



In-Work Credits in the UK and the US*

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Abstract

In-work credits grew in popularity worldwide during the late 1990s and 2000s as a means of reforming welfare systems in ways that could both encourage work and reduce poverty. This paper reviews the role of in-work tax credits in the UK and the US, what is known and remains to be known about their impacts and distributional consequences, and the possibilities for reform. Evidence is clear that in-work credits reduce poverty and can encourage lone parents to work, but have minimal impacts, in aggregate, on second earners. Spending on in-work credits has grown in the UK, but there have been two major overhauls of the way these are structured so that, on current plans, the UK will not have an identifiable in-work credit by 2023. In the US, in-work assistance has grown in generosity and reach since the 1980s, thanks to broad political support for the Earned Income Tax Credit (EITC) and the (less-targeted) Child Tax Credit. Future debates in the UK should focus on the rise of in-work poverty, particularly amongst couples, with some needed focus on the design of in-work benefits, a debate where economic analysis and evidence should have a major role to play. In the US, the policy discussion should be about

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whether to increase substantially the EITC for those without children, and how best to maintain or expand the credit's generosity for those with children.

I. Introduction

In-work credits grew in popularity worldwide during the late 1990s and 2000s as a means of reforming welfare systems in ways that could both encourage work and reduce poverty.¹ With continuing stagnation in earnings for less-skilled workers,² and growing awareness of disparities in income at the top,³ there is a renewed interest in policies aimed at reducing inequality and increasing income and opportunity of the less-advantaged population. In this paper, we assess the central 'post-market' policy aimed at the twin concerns of stagnant earnings and low employment: in-work (tax) credits.

The stated inspiration for much of the policy learning and international spread of in-work credits during the 2000s was the UK and the US, two countries that have had credits for low-income working families for over 40 years. In the UK in 2016–17, 2.5 million families with children were in work and receiving the Child or Working Tax Credit (31 per cent of families with children), with an average annualised award of £7,474, costing £18.4 billion a year, and an additional £0.9 billion was spent on 0.4 million families without children who received just the Working Tax Credit (we discuss later the new Universal Credit programme). In the US, the major in-work tax credits include the Earned Income Tax Credit (EITC) and the Child Tax Credit. The EITC is particularly central; it provides a refundable tax credit to lower-income working families, and tax expansions over the past two decades have made the EITC a central element of the US safety net.⁴ In 2016, the EITC reached 27.4 million tax filers at a total cost of \$66.7 billion, with an average credit amount of \$3,181 per year for families with children.⁵ Almost 20 per cent of all tax filers and 44 per cent of filers with children receive the EITC. The US Child Tax Credit was introduced in 1997 and it currently provides a maximum credit of \$2,000 per child. It is much less targeted because the credit has never been fully refundable and it is phased out very high in the income distribution (for example, at \$200,000 for single parents). In 2016, the Child Tax Credit cost a total of \$52 billion, and about half of that is the refundable portion of the credit that is received by low-income filers.

In this paper, we review the role of in-work tax credits in the UK and the US, what is known and remains to be known about their impacts and distributional consequences, and the possibilities for reform. In doing so, we

¹Immervoll and Pearson (2009), especially paragraph 30.

²Machin (2011) and Blundell et al. (2018) for the UK; Autor (2014) for the US.

³Alvaredo et al., 2018.

⁴Bitler and Hoynes, 2010; Hoynes and Schanzenbach, 2018.

⁵Internal Revenue Service, 2018.

provide a substantial update to Walker and Wiseman (1997), Brewer (2001) and Blundell and Hoynes (2004). We begin in Section II by reviewing the structure and history of in-work credits. Section III provides summary data on the costs and trends for the programmes in the two countries. Section IV summarises what we know about how the programmes affect labour market and other outcomes. In Section V, we discuss what future research and policies should address, and we conclude in Section VI. This paper is about in-work tax credits, and we do not try to provide a complete characterisation of the range of programmes available to families with children in the UK or the US (Hoynes and Stabile (2019) do this for the US and Canada, for example). We also do not assess the strength of the financial incentives to work facing families through the full benefit and tax system in the two countries (as Brewer (2001) did).

