mindful not to reverse such gains, it will also need to deal more directly with the problem of working poverty.

- Underpinning this changing picture is a shift in earnings patterns within families. It is well documented – and borne out in this paper – that **wage growth among women has outstripped that among men over the past decade**, helping to narrow (though not close) the gender pay gap.

- However, the picture looks more complicated if we focus specifically on families with dependent children. Here we see that earnings growth among fathers has been significantly lower than among comparable men without children while, conversely, earnings growth among mothers has significantly outpaced that recorded among comparable women without children. Thus **the gender pay gap between parents in the lower part of the earnings distribution narrowed by around 25 percentage points between 1994-95 and 2007-08**.

- In part this trend flows from shifts in working patterns, with men increasingly working part-time and women (in particular mothers) increasingly working full-time. It may also reflect changes in the age at which women become mothers (with older mothers suffering smaller wage penalties when they return to work) and the particularly poor wage performance of older men (who are more likely to be fathers – although in many cases older workers will no longer have any *dependent* children). **It is a finding that holds across the earnings distribution and across the pre- and post-tax credit periods, suggesting that it is not directly associated with the introduction of tax credits,** though further research is required to fully understand the phenomenon.

- Irrespective of the cause, this trend has meant that **families with children who are reliant on a single male breadwinner have experienced significantly slower growth in wages over this period than those containing a working mother**. Comparing working parents (in couples) at the 25th percentile of the overall earnings distribution we find that, between 1994-95 and 2007-08, men in single earner households experienced wage growth that was 0.6 percentage points a year slower than men in dual earner households and 2.4 per cent a year slower than women in dual earner households. It is no surprise, therefore, that the growth in the share of child poverty accounted for by working households that we noted above is being driven by male breadwinner families: **even with the expansion of tax credits over the past decade, such families are not escaping poverty**.

These developments present direct challenges for tax credits and for family tax policy more generally. If the current emphasis on income tax cuts and erosion of direct payments such as Child Benefit and tax credits is representative of a shift in the political economy, then we need to look again at how the additional financial needs of families can best be supported through the tax or benefit system.

Most immediately, there is a need to review the design of Universal Credit. Given the growing importance of mothers' wages to the living standards of low to middle income households – identified both here and in previous Resolution Foundation reports – the expected negative impact of Universal Credit on work incentives for (potential) second earners to enter work appears problematic.

While one response could simply be to increase financial compensation for single earner families (through transferrable tax allowances for instance), an approach which aims to encourage further increases in mothers' employment (via a focus on childcare and more flexible employment or through making tax credit receipt in a single earner family conditional on the second person actively looking for work for example) is likely to prove a better fit with underlying trends in wages and be more sustainable.

A variety of options exist. We will publish a second paper later in the summer that will build on the findings in this report to consider a range of approaches which potentially retain much that is good about tax credits but which fit into a broader attempt to reform the tax and benefit system in a way which recognises changes in the labour market and the long-term squeeze on living standards faced by low to middle income households.

Introduction

The emergence of the tax credit system – from Family Credit to Working Family Tax Credit, Working and Child Tax Credits and now the proposed Universal Credit – represents perhaps the most substantial development in social policy over the last 30 years. Reforms under the previous Labour Government were particularly significant, resulting in the creation of a new system of redistribution towards in-work families with children. This system has provided a balance against both the shift from a family-based income tax system to an individualised one and the increasing focus on a family-based means test in the welfare system.

However, having been at the heart of government policy for much of the last decade, tax credits are now at something of a critical juncture. The political and economic circumstances that drove the evolution of the policy have changed, as have the details underlying some of the challenges which tax credits were designed to tackle. Further significant growth in tax credit spending looks unlikely: from a peak of £28.6 billion in 2009-10, total expenditure on tax credits is set to fall steadily in real-terms in the coming years, dropping to £25.4 billion in 2016-17.[1] At the same time, roll-out of the Universal Credit from 2013 onwards will blur the distinction between in-work support and out-of-work benefits, potentially undermining some of the protection from retrenchment that it was hoped would be afforded to tax credits by their identification as tax rebates for working families rather than benefits.

Yet, against the backdrop of an individualised approach to income tax, tax credits continue to hold a vital role in underpinning family-level progressivity (and it is income at the family level that has most relevance for questions of poverty and living standards). Therefore, while policy objectives may need to be more limited or more effectively achieved in the future, tax credits clearly have much to offer. The challenges of the coming years therefore provide for an opportunity for further evolution of the policy.

This paper takes a first step towards picturing what this evolution might look like. By assessing the impact of tax credits in a number of areas over the past decade or so, we can identify what worked – and should therefore be retained or developed in any future system – and what didn't. A second paper, due for publication later this year, will build on this work to consider a range of tax and benefit options for meeting the needs of low to middle income families.

We begin by looking briefly in **Section 1 at the story so far for tax credits**. We consider the factors behind their development and look at who benefits and who doesn't. In **Section 2 we assess the impacts associated with tax credits in five areas**: child poverty; in-work incomes; employment; wages; and family formation. Finally, in **Section 3 we consider changes in the nature of some of the problems tax credits were designed to counter**, including the growing importance of working poverty and the increasing difficulties faced by families reliant on the traditional male breadwinner. It is this discussion which we will pick up in the second paper.

A variety of **appendices** provide further details of the development of tax credits and eligibility and awards under the current system.

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[1] Based on projections for tax credit expenditure and inflation set out in the OBR's *Economic and fiscal outlook*, March 2012. Figures are in 2009-10 prices, deflated using the RPI

1. The evolution of tax credits

Despite the long history of tax credits in the UK, this paper is primarily concerned with policies developed over the last decade or so. It is these credits, with their explicit focus on poverty reduction and support for working families in a world of individualised taxation and sluggish wage growth, which are likely to provide the basis for further development in the coming years.

Nevertheless, in order to understand why today's tax credits look like they do, it is necessary to begin by reflecting on the evolution of the policy to date. In this section we therefore look briefly at the transition from one form of tax credit to another, and consider some of the key drivers for these developments.[2] We then identify tax credit eligibility across families, incomes and earnings, so as to inform our assessment in Section 2 of the recent successes – or otherwise – of the policy.

1.1 From the Family Income Supplement to Universal Credit

In-work benefits have existed in the UK in some form since 1971, incorporating three broad phases or 'generations'.

First generation: the Family Income Supplement

In the first instance, the Family Income Supplement (later Family Credit) was a direct payment made to very low income working families. Although take-up and generosity increased over time, it remained a highly targeted programme, reaching just 790,000 families in its final year.

Second generation: the Working Families Tax Credit

In the decades following the introduction of the Family Income Supplement, four trends developed that significantly increased the work required of tax credits.

First, the UK's system of income tax became increasingly individualised. The Child Tax Allowance, which reduced the taxes payable by families with children, was phased out in 1977 (being replaced by Child Benefit), and the value of the Married Man's Allowance steadily lost pace with earnings. The big change took place in 1990, however, when income tax became based on individual assessment rather than on a family basis. As a result, the tax system became less progressive with respect to the family, with a person supporting a family of five now paying the same level of tax as a person living alone with the same earnings.[3]

At the same time, the welfare system was heading in precisely the opposite direction. In the 1970s most welfare benefits were paid on the basis of contributions made by the worker and many were linked to earnings rather than family size. One of the first major reforms in this area in the Thatcher years was to remove links to earnings and restrict access to contributory benefits. The result was a welfare system largely out of reach for in-work families, with benefits paid primarily to workless households on the basis of family size. This produced radically different incentives for taking a low paid job for a first earner moving into work and losing benefits compared with a second earner who lost no benefits and got a generous tax treatment. Likewise, among those in receipt of welfare benefits, those with children had sharply reduced work incentives relative to those without.

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[2] A more detailed consideration of this evolution, along with a timeline of key developments, is provided in Appendix 1.

[3] See Appendix 2 for a broader description of the shift towards individualised taxation in the UK and the associated decline in progressivity.

Thirdly, wage inequality grew consistently over the course of the 1980s and 1990s, meaning that the wages of lower paid (and lower skilled) workers were lagging behind those for others. Wages among full-time men at the 90th percentile increased by 80 per cent in real terms between 1977 and 1999 for instance, compared with growth of just 20 per cent among those at the 10th percentile.[4]

Finally, these developments were compounded by the rapid increase in divorce and single parenthood, such that the number of children living with one parent increased from 1-in-20 in the 1970s to one-in-five in the mid-1990s.

Taken together, these forces produced a significant increase in the number of children growing up in workless families and a growing problem of slow income growth among lower income in-work households. While the overall employment rate in the population remained constant (apart from cyclical movements), increases in the number of dual earner families were offset by matching increases in the number of no earner families. As such, by 1996, one-in-five children was growing up in a workless household.[5] While many of the workless parents were single parents, there was a very large increase in the extent to which couples too were workless, equating to one-in-ten couples with children in the same period. At the same time, working families with children, especially those reliant on a single low wage, were losing ground, both in terms of earnings and because of reductions in the support they received from the tax system and from Child Benefit.[6]

In reaction to these developments, Family Credit was replaced in 1999 by the second generation of tax credits – the Working Family Tax Credit (WFTC) – with the Labour Government stating that the new policy had a dual remit to both "tackle child poverty" and "help make work pay".[7] It borrowed heavily from the experiences of the Earned Income Tax Credit in the US and the Canadian Self-sufficiency Programme, and was both more generous and more widely available than Family Credit. Around 1 million families were in receipt in the first year of the programme, rising to 1.4 million by the time of its replacement in 2003, nearly double that of its predecessor.

Third generation: Child and Working Tax Credits

While WFTC represented a significant step up in terms of coverage and ambition, it remained targeted on relatively low income families. The next generation of tax credits, introduced in 2003, was far more extensive. It incorporated Working Tax Credits (WTC), available to in-work families with and without children, and Child Tax Credits (CTC), available to in- and out-of-work families with children. It reached much further up the income distribution than its predecessors and replaced not just WFTC and the related Disabled Person's Tax Credit, but also the income tax allowance provided by the Children's Tax Credit and the child elements of Income Support and income-based Jobseeker's Allowance.

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[4] ONS, *Annual Survey of Hours and Earnings*. Figures deflated using the RPI.

[5] Gregg PA & Wadsworth J, More Work in Fewer Households in Hills J. (ed) *New Inequalities*, Rowntree, 1996. Office for national Statistics http://www.ons.gov.uk/ons/rel/lmac/working-and-workless-households/2011/stb-working-and-workless-2011.html

[6] See Appendix 2.

[7] HM Treasury & Inland Revenue, The Child and Working Tax Credits: The Modernisation of Britain's Tax and Benefit System, April 2002

Tax credit awards are made at the family level under this structure, with entitlement varying depending on income, hours worked, numbers of children, childcare costs and disabilities. Table 1 shows that the total number of families benefiting rose from an estimated 5.7 million in 2003-04, to 6.3 million in 2010-11.[8]

Table 1: Tax credit awards: *UK 2003-04 to 2009-10*

Entitlement values in 2010-11 prices (adjusted using RPI)		Out-of-work families[1]	In-work families			Total in receipt[1]
			With children	*With no children*	Total	
2003-04	Number of families (000s)	*1.4m*	*4,171*	*164*	4,336	*5.7m*
	Entitlement (£million)[2]	6,300	*13,700*	*400*	14,000	20,400
2004-05	Number of families (000s)	1,379	*4,275*	*234*	4,508	5,888
	Entitlement (£million)	6,400	*14,400*	*500*	14,900	21,300
2005-06	Number of families (000s)	1,406	*4,261*	*272*	4,533	5,939
	Entitlement (£million)	6,400	*14,800*	*600*	15,400	21,800
2006-07	Number of families (000s)	1,399	*4,251*	*305*	4,556	5,955
	Entitlement (£million)	6,500	*15,800*	*700*	16,500	23,000
2007-08	Number of families (000s)	1,392	*4,253*	*336*	4,589	5,981
	Entitlement (£million)	6,500	*16,200*	*800*	16,900	23,400
2008-09	Number of families (000s)	1,434	*4,281*	*405*	4,686	6,120
	Entitlement (£million)	7,200	*18,300*	*1,000*	19,300	26,500
2009-10	Number of families (000s)	1,484	*4,283*	*482*	4,765	6,249
	Entitlement (£million)	7,900	*19,700*	*1,200*	20,900	28,700
2010-11	Number of families (000s)	1,462	*4,302*	*544*	4,846	6,308
	Entitlement (£million)	7,600	*19,600*	*1,300*	20,900	28,500

Notes: [1] No, or only approximate, estimates for out of work families are available for some earlier years. Figures shown thus "1.4m" are approximate estimates shown in millions. The estimates for out of work families include those receiving
[2] For 2003-04, rounded to the nearest £0.1bn

Source: HMRC, *Personal Tax Credits: Finalised Award Statistics 2009-10* , Table 1.1

Compared with WFTC then, coverage rose by around five million in total, though it is probably more appropriate to exclude the 1.5 million non-working families in receipt of CTC from this comparison. Similarly, we might reasonably exclude the 1.6 million in-work families eligible only for the flat-rate family element of CTC, leaving a total of 3.2 million families in receipt of the means-tested portion of WTC/CTC – still more than twice as many beneficiaries as under WFTC. Hence the programme moved beyond income supplementation to reduce poverty to a more generalised support for families with children, while remaining far more targeted than universal Child Benefit.

This expansion inevitably came at a cost, with spending on the programme amounting to more than three times the WFTC level. Moreover, while the overall number of recipients increased by 11 per cent between 2003-04 and 2010-11, total payments increased (in real terms) by 40 per cent, reflecting above-inflation increases in many of the award elements. It should be noted however, that much of this initial expenditure

[8] This is the latest year for which finalised data is available, but provisional statistics for subsequent snapshot points suggest that the number has since fallen below six million.

was drawn from other lines of spending, and that the subsequent increases were in-part compensating for relative declines in other forms of support such as Child Benefit and adult welfare benefits.[9]

While WFTC was focused heavily on single parents, accounting for around half of the total coverage, the expansion under WTC/CTC was almost entirely made up of working couples. With its broader coverage (tax credits covered 60 per cent of families with children and half of working families in 2010-11), the new system can in retrospect be seen to have added a third goal to the existing two of **reducing child poverty** and **making work pay**: namely **reducing the net amount of taxes paid by (most) families with children**. In some senses then, it reintroduced recognition of the family to the tax system.[10]

The hope was that the third generation of tax credits would be viewed, to some degree, as tax rebates rather than benefits. This was intended to make them more popular and hence easier to sell than previous incarnations and perhaps therefore more likely to be protected from retrenchment by a future government, as had happened with Child Benefit in the 1980s. Recent developments suggest that such hopes have perhaps not been fully realised.

The next generation: Universal Credit

From its peak in 2009-10, spending on tax credits is set to fall in real-terms in every year through to 2016-17. The introduction of Universal Credit from next year will also remove much of the distinction between the in-work support and recognition of children provided by the current tax credit system and all other government benefits. Combined with the restriction of Child Benefit for families with at least one person earning in excess of £50,000 the paring back of tax credit support represents something of a shift back towards the greater targeting of the WFTC period. In this new phase, those with low to middle incomes – both with and without children – are instead set to have their income tax bills reduced more directly, via above-inflation increases in the personal tax allowance.

1.2 Eligibility and entitlement

In order to assess the impacts of tax credits – and in particular any associated behavioural shifts – in Section 2, we must first identify which groups are eligible for payments and which are not. In this way, we can then establish target groups and control groups for comparison. Below we consider eligibility and entitlements across family income, family composition and individual earnings.

By family income

Unsurprisingly, given that tax credit awards are in part conditional on family income, eligibility and entitlement vary across the income distribution. Figure 1 details the spread of recipients and payments across the working-age family distribution and highlights the importance of tax credits to the low to middle income households that are the focus of Resolution Foundation work.[11]

It shows that the one-in-ten families located in decile 1 accounted for one-tenth (9 per cent) of all tax credit awards in 2009-10; that is, no more than their share in the working-age population. In contrast, families in

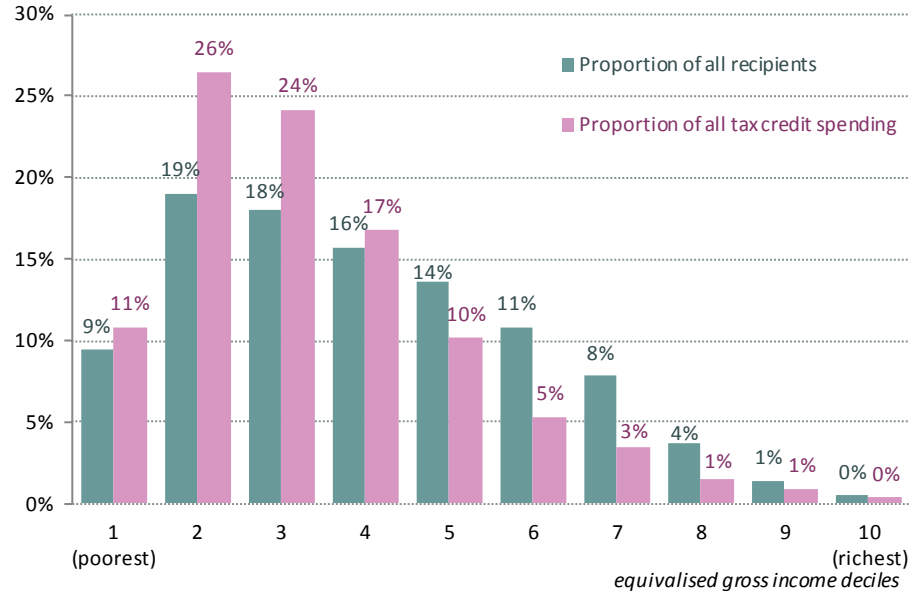
[9] These trade-offs are highlighted in Figure 6 and are discussed in more detail in Appendix 2.

[10] The role of tax credits as tax rebates is discussed in Appendix 3.

[11] Low to middle income households are defined as those in deciles 2-5 of the working-age equivalised gross household income distribution in which means-tested benefits account for less than one-fifth of total income. Households in the bottom decile of the distribution and those in which more than one-fifth of income is derived from means-tested benefits are considered 'benefit-reliant', while those in the top half of the distribution are labelled 'higher income'.

deciles 2-5 were disproportionately likely to be recipients, reflecting the fact that members of this group are more likely to have been in work and therefore eligible for WTC as well as CTC. Taken together, the 20 per cent of families located in deciles 2 and 3 accounted for nearly 40 per cent of recipients and half of all the expenditure. Eligibility declined across the remainder of the income range and, while a sizeable minority (24 per cent) of all awards were made to families in the top half of the distribution, the cash values were low, being restricted largely to the flat family element of CTC.

Figure 1: Distribution of tax credit recipients and payments across working-age family income deciles: *UK 2009-10*



Note: Family incomes equivalised using modified-OECD scale.
Source: Authors' analysis of DWP, *Family Resources Survey 2009-10*

Given these patterns, when looking at the impact of tax credits on in-work family incomes in Section 2, it would appear reasonable to focus on trends in incomes in the lower half of the income distribution – and in particular among members of the (primarily working) low to middle income group.

By family composition

Tax credit awards also vary by family type – reflecting both the additional entitlement associated with having children and variations in working status and average incomes by family composition. Table 2 details the proportion of different family types in receipt of tax credits in 2009-10 in each of the three income groups defined by the Resolution Foundation. It also sets out average awards across the groups.

It shows that, across the working-age population as a whole, four-in-five single parents received a tax credit award, along with half (54 per cent) of couples with children, one-in-ten single people and just 2 per cent of couples without children. Among those in receipt of a payment, average weekly awards were highest (£97) for single parents, second highest for single people (£65), third highest for couples with children (£58) and lowest for couples without children (£44).

As indicated above, eligibility was highest for all family types in the low to middle income group, with two-fifths (38 per cent) of families benefitting overall, and single parents (88 per cent) and couples with children (71 per cent) being particularly likely to receive an award. Among those in receipt however, average awards

tended to be a little higher in the benefit-reliant group than in the low to middle income one, reflecting the lower incomes (and therefore lower tapering of payments) accruing to families in the former group.

Table 2: Tax credit receipt among families by income group: *UK 2009-10*

	Benefit-reliant	Low to middle income	Higher income	All family units
Proportion in receipt of tax credits				
Single parent	79%	88%	62%	80%
Couple with children	68%	71%	36%	54%
Single without children	10%	19%	5%	10%
Couple without children	5%	5%	1%	2%
All family units	33%	38%	12%	24%
Average tax credit award per week among all family units				
Single parent	£68	£101	£47	£78
Couple with children	£66	£48	£9	£31
Single without children	£9	£13	£1	£7
Couple without children	£2	£2	£0	£1
All family units	£30	£30	£4	£17
Average tax credit award per week among all family units in receipt of tax credits				
Single parent	£85	£115	£76	£97
Couple with children	£98	£67	£25	£58
Single without children	£90	£68	£28	£65
Couple without children	£50	£46	£33	£44
All family units	£90	£78	£31	£69

Source: Authors' analysis of DWP, *Family Resources Survey 2009-10*

While a sizeable minority of low to middle income families without children are in receipt of tax credits (19 per cent of singletons for example),[12] Table 2 confirms that the focus of tax credits is on families with children.

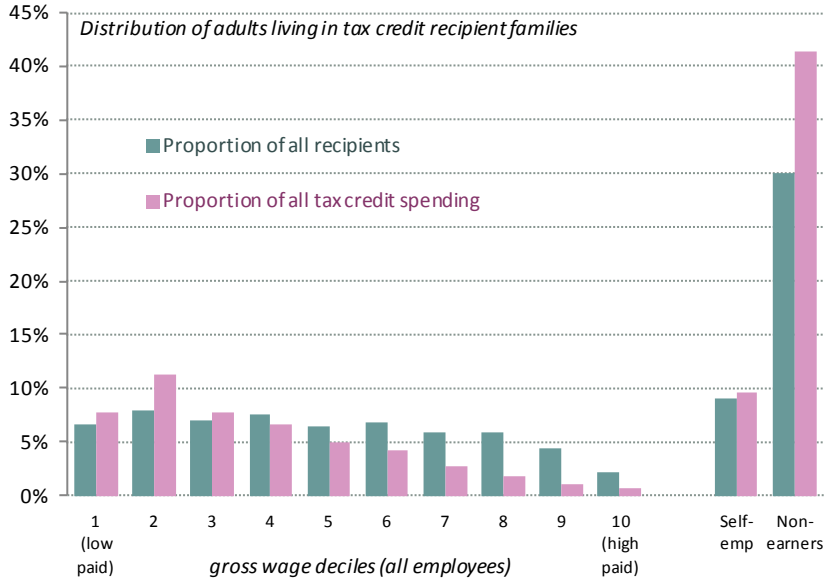
By individual earnings

Because tax credits are based on family income and compositions, the relationship with earnings is not straightforward. However, prior to considering the impact of tax credits on pay in Section 2, we need to identify broadly where tax credit recipients sit in the wage distribution. Figure 2 highlights the complex interaction.

It sets out the distribution of all adults living in families that benefited from tax credits in 2009-10 and shows that 30 per cent were not working. That is, they either lived in a household in which no one worked and qualified for CTC only, or they were the non-working half of a single earner couple. In terms of coverage across in-work adults, Figure 2 shows that tax credit eligibility extended into every decile of the hourly earnings distribution, with little change in levels of receipt across the bottom four-fifths of the spectrum. This spread across a large swath of the earnings distribution is the inevitable result of basing payments on family circumstances rather than individual earnings. It therefore also highlights the difference between a tax system based on individual earnings and one based on family income adjusted for family size.

[12] It should be noted that the lower proportion of families without children reporting receipt of tax credits reflects not just lower levels of eligibility but also lower take-up among such adults.

Figure 2: Distribution of tax credit recipients and payments across earnings deciles: *UK 2009-10*



Notes: Earnings distribution calculated on the basis of derived hourly earnings and covers all employees. For the purposes of allocating the share of all tax credit spending, awards are assumed to be distributed evenly within eligible families.

Source: Authors' analysis of DWP, *Family Resources Survey 2009-10*

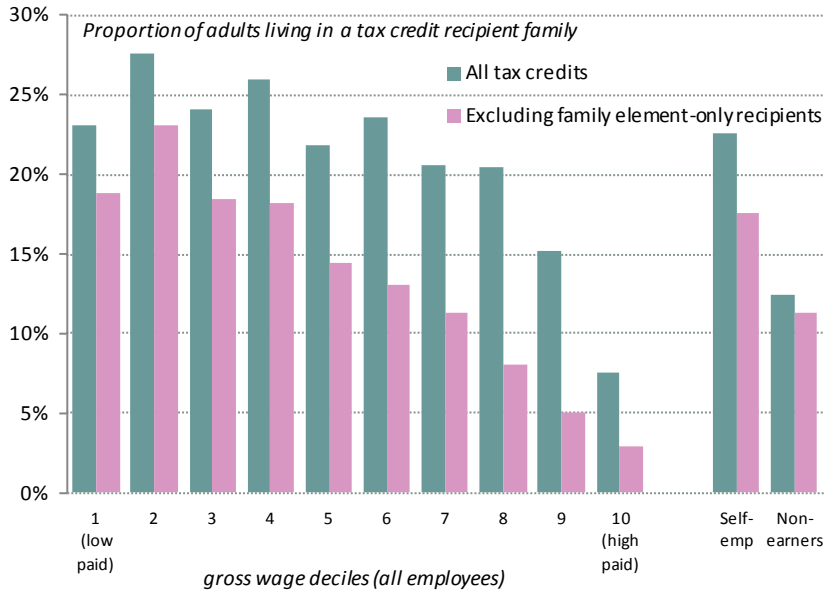
However, the picture is slightly different in terms of the *size* of awards, with more of the benefit being concentrated in the hands of workers in the lower half of the earnings distribution. Indeed, to the extent that workers in the top half of the earnings distribution receive tax credit payments, they are in many instances likely to be eligible only for the relatively small family element of CTC.[13]

Figure 3 highlights this point. It details the distribution of tax credit recipients *within* each decile (in contrast to the *across* decile distribution depicted in Figure 1) and compares these figures with those obtained when families receiving the family element only are excluded from the analysis. The decline in coverage as earnings rise is much sharper here. For example, while one-quarter (24 per cent) of workers in decile 6 lived in a family benefiting to some extent from tax credits, the proportion in receipt of more than just the family element was a little over half as much (13 per cent). Given that our concern here is with the impact of tax credits on wages, we are most interested in looking at workers who both receive sizeable awards and stand to face reductions in payments as their earnings rise; that is, they are subject to the tax credit taper. It would therefore seem reasonable to focus our attention on the bottom half of the wage distribution where tax credit receipt is most concentrated.

The picture is even clearer if we focus just on families with children (which we know are much more likely to be eligible for tax credits). Figure 4 shows the proportion of working parents in each earnings decile living in a family receiving more than just the family element of tax credits. Among those parents in the bottom half of the earnings distribution, around half were in receipt – rising as high as 62 per cent among those in decile 2. Coverage falls away very quickly as we move into the top half of the distribution.

[13] See Appendix 6 for details of the various elements provided under the current system of tax credits.

Figure 3: Distribution of tax credit recipients and payments within earnings deciles: *UK 2009-10*



Notes: Earnings distribution calculated on the basis of derived hourly earnings and covers all employees. Family element-only recipients excluded by removing all adults living in families with zero WTC receipt and CTC receipt of less than £11 a week.

Source: Authors' analysis of DWP, *Family Resources Survey 2009-10*

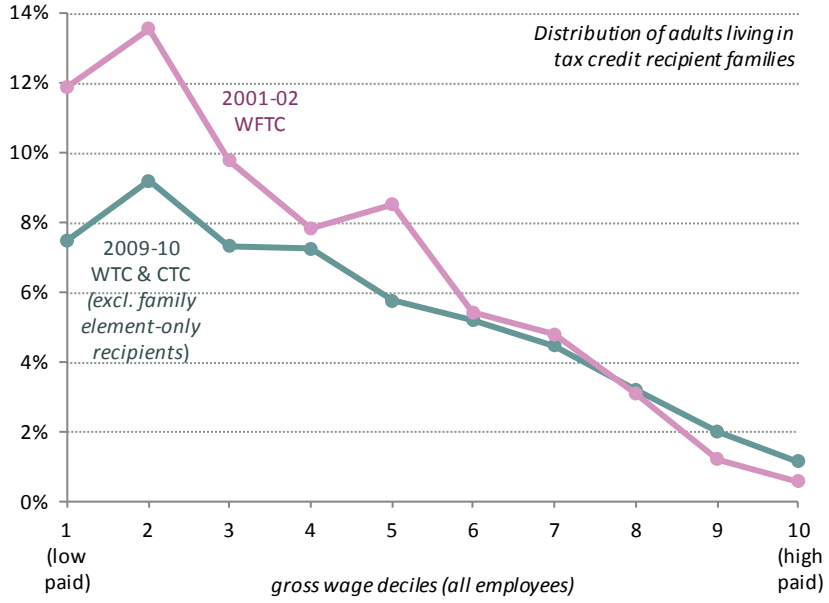
Figure 4: Proportion of working parents living in a tax credit recipient family (more than just family element) in each earnings decile: *UK 2009-10*

Notes: Earnings distribution calculated on the basis of derived hourly earnings and covers all employees. Family element-only recipients excluded by removing all adults living in families with zero WTC receipt and CTC receipt of less than £11 a week.

Source: Authors' analysis of DWP, *Family Resources Survey 2009-10*

Despite this concentration, it is worth noting that today's tax credits remain less targeted than the preceding system of WFTC. As Figure 5 shows, the current pattern of coverage (even after we remove family-element only families) is flatter than the one in place during the WFTC years. The fact that the WTC/CTC line sits below the WFTC one at most points also highlights the extent to which a higher proportion of coverage under the current system is accounted for by non-employees than was the case under WFTC. As a result of this wider dissemination both within and outside of the earnings distribution, the bottom three deciles accounted for just one-quarter of all tax credit recipients in 2009-10, compared with more than one-third (35 per cent) under WFTC. The equivalent share of 35 per cent is only reached under the current system if we extend our focus to the entire bottom half of the distribution.

Figure 5: A comparison of the distribution of tax credit recipients and payments across earnings deciles: *UK 2001-02 and 2009-10*



Notes: Earnings distribution calculated on the basis of derived hourly earnings and covers full-time and part-time employees. Family element-only recipients excluded by removing all adults living in families with zero WTC receipt and CTC receipt of less than £11 a week. Figures do not sum to 100 per cent in either year because self-employed and non-earners are excluded from this picture.

Source: Authors' analysis of DWP, *Family Resources Survey 2001-02* and *2009-10*

So, while the breadth of access to CTC and WTC means that eligibility extends through much of the earnings and income distributions, and across different family types, the analysis here suggests that coverage – and particularly expenditure – is most concentrated in the lower half of both the earnings and income distributions and among families with children.

In terms of income, tax credits are focused on the second and third deciles; in terms of wages, recipients are spread more evenly across the bottom half of the wage distribution. In Section 2 we therefore assess the impact of tax credits across a range of measures by focusing primarily on outcomes for low to middle earners and low to middle income families with children.

2. Assessing the impact of tax credits

Having set out the motivations and factors underpinning the development of the UK's system of tax credits and identified broadly who benefits and who doesn't in Section 1, we now turn to an assessment of their success – or otherwise – to date.

Of course, while the evolution of a range of outcomes since the inception of tax credits can be documented, attributing gains and losses to policy changes is far more complex. The amount of tax credits any family receives is not only driven by eligibility but also by a complex set of decisions made by the family, employers and others in response to incentives created by changes to tax and welfare systems and other policies such as the National Minimum Wage and welfare to work programmes. Nevertheless, a sensible place to start is to document some outcomes that emerge from this process and try and discuss what other intermediate decisions related to work, wages and family choices may have been influenced by tax credits. We look at five areas in particular:

- child poverty;
- in-work incomes;
- employment;
- wages; and
- family formation.

In relation to the first two areas we consider whether there is evidence of tax credits having a direct positive effect in those groups we identified as being most likely to be in receipt in Section 1. In relation to the final three areas, we instead look for signs of more indirect links and behavioural changes by comparing tax credit eligible groups with others.

2.1 The impact on child poverty

We noted in Section 1 that today's generation of tax credits were designed to achieve three main goals: reduction of child poverty; making work pay; and support for low to middle income families with children. Of these, child poverty was almost certainly the primary objective.

In the mid-1990s, (relative) child poverty rates in the UK were among the highest in Europe, having been broadly typical in the 1970s. The newly elected Labour Government thus focused much of its attention on this area, announcing that it intended to 'eradicate' child poverty by 2020-21 and setting two interim targets: first, to cut child poverty by a quarter by 2004/05; and secondly to halve it by 2010/11.

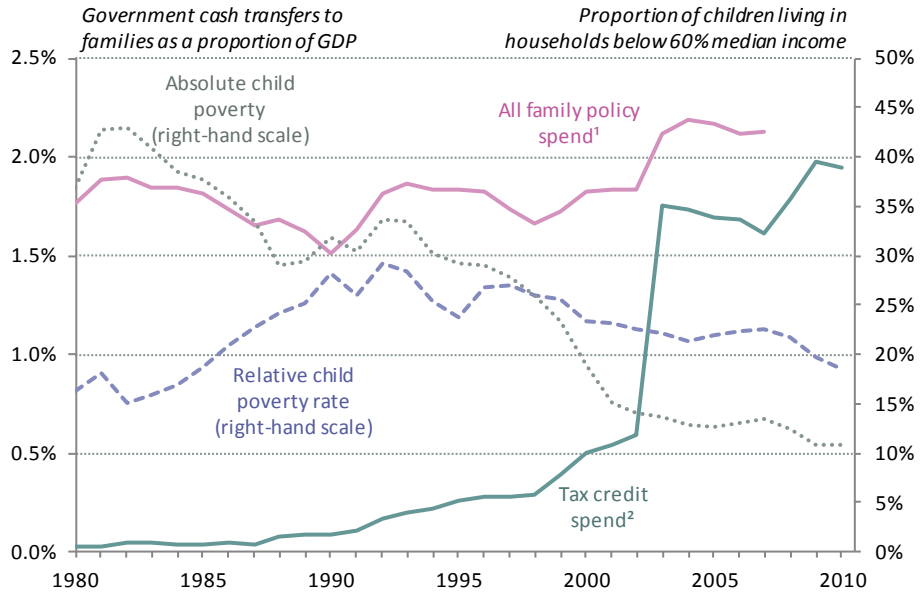
The first target was measured against the conventional European definition of *relative* poverty – that is, using a poverty line of 60 per cent of national median household income (adjusted for household size and before housing costs) in the current year.[14] The second target was assessed against both this relative

[14] There has been a historical debate in the UK as to whether or not to deduct housing costs from total income but the European convention of not doing so was adopted by the UK government in order to facilitate international comparisons.

definition and against an *absolute* low income indicator (using a fixed poverty line of 60 per cent of median income in 1998-99).[15]

Figure 6 documents progress against these targets, setting out changes in absolute and relative child poverty rates against child-related government cash transfers to families over the last 30 years. Comparison of the *all family policy spend* line with the *relative child poverty rate*, highlights the strong inverse relationship in effect across the period. Looking specifically at the tax credit period, we see that spending on child cash transfers was rising steadily between 1998 and 2004, driven by the development of tax credits. That overall spend grew by less than tax credit expenditure was down to the fact that the new policy absorbed a significant amount of monies previously allocated to other benefits. The period was not just one of increasing generosity therefore, but also of increased targeting of support on low to middle income families with children (especially those with younger children where the incidence of poverty was very high).

Figure 6: Child poverty rates and cash transfers to families with children: *UK 1980-2010*



Notes: Relative child poverty shows the proportion of children living in households with incomes below 60 per cent of the contemporary median (BHC). Absolute child poverty shows the proportion of children living in households with incomes below 60 per cent of the 1998-99 median (BHC).
[1] "All family policies" incorporates: *family allowances* (primarily spend on Child Benefit); *tax breaks for social purposes* (state tax relief for family-related costs like childcare, but not the value of additional family or spousal tax allowances in the personal taxation system – meaning that the decline in overall spend in the 1980s and 1990s is somewhat understated); and *other cash benefits* (additional cash transfers including family- or child-related tax credits).
[2] Tax credit spend covers Family Credit, Working Family Tax Credit, Child Tax Credits and that part of Working Tax Credit allocated to families.

Source: OECD, *SOCX database*; IFS, *Poverty statistics*; DWP, *Households Below Average Income 2010-11*

[15] A third assessment was made using a combined relative low income and material deprivation indicator.

Despite steady rises in incomes as a whole and therefore the median benchmark against which progress was measured,[16] moderate increases in overall spending as a share of GDP plus greater targeting thus reduced poverty markedly in this period. Although the relative poverty target was narrowly missed, the absolute poverty rate fell by 13 percentage points between 1998-99 and 2004-05, equivalent to around 1.6 million children.

After 2004-05, relative and absolute child poverty rates drifted upwards, coinciding with a fall in tax credit expenditure relative to GDP. The onset of recession reversed this trend. Above-inflation increases in benefits and tax credits designed to support families and provide a fiscal boost to the economy helped to raise the incomes of low income families with children relative to the (falling) median income benchmark. As such, the rate of relative child poverty in 2010-11 was at its lowest level (18 per cent) since the mid-1980s. Nevertheless, it remained significantly above the target level.

While debates have continued as to whether the money could have been used more effectively, and indeed whether the target was the correct one to pursue at all, the correlations between child poverty reduction and investment in tax credits suggest that the mechanism provides a useful lever: when tax credits were increased above the rate of earnings child poverty fell, while during the pause when such increases stopped poverty started to rise again as other elements of family support such as Child Benefit and benefits for out of work adults did not keep pace with earnings prior to the recession.

Modelling by the IFS confirms this apparent link, showing that overall direct tax and benefit policy in the past decade played an "important role" in explaining three trends: the large overall reduction in child poverty; the slowdown in progress between 2004-05 and 2007-08; and some of the variation in child poverty trends between different groups of children (i.e. across different family types and by economic status of their parents).[17] We return to this third point in Section 3, considering the changes in the nature of the problem that have occurred in recent years and the associated implications for future tax credit policy, in particular the growing share of child poverty accounted for by single earner couples.

2.2 The impact on in-work family incomes

If reducing child poverty has been the primary goal of the tax credit policy, then the second major aim has been to provide support to relatively low income in-work families. This motivation took on added significance given the stagnation in the earnings of ordinary workers that became apparent in the years prior to the financial crisis and recession of 2008-09. Figure 7 details this phenomenon.

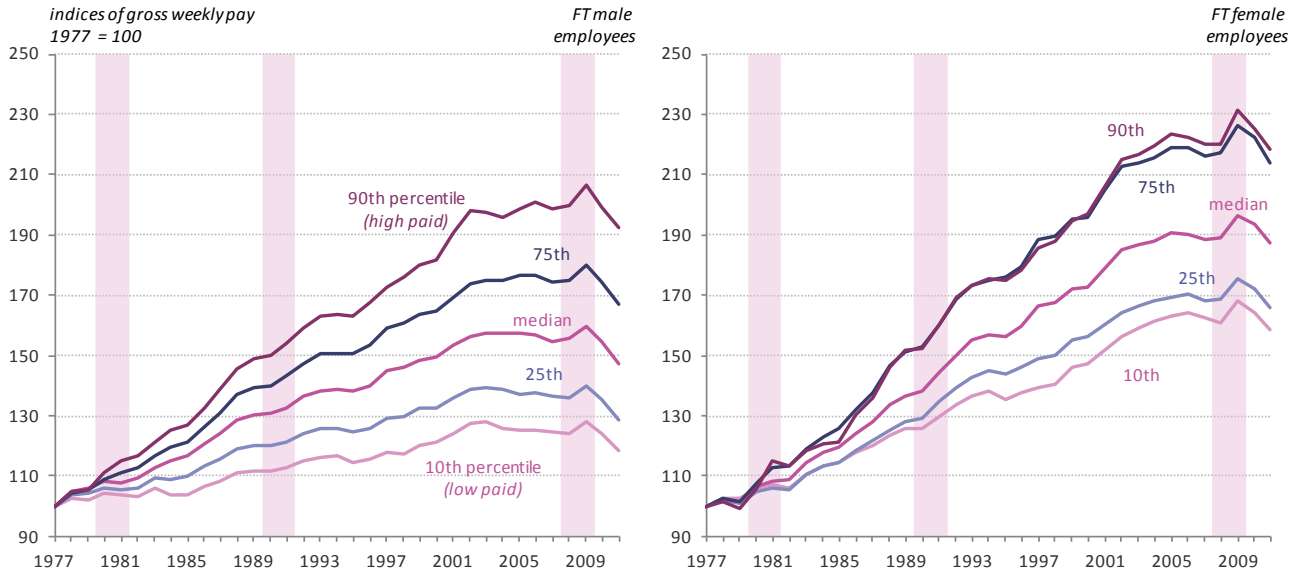
It sets out indices of weekly earnings among full-time men and women employees in the period from 1977. It shows that, unlike during other periods of economic growth, male wages were flat or falling across much of the earnings distribution in the five years leading up to the most recent recession, despite the tight labour market that existed. Only at the very top of the earnings distribution was wage growth recorded, and even

[16] Note that, because the benchmark being used here is median incomes in the country as a whole, for working-age poverty to fall families must experience income growth that not just rises, but rises faster than those of more affluent people. This is obviously a much harder target and is often described as running up the down escalator.

[17] Brewer M et al, *Child Poverty in the UK since 1998-99: Lessons from the Past Decade*, Institute for Fiscal Studies, October 2010

here it was somewhat slower than might have been expected.[18] For women earnings growth slowed but continued to rise prior to the recession.

Figure 7: Trends in gross weekly earnings at different points in the earnings distribution: *GB 1977-2011*



Notes: There are two methodological breaks in the series, in 2004 and 2006, but the changes have little bearing on the results shown here. 2011 data is provisional. Figures have been deflated using the RPI. Shaded areas represent periods of recession.