II. The history of in-work credits in the UK and the US

1. The UK

The UK has had a programme to support low-income working families since 1971, although the structure and the name have changed several times since then. We restrict attention in this paper to the period since 1992, and we can distinguish four periods since then: 1992 to 1999 (Family Credit); 1999 to 2003 (Working Families' Tax Credit); 2003 to 2023 (Child and Working Tax Credit); 2016 onwards (Universal Credit). Below, we summarise the key features, and note how the changes to in-work credit programmes affect comparisons over time and with the EITC.⁶

a) Family Credit

Family Credit (FC) started in 1988 and was a cash benefit available to low-income families with children⁷ where an adult worked at least 16 hours a week.⁸ A family was eligible for the maximum benefit as soon as someone worked at least 16 hours a week; there was no phase-in range, such as that present in the EITC (discussed below). Earnings above a threshold reduced entitlement to the credit, with a steep phase-out rate of 70 per cent applied

⁶See Brewer (2001) and references therein for more on the history of in-work credits in the UK.

⁷When discussing the UK, we use 'children' to mean dependent children, which in the UK means a child aged under 16, or under 20 and in full-time secondary education.

⁸FC existed alongside a series of income-related benefits intended to support those who were not in work, and an income-related programme that helped with rental costs that was available to those in and out of work. These out-of-work benefits continued alongside the subsequent programme that replaced FC (Working Families' Tax Credit, discussed below). These programmes are not the focus of this paper, though it is vital to consider them when assessing the overall generosity of the UK system for families with children, and in particular the strength of the financial incentive to work. Blundell and Hoynes (2004) discuss how these out-of-work programmes reduce the work incentives of the UK credits compared with the EITC.

to earnings after deducting tax (meaning that a common marginal effective tax rate for the main earner on the phase-out was 79 per cent: in 1997–98, an FC recipient who paid income tax and National Insurance (NI) and earned an additional pound would lose 30p in tax and NI, and then lose 70 per cent of the remaining 70p to the FC taper, thereby losing $30p + 49p = 79p$ overall). The amount of credit was increasing in the number of children, and there was a small additional credit if any adult worked at least 30 hours a week. Some spending on childcare could be deducted from the measure of earnings. Those with a large amount of financial assets could not claim.

b) Working Families' Tax Credit

Working Families' Tax Credit (WFTC) was phased in to replace Family Credit between October 1999 and April 2000.⁹ The key differences were that: it was considerably more generous, with higher maximum entitlements and a slower phase-out rate (the phase-out rate was 55 per cent applied to earnings after tax, meaning that a common marginal effective tax rate for the main earner on the phase-out and paying income tax and NI at a combined rate of 32 per cent was 69.4 per cent: this is calculated as $0.32 + (0.68 \times 0.55)$ as per the calculations for FC); it contained an explicit rebate against childcare costs, rather than an earnings disregard; although it was not formally linked to the income tax system, the credit was administered by the tax authority, rather than by the department that administers all cash welfare and social security programmes; and it was paid to recipients by employers (who were refunded by the tax authorities).

WFTC was made more generous in each year of its operation, and many researchers used this rapid expansion in the generosity of in-work support as a natural experiment to learn about the impacts on labour supply and family structures (as we show later, the number of recipients doubled, and spending more than doubled, between 1998 and 2003). But the WFTC reform was also part of a much wider strategy pursued by the UK government to tackle child poverty and to support working families, alongside reforms such as a new minimum wage, expanded entitlement to pre-school childcare, support to help lone parents find work, and higher cash benefits.¹⁰ Although policymakers at the time said that they had drawn inspiration from the US EITC, WFTC was much more similar in design and operation to its predecessor, Family Credit, than to the EITC.¹¹

⁹See Blundell et al. (2000), Brewer, Clark and Wakefield (2002) or Brewer et al. (2009) for more detail and the comparison with FC.