Source: ONS, *Annual Survey of House and Earnings* and *New Earnings Survey*

Previous Resolution Foundation work has emphasised the importance of tax credits in this period of wage stagnation to the living standards of low to middle income households.[19] Figure 8 revisits some of this analysis. The first chart shows that the average (real-terms) value of net earnings among households in the group was almost entirely flat between 2002-03 and 2007-08, ending the period slightly lower than it started. In contrast, average incomes in the group increased very slightly: that is, living standards improved slightly despite a drop in earnings.

This divergence in growth rates was due to a big increase in the value of state support flowing to members of the group. Almost all of this increase occurred in 2003-04, reflecting the introduction of WTC and CTC which were more generous than the credits and benefits they replaced and extended further into the low to middle income group. Following a smaller overall boost in 2004-05, increases in tax credits among low to middle income households were subsequently more than matched by cuts in benefit payments, resulting in a slight decline in the overall level of state support from 2005-06 until the recession period.

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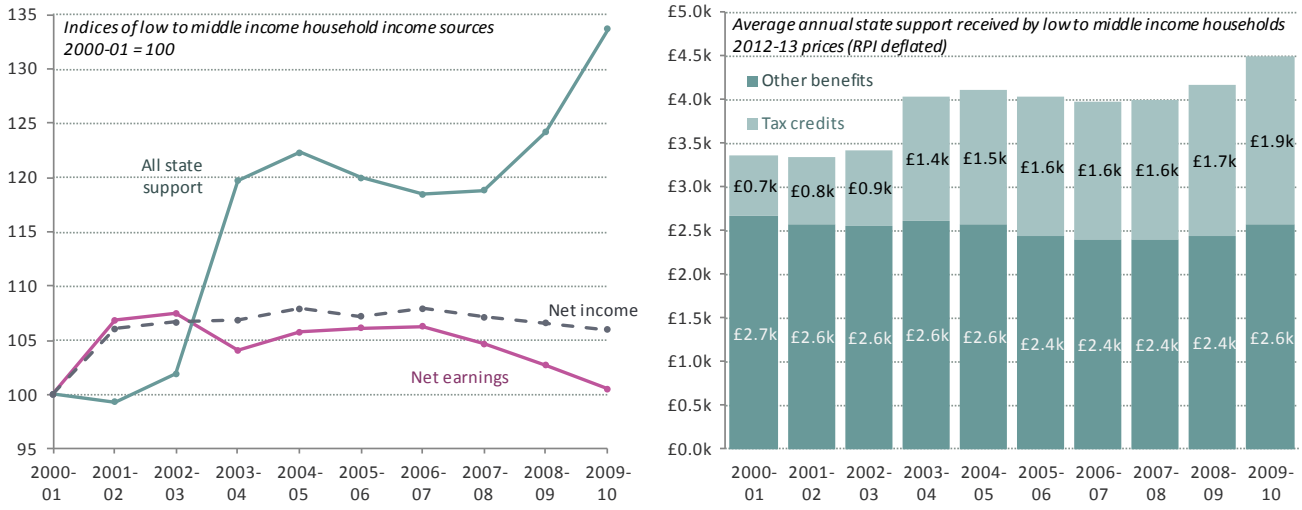
[18] Although not shown here, data on earnings growth at the extreme top of the distribution (i.e. the 99th percentile) shows that the very highest earners continued to experience strong pay growth in this period. It should also be noted that the weekly earnings data recorded here does not fully capture the impact of bonuses, which have grown in importance (particularly at the top end of the distribution) in the last decade. Annual pay data, which better captures this information, highlights stronger growth at the 90th percentile and above.

[19] See for example, Brewer M & Wren-Lewis L, *Why did Britain's households get richer? Decomposing UK household growth between 1968 and 2008-09*, Resolution Foundation, December 2011

Figure 8 also highlights the subsequently vital role played by tax credits following the global financial crisis of 2007-08. From this period, average households earnings in the group fell dramatically. While incomes also dropped, the decline was far less marked, thanks to a sizeable increase in average tax credit receipts. Subsequent tax credit cuts – both those already implemented and those still due to hit – are set to reverse these gains in the coming years, leaving low to middle income households exposed to the continued poor performance of wages.

Figure 8: Trends in selected components of average net low to middle income household income: *UK 2002-03 to 2009-10*



Note: Figures are real-terms 2012-13, deflated using RPI.
Source: RF analysis of DWP, *Family Resources Survey 2009-10* & earlier

2.3 The impact on employment

Our consideration of the impact of tax credits on poverty and in-work incomes focused on the direct effects associated with the policy. However, we might also expect tax credits to produce (both positive and negative) indirect effects which stem from changes in a range of incentives for individuals and employers. In this section we look at one such potential spill over, namely the employment effects associated with the introduction of tax credits.

With the growth of workless families forming part of the motivation for introducing the system, we begin by considering trends in this metric pre- and post-tax credit development. We then look more generally at employment trends among tax credit target groups, and at incentives for progression among those tax credit recipients already in work.

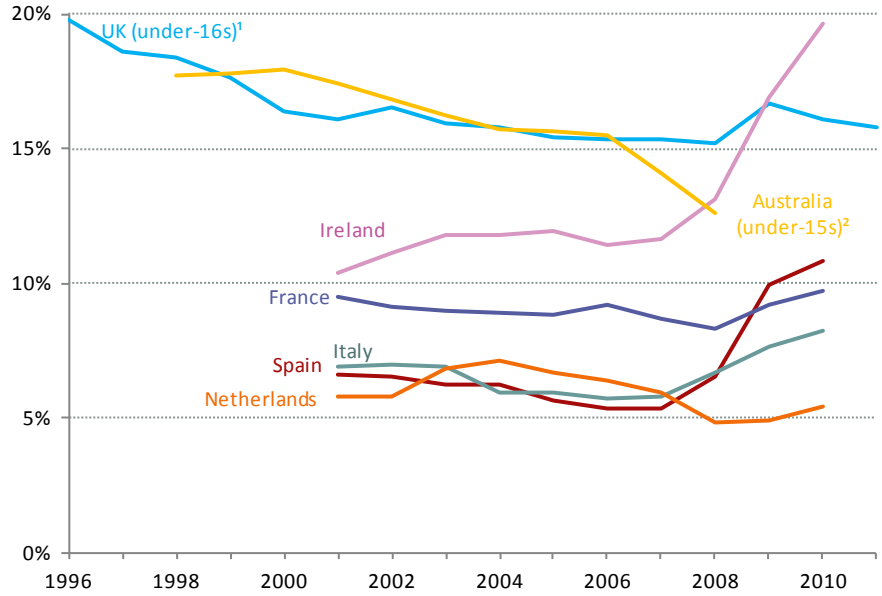
Trends in worklessness among target groups

As already noted, in the mid-1990s, one-in-five children in the UK lived in a household where nobody worked. As Figure 9 shows, this was far higher than existed in most other countries. This phenomenon occurred both because of the relatively high incidence of single parenthood in the UK and because of the unusually high levels of worklessness recorded among both single parents and couples with children in this country.

With the advent of the WFTC in 1999 and the expansion of tax credits in 2003 this high level of worklessness diminished sharply and, although the gap compared to other countries remained, the magnitude had shrunk

by the start of the 2008-09 recession. It is worth noting however, that this was a period of increasing employment and the drop in worklessness may in fact reflect this rather than the new tax credit regime.

Figure 9: Proportion of children living in households where no-one is working: *1996-2011*



Notes: Children include those aged 0-17 unless otherwise stated. [1] Three-month average Apr-Jun. [2]As at June each year.

Source: Eurostat, *Population in jobless households - Annual data*; ONS, *Working and Workless Households 2011*; Australian Bureau of Statistics, *Survey of Income and Housing*

The most striking feature of Figure 9 though is that worklessness in the UK picked up only slightly following the onset of recession. While the fall in employment has been smaller than in previous recessions we would still have expected workless households with children to rise by around 2 percentage points (slightly less than the overall fall in employment because some job losses are accounted for by one member of a two-earner couple). The absence of this rise, in marked contrast to many European countries, means that the UK is no longer the worst in Europe for children living in workless households. Notwithstanding this progress, the gap with the best performing countries in Europe – such as the Netherlands for instance – remains startling.

Movement into work among target groups

In order to isolate the effect of tax credits on employment, we need to turn to alternative studies. There are two broad approaches to this research.

The first looks at how employment among eligible groups (i.e. parents) changed before and after the introduction of tax credits, compared to non-eligible groups (i.e. non-parents). Other than tax credit eligibility, these groups are typically broadly comparable in terms of gender, age and education. Gregg and Wadsworth have taken this approach in relation to workless households for example, creating a measure of how many families would be workless if work was randomly distributed across the population and

comparing this benchmark against what is observed.[20] So, if the amount of available work increases the numbers of workless households should fall, while if there are more single adult households it will rise (because there is more chance of at least one person being in work in a two adult household).

In the late 1970s this benchmark predicts the actual number of workless household almost exactly, but by 1996 there were some 7 per cent more households without work than there should have been. There was a mirror image population of additional multi-earner households than would occur by chance. After the introduction of tax credits this excess of workless households started to fall fairly steadily – during good economic periods and bad – reaching 5 per cent by 2009. The effect appeared especially strong among single parents, where it fell from 30 per cent to 20 per cent. Among couples with children it declined from 2.8 per cent to 1.3 per cent.

This pattern of tax-credit induced sharp increases in employment among single parents is also found by Gregg, Harkness and Smith. They compare single parents with similarly qualified single women without children for the WFTC period and suggest that employment rose by 4 per cent more than in the control group. It should be noted however, that several other changes were in evidence in this period and it is not possible to determine the extent to which the relative gain was directly due to tax credits rather than changes in childcare and welfare to work programmes.[21]

Their work also explores the dynamics of employment, and finds that the rise in employment is not due to more single parents *entering* work but rather *staying* in work, especially at the time of relationship breakdown. So, where the parent principally looking after the children would previously often quit work in the face of a floundering relationship, they increasingly maintain their employment status instead. There were also marked rises among single parents increasing hours to get above the 16 hours needed to qualify for tax credits – strongly indicating an incentive effect.

The second approach to assessing the employment effect on parents generated by tax credits is to explicitly model the effects of financial incentives on working patterns over a long period of time and then use this to predict how much behaviour will change as a result of the reforms introduced. Brewer et al. explore the WFTC period and suggest that the effects again amounted to around 4 per cent.[22] Francesconi and van der Klaauw look over a longer period covering the early part of the third generation of tax credits and find a slightly higher 5 per cent figure.[23]

These studies suggest that tax credits were responsible for about one-half of the rise in single parent employment over the time periods they consider, which was about 12 per cent over the full period 1998 to 2009, with the rest coming from aggregate pick up in employment and other policy effects. The studies also suggest there were far smaller, but positive, effects on parents in couples.

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[20] Gregg P & Wadsworth J, "Two Sides to Every Story: Measuring Worklessness and Polarisation at the Household Level", *Journal of the Royal Statistical Society Series A* Volume 171, 2008

[21] Gregg P, Harkness S & Smith S, "Welfare Reform and Lone Parents in the UK", *Economic Journal Features* vol. 119 issue 535, February 2009

[22] Brewer M, Duncan A, Shephard, A & Suarez M, "Did working families tax credit work? The impact of in-work support on labour supply in Great Britain", *Labour Economics*, vol. 13(6), 2006

[23] Francesconi M & van der Klaauw W, "The socioeconomic consequences of in-work benefit reform for British lone mothers", *Journal of Human Resources*, 2007

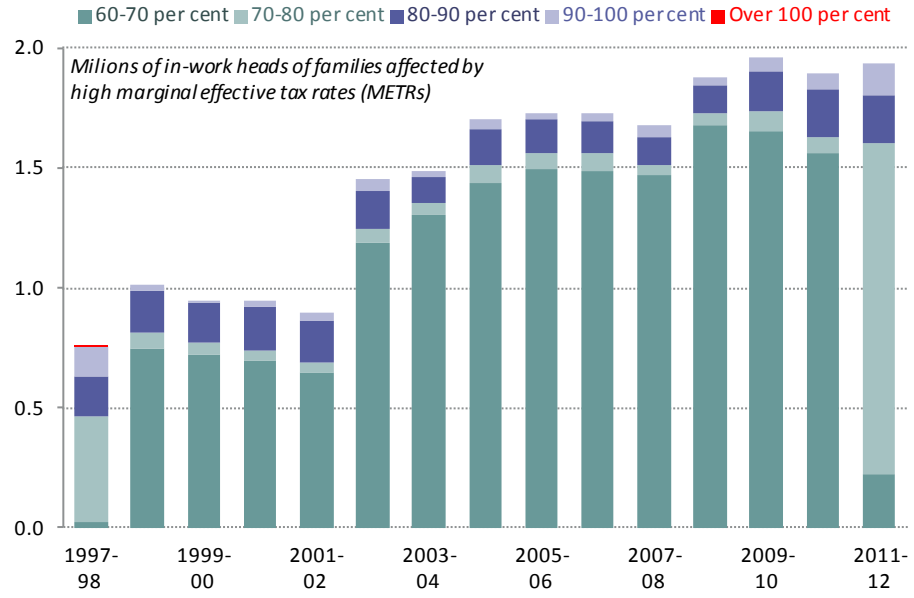
The overall conclusion is that the effects of tax credits on employment were positive if modest, and made only a minor contribution to the poverty reduction outlined in Section 2.1. As we will pick up in Section 3 however, it is worth noting that while at the beginning of the period under consideration some 60 per cent of the families with children that were below the poverty threshold were workless, the latest picture suggests that some 55 per cent are instead working poor. This is a profound shift in the pattern of poverty, with child poverty now being much more about working poverty.

Progression in work: marginal effective tax rates

While tax credits have encouraged some parents to enter work, the way in which they are withdrawn as earnings rise means they inevitably contribute to high marginal effective tax rates (METRs): that is, the proportion of an extra pound of earnings that is lost due to the withdrawal of benefits and tax credits and payment of taxes.[24] This is especially true where tax credits withdrawal comes on top of regular taxation (i.e. for people already subject to income tax and NICs).

Figure 10 shows the distribution of high METRs across heads of households in the period from 1997-98 onwards. Prior to the introduction of WFTC around 750,000 household heads had METRs over 60 per cent, and around 100,000 lost more than 90 pence of each additional pound. A tiny number had METRs in excess of 100 per cent: that is, earning extra money would result in *reductions* in their overall income. Such patterns occurred because some individuals who were liable for income tax also faced withdrawal of several benefits (Housing Benefit, Council Tax Benefit, Family Credit) at once.

Figure 10: Distribution of high marginal effective tax rates among working heads of families: *UK 1997-98 to 2011-12*



Notes: Marginal deduction rates are for working heads of families in receipt of income-related benefits or tax credits where at least one person works 16 hours or more a week, and the head of the family is not receiving pensioner or disability premia.

Source: HMT, *Budget 2010* and earlier

[24] Note that additional earnings do not necessarily produce immediate reductions in tax credits. Instead, extra earnings this year result in lower tax credit payments in the next period if they are sustained.

The advent of WFTC had two effects. It *increased* the number of people facing METRs over 60 per cent, because more people became eligible for support; but it also *reduced* the numbers on very high tax rates, because WFTC reduced the likelihood of multiple benefit withdrawal at the same time. Principally, far fewer working families also received Housing Benefit.

The expanded tax credit system from 2003 covered significantly more families. Working recipients typically lost 68-70 per cent of any extra pound earned over this period (through income tax, NICs and tax credit withdrawal). In the tax year 2010-11 the tax credit taper was increased from 39 per cent to 41 per cent. Although the increase was relatively small, it had the effect of pushing a large number of people onto typical withdrawal rates over 70 per cent (20 per cent income tax plus 11 per cent NICs plus 41 per cent tax credit withdrawal). Under Universal Credit the typical METR will rise again to 76 per cent, but the very high rates of over 80 should disappear.[25]

2.4 The impact on wages

The second possible indirect tax credit effect that we look at relates to earnings. Tax credits potentially encourage people to work for lower wages than otherwise would be the case. As discussed above, this has a positive implication – namely that it encourages non-workers to enter the labour market. However, if the increase in labour supply results in lower wages among a broad swath of families with children, then a large part of the allocated resource will not ultimately feed through into higher incomes for these families.

These wage effects may occur for three rather different reasons:

- First, if tax credits encourage a lot more people to seek work at lower wages this is likely to suppress wages for all workers as labour is more plentiful for firms in these sectors. This then is a **general effect on low wages**.
- Secondly, because recipients do not get large income gains (due to the presence of high marginal effective tax rates discussed above) from being in better paid work they will tend to be sorted increasingly toward the bottom end of the labour market. That is, the **wages of tax credit eligible workers fall relative to similarly paid non-eligible workers**.
- Thirdly, if seeking higher wages becomes less beneficial people may not see as much value in investing in training and education or in moving to secure a better paid job, and hence we might see less upward progression or mobility among eligible low wage workers. There is thus **a lack of progression**.

Evidence to date

There have been relatively few studies looking at these effects and, to the extent that some *do* exist, their relevance to the tax credits currently in place in the UK is limited by their focus on somewhat different systems. Here we briefly review two studies of the US Earned Income Tax Credit (EITC) and two analyses of WFTC in the UK.

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[25] Note, these figures take no account of a range of additional costs incurred as a result of working an additional hour. The most important omission relates to childcare. Such costs are likely to prove prohibitive for some workers – coming on top of METRs in excess of 70 per cent – although some may qualify for additional childcare support, thus increasing their incentive to work longer.

The EITC is narrowly targeted (even in comparison with the WFTC) and is primarily taken up by single parents. We would expect the positive effect of boosting employment among the EITC target group to naturally reduce average wages at the bottom of the distribution for two reasons: first, because new entrants tend to work for lower pay than existing workers; and secondly because the boost in overall labour supply will encourage wages to fall.

Looking at expansion of the EITC programme in the mid-1990s, Rothstein has argued that each $1 increase in payments produced transfers of $0.70 to the intended recipients (low wage single mothers) and $0.72 to employers, with the excess of $0.43[26] coming from the pockets of EITC-ineligible low wage female workers.[27] That is, downward pressures on average wages for low-paid workers were more than offset by EITC payments for eligible single parents, but resulted in reductions in net incomes for non-eligible employees.

Similarly, Leigh has concluded that the EITC has had a perverse impact on the wages of workers who do not qualify for it, with a 10 per cent increase in the generosity of the EITC being associated with "a 5 per cent fall in the wages of high school dropouts and a 2 per cent fall in the wages of those with only a high school diploma".[28] He notes, however, that the employment and wage effects in combination boost total incomes among single mothers by more than $1 for every dollar spent, because the employment effect outweighs any wage slippage.

We would not expect such effects to be as large in the UK context, because the wider coverage of our tax credits means any supply boost effects are spread across a much larger group of workers. Nevertheless, a study of the WFTC by Azmat found that there *was* wage slippage among eligible fathers. The work suggests that the wages of male WFTC-eligible workers declined relative to similarly-skilled non-eligible workers, leading to the loss of 34 per cent of the tax credit payment. This effect was limited to male claimants, however: no such effect was detected among mothers (if anything, there were wage gains). Importantly, Azmat contended that much of the slippage recorded among the eligible group was associated with the 'salience' of the credit. That is, because the WFTC was paid through the PAYE system, employers could clearly see who among their workers were in receipt – and by how much they gained – and therefore modified their salaries accordingly.[29]

A second study of WFTC by Gregg and Harkness looked explicitly at single parents and found that there was no wage slippage among existing working single parents, but that the extra workers moving into work as a result of improved incentives earned on average lower wages, as indeed all new entrants normally do.[30]

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[26] These three figures should sum to $1 (i.e. $0.70 + $0.72 - $0.43): that they don't is down to rounding.

[27] Rothstein J, *The Unintended Consequences of Encouraging Work: Tax Incidence and the EITC*, CEPS Working Paper No. 165, May 2008

[28] Leigh A, *Who benefits from the earned income tax credit? Incidence among recipients, coworkers and firms*, Discussion paper series, Forschungsinstitut zur Zukunft der Arbeit, No. 4960, 2010

[29] Azmat G, Incidence, *Salience and Spill overs: The Direct and Indirect Effects of Tax Credits on Wages*, Universitat Pompeu Fabra and Barcelona GSE, October 2011

[30] Gregg P & Harkness S, "Welfare Reform and Lone Parents Employment" in Dickens R, Gregg P & Wadsworth J (eds) *The Labour Market Under Labour: State of Working Britain 2003*, Palgrave, London, 2003

Assessing the current tax credit system

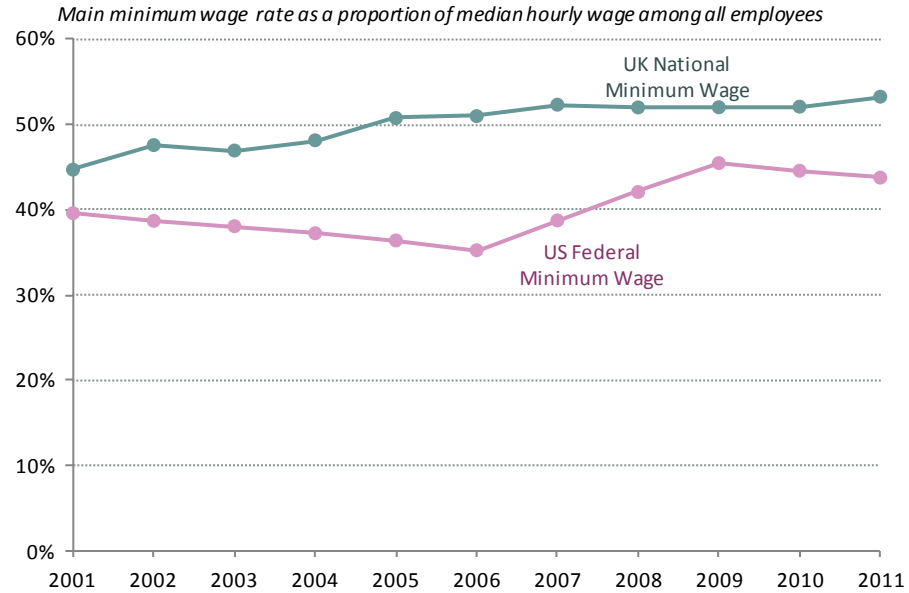
As yet, no similar studies appear to have been published in relation to the WTC/CTC period. Given that we have already noted that findings in relation to the (relatively targeted) WFTC may not map directly onto the current generation of (expanded) tax credits, it is worth exploring this issue in some detail. Here we test for evidence of an impact in two ways:

- First, by comparing trends in wages in the bottom half of the earnings distribution (where WTC/CTC eligibility is concentrated) with pay above the level of typical tax credit receipt: that is, we will investigate whether there has been a general effect on low wages; and
- Secondly, by looking at the relative wage performance of eligible and non-eligible groups in the same (lower) part of the earnings distribution: that is, we will consider whether those workers who are eligible for tax credits (i.e. low waged parents) have fallen down the earnings distribution.

The National Minimum Wage and wage inequality

As discussed above, in-work credits may depress wages generally in the part of the earnings distribution at which most support is targeted by increasing the supply of labour at any given level of pay. Having established in Section 1 that tax credits are primarily distributed among the bottom half of workers (the lowest deciles during the WFTC period and the bottom half more generally during the WTC/CTC period), we turn first to consider whether wages in this part of the distribution fell further behind those further up after the introduction of tax credits.

Figure 11: Minimum wage level as a proportion of median hourly pay: *UK & US 2001-2011*



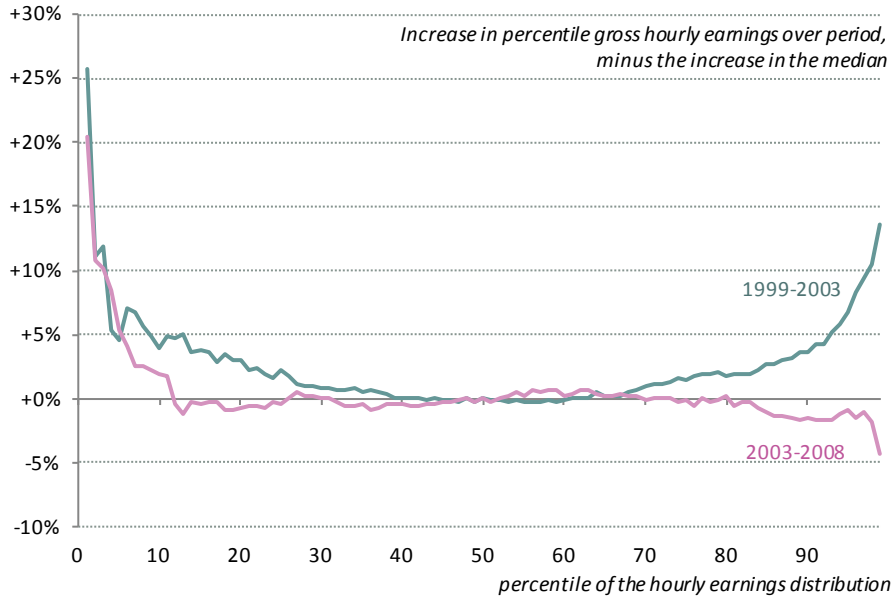
Notes: In both countries, median hourly pay data covers all employees, including those who are exempt from the standard minimum wage rate. In the US, several states impose minimum wages above the federal rate used here, meaning that the figures shown here are likely to understate the size of the US wage floor to some extent.

Sources: UK: ONS, *Annual Survey of Hours and Earnings*; US: Bureau of Labor Statistics, *Occupational Employment and Wage Estimates, National Cross-Industry Estimates*

The UK picture is complicated because development of WFTC coincided with the introduction of the first National Minimum Wage. As such Figure 11 shows that, in contrast to experiences in the US, any downward pressure on wages associated with the WFTC is likely to have been countered by strong upward pressures associated with the minimum wage.

Figure 12 shows that wages at the top and bottom of the earnings distribution rose very rapidly compared to the median in the period after the introduction of the WFTC; up to 25 per cent faster at the very low paid end of the distribution. Earnings growth was above the national norm across the bottom quarter of the distribution where the WFTC was focused. This is in stark contrast to the pre-WFTC period (not shown here). We cannot conclude that this means that WFTC *raised* wages – the effect may instead reflect spill over effects from the NMW or tightness in the labour market – but there appears to be no evidence of slippage in the part of the distribution where tax credits were biting.

Figure 12: Growth in hourly wages relative to the median at each percentile of the overall distribution: *UK 1999-2008*



Notes: Chart shows the percentage growth in hourly wages (in cash terms) for each percentile of the earnings distribution minus the growth at the median (or 50th percentile). Points above zero represent faster growth than occurred at the median; points below zero represent slower growth. Unexpectedly poor performance of wages at the very top of the distribution in the 2003-2008 period is likely to reflect the under-identification of bonus payments in the ASHE hourly data. Previous Resolution Foundation work (*Missing Out*) has shown that bonuses formed an increasing share of overall remuneration for this part of the distribution in the period considered.

Source: ONS, *Annual Survey of Hours and Earnings*

In terms of the WTC/CTC phase of tax credits policy, we might not expect the NMW to have the same impact, because tax credit coverage was no longer as concentrated at the lowest end of the earnings distribution. Consideration of Figure 12 shows that wage growth was again relatively strong in the bottom decile in the period from 2003-2008.[31] However, there was no real difference across the bulk of the distribution,

[31] Wage growth appears to have been below the national norm at the very top of the distribution. However, this is likely to simply reflect the failure of the hourly pay variable used here to fully capture bonus payments: such

suggesting once again that that there is a lack of evidence to suggest that tax credits suppressed wages among all low wage workers. So we turn next to the impact on those most likely to be in receipt of tax credits – low wage parents.

Wage trends among tax credit recipients

As we established in Section 1, families with children are much more likely to be in receipt of tax credits than those without. Therefore, while wages for low wage workers appear not to have been *generally* squeezed following the introduction of tax credits (actually somewhat the reverse), we must next consider whether there is any evidence that the primary tax credit recipients – low wage parents – have experienced wage growth that has fallen behind that for other low wage workers. That is, whether or not parents' wages have fallen in the overall earnings distribution.[32]

Under WFTC the number of claimants was sufficiently small to make any evidence of general wage effects hard to detect. However, with the expansion of the third generation tax credits discussed earlier, we have expanded the population of recipient working families to 4.8 million. In what follows we undertake a number of comparisons to assess evidence of wage slippage before and after the introduction of both WFTC and WTC/CTC, with the target group being parents on low to middle wages and the comparator groups comprising typical wage earners, higher-waged parents and low to middle earning non-parents.

Figure 13 documents wages for workers with children compared to the overall population median, focusing on the lower part of the *with kids* earnings distribution. It shows that hourly wages at the 35th percentile of this distribution equated to around 86 per cent of the median wage in 1994-95, before subsequently rising a little bit faster than the median, eroding the gap by about 1 percentage point by the end of the period.

This closing of the wage gap between the lowest paid parents and the overall median is more marked further down the distribution, with the 5th and 10th percentiles performing particularly strongly. This may well be driven not by tax credits but by the NMW and low unemployment, but it clearly shows that there is a general improvement in the wages of parents compared to the typical (median) UK wage over this period. We can therefore conclude that the wages of low paid parents were not slipping compared to typical wages over this period. Next however, we consider whether they were falling relative to the wages of non-parents *within* the bottom half of the distribution.

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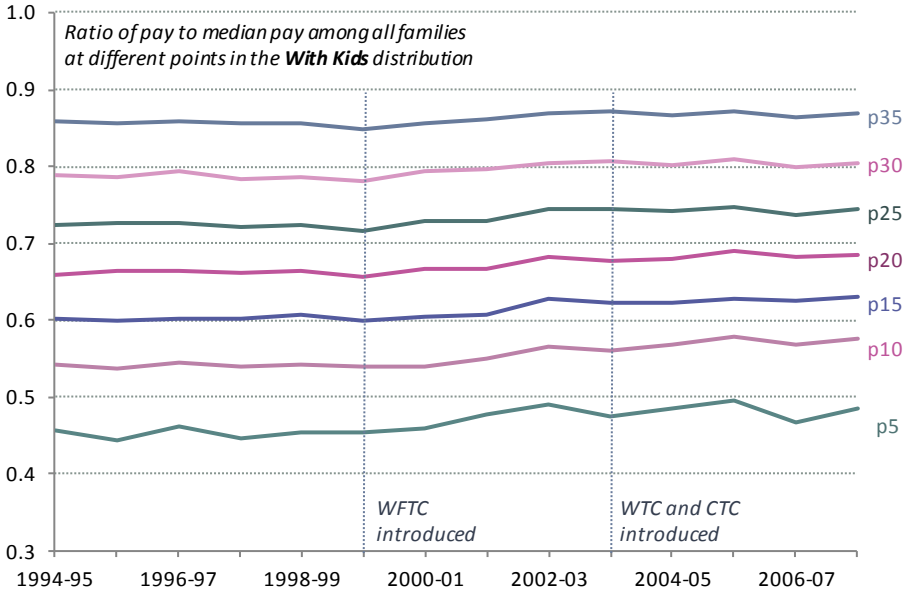
remuneration accounted for an increasing share of overall pay among the highest earners in this period. See for example, Whittaker M & Savage L, *Missing Out: why ordinary workers are experiencing growth without gain*, Resolution Foundation, 2011 for an account of the growing share of wages flowing to the very highest earners.

[32] As an alternative we could compare trends in wages across high-eligibility and low-eligibility industries. However, as shown in Appendix 4, coverage is relatively uniform across sectors, making it difficult to get any sense of whether tax credits have any effects on wages by looking through this particular lens.

Figure 13: Hourly wages among workers with children relative to the overall median wage: *UK 1994-95 to 2007-08*



Source: Authors' analysis of DWP, *Family Resources Survey 2009-10*

In turning next to compare the wage performance of parents and non-parents over time, it is important that we focus on workers with similar starting wages, so as to avoid conflating the general reduction in wage inequality at the bottom with shifts in relative earnings of parents who generally have higher wages.

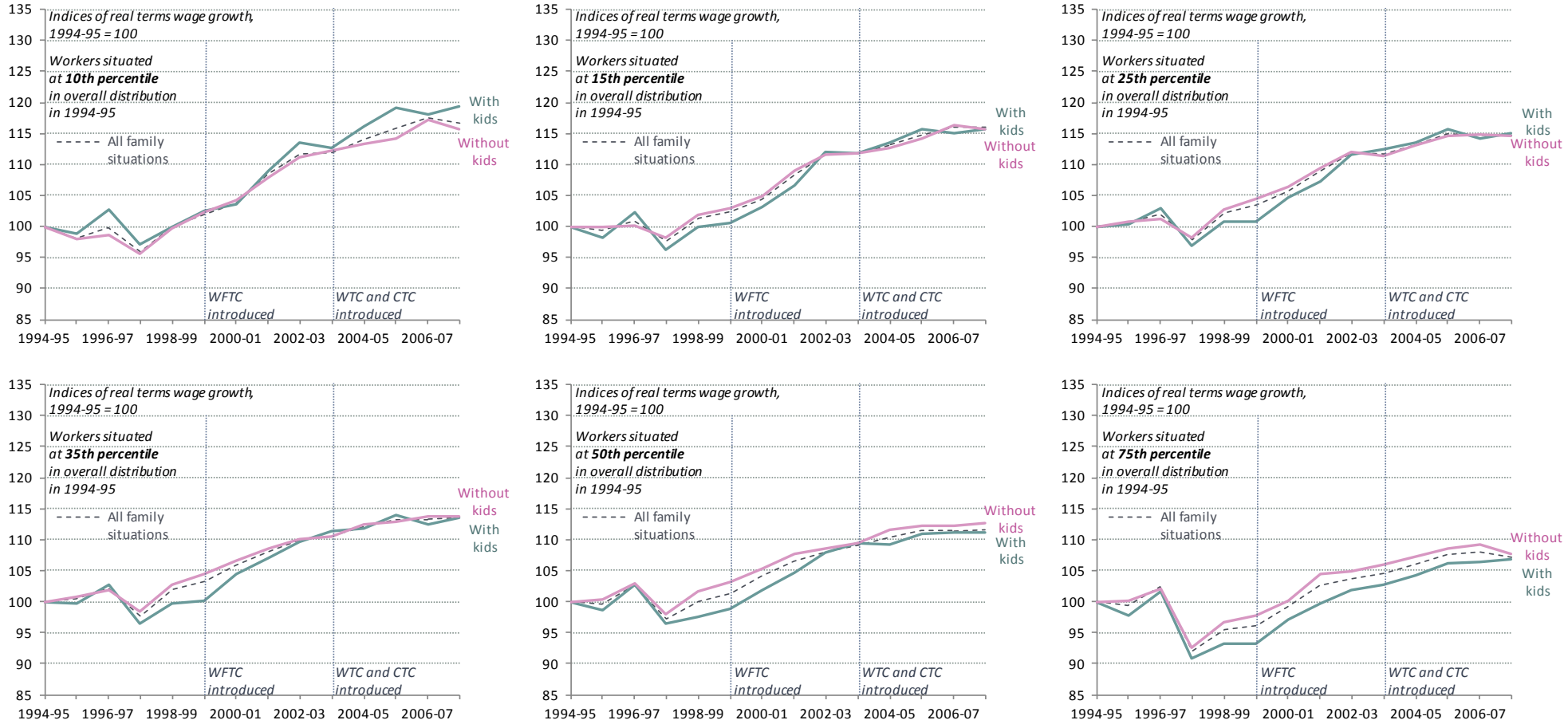
Figure 14 does this. Each chart compares trends among workers with children and those without, with the dotted line presenting the position of all workers for reference. On each occasion, we identify positions within the two groups' pay distributions that correspond to the same point in the overall earnings distribution at the start of the period, and then monitor wage growth in these parts of the comparators' distributions over time.

For example, the chart at the top left of the figure compares wage trends among those who had earnings equivalent to the 10th percentile of the overall distribution in 1994-95 (£3.08 an hour). However, because workers with children tend to have higher wages on average than those without (reflecting differences in ages), this wage level was equivalent to the ones recorded at the 9th percentile of the *with kids* distribution and the 11th percentile of the *without kids* distribution. The chart therefore tracks wage growth at the 9th percentile of the *with kids* distribution and the 11th percentile of the *without kids* group over the period as a means of determining whether (broadly) eligible and (broadly) non-eligible workers starting at the same wage experienced differing levels of pay growth.

If we look first at this 10th percentile chart, we see that overall wages (that is, the dotted line which shows workers from all types of family) increased by 17 per cent between 1994-95 and 2007-08. This growth is stronger than displayed at higher parts of the distribution, potentially reflecting some spill over from the NMW shown earlier. More pertinently, the lines for parents and non-parents track each other very closely, although there is a small degree of faster growth for parents.

The picture changes only slightly across the higher parts of the wage distribution. Here we identify the opening of a small gap in favour of non-parents during the pre-WFTC period which is subsequently closed during the WFTC years but, even at their widest, the gaps appear relatively small.

Figure 14: Indices of hourly wage growth among workers with and without children by original position in overall wage distribution: *UK 1994-95 to 2007-08 (all workers)*



Notes: In each instance, earnings growth is compared for the within group percentile associated with the specified point in the overall earnings distribution in 1994-95. For example, in 1994-95 the position within the 'with kids' earnings distribution corresponding to the 50th percentile overall was p45 while the position within the 'without kids' distribution was p53. Thus, the chart tracks changes in earnings at p45 for workers with kids vs p53 for those without. In all cases, figures are adjusted into 2009-10 prices using the RPI.

Source: Authors' analysis of DWP, *Family Resources Survey*

As we have seen, the shift to WTC/CTC in 2003 resulted in an extension of tax credit concentration from the bottom three deciles of the earnings distribution to the bottom half. We might therefore expect to see some impact at the 35th and 50th percentiles in this later period. Once again, however, there are no significant differences.

At the 75th percentile, where tax credit coverage approaches zero, wage growth for parents is a little stronger than for non-parents. However, this appears to have more to do with the relatively weak wage growth among non-parents at this part of the distribution, rather than wage growth among parents that is significantly stronger than exists further down the wage spectrum. Over the period as a whole, the absence of any significant difference between the pattern at the 25th percentile (where the bulk of tax credit expenditure is concentrated) and the 75th percentile (where most people are no longer eligible) suggests strongly that there is no evidence here of tax credit receipt reducing wage growth.

Table 3 provides further detail, allowing us to construct clear comparisons of wage growth across time for the two groups of parents and non-parents. Economists describe such comparisons as *difference in difference* analysis. The table shows the simple difference in difference estimate for annual wage growth at each part of the wage distribution: it is marked in green if wage growth in a given period was more than 0.5 per cent a year *faster* for parents than for non-parents, and in pink if wage growth among parents was more than 0.5 per cent a year *slower*.

There are three comparisons worth noting. First, if we focus on the lower part of the earnings distribution we observe only small differences in average annual wage growth between parents and non-parents. Secondly, we can consider whether wage growth differences between parents and non-parents varied between low wage and higher waged groups (as the latter are far less likely to be eligible for tax credits). The results suggest the patterns are similar. Thirdly, we can look across three periods to consider changes before and after tax credit reforms. We see that, prior to the introduction of WFTC in 1999, parents were losing ground on non-parents right across the distribution. In contrast, parents recorded faster wage growth in most instances in the WFTC period, with very little observable difference from 2002-03 onwards.

Overall then, in terms of wages in the lower part of the distribution in general and in terms of parents compared to non-parents in the low to middle part of the wage distribution or compared to higher wage parents beyond the reach of tax credits, the most striking feature is the absence of any strong differences. Nor were any such differences apparent prior to WFTC.

As we will see in Section 3 however, there does appear to be evidence of divergence in wage growth *between* parents at the same (lower) part of the earnings distribution. That is, wage growth among fathers has lagged wage growth among mothers by some considerable distance. The findings appear to underpin changes in the nature of poverty and have implications for the future role and design of tax credits.

Table 3: Average annual growth in hourly wages by family type of worker and starting position in overall earnings distribution: *UK 1994-95 to 2007-08 (all workers)*

	1994-95 to 1998-99	1998-99 to 2002-03	2002-03 to 2007-08	1994-95 to 2007-08
p10				
With kids	-0.0%	+3.4%	+1.2%	+1.5%
Without kids	-0.1%	+2.9%	+0.9%	+1.2%
Difference	+0.1%	+0.5%	+0.3%	+0.3%
p15				
With kids	-0.0%	+3.0%	+0.8%	+1.2%
Without kids	+0.5%	+2.4%	+0.8%	+1.2%
Difference	-0.5%	+0.6%	-0.1%	+0.0%
p25				
With kids	+0.2%	+2.7%	+0.7%	+1.2%
Without kids	+0.7%	+2.3%	+0.5%	+1.1%
Difference	-0.5%	+0.4%	+0.2%	+0.0%
p35				
With kids	-0.1%	+2.5%	+0.8%	+1.0%
Without kids	+0.7%	+1.8%	+0.7%	+1.1%
Difference	-0.8%	+0.7%	+0.0%	-0.0%
p50				
With kids	-0.6%	+2.6%	+0.6%	+0.9%
Without kids	+0.4%	+1.7%	+0.8%	+1.0%
Difference	-1.0%	+0.9%	-0.2%	-0.1%
p75				
With kids	-1.7%	+2.1%	+1.0%	+0.5%
Without kids	-0.9%	+2.1%	+0.5%	+0.6%
Difference	-0.8%	+0.0%	+0.5%	-0.1%

Notes: Average annual growth is calculated by comparing the end-point of each period with the start. Shaded numbers highlight periods in which the difference between average annual growth for the two comparator groups was greater than 0.5 percentage points.

Source: Authors' analysis of DWP, *Family Resources Survey*

2.5 The impact on family structures

Finally in this section we turn to consider a third potential behavioural impact: namely whether or not the development of tax credits has had any influence on family structures in the UK.