¹⁰See Hills et al. (2009) or Waldfogel (2010). Section 2 of Brewer and Browne (2006) details the non-WFTC reforms taking place in the 1999–2002 period.

¹¹Brewer, 2001.

c) Child and Working Tax Credits

Child Tax Credit (CTC) and Working Tax Credit (WTC) replaced WFTC in 2003, and are (at the time of writing) due to be phased out by 2023.¹² Replacing WFTC with CTC and WTC was a much more significant reform than replacing FC with WFTC in terms of the operation of the welfare and tax system, but had smaller impacts on budget constraints and financial incentives to work: the reform was primarily motivated by operational issues rather than a desire to change the amount of support going to families with children. Like WFTC, WTC was a work-contingent refundable tax credit, with an associated programme that rebated families' spending on formal childcare (known as the Childcare Tax Credit), but it was also made available to adults without children who were working and had a low family income (they had to be aged 25 or over and working at least 30 hours a week).¹³ CTC is not an in-work credit as it is available to those without earnings as well as those with earnings; as with the earlier credits, entitlement depends on the number of children (when introduced, CTC replaced a non-refundable tax credit for families with children and also additional cash benefits payable to families with children on welfare benefits). For both programmes, assessment periods and income concepts were aligned with the income tax system, although the tax credits remained formally separate from income tax; the phase-out rate was initially set to 37 per cent but this applied to earnings after tax, meaning that a common marginal effective tax rate for a main earner who also paid income tax and National Insurance on the phase-out became 70 per cent (this is just the sum of the marginal withdrawal rates for income tax, NI and WFTC, which in 2003–04 were 22 per cent, 11 per cent and 37 per cent); and asset rules were scrapped. Families apply for these credits, and payments are made in real time on an initial estimate of circumstances in the current year, subject to an end-of-year reconciliation. Both credits are now paid direct to recipient families, and there is no role for employers. In order to claim tax credits, working families will generally need to have UK nationality or be from an EU country, an EEA country or Switzerland; these rules are slightly less restrictive than those that apply to the main welfare programmes available to non-working families. Like all UK welfare programmes, all in-work programmes in the UK treat unmarried couples who live together as husband and wife identically to married couples.

Between 2003 and 2010, under successive Labour governments, there were only small changes to the generosity of CTC and WTC; the most significant were an increased rebate on childcare spending (in 2006) and a 2 percentage

¹²See Brewer (2003) for more details on their initial design.

¹³For some of this period, an additional time-limited in-work credit was available to lone parents who moved off welfare and into work. It was known as In Work Credit, and was piloted between 2004 and 2008 and available nationally between 2008 and 2011. In principle, it can be thought of like a very generous back-to-work bonus. We do not discuss it further here and the statistics later in this paper do not include its recipients or spending on it. See Brewer et al. (2011) for more details.

point increase in the phase-out rate accompanied by a substantial increase in the earnings threshold (in 2008). There were also several changes made to try to reduce the problem caused by overpayments (as we discuss in Section V). Since 2011, entitlements to tax credits have been cut in real terms through: a requirement for couples to work 24 hours a week between them as well as have someone in work for at least 16 hours a week; a reduction in the rebate on childcare spending; another 2 percentage point increase in the phase-out rate; the removal entirely of the £545 a year payment to middle-income families; a succession of freezes in nominal entitlements; and a version of the ‘family cap’, whereby additional credits are not paid in respect of third or subsequent children born after April 2017. These have been part of successive UK governments’ cuts to many welfare and social security programmes since 2010.