In general terms, welfare can affect partnership by creating penalties or bonuses for being partnered compared to being single. Traditional means-tested benefits are typically associated with partnership penalties, because they raise incomes when a parent is out of work and unpartnered relative to having a working partner.

But, as discussed further in the articles by Grogger and Karoly,[33] the effects of tax credits on partnership are ambiguous. Since a woman can be entitled to tax credits on the basis of her partner's earnings, tax credits

[33] Grogger J and Karoly L, "The effects of work-conditioned transfers on marriage and child well-being: a review", *Economic Journal*, 2009

make low-earning men (financially) more attractive than would normally be the case. In general, low income single earner couples and working single parents receive income top-ups under the tax credit system, while dual-earning couples face penalties because of the high marginal tax rate on the second earner. The introduction of tax credits into a system where means-tested welfare payments already exist therefore boosts the incomes associated with being either a working single parent or in a relationship with a low-waged working partner.

Anderberg (2008)[34] models the change in benefit entitlement from being part of a couple compared to being single using data from the *Family Resources Survey* and estimates the probability of being in a couple as a function of these partnership penalties or bonuses over successive past policy changes. Simulating the effect of WFTC, he estimates that it was associated with an increase in partnership of around 0.8 percentage points – or around 50,000 additional couples. However, this captures the effect of WFTC in isolation. In practice, the simultaneous increase in Income Support will have made single-parenthood relatively more attractive and raised the partnership penalties by a similar order of magnitude to the increase in partnership bonuses brought about by WFTC. The two reforms therefore largely cancelled each other out. Such a neutral result is confirmed by Gregg, Harkness and Smith. They show a statistically insignificant increase in the probability of single parenthood following the reforms.[35]

Overall it should be noted that, while the long-term shift towards single parenthood in the UK is continuing, the pace of change is significantly slower than existed in the 1980s. Thus the picture generally shown by Anderberg is confirmed, that while partnership is affected by welfare systems, the size of the effect is very small and is a second order consideration in welfare design.

Having looked at trends in each of the five areas of child poverty, in-work incomes, employment, wages and family formation before and after the introduction of WFTC and the subsequent development of WTC and CTC, and found broadly positive pictures, we turn in the next section to consider some of the challenges that may require refinement of the tax credit model in the coming decade. To do this, we consider both changes in the political and economic climate and changes in the nature of poverty and in-work incomes that tax credits are designed to tackle.

[34] Anderberg D, "Tax credits, income support, and partnership decisions", *International Tax and Public Finance*, vol. 15(4), 2008, pp. 499–526.

[35] Gregg P, Harkness S and Smith S, "Welfare Reform and Lone Parents in the UK", *Economic Journal Features* vol. 119 issue 535, February 2009

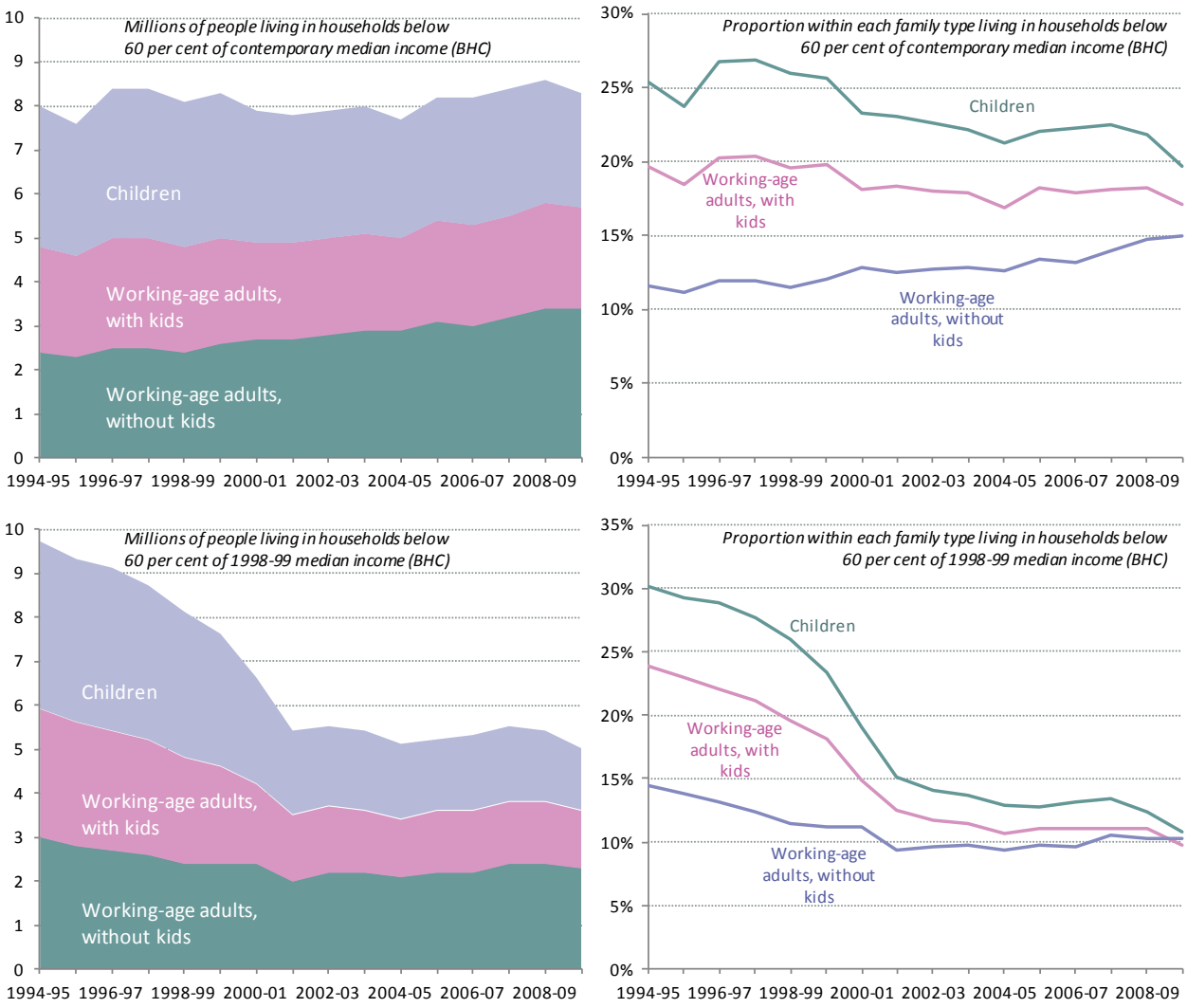
3. The changing role of tax credits

Our assessment of the impact of tax credits in the past decade or so has thus far focused on outcomes for target and non-target groups before and after the development of WFTC and WTC/CTC across a range of areas. While our findings point to a number of apparent successes, the coming years pose a range of challenges. In part these are associated with the current configuration of tax credits and changes in the political and economic climate; and in part they are associated with changes in the very nature of the problems tax credits aim to deal with. In this section we consider such challenges.

3.1 The growing importance of working poverty

We showed in Section 2.1 that tax credits helped to reduce child poverty in the period between 1998 and 2004, but that subsequent cuts in spending relative to GDP resulted in some reversal of this improvement. However, beneath this headline finding sit three trends that are likely to have significant implications for the coming years.

Figure 15: Trends in relative and absolute poverty among working-age families: *UK 1994-95 to 2009-10*



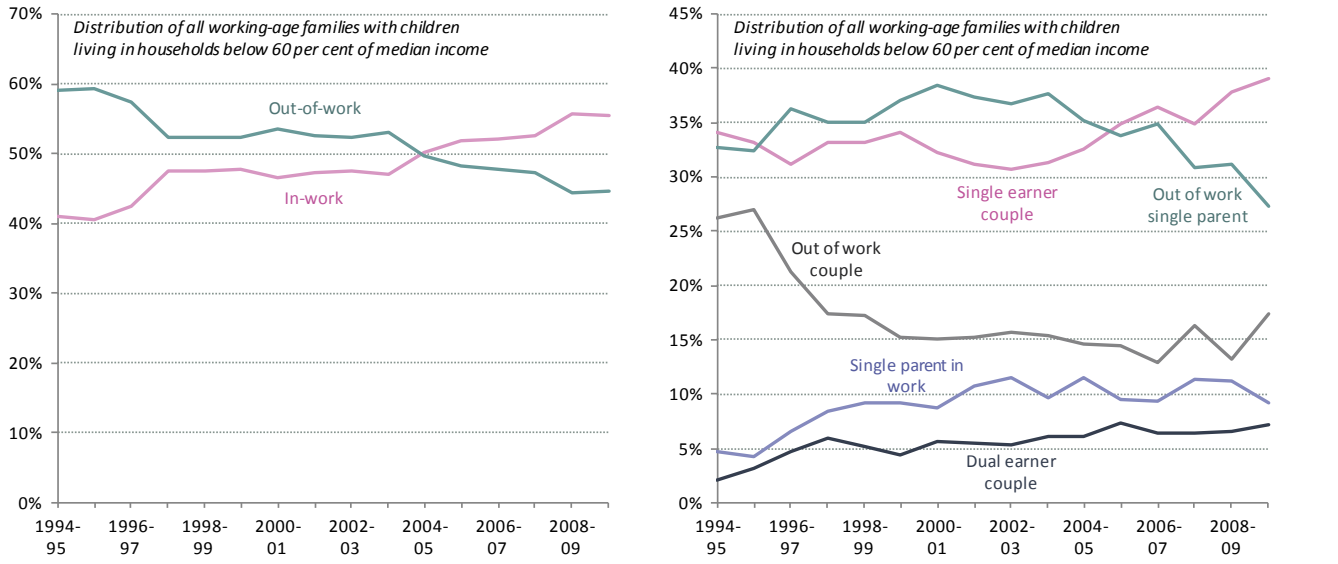
Source: IFS, *Poverty statistics*

First, while child poverty (and the associated poverty rate of parents)[36] fell overall in the period from 1998, poverty among working-age non-parents increased steadily. That is, there wasn't a general decline in poverty over this period, just one focused on families with children (and pensioners).

Figure 15 details the breakdown of relative (top row) and absolute (bottom row) poverty among working-age households between 1994-995 and 2009-10. It depicts an increase in relative poverty among non-parents of some 1 million (or 3.4 percentage points). While the focus over this period has understandably been on tackling *child* poverty – because of both the short- and long-term consequences – the growing trend among non-parents is unlikely to be one that the government can ignore indefinitely.

Secondly, and perhaps more importantly, while parental poverty has tended to fall, the circumstances of those considered poor has shifted markedly, with in-work families accounting for a growing share of those experiencing child poverty. Figure 16 shows that the proportion of poor families with children that were in-work increased from around 40 per cent in 1994-95 to 55 per cent by the end of the period.[37]

Figure 16: Parental poverty by family type and economic status: *UK 1994-95 to 2009-10*



Source: DWP, *Households Below Average Income*

The fall in workless poverty reflected both the decline in the number of children in workless households that we saw in Figure 9 and a fall in the proportion of non-working single parents who were below the poverty line (as shown in Figure 16). The increasing share of poor children in working families is dominated by single earner couples. Here the paradox is that despite the sharp increase in spending on the working poor associated with tax credits, a lot of single earner couples have not been lifted out of poverty.

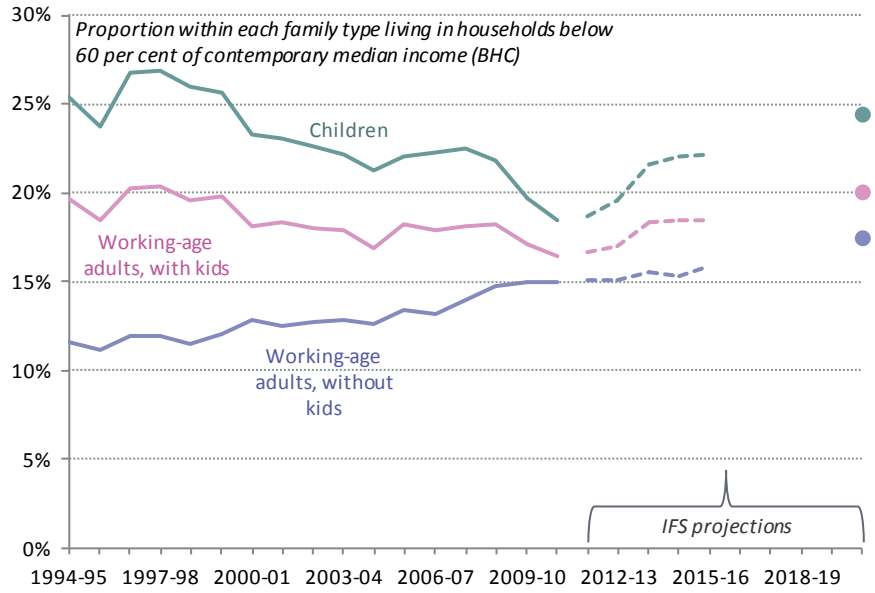
[36] As with child poverty, poverty rates among parents fell from 1998 onwards – for the obvious reason that they live in the same families – but the reduction was less sharp. This was because the fall in poverty was less marked in families with just one child, where poverty rates were already low. The fall in child poverty was also focused on younger children, which the government made a priority in the early years of the programme.

[37] The overall number of children is of course falling so there is not a rise in number in working poor families, just an increased share.

In part this is likely to reflect take-up and measurement issues.[38] But the fact remains that child poverty has increasingly become a story about single earner couples. Why this group has not benefited as much as others from the focus on poverty reduction is explored further in Section 3.3.

The third trend to note in relation to poverty is that the recent rapid fall looks set to go into reverse. Figure 17 details IFS projections for poverty among working-age households in the period to the end of the decade given current government policies. These show that many of the gains made in recent years appear set to be reversed. In the short run, relative child poverty is forecast to remain broadly constant, before rising slightly in 2013-14. Over the same period, absolute child and working-age adult poverty (not shown here) are forecast to rise continuously, and by more than relative poverty, reflecting the fact that the living standards of low income families are set to fall (increasing absolute poverty), but by less than the living standards of families at median income.

Figure 17: Working-age relative poverty projections: *UK 1994-95 to 2020-21*



Source: IFS, *Child and Working Age Poverty from 2010 to 2020*

Beyond this period, absolute poverty is forecast to fall slightly and relative poverty to rise slightly as real earnings return to positive growth. Relative child poverty is therefore set to increase from its current level of 18 per cent to reach 24 per cent in 2020-21, two and a half times the 10 per cent target specified in the *Child Poverty Act* and the highest level since 1999-00.

[38] Not all families are claiming the tax credits they are entitled to, and reported levels of tax credit awards amount to less than the total government expenditure on the programme, which may suggest under-reporting of receipt in the *Households Below Average Income* poverty data. Also tax credits do not adjust to income changes immediately, so that at that time at which the household survey measures incomes, extra tax credits are not yet being received. This means that poverty over a long period, such as a year, might well be significantly lower.

3.2 Shifts in earnings within families

While we noted in Section 2 the similarity in earnings growth across parents and non-parents in the lower half of the earnings distribution over the past 15 years or so, this picture masks a more interesting trend *within* families.

A narrowing gender pay gap

Figure 18 repeats the analysis set out in Figure 14, but this time compares male workers with and without children (top row) and female workers with and without children (bottom row). We again describe the trends across the three periods in more detail in accompanying tables (Table 4 & Table 5). While women's pay remains somewhat lower than men's, the data shows that male wage *growth* lagged behind women's at each point in the overall distribution (a finding which chimes with the picture set out in Figure 7). At the 25th percentile, for instance, we see that male earnings grew by around 10 per cent less than the overall median wage between 1994-95 and 2007-08, while female earnings grew by around 5 per cent more. This equates to a reduction in gender wage inequality over the period of over 1 percentage point a year (i.e. 15 percentage point swing over 13 years).

More surprisingly, however, wage growth among working fathers between the 15th to 35th percentiles lagged behind that recorded among men without children by some distance. For women, the converse was true: mothers' pay growth significantly outpaced that recorded among other women. While not shown here, both of these trends appear to hold into the top half of the distribution, although the gaps for men in particular decline in size at the 75th percentile.

The picture has thus become more complex: fathers are losing ground on their peers, while mothers are gaining on theirs. Thus the gender pay gap between mothers and fathers – while still in evidence – has shrunk by almost 25 percentage points over this period.

It is not obvious why this is happening. We might consider the poor performance of fathers' wages relative to non-fathers to be evidence that tax credits *have*, after all, had some dampening effect on the wage growth of recipients. However, it is not clear why mothers would not be similarly affected. It is also important to note that these patterns were emerging prior to the advent of WFTC. More than half of the observed wage gap between fathers and other men was present before 1999, although sizeable gaps also appeared at the 25th and 35th percentiles during the WTC/CTC period. Among women, mothers outperformed other women most significantly during the WFTC years, reversing the small negative gap that had opened up in the period prior to this.

Other factors may be at play. We might posit for instance that the difference we observe between fathers and other men is in part a function of age differences between parents and non-parents. On average, working fathers are older than working non-fathers: the divergence in wage growth may therefore be the result of factors undermining wage growth among older men in particular. However, given that we are focusing on parents of *dependent* children – that is, those under-16 years' old or still in full-time education – we are unlikely to be capturing too many men in their late-50s and 60s. Similarly, in relation to the relatively strong performance of mothers, we can speculate that this is associated with an increase in the average age at which women are giving birth and therefore a reduction in the wage penalty associated with motherhood.

Figure 18: Indices of hourly wage growth among workers with and without children by original position in overall wage distribution: *UK 1994-95 to 2007-08*

Notes: In each instance, earnings growth is compared for the within group percentile associated with the specified point in the overall earnings distribution in 1994-95. For example, in 1994-95 the position within the 'men with kids' earnings distribution corresponding to the 15th percentile overall was p5 while the position within the 'men without kids' distribution was p12. Thus, the chart tracks changes in earnings at p5 for men with kids vs p12 for men without. In all cases, figures are adjusted into 2009-10 prices using the RPI.

Source: Authors' analysis of DWP, *Family Resources Survey*

Table 4: Average annual growth in hourly wages by family type of worker and starting position in overall earnings distribution: *UK 1994-95 to 2007-08 (male workers)*

	1994-95 to 1998-99	1998-99 to 2002-03	2002-03 to 2007-08	1994-95 to 2007-08
p15				
Men with kids	-1.5%	+2.1%	+0.1%	+0.2%
Men without kids	-0.2%	+2.3%	+0.4%	+0.8%
Difference	-1.3%	-0.2%	-0.3%	-0.6%
p25				
Men with kids	-1.4%	+1.9%	-0.5%	-0.0%
Men without kids	-0.0%	+2.1%	+0.3%	+0.7%
Difference	-1.3%	-0.2%	-0.8%	-0.8%
p35				
Men with kids	-1.1%	+1.9%	-0.4%	+0.1%
Men without kids	-0.0%	+1.5%	+0.7%	+0.7%
Difference	-1.1%	+0.4%	-1.1%	-0.6%

Notes: Average annual growth is calculated by comparing the end-point of each period with the start. Shaded numbers highlight periods in which the difference between average annual growth for the two comparator groups was greater than 0.5 percentage points.

Source: Authors' analysis of DWP, *Family Resources Survey*

Table 5: Average annual growth in hourly wages by family type of worker and starting position in overall earnings distribution: *UK 1994-95 to 2007-08 (female workers)*

	1994-95 to 1998-99	1998-99 to 2002-03	2002-03 to 2007-08	1994-95 to 2007-08
p15				
Women with kids	+0.6%	+3.6%	+1.1%	+1.7%
Women without kids	+0.8%	+2.5%	+1.0%	+1.4%
Difference	-0.2%	+1.1%	+0.1%	+0.3%
p25				
Women with kids	+0.7%	+3.3%	+1.6%	+1.8%
Women without kids	+1.2%	+2.5%	+0.8%	+1.4%
Difference	-0.5%	+0.7%	+0.8%	+0.4%
p35				
Women with kids	+0.9%	+3.3%	+1.6%	+1.9%
Women without kids	+1.3%	+2.3%	+0.8%	+1.4%
Difference	-0.4%	+1.0%	+0.8%	+0.5%

Notes: Average annual growth is calculated by comparing the end-point of each period with the start. Shaded numbers highlight periods in which the difference between average annual growth for the two comparator groups was greater than 0.5 percentage points.

Source: Authors' analysis of DWP, *Family Resources Survey*

If we instead accept that there is something about the nature of being a father or a mother that has driven these trends, then one explanation we might advance is that investments in careers are shifting at the family level. When one person earns more than their partner there are strong incentives for the couple to focus their efforts on maximising the returns of the higher paid person, with that person working overtime or the family moving house to take better jobs. With the gender pay gap falling, this focus is less clearly on the male wage earner than in previous years. The gender pay gap is now zero for people in their 20s and a significant number of women earn more than their partner before childbirth. Where previously women within such couples may have moved into part-time work or out of the labour market altogether after giving birth, while their partner remained in full-time employment, the focus may now have shifted towards maintaining the career of the woman instead.

Clearly, further research into the causes of these trends is required. It is nevertheless clear that the presence of a female wage earner in a family became steadily more important in recent years, with dual earner families likely to have fared better than male-headed single earner ones. It would appear then, that the growth in the share of poverty accounted for by single earner families that we identified in Section 3.1 was primarily a function of this relative decline in earnings among fathers.