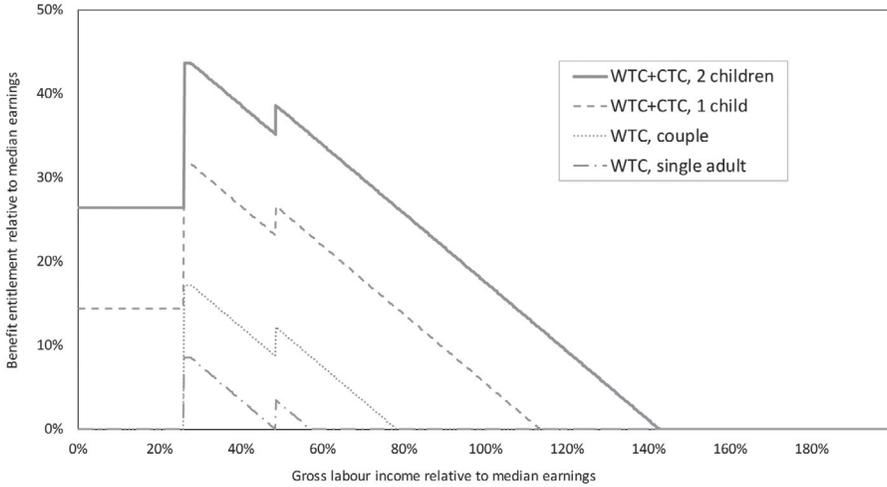
Panel A of Figure 1 shows the combined WTC and CTC schedule for several family types, reflecting the rules in tax year 2016–17, and Panel B splits the schedule for a family with two children into the WTC and CTC components. To facilitate comparisons with the US, earnings on the horizontal axis and the credit amount on the vertical axis are both expressed as a percentage of country-specific median annual earnings; in 2016–17, that was £23,084 in the UK. Entitlements vary with the number of children and, for those without children, the number of adults. In 2016–17, the theoretical maximum entitlement to WTC for lone parents was £3,970 a year¹⁴ and CTC provided an additional £3,325 for the first child and £2,780 for the second. WTC was completely phased out at £18,096 and CTC was phased out for a family with two children at £32,968.

Strictly speaking, Child Tax Credit is not an in-work credit: it has no work requirement, and is available to all families with children with incomes low enough to qualify (including those with no income, as is evident in Panel A of Figure 1). In Section III, when we examine total spending on and the number of recipients of in-work credits in the UK, we count only those in work and receiving CTC and/or WTC. We do this partly to ensure comparability over time, particularly with WFTC: in the 2003 reform, WFTC was effectively split into two, with WTC providing in-work support to those with and without children, and CTC providing child-contingent support to out-of-work and in-work families. We also do this to maintain comparability with the US in-work credits: comparing only the WTC programme with the EITC would substantially understate the size of the top-up that is available to low-income working families with children in the UK and mask the variation in entitlements between those with and without children.

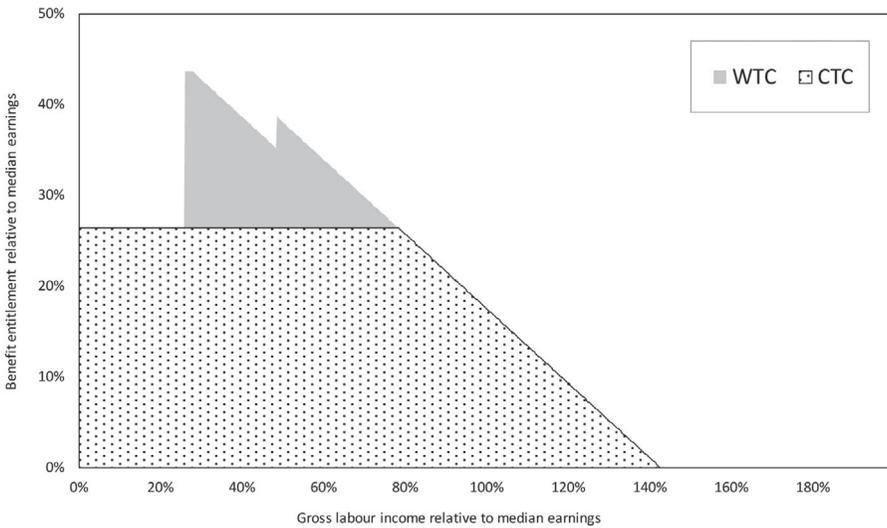
¹⁴This is also the maximum theoretical WTC entitlement for couples with and without children, but the only way to receive this is to be self-employed, as working the required number of hours to attain eligibility for WTC at the minimum wage would put the family in the phase-out range of WTC.