Changes in working patterns

So far we have explored hourly wages. It is clear that wages among the low paid caught up with median wages in the years following the introduction of WFTC, and that this was common to parents and non-parents to a broadly similar degree. In contrast with the pre-tax credit period, wage inequality did not rise across the earnings distribution, with the lowest paid losing ground on those in the middle who in turn lost ground on the top. Instead, there was a compression of wages in the bottom half of the distribution, with only those at the very top moving away from the rest of society. Further, parents have not lost ground compared to non-parents in the lower half of the wage distribution. But fathers *have* been losing ground while mothers' wages have been improving. This mix is hard to attribute to tax credits, but it may be an important part of the rise in working poverty for single earner male breadwinner households.

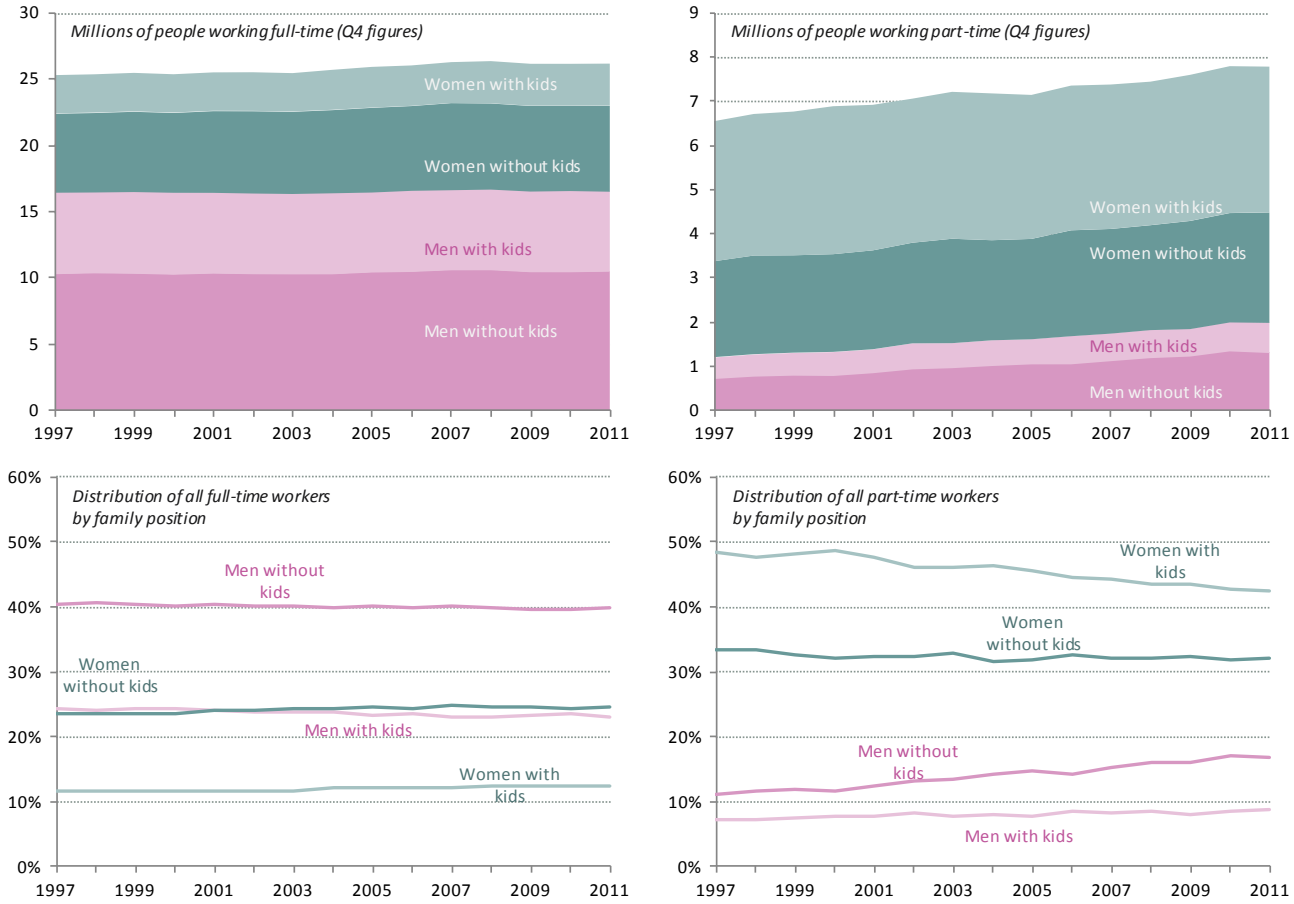
But this analysis fails to account for potential shifts in working hours. There has been a steady growth in part-time working over the last 20 years, with the number of part-time jobs increasing from 6.6 million to 7.8 between 1997 and 2011, and much of this trend has been driven by male workers.

Figure 19 presents a breakdown of part-time and full-time working by gender and parental status. It shows that the growth in part-time working was primarily accounted for by those without children – presumably students and those close to retirement. Of the overall 1.2 million increase in part-time workers, three-quarters (73 per cent) were non-parents. The increase was particularly marked among men without children: the number of such part-time workers rose by 79 per cent, accounting for nearly half (46 per cent) of the overall increase.

Growth in part-time working among parents was much more modest, accounting for just 27 per cent of the overall increase. The number of mothers working part-time rose by just 4 per cent over the entire period: having accounted for close to half (48 per cent) of all part-time workers in 1997, mothers' share fell to two-fifths (42 per cent) in 2011. The number of fathers working part-time jumped by 44 per cent over the period, but this was from a very small base and accounted for just 17 per cent of the overall rise in part-time working.

In contrast, the total number of people working full-time increased by just 3.5 per cent over the period, from 25.4 million to 26.2 million. Again, most (80 per cent) of the increase was accounted for by non-parents, but this time the trend was driven by women: while the number of men without kids working full-time increased by just 2 per cent and the number of men with kids *fell* by 2 per cent, the number of mothers working full time jumped by 10 per cent and the number of other women increased by 9 per cent.

Figure 19: Trends in full-time and part-time working by family type: *UK 1997-2011*



Note: All figures refer to Q4.
Source: ONS, *Labour Force Survey*

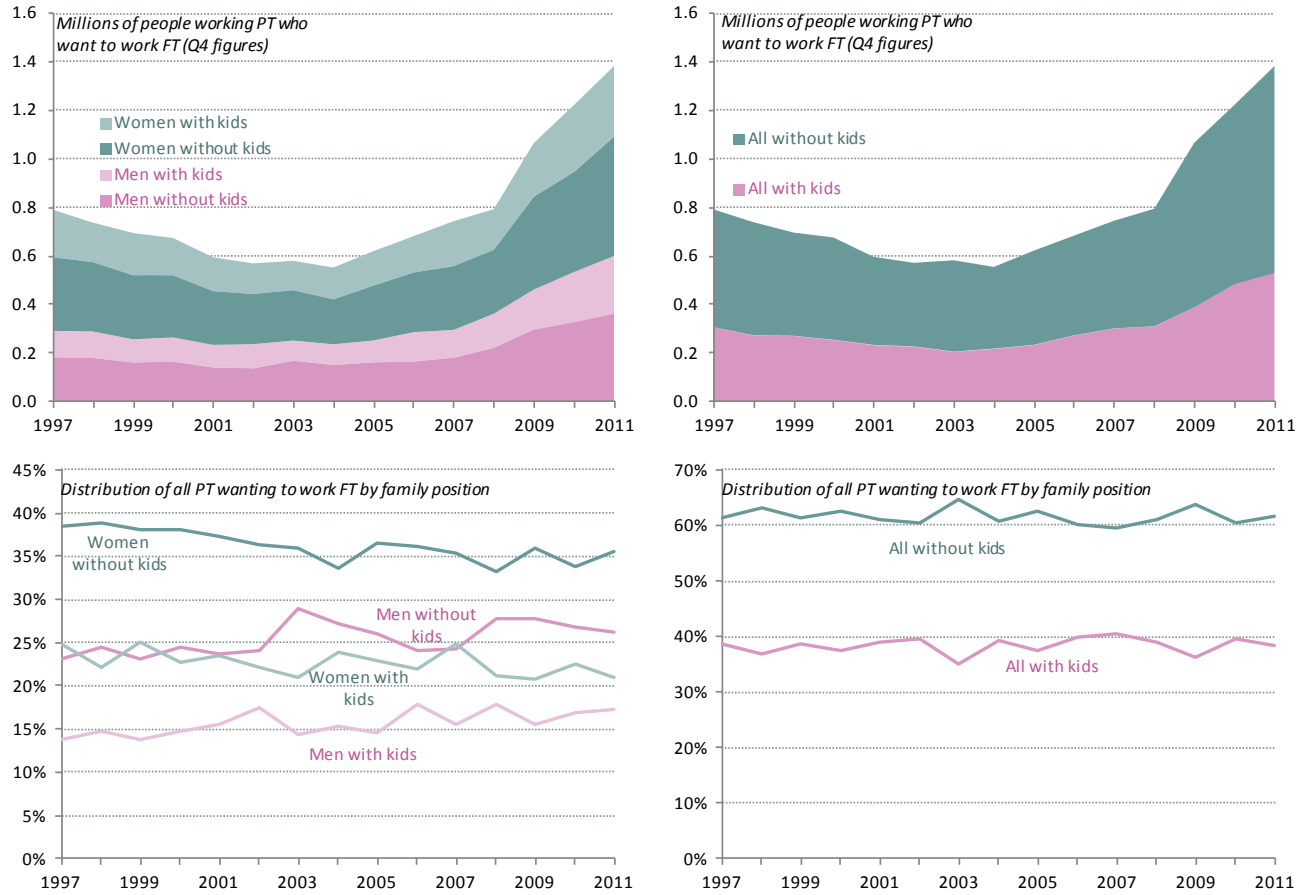
There is then, some evidence to suggest that the strength of hourly wage growth among mothers reflects a shift towards full-time working (and the better pay rates associated with such jobs), but it is more difficult to draw the converse conclusion for fathers. We can control more explicitly for these changing working patterns by repeating our *difference in difference* analysis for full-time workers only. The results are set out in Appendix 5 and confirm that such shifts appear to explain some of the difference in wage growth observed between mothers and other working women, but that they appear to have little to say in relation to the wage trends of fathers and other men.

Underemployment during the recession

To the extent that part-time working among fathers *has* increased, there is some evidence that it has increasingly been involuntary. Underemployment, that is, people working fewer hours than they'd like to, has been increasing steadily since 2004, with particularly sharp increases occurring following the onset of recession in 2008.

Figure 20 explores trends in those working part-time who say they want to work full-time by gender and parental status. Over the period as a whole, the distribution of underemployment between parents and non-parents altered little. There was, however, something of an increase in the proportion in this position who were fathers and a slight fall among mothers, but there is nothing to suggest that men with children have been any more likely to experience underemployment than those without.

Figure 20: Trends in underemployment by family type: *UK 1997-2011*



Note: All figures refer to Q4.
Source: ONS, *Labour Force Survey*

To some extent, the rapid increase in underemployment from 2008 helps to explain why unemployment did not increase during the recession as sharply as in previous downturns. For those who would otherwise have lost their jobs entirely, it may therefore be considered to be something a positive development, but only if it unwinds in the recovery when it comes. It may also form part of the story of why the proportion of children in workless families has not risen through the recession, and may well have been supported by tax credits.

3.3 The decline of the male breadwinner

So far in this section we have identified both an increase in working poverty centred on single earner families and a sharp relative decline in the wages of low to middle earning fathers. These two findings in combination point towards a significant problem for traditional male breadwinner families throughout the past decade or so.

To consider whether this hypothesis holds up, Figure 21 compares trends in the wages of single earner fathers in couples with trends among men and women in dual earner families with children.[39] Once again we present a more detailed breakdown of the *difference in difference* trends within the three periods in the accompanying Table 6.

Unlike our previous comparisons, this analysis is subject to something of a selection problem. The increases in employment among mothers set out above mean that the population of single earner families has become more select: comparing wages at the start and end of the period will fail to account for the fact that the composition (in terms of education and skill levels for example) of the group will have changed. Notwithstanding this measurement difficulty however, the primary question remains: namely, does this particular group represent a major challenge for further tackling poverty in working families?

The figures appear to support this hypothesis: as with fathers as a whole, there is evidence of slower wage growth among single earner fathers. Once again this trend appears to have started prior to the introduction of tax credits. Indeed, there was some evidence of catch-up between single male earners and dual male earners during the WFTC period. Similarly, the trend appears to hold across the earnings distribution, suggesting that there is no clear link to the introduction of tax credits, although once again further research is required to fully understand this phenomenon.

The clear implication however is that families relying on a single male wage are losing ground and that, even with tax credits, they are not escaping poverty. The findings have potentially important policy ramifications. They highlight the importance of promoting policies to encourage further increases in mothers' employment, although some will advocate more direct compensation for one earner families. Thinking about the best way of addressing this issue is one of the clear future challenges for tax credits and for family tax policy in general.

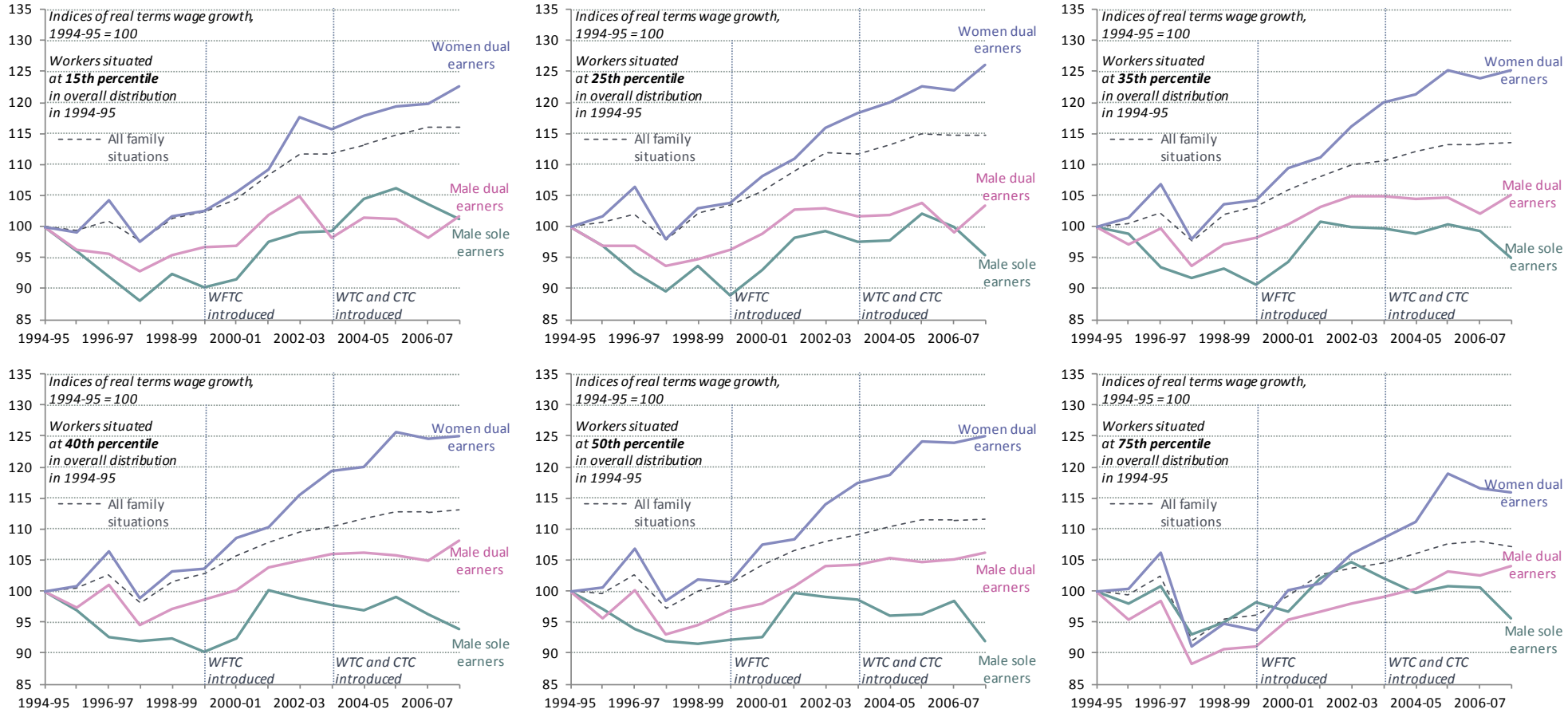
3.4 The politics of tax credits

As has already been noted, tax credit expenditure has been cut from its 2009-10 peak and is set to continue to fall in the coming years. While this forms part of the coalition Government's wider policy of fiscal consolidation, it also reflects a shift in the political environment and an apparent move back towards the narrower targeting of support for families that previously existed under WFTC.

In addition to the tax credit cuts, the Government intends to reduce the availability of support from Child Benefit – via freezes in awards in the short-term, up-rating in line with the CPI (which is usually lower than both RPI and earnings growth) in the medium term and by restricting access for those earning more than £50,000 a year. The repackaging of tax credits within the new Universal Credit also has implications. The merger of tax credits and other benefits will blur the distinction between in- and out-of-work support, and will increase the rate at which support is withdrawn as earnings rise. Under this approach, tax credits appear to still have a role to play in tackling child poverty and in supporting low income in-work families, but the third goal of the WTC/CTC period – that of reintroduction of recognition of the family into the tax system by providing a tax rebate for low to middle income families – is in decline.

[39] Single earner mothers in couples remain relatively rare and are excluded from this analysis. Single parents (both male and female) are also excluded.

Figure 21: Indices of hourly wage growth among workers in couples with children by original position in overall wage distribution: *UK 1994-95 to 2007-08*



Notes: In each instance, earnings growth is compared for the within group percentile associated with the specified point in the overall earnings distribution in 1994-95. For example, in 1994-95 the position within the 'male sole earners' earnings distribution corresponding to the 25th percentile overall was p14 while the position within the 'male dual earners' distribution was p7. Thus, the chart tracks changes in earnings at p14 for sole male earners vs p7 for men in dual earning families. In all cases, figures are adjusted into 2009-10 prices using the RPI.

Source: Authors' analysis of DWP, *Family Resources Survey*

Table 6: Average annual growth in hourly wages among workers in couples with children by starting position in overall earnings distribution: *UK 1994-95 to 2007-08*

	1994-95 to 1998-99	1999-00 to 2002-03	2003-04 to 2007-08	1994-95 to 2007-08
p15				
Male sole earners	-1.9%	+1.7%	+0.4%	+0.1%
Male dual earners	-1.2%	+2.4%	-0.6%	+0.1%
Female dual earners	+0.4%	+4.0%	+1.0%	+1.7%
Male sole minus male dual	-0.7%	-0.7%	+1.1%	-0.0%
Male sole minus female dual	-2.3%	-2.3%	-0.5%	-1.6%
p25				
Male sole earners	-1.6%	+1.4%	-0.8%	-0.4%
Male dual earners	-1.3%	+2.1%	+0.1%	+0.3%
Female dual earners	+0.7%	+3.3%	+2.0%	+2.0%
Male sole minus male dual	-0.2%	-0.7%	-0.9%	-0.6%
Male sole minus female dual	-2.3%	-1.9%	-2.8%	-2.4%
p35				
Male sole earners	-1.7%	+1.7%	-1.0%	-0.4%
Male dual earners	-0.7%	+2.0%	+0.1%	+0.4%
Female dual earners	+0.9%	+3.1%	+1.8%	+1.9%
Male sole minus male dual	-1.0%	-0.2%	-1.1%	-0.8%
Male sole minus female dual	-2.6%	-1.4%	-2.8%	-2.3%
p50				
Male sole earners	-2.1%	+1.9%	-1.4%	-0.6%
Male dual earners	-1.4%	+2.4%	+0.4%	+0.5%
Female dual earners	+0.4%	+3.0%	+2.2%	+1.9%
Male sole minus male dual	-0.7%	-0.5%	-1.8%	-1.1%
Male sole minus female dual	-2.6%	-1.2%	-3.6%	-2.5%
p75				
Male sole earners	-1.2%	+2.4%	-1.8%	-0.3%
Male dual earners	-2.3%	+1.8%	+1.2%	+0.3%
Female dual earners	-1.3%	+2.8%	+2.0%	+1.2%
Male sole minus male dual	+1.1%	+0.6%	-3.0%	-0.7%
Male sole minus female dual	+0.0%	-0.4%	-3.8%	-1.6%

Notes: Average annual growth is calculated by comparing the end-point of each period with the start. Shaded numbers highlight periods in which the difference between average annual growth for the two comparator groups was greater than 0.5 percentage points.