FIGURE 1
UK Child Tax Credit and Working Tax Credit schedules, 2016–17

Panel A. Various family types



Panel B. Families with two children



Note: Uses median earnings in April 2016, which was £23,084.
Source: Authors' calculations based on HM Revenue and Customs (2018a) and table 1 of <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/ash1997to2015selectedestimates>.

d) Universal Credit

In 2011, the UK government announced plans to replace most income-related welfare benefits and tax credits with a single programme known as Universal Credit.¹⁵ At the time of writing, it was planned that Universal Credit would be fully rolled out, and the existing (or ‘legacy’) benefits and tax credits fully abolished, by December 2023. When initially announced, Universal Credit was intended to be more generous than the programmes it replaced, but the opposite is now true, despite the fact that the legacy programmes have seen cuts to their entitlement since then.¹⁶ In its structure, Universal Credit resembles a standard income-related safety-net cash transfer programme, or even a negative income tax programme: maximum entitlements vary with family size and composition; the maximum entitlement is reduced for those without any income, with unearned income subject to a 100 per cent phase-out rate and earned income above a threshold reducing entitlements with a 63 per cent phase-out rate applied to earnings after tax; and asset rules mean that those with enough financial assets will be ineligible. When Universal Credit is fully operational, the UK will therefore no longer have an identifiable in-work credit or tax credit, but low-income working families with and without children will still be entitled to receive income top-ups through Universal Credit. For this reason, and because Universal Credit is in the middle of a complicated and uncertain transition period at the time of writing, this paper does not consider in-work support under Universal Credit.

2. The US

a) The Earned Income Tax Credit

The US has had an in-work credit since 1975 when the Earned Income Tax Credit (EITC) was introduced as a small tax credit aimed at offsetting the social security payroll tax for low-income families with children. Beginning with the Tax Reform Act of 1986 and then in subsequent tax acts in 1990, 1993, 2002 and 2009, the EITC has expanded in its reach and generosity, with the clear goal of supplementing income while encouraging work.

The EITC is a refundable tax credit. Therefore, if the credit exceeds a taxpayer’s tax liability, they receive the difference as a refund. A taxpayer’s eligibility for the EITC depends on the taxpayer’s earned income (or, in some cases, adjusted gross income) and the number of qualifying children who meet age, relationship and residency tests.¹⁷

¹⁵See Browne, Hood and Joyce (2016) for more details.

¹⁶Researchers have made comparisons between Universal Credit and the programmes it replaces (see, for example, Brewer, Browne and Jin (2012), Browne, Hood and Joyce (2016) and Brewer, Finch and Tomlinson (2017)), but these have quickly become out of date, as successive governments have made multiple changes to the legacy benefits and to Universal Credit.

¹⁷A qualifying child for the EITC is younger than 19 (or younger than 24 and a full-time student), lives with the taxpayer for more than half the year, has a valid social security number and is not claimed as a

To be eligible for the EITC, the tax filing unit must have earned income during the tax year. The value of the credit is determined by a benefit schedule with three regions, known as the phase-in, flat and phase-out ranges. In the phase-in region, the credit increases by a share of each additional dollar earned. Once the credit reaches its maximum value, the taxpayer is in the second, flat region, where additional earnings do not affect the credit value. In the final region, the credit declines with each additional dollar of earnings (or adjusted gross income, if that is higher) until it is zero. Tax filers and their children must have a social security number to receive the EITC; this includes legal immigrants as well as citizens.

The exact parameters of the schedule vary by filing status and by the number of qualifying children, but the basic shape is the same. Panel A of Figure 2 displays the schedule in 2018 as a function of earned income for single taxpayers with no, one, two, and three or more children. To facilitate comparisons with the UK, earnings on the horizontal axis and the credit amount on the vertical axis are both expressed as a percentage of country-specific median annual earnings; in 2017, that was \$37,479 in the US. The figure shows that the generosity of the credit increases with family size, and childless tax filers are eligible for only a very small credit. The phase-in (or subsidy) rate is substantial at 34 (40, 45) per cent for those with one (two, three or more) children, while the phase-out rate is much lower, at 15.98 (21.06) per cent for those with one (two or more) children. Maximum benefits in 2018 are \$3,461 for families with one child, \$5,716 for families with two children and \$6,431 for those with three or more children. The relatively low phase-out rate implies eligibility fairly high into the income distribution: maximum allowable income for a taxpayer with one (two, three or more) children is \$40,320 (\$45,802, \$49,194). By comparison, median family income in 2017 was \$61,372.¹⁸ The dotted lines in Figure 2 denote the extended flat and phase-out regions for married couples (\$5,690 in 2018) receiving the EITC.¹⁹ The credit for families without children is much less generous, with phase-in and phase-out rates of 7.65 per cent, a maximum credit of \$519 and a maximum allowable income of \$15,270.²⁰

EITC recipients receive the payment as an annual lump sum. The Advance EITC programme allowed recipients to receive their credits throughout the

dependant by another taxpayer (Internal Revenue Service and US Department of the Treasury, 2013). The EITC's qualifying child rules are complex and differ from rules for children in other parts of the tax code.

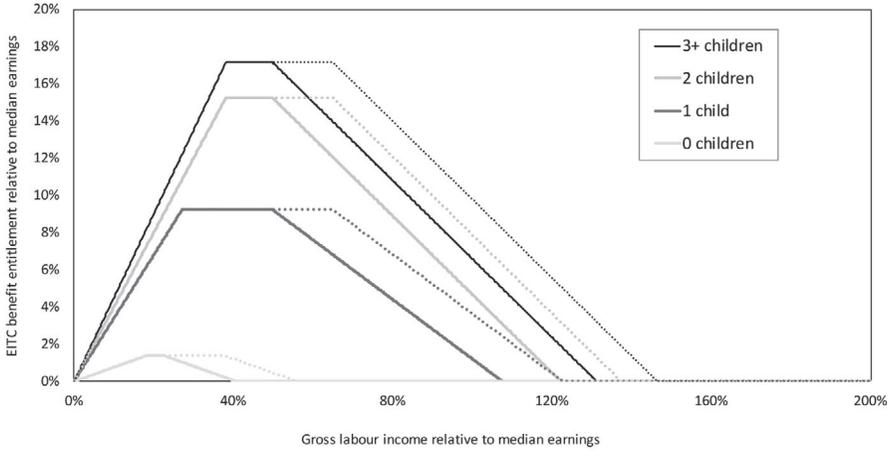
¹⁸Fontenot, Semega and Kollar, 2018.

¹⁹Beginning in 2002, the flat and phase-out portions of the credit were expanded for married couples. This expansion has increased over the years starting with a \$1,000 expansion in 2002 and \$2,000 in 2005, and it is \$5,690 in 2018. Otherwise the EITC does not vary with family structure.