Source: Authors' analysis of DWP, *Family Resources Survey*

Tax policy is instead increasingly being focused on increases in the personal tax allowance that benefit all basic rate taxpayers, irrespective of their family status or household income. As with the issues surrounding the individualisation of income tax (see Appendix 2), this shift is inevitably less well targeted on families and is likely to reduce the overall progressivity of the tax system. Previous Resolution Foundation analysis has shown, for example, that the personal allowance increases coming into effect in 2012-13 and 2013-14 stand to increase average annual household incomes in low to middle income group by £200, but that these gains will be more than offset cuts in tax credits which will reduce incomes by £266.[40]

It could be argued, however, that the triple goal that we have identified in relation to the third generation of tax credits was always going to prove too much for one policy; not just because of the associated cost but also because of the level of bureaucracy required.

For example, the tension between the income supplementation and tax rebate roles played by tax credits may have contributed to the administrative problems that dogged WTC/CTC in its early years.[41] While a tax rebate would normally be paid at the end of a year, with the full benefit of financial hindsight, an income supplement is typically required to react more immediately to changes in circumstances (to support incomes today). The WTC/CTC system therefore tried to provide such flexibility within an annual period, with any discrepancies associated with changes being reconciled at the end of the period. This led to a cumbersome bureaucracy however and, because people notified the authorities of increases in earnings less frequently than they did things like job losses, a lot of repayment demands. This proved deeply unpopular and the Government eventually decided to allow adjustment when incomes fell but to ignore increases up to a fairly generous limit.

Critics have also pointed to more general complexities related to changes in (non-financial) personal circumstances[42] and to the reductions in work incentives associated with the high METRs we discussed in Section 2. So, in addition to changes in the nature of the problems that tax credits are designed to tackle, one of the key challenges looking forward concerns design and whether alternative models can achieve the same goals with improved take-up and understanding, lower bureaucracy costs and lower marginal effective tax rates. It is these issues that we will return to in the second paper on this topic, due for publication later this summer.

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[40] Whittaker M, *Budget 2012: detailed analysis*, March 2012, Chart 2

[41] See for example, House of Commons Treasury Select Committee, *The administration of tax credits*, Sixth report of Session 2005-06, 23 May 2006

[42] Child Poverty Action Group, *Tax credits: improving delivery and choice – a discussion paper*, September 2008

Conclusions and future work

Arguably the development and extension of tax credits – from Family Credit in the 1990s to Working Families Tax Credit in the early-2000s and Child and Working Tax Credits in the past decade – represents the biggest shift in UK social policy over the last 15 years, with the current system attempting to meet three significant goals:

- to reduce child poverty;
- to make work pay; and
- to counter the individualisation of the income tax system by providing tax rebates for families with children.

More than six million families receive some form of tax credit and total expenditure amounts to nearly £30 billion. The current system of WTC/CTC has been labelled cumbersome and bureaucratic, but the payments remain popular. Yet, given the size of the tax credit bill, questions abound about the effectiveness of the current system – and indeed about the appropriateness of the very goals the credits have been designed to achieve.

An often repeated concern is that tax credits produce behavioural responses among firms and claimants which depress wage growth at the lower end of the earnings distribution in general and among intended beneficiaries in particular, resulting in direct transfers of money from government to employers. The findings in this report refute this accusation – at least in relation to the current generation of tax credits.

In contrast to other tax credit systems, the relatively broad spread of WTC and CTC receipt across the lower half of the earnings distribution and the upward pressure placed on wages at the bottom by the development of the National Minimum Wage appear to have combined to avoid any such effect. We find no evidence of a general wage effect; instead there has been some compression of wages across the distribution (outside of the very top earners). Nor do we find any evidence that tax credit recipients (low wage parents) have fared any less well than non-recipients in the same part of the earnings distribution.

More generally, we identify a number of broadly encouraging outcomes associated with the policy: from the direct effects on poverty reduction and support for in-work incomes, to the indirect impacts on employment levels among target groups.

Nevertheless, a number of questions remain. Most obviously, in an environment of sluggish economic recovery, low wage growth and fiscal consolidation, the value for money provided by tax credits is set to come under ever closer scrutiny. Cuts in tax credit expenditure, their incorporation into the new Universal Credit from next year and the increasing focus on raising the income tax personal allowance all point towards a paring back of the scope and ambition of the policy in the coming years. The findings in this paper highlight some additional challenges facing tax credits and family tax policy more generally.

While some progress was made against the targets set for child poverty in the early-2000s, more recent performance has been disappointing. Projections for the coming decade suggest that previous gains may be wiped out entirely. Moreover, the nature of the poverty problem has altered, with an increasing proportion of families below the poverty threshold being in work. The evidence in this paper highlights shifts in earnings

within families, with wage growth among mothers far outstripping wage growth among fathers. These trends result in the identification of a particular problem developing for in-work families reliant on the traditional male breadwinner.

This key finding throws up an important question about how the tax and welfare system might deal with this new phenomenon – for example, the extent to which policies to encourage further increases in employment among mothers should be balanced by new forms of income supplementation for single earning households despite the obvious disincentives this would produce for second earners. It also leads into a wider discussion about the design of family tax policy, and raises questions about the appropriateness of Universal Credit – with its strong work disincentives for second earners – for meeting the welfare challenges of the next decade.

Widening out this debate, it is clear that there are a number of long standing issues concerning the treatment of families in the tax and welfare systems. These cover the of degree of progressivity in tax and welfare and the extent to which children should be a focus for a fair system, irrespective of whether they are above or below the poverty line. Building on the findings in this paper, the next step of this agenda therefore involves looking at alternative models and assessing how they fare across these issues. We will publish the results of that review later in the year.

Appendix 1 A timeline of changes to tax allowances and credits

As discussed in Section 1, today's tax credits were introduced, and have evolved over time, in reaction to broader shifts towards individualised taxation and family-based welfare. In this appendix we provide a timeline of relevant developments

- ***Pre-1945*** Single persons received the same single person's allowance to set against their income for tax. On marrying, a couple's joint income was taxed as the husband's, and both partners ceased to be eligible for the single person's allowance. In the case of the husband, his single allowance was replaced by the married man's allowance (MMA). The MMA was 'transferable', in the sense that it was given to the husband, even if he did not work, who used it to claim against income earned by his spouse (income which was, of course, counted as his own, for the purposes of tax).

  Married women who did not work did not receive any allowance. Those who did work received the wife's earned income relief (WEIR). When this was first introduced in 1920, it was equal to the difference between the MMA and two single person allowances. In 1942 the WEIR was increased to the level of the single person's allowance, putting working couples at a distinct advantage. This allowance would be added to their husband's MMA when calculating the total earnings a couple could receive tax-free.

- ***1945*** The *Family Allowances Bill* was introduced by the Coalition Government. The benefit was taxable and was paid only for second and subsequent children.

- ***1948-67*** Family Allowances were increased twice.

- ***1968*** Family Allowances were increased twice, but the increases were targeted at those below the tax threshold since Child Tax Allowances were reduced by the same amount.

- ***1971*** Introduction of Family Income Supplement (FIS). This was a means-tested benefit for families with an adult working at least 24 hours a week and with a dependent child. Numbers in receipt grew steadily through the 1970s and 1980s because of the increased generosity of the benefit, higher take-up, and a growth in the eligible population, in particular that of single parents.

- ***1975*** The *Child Benefit Bill* was introduced by the Labour Government with all party support. Payments were extended to all families and in respect of all children.

- ***1977*** Child Benefit introduced. Child Tax Allowances index-linked.

- ***1979*** Child Tax Allowances phased out completely.

- ***1988*** FIS was renamed Family Credit (FC), with some structural change and an increase in generosity. Take-up continued to rise, as did the size of the eligible population and the generosity of the benefit, leading to further increases in numbers receiving.

- ***1990*** Introduction of individualised income tax. All taxpayers, male or female, married or single, became entitled to the same personal allowance, available against all income, whether from earnings, pensions or savings. This was set at the same level as the single person's allowance. An addition was made to this allowance for taxpayers aged 65 or over and a second addition was made

for taxpayers aged 75 and over. The extra allowance was progressively withdrawn for taxpayers with an income above a set limit.

- A new married couple's allowance (MCA) replaced the MMA, equivalent to the gap between the new single allowance and the MMA, and going – in the first instance – to the husband, to ensure that his tax threshold would not fall. As with the new personal allowance, two age-related additions were made. Again, these additions were withdrawn for incomes above a set limit. The WEIR was abolished.

- ***Early-1990s*** The Family Credit hours requirement was cut to 16 per week, and a childcare disregard was introduced to encourage higher participation especially among mothers of young children.

- ***1994*** MCA restricted to 20 per cent, meaning all eligible taxpayers received the same level of credit as a deduction from their final tax bill.

- ***1995*** MCA further restricted to 15 per cent from April 1995.

- ***1999*** Working Families Tax Credit (WFTC) replaced Family Credit with similar properties, but with more generous payments and wider eligibility. The method of payment also differed. While FC was paid direct as a cash benefit, WFTC was paid through the wage packet by the employer, who was then compensated by the Inland Revenue, unless a couple decided that the nonworking adult should apply for and receive WFTC.

- ***2000*** MCA (other than for couples who had already reached the age of 65) and the additional personal allowance received by single parents were abolished.

- ***2001*** Introduction of the children's tax credit for families with one or more children under 16. The credit took the form of an allowance for which relief was given at 10 per cent. The value of the credit was tapered for higher rate taxpayers (by £1 for every £15 of income above the higher rate threshold, until entitlement to the credit was exhausted).

- ***2002*** The children's tax credit was increased in line with inflation and an additional 'baby' rate was paid for the first year of a child's life equivalent to a further credit of £10 a week.

- ***2003*** Child Tax Credit (CTC) replaced children's tax credit and the child elements of four other benefits/credits: income support, jobseeker's allowance (income-based), WFTC and disabled person's tax credit (DPTC). Awards for the new credit would be based on the income of the family, and to be paid to the main carer.

- A second new credit – the Working Tax Credit (WTC) – was introduced, merging in-work support provided through the WFTC and DPTC.

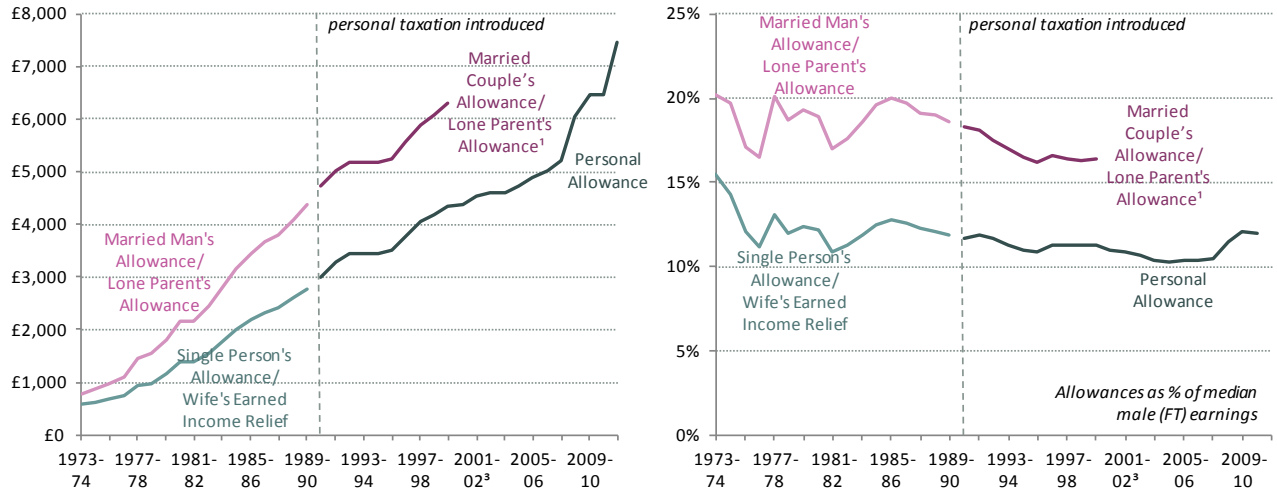
Appendix 2 Individualised income tax and progressivity

As discussed in Section 1, one of the key drivers of the development of tax credits was the need to counterbalance the shift to individualised income taxation and the relative decline in generosity of family cash transfers. In this appendix we consider these trends in some detail.

The shift towards individualisation

Figure 22 looks at the treatment of families in the tax system in the period from 1973. It details trends in the various forms of income tax allowances in place before and after the shift to individualised taxation in 1990, with the left-hand panel describing the cash value of the allowances and the right-hand panel setting them in relation to median full-time male earnings. It highlights the advantage enjoyed by married couples for much of the period, but also notes that tax allowances fell generally against median earnings from the mid-1980s onwards.

Figure 22: Value of income tax allowances: *GB 1973-74 to 2010-11*

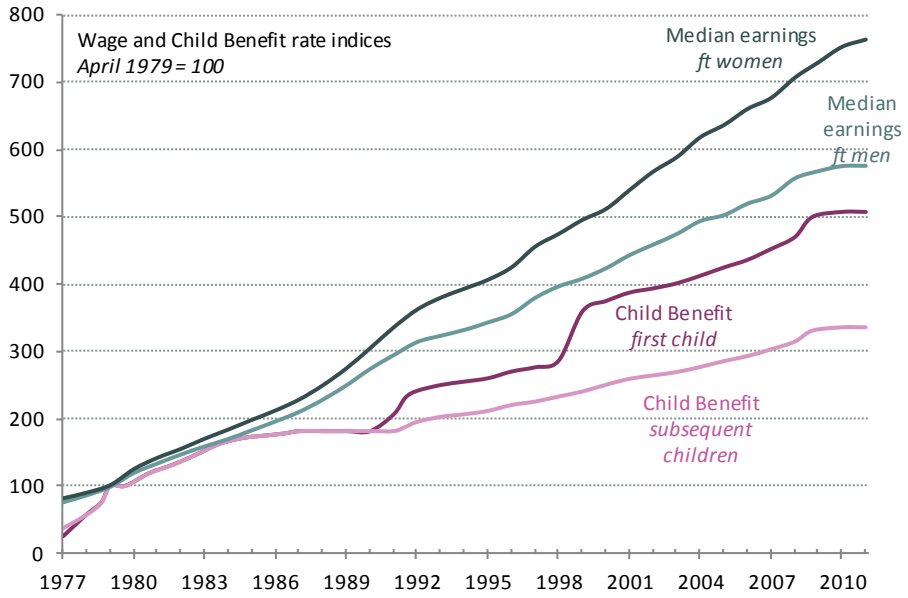


Notes: All figures relate to under-65s and are in cash terms. ¹For continuity with earlier series, line shows total of MCA/LPA plus Personal Allowance. From April 1994 the MCA and the LPA operated as tax credits rather than tax allowances.

Sources: IFS, *Direct Taxes tables*; ONS, *Annual Survey of Hours and Earnings*

Figure 23 highlights the simultaneous decline in the relative level of support provided by Child Benefit since its introduction in 1977. Having been flat for much of the 1980s, and therefore falling behind median earnings, Child Benefit rates have since drifted further and further away from typical male and female earnings.

Figure 23: Indices of median pay and Child Benefit payments: *GB 1977-2011*



Note: Child Benefit rate for first child relates to couples. Prior to 1998, single parents received additional support. All figures are in cash terms.

Sources: IFS, *Benefit Tables*; and ONS, *Annual Survey of Hours and Earnings*

Progressivity and the tax system

We assert a number of times in the main report that this move towards individualisation reduced the progressivity of the tax system. Here we explore that question in more detail. In Table 7 we set out the Gini coefficients[43] reported at different stages of the shift from original to disposable incomes among in-work families (with and without children).

Table 7: Gini coefficients for various forms of equivalised income among in-work families: *UK 2009-10*

	Gini coefficient
Before tax original income *(all private income - i.e. before benefits/tax credits)*	0.43
After tax original income *(all private income - i.e. before benefits/tax credits - after income tax and NICs)*	0.39
After tax original income plus tax credits and Child Benefit *(all private income plus tax credits and Child Benefit, but before other benefits)*	0.36

Notes: All calculations are based on family-level incomes equivalised using the modified-OECD scale.

Source: Authors' analysis of DWP, *Households Below Average Income 2009-10*

The results show that inequality across working families before the effects of taxation and benefits are measured is high, with the Gini standing at 0.43. If we next measure inequality once (individualised) income taxes and NICs are accounted, the Gini reduces to 0.39, confirming the progressivity of the income tax

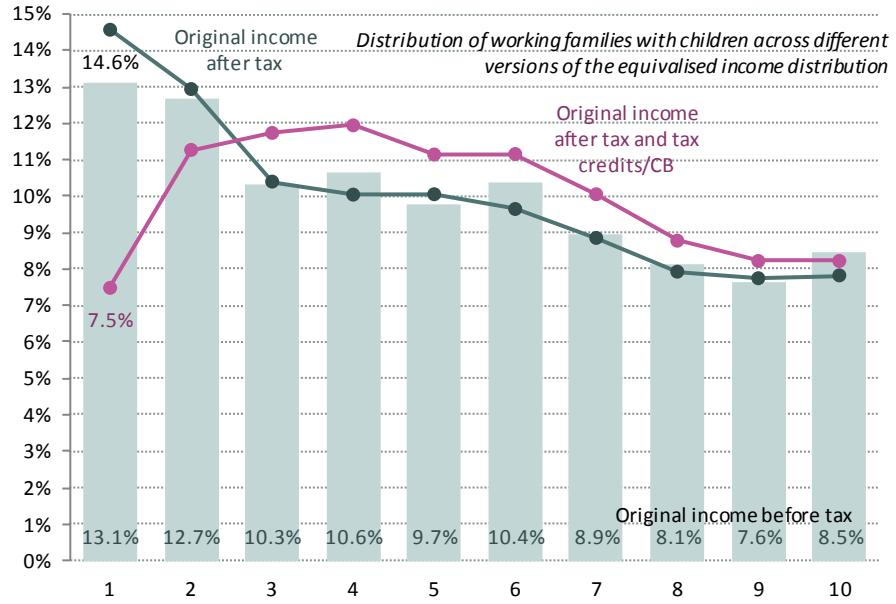
[43] The Gini coefficient is a standard measure of income inequality. A value of zero expresses perfect equality (where everyone has an exactly equal income), while a value of one expresses perfect inequality.

system. Inequality is reduced still further (producing a Gini of 0.36) if we add tax credits and Child Benefit to the equation.

What these figures hide, however, is the extent to which the reduction in inequality helps to move families with children up the income distribution. Figure 24 sets out the spread of in-work families with children across these three different forms of the equivalised income distribution (i.e. before-tax original income; after-tax original income; and after-tax original income plus tax credits and Child Benefit):

- Adjusting original incomes (before tax and benefits) for family size we see that in-work families with children are more frequently in the lowest two deciles (13.1 per cent in decile 1 and 12.7 per cent in decile 2) and less represented in the top three deciles.
- After taxation this concentration at the bottom end intensifies (14.6 per cent in decile 1 and 12.9 per cent in decile 2). As working families in the bottom decile are often below the poverty line, we can see that taxation *increases* in-work poverty among families with children.
- It is only with the payment of tax credits and Child Benefit that this over-representation in the lowest deciles is eliminated (7.5 per cent in decile 1 and 11.3 per cent in decile 2). On this measure, in-work families are instead most likely to appear in the low to middle income deciles 2 to 5.

Figure 24: Distribution of in-work families across the income distribution: *UK 2009-10*



Notes: Income categories correspond to those described in Table 7. All calculations are based on family-level incomes equivalised using the modified-OECD scale.
Source: Authors' analysis of DWP, *Households Below Average Income 2009-10*

Another way of looking at this is by considering where the median family with children sits in the overall income distribution before and after tax and before and after the payment of tax credits and Child Benefit. In relation to original income before tax, the median family is located at the 57th percentile of the distribution for all families (including pensioners); after tax the median family falls very slightly to the 56th

percentile; but after tax credits and Child Benefit the median family jumps to the 60th percentile in the overall distribution.[44]

So, whereas taxation reduces inequality between rich and poor in general it does nothing to reduce inequality between those with and without children. This is because families with children are generally higher earning but are poorer because their income must cover larger family units. The progressivity of the (individualised) tax system therefore increases the preponderance of families in the poorest parts of the working population: that is, inequality between families with and without children increases. Tax credits reduce overall inequality further but also substantially reduce the inequality between working families with and without children. This reduction in family-based inequality extends well beyond the poverty line.

Government spending on children in the tax credit period

In addition to providing more targeted support for families, the development of tax credits and the expansion undertaken from 2003 in particular also increased the generosity of payments. As Table 1 in the main report showed, the headline figure for spending on tax credits has reached just under £30 billion, which is a huge amount for a programme that barely existed prior to 1998. However, the idea that this spend is all new is very misleading. As discussed, tax credits have replaced child elements in out-of-work benefits and payments for other child payments have been pegged.

Figure 6 in the main report showed OECD data on cash-based support for children through between 1980 and 2007. It highlighted the rapid increase in tax credit expenditure, but also made clear that the overall impact on spending on family policies was more muted. Compared to the period immediately prior to the introduction of WFTC, the proportion of GDP allocated to children in 2007 rose by just 0.5 percentage points, or £8 billion in current values.[45]

Even this picture overstates the extent of the additional spending, because the expenditure associated with the various forms of family tax allowances that existed prior to the mid-1990s is not included in the overall total. On the other hand it does not cover the recession period when tax credits were increased while GDP fell.