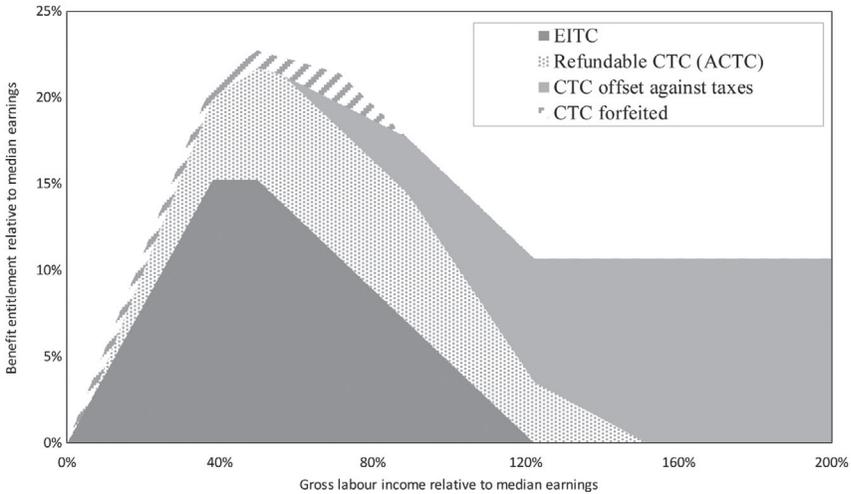
²⁰All tax parameters discussed here are for tax year 2018 to incorporate the large expansion of the US Child Tax Credit in 2018. Figure 2 is presented in 2017 dollars for comparability with the UK numbers and the fact that median earnings is not available yet for 2018 (we use 2017 median earnings for the axes).

FIGURE 2
US tax credits schedules, 2018

Panel A. Earned Income Tax Credit



Panel B. Child Tax Credit and Earned Income Tax Credit: single-parent families with two children



Note: Credit amounts are compared with median earnings by expressing each schedule in 2017 dollars using the CPI-U-RS. Median earnings in 2017 was \$37,479. In Panel A, solid lines denote schedule for single filers and dotted lines denote schedule for couples.

Source: EITC 2018 schedule from Internal Revenue Service, Revenue Procedure 2016-55. CTC 2018 schedule from Internal Revenue Service, Publication 972. Median individual earnings from Semega et al. (2019).

year, but take-up was extremely low (under 1 per cent) and this option was eliminated in 2011.

The EITC has grown substantially since its introduction in 1975. The 1987 expansion, part of the Tax Reform Act of 1986, increased the generosity of the credit for the lowest-income workers and extended its benefits beyond the poorest. The 1990 tax act further expanded the credit and introduced separate schedules for those with one and two or more children (previously the credit did not vary with number of children). The largest expansion was part of the 1993 tax act. This expansion of the EITC led to an increase in the subsidy rate from 19.5 per cent to 40 per cent (18.5 per cent to 34 per cent) for taxpayers with two or more children (taxpayers with one child). This expansion also included a small credit for those without children for the first time. Importantly, the 1993 EITC expansion occurred as part of a widespread reform of government programmes for low-income families with children, all moving towards more conditionality and work requirements. Federal welfare reform was passed in 1996, which led to a dramatic decline in out-of-work cash support for families with children.²¹ In 2002, the extension of the flat and phase-out regions was introduced for married couples, and a separate schedule for families with three or more children was added in 2009. Since 1987, the schedule (maximum credit; phase-in, flat and phase-out regions) has adjusted for inflation year to year.

b) The Child Tax Credit

Another in-work credit – the Child Tax Credit (CTC) – has been available in the US since 1997. The CTC has the same basic structure as the EITC (requires earnings; has phase-in, flat and phase-out regions) with a maximum credit of \$2,000 per child under current law.²² However, the two programmes are otherwise different. The CTC is not fully refundable and thus the lowest-income families do not receive the full benefits of the credit. The refundable portion of the CTC (called the Additional Child Tax Credit or ACTC) is limited to those with earnings above \$2,500 per year, is phased in at a 15 per cent rate and is capped at a maximum credit of \$1,400. The CTC phase-in (15 per cent) and phase-out (5 per cent) rates are much lower than those for the EITC. Additionally, the flat range for the credit is very large: under current law, the CTC begins to phase out for single parents at incomes of \$200,000 and for married couples at incomes of \$400,000. The result is that the CTC/ACTC is much less targeted than the EITC and most of the spending on the programme goes to families far above the poverty line.²³

²¹Moffitt, 2003; Bitler and Hoynes, 2016; Ziliak, 2016.