Clearly investment in tax credits *has* been significant and, as we saw in Section 2, it has produced a number of benefits. It is important to note, however, that much of the expenditure represents a reallocation of existing funds.

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[44] Authors' analysis of DWP, *Household Below Average Income 2009-10*

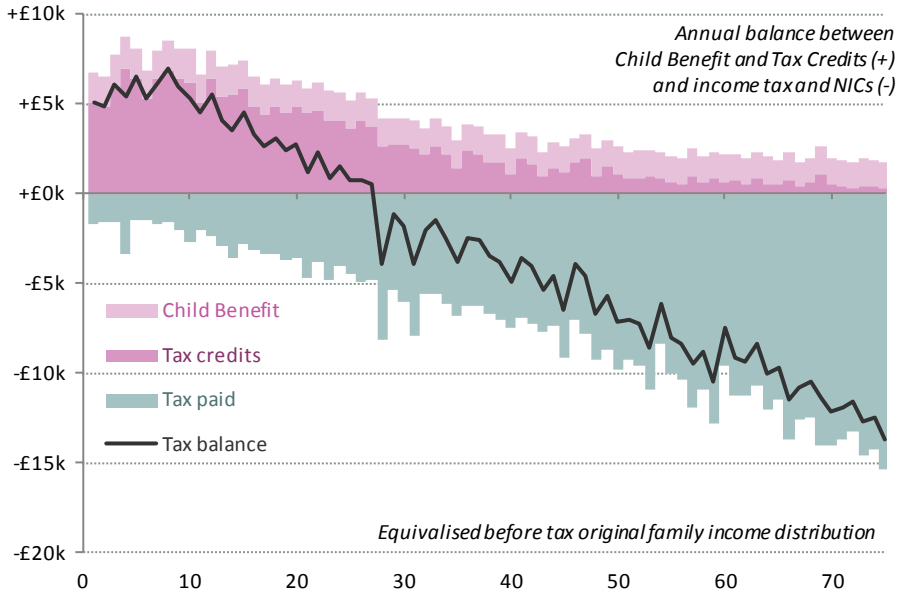
[45] The Treasury norm is to compare values by comparing to inflation to gauge real spending increases. But for major areas of spending such as education, health and welfare a sensible comparison is to compare to earnings or GDP. This asks if child cash payments are increasing relative to a base that holds relative incomes constant, In other words if earnings are growing and spending rises with only prices incomes of those more reliant o9n this support will be steadily falling compared to society as a whole.

Appendix 3 Tax credits as tax rebates

As discussed in the main report, the introduction of WTC/CTC in 2003 represented a major expansion of the tax credit system, reaching much further up the income distribution than the preceding WFTC system. In this way it mimicked the use of income tax reductions for having children that is widespread across countries but is particularly marked in the US and France (which has more generous tax reductions for larger families). This particular strategy was not pursued in the UK because of a desire to target the support on *family income* rather than on *individual earnings*. Attempting to do this in the tax system would mean linking the PAYE systems of the employers of both parents when both were working. It was felt this might prove unpopular and administratively difficult (though it is what is proposed to happen for Universal Credit which is due to start next year).

Nevertheless, while it may not have been an explicit objective of the design, we can see in retrospect that the UK approach represented an attempt to move beyond simple income supplementation into a secondary system of tax rebates. Figure 25 helps to explain this process. It describes the net picture of taxes, tax credits and Child Benefit across the distribution of original (pre-tax and benefits) family incomes in 2009-10. Those families that started in the lowest decile – broadly the working poor in the absence of tax credits – experienced net gains on average of £5,000 a year. Here then there is major income supplementation. By the 25th percentile this has fallen to zero, so credits received match taxes paid. Beyond this point in the distribution, taxes are on balance being paid but tax credits are acting as a tax rebate system reducing the net tax paid. Because this tax rebate process diminishes reasonably rapidly with income it represents a very progressive system of redistribution.

Figure 25: Balance between tax paid and credits received by position in income distribution: *UK 2009-10*



Notes: Taxes paid cover income tax and NICs. Tax credits received cover both WTC and CTC. Families are ranked on the basis of equivalised before-tax original (i.e. non-benefit) income.

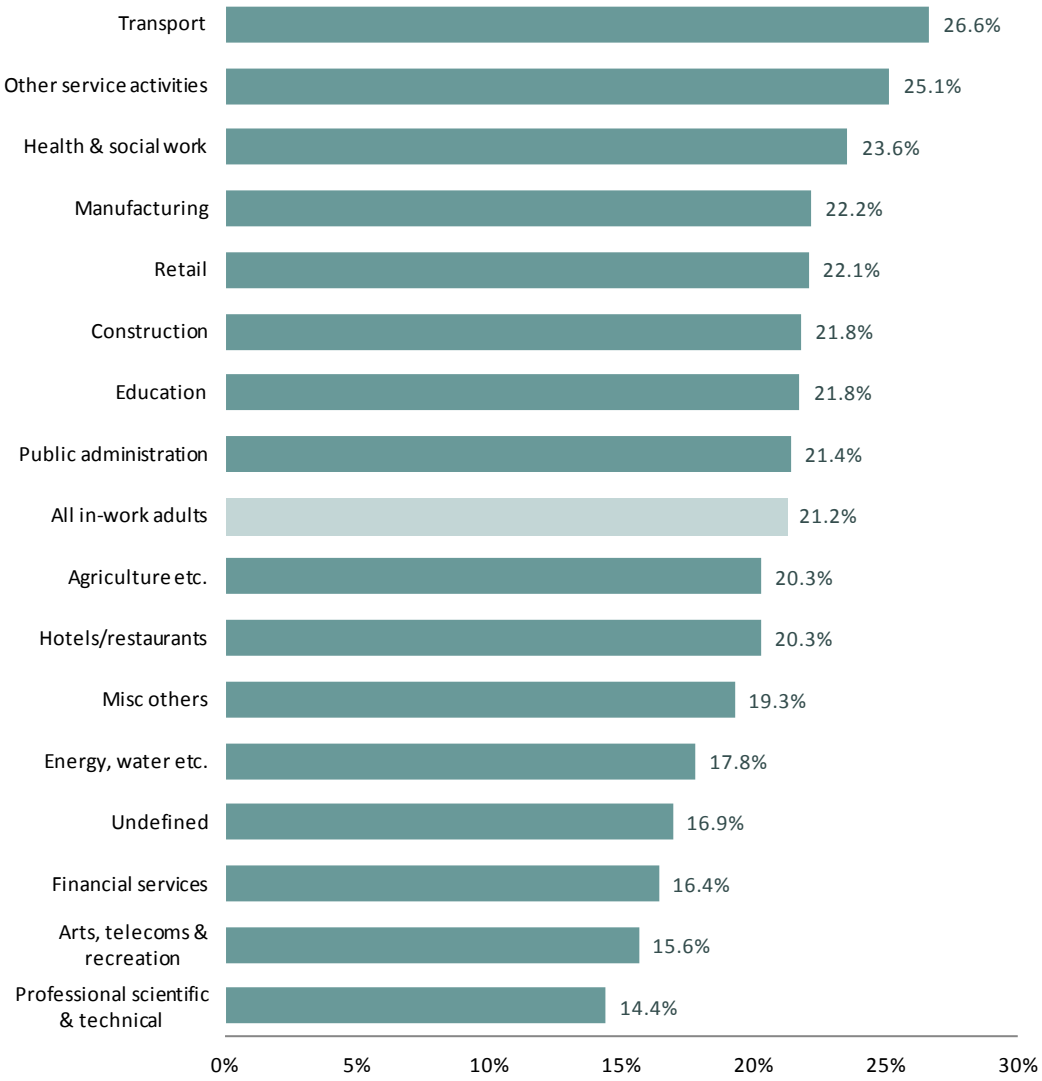
Source: Authors' analysis of DWP, *Households Below Average Income 2009-10*

Appendix 4 Tax credit coverage by industrial sector

In this appendix we look briefly at tax credit coverage by the industrial sectors where recipients work. As with the earnings distribution, the wide reach of the WTC/CTC system means that the coverage is remarkably even. Figure 26 shows that coverage in nearly all sectors was within plus or minus 5 percentage points of the overall figure of 21 per cent of working adults receiving credits in 2009-10.

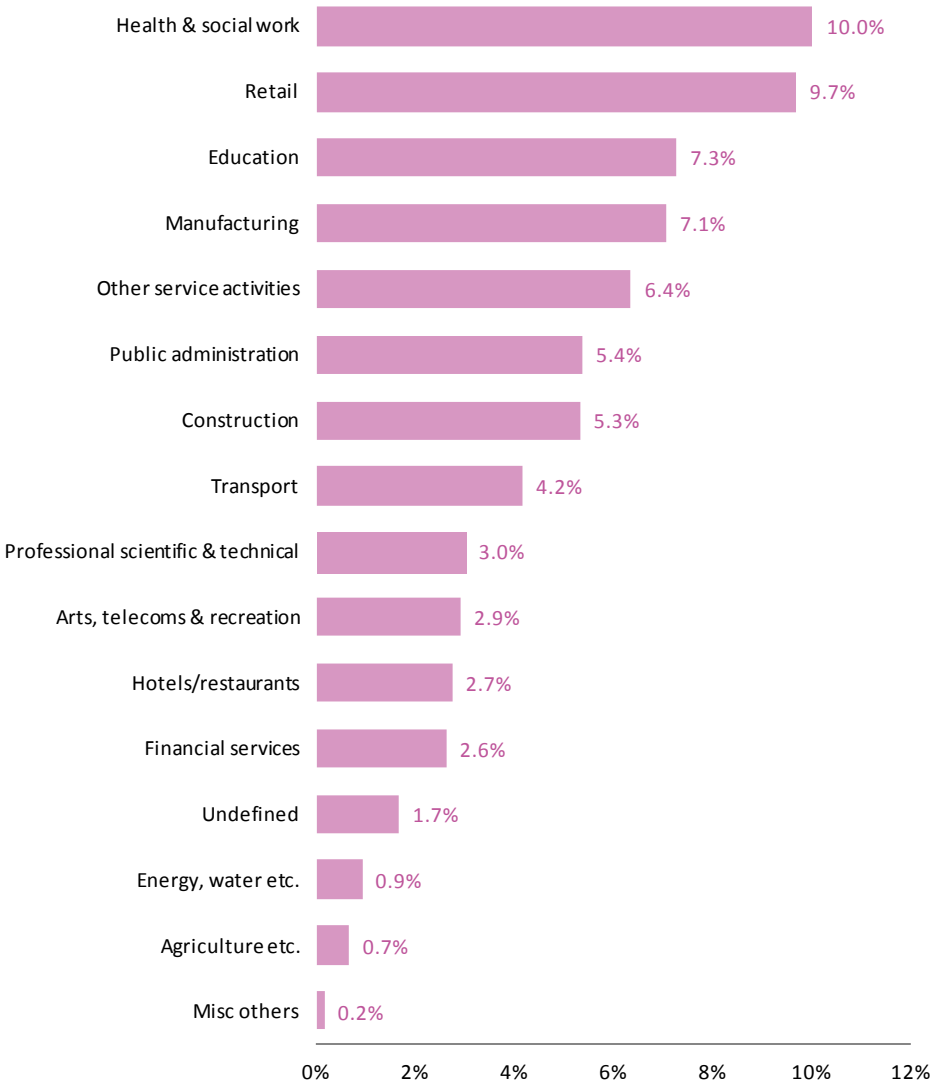
Looking instead at the share of total tax credit *expenditure* accruing to workers in each sector, we observe a more marked pattern. Figure 27 shows that one-tenth of total spending flowed to staff in the health & social work sector (10 per cent), with a further one-tenth accounted for by workers in retail (9.7 per cent). Other sizeable recipient sectors included education (7.3 per cent) and manufacturing (7.1 per cent). The distribution in part reflects the varying sizes of the sectors, with more money heading to sectors with the most workers. It will also reflect relative pay rates, however, with lower paid workers tending to receive higher average payouts.

Figure 26: Proportion of adults within each industrial sector living in a tax credit-recipient family: *UK 2009-10*



Source: DWP, *Family Resources Survey 2009-10*

Figure 27: Distribution of tax credit spending by industrial sector: UK 2009-10



Notes: For the purposes of allocating the share of all tax credit spending, awards are assumed to be distributed evenly within eligible families. As such, each in-work adult in a couple family is assumed to receive half of any award. The remaining 30 per cent of tax credit spend not shown in this chart accrues to non-earners.

Source: DWP, *Family Resources Survey 2009-10*

Appendix 5 Wage trends among full-time workers

As we discussed in the main report, the wage differences observed between fathers, mothers and non-parents may in part be a function of changing working patterns. In this appendix we control for these shifting patterns by repeating the *difference in difference* analysis undertaken in Sections 2.4 and 3.2 for full-time workers only.

Broadly speaking, the patterns look much like those set out in Table 3, Table 4 and Table 5, although the gap between mothers and other working women appears to be smaller when we focus just on those working full-time, suggesting that some of the difference identified in the main report is indeed down to changes in working hours. Among men, however, there is very little difference between the *full-time* and *all workers* analysis, suggesting that changes in working hours explain relatively little of the pay gap between fathers and other men.

Table 8: Average annual growth in hourly wages by family type of worker and starting position in overall earnings distribution: *UK 1994-95 to 2007-08 (full-time workers)*

	1994-95 to 1998-99	1998-99 to 2002-03	2002-03 to 2007-08	1994-95 to 2007-08
p10				
With kids	-0.5%	+2.7%	+1.1%	+1.1%
Without kids	-0.4%	+3.0%	+0.8%	+1.1%
Difference	-0.1%	-0.4%	+0.3%	-0.0%
p15				
With kids	-0.6%	+2.4%	+0.9%	+0.9%
Without kids	+0.2%	+2.5%	+0.7%	+1.1%
Difference	-0.8%	-0.1%	+0.1%	-0.2%
p25				
With kids	-0.6%	+2.1%	+0.6%	+0.7%
Without kids	+0.3%	+2.3%	+0.5%	+1.0%
Difference	-0.8%	-0.2%	+0.2%	-0.3%
p35				
With kids	-0.5%	+1.8%	+0.7%	+0.6%
Without kids	+0.4%	+1.9%	+0.5%	+0.9%
Difference	-0.9%	-0.2%	+0.1%	-0.3%
p50				
With kids	-1.1%	+2.1%	+0.5%	+0.5%
Without kids	+0.1%	+1.8%	+0.7%	+0.8%
Difference	-1.2%	+0.3%	-0.2%	-0.3%
p75				
With kids	-2.0%	+1.9%	+0.9%	+0.3%
Without kids	-1.0%	+2.2%	+0.5%	+0.6%
Difference	-1.0%	-0.4%	+0.4%	-0.3%

Notes: Average annual growth is calculated by comparing the end-point of each period with the start. Shaded numbers highlight periods in which the difference between average annual growth for the two comparator groups was greater than 0.5 percentage points.

Source: Authors' analysis of DWP, *Family Resources Survey*

Table 9: Average annual growth in hourly wages by family type of worker and starting position in overall earnings distribution: *UK 1994-95 to 2007-08 (full-time male workers)*

	1994-95 to 1998-99	1998-99 to 2002-03	2002-03 to 2007-08	1994-95 to 2007-08
p15				
Men with kids	-1.5%	+2.1%	-0.2%	+0.1%
Men without kids	-0.5%	+2.3%	+0.5%	+0.7%
Difference	-1.0%	-0.2%	-0.7%	-0.6%
p25				
Men with kids	-1.3%	+2.0%	-0.6%	-0.0%
Men without kids	-0.3%	+1.9%	+0.4%	+0.6%
Difference	-1.0%	+0.1%	-1.1%	-0.7%
p35				
Men with kids	-1.1%	+1.9%	-0.4%	+0.1%
Men without kids	-0.3%	+1.4%	+0.7%	+0.6%
Difference	-0.8%	+0.5%	-1.1%	-0.5%

Notes: Average annual growth is calculated by comparing the end-point of each period with the start. Shaded numbers highlight periods in which the difference between average annual growth for the two comparator groups was greater than 0.5 percentage points.

Source: Authors' analysis of DWP, *Family Resources Survey*

Table 10: Average annual growth in hourly wages by family type of worker and starting position in overall earnings distribution: *UK 1994-95 to 2007-08 (full-time male workers)*

	1994-95 to 1998-99	1998-99 to 2002-03	2002-03 to 2007-08	1994-95 to 2007-08
p15				
Women with kids	+0.2%	+2.9%	+1.3%	+1.4%
Women without kids	+0.7%	+2.7%	+0.9%	+1.4%
Difference	-0.5%	+0.2%	+0.4%	+0.0%
p25				
Women with kids	+0.4%	+2.4%	+1.6%	+1.5%
Women without kids	+0.8%	+2.8%	+0.3%	+1.2%
Difference	-0.4%	-0.4%	+1.3%	+0.2%
p35				
Women with kids	+0.7%	+2.0%	+1.6%	+1.5%
Women without kids	+0.9%	+2.4%	+0.5%	+1.2%
Difference	-0.2%	-0.3%	+1.1%	+0.3%

Notes: Average annual growth is calculated by comparing the end-point of each period with the start. Shaded numbers highlight periods in which the difference between average annual growth for the two comparator groups was greater than 0.5 percentage points.

Source: Authors' analysis of DWP, *Family Resources Survey*

Appendix 6 The 2012-13 tax credit system

The rules governing tax credit eligibility, entitlement and removal are complex and dependent on individual circumstances. Here we set out the various elements contained within WTC and CTC, along with an explanation of how payments are calculated.

Working tax credit

WTC is a means-tested form of in-work support. It is available to families with and without children, but in order to receive it a person must meet certain age and working criteria.

In families without children:

- adults aged 25 and over must do paid work of at least 30 hours a week;
- adults with a disability aged 16 and over must do paid work of at least 16 hours a week; and
- adults aged 60 and over must do paid work of at least 16 hours a week.

In families with children:

- single people aged 16 and over must do paid work of at least 16 hours a week; and
- couples must do paid work summing to a minimum of 24 hours a week, with at least one of the adults working 16 or more hours a week.

Each family is eligible for a mixture of payments – or 'elements' – reflecting their individual circumstances. These include:

- *basic element* – paid to all who are eligible for WTC (£1,920 annual award in 2012-13);
- *couples element* – paid on top of the basic element if a joint claim is made (£1,950);
- *lone parent element* – paid on top of the basic element to those bringing up a child(ren) on their own (£1,950);
- *30-hour element* – an extra payment for those working at least 30 hours a week and to those in a couple, with at least one child, who work at least 30 hours between them (and in which one member of the couple earning at least 16 hours) (£790);
- *disability element* – an extra payment for those who work and have a disability (£2,790);
- *severe disability element* – an extra payment on top of disability element for those who work (or are in a couple in which at least one person works) and have a severe disability (£1,190); and
- *childcare element* – an extra payment up to 70 per cent of eligible costs for those who pay for registered or approved childcare (£175 per week maximum entitlement for first child and £300 per week for two or more eligible children).

Child Tax Credit

Unlike WTC, eligibility for CTC is not dependent on being in work. Instead, it is available to people with responsibility for a child or children aged under 16. Those with children aged 16 to 19 and in certain types of education or training can also qualify.

As with WTC, it consists of a number of elements:

- *family element* – paid to all who are eligible for CTC (£545 annual award in 2012-13);
- *child element* – paid on top of the family element for each child within the family (£2,690);
- *disability element* – an extra payment for each disabled child in the family (£2,950); and
- *severe disability element* – an extra payment on top of the disability element for each severely disabled child in the family (£1,190).

Awards and tapering

The amount of tax credit support an eligible family can receive (known as their entitlement) varies depending on their income[46] and which tax credit elements they are eligible for. First, a family's maximum possible entitlement is worked out by adding up all the different elements of CTC and WTC they are eligible for. A household's actual entitlement is then determined by tapering this maximum amount according to different thresholds:

- families eligible for the WTC alone receive the full entitlement until their gross (before-tax) annual income reaches £6,420. After this point the amount of tax credits they receive is reduced by 41 pence for each additional £1 they earn beyond this threshold;
- families eligible for the CTC alone receive the full amount until their gross annual income reaches £15,860. The elements the family qualify for are then removed in a certain order. As with WTC, the child elements (and any disabled elements) are reduced by 41 per cent for each additional £1 of income. The family element is only withdrawn – again at a rate of 41 per cent – if the family's income has reduced the child element to zero; while
- families eligible for both WTC and CTC have their entitlements tapered at a rate of 41 per cent once their gross annual income exceeds £6,420.Once again, the family element of CTC is only withdrawn once all other elements have been reduce to zero.

So for example, a married couple with one child working a total of 37 hours a week and earning £18,000 a year could potentially qualify for the WTC basic, couples and 30 hour elements, along with the CTC child and family elements. The various elements sum to £7,895, but this maximum award is reduced by £4,747.80 (41 per cent of the difference between the family's income (£18,000) and the taper threshold (£6,420), meaning that their annual award would be £3,147.20.

[46] In each instance, the income used to calculate the award is based on the families' income from the previous tax year, or on their most recently reported circumstances in-year.

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