²²A qualifying child for the CTC is under age 17. New in 2018, families with children aged 17–18 or those aged 19–24 and in college full time, and older dependants, are eligible for a credit of \$500 per child/dependant.

²³Hoynes and Rothstein, 2017.

Panel B of Figure 2 presents the combined budget constraint for the EITC and the CTC for 2018. For illustration, we calculate the credits assuming a single parent with two children. The figure separately identifies the portion of the CTC that is refunded (the ACTC) and the portion that offsets other taxes (non-refundable). The figure also shows (labelled as ‘CTC forfeited’) the portion of the credit that is forgone by very low-income families for whom the refundability limit is binding. The figure shows the significantly greater targeting of the EITC and the ACTC compared with the non-refundable portion of the CTC (where the credit does not begin to phase out until income is at least four times the end of the phase-out region under the EITC).

In this paper, we focus on the EITC given that the research is fairly limited for the CTC and it is less central for low-income families.

III. Policies and context

In this section, we lay out the facts about the policies in the two countries as well as the populations that the programmes are meant to serve.

1. Overview of in-work credits and their generosity

Table 1 presents data on the cost and utilisation of these in-work credits in the UK (in 2016–17) and the US (in 2016). As noted earlier, to facilitate comparability between the UK and the US, the UK CTC figures are restricted to those who are in work. For the US, we present separate figures for the refundable child tax credit (ACTC) and the non-refundable child tax credit (labelled ‘CTC’). For both countries, we provide estimates separately for those with and without children.

In both countries, the vast majority of claimants are families with children (86 per cent in the UK and 90 per cent in the US) and the overwhelming majority of spending is on families with children (95 per cent in the UK and 98 per cent in the US). Ignoring the CTC in the two countries, 80 per cent of WTC claimants and 74 per cent of EITC recipients are families with children. A large share of families with children in the two countries receive the in-work credits: 31 per cent in the UK receive WTC or CTC and 54 per cent in the US receive the EITC. Married and cohabiting couples make up 50 per cent of tax credit recipients in the UK, and married couples make up 22 per cent of EITC recipients in the US.

Receiving the tax credits requires signing up for the benefits (and filing a tax return in the US). In the UK, estimated caseload take-up rates of CTC and WTC in 2016–17 were 81 per cent amongst working families with children (96 per cent for lone parents and 72 per cent for couples with children) but only 31 per cent amongst families without children eligible for WTC (expenditure take-up

TABLE 1
Number of claimants and cost of programmes

Panel A. UK, 2016–17

	Total claimants (thousand)			Total expenditures			Total expenditures per claimant			Claimants / Total families		
	WTC	CTC	Any	WTC	CTC	Any	WTC	CTC	Any	WTC	CTC	Any
All	2,055	2,456	2,857	£6.3bn	£13.0bn	£19.3bn	£3,065	£5,288	£6,751	8%	9%	11%
With children	1,654	2,456	2,456	£5.4bn	£13.0bn	£18.4bn	£3,246	£5,288	£7,474	21%	31%	31%
Without children	401	-	401	£0.9bn	-	£0.9bn	£2,322	-	£2,322	2%	-	2%

Panel B. US, 2016

	Total claimants (million)			Total expenditures			Total expenditures per claimant			Claimants / Total families		
	EITC	ACTC	CTC	EITC	ACTC	CTC	EITC	ACTC	CTC	EITC	ACTC	CTC
All	27.4	19.5	22.1	\$66.7bn	\$25.4bn	\$26.8bn	\$2,437	\$1,303	\$1,213	19%	14%	16%
With children	20.3	19.5	22.1	\$64.7bn	\$25.4bn	\$26.8bn	\$3,181	\$1,303	\$1,213	54%	51%	58%
Without children	7.1	-	-	\$2.1bn	-	-	\$291	-	-	7%	-	-

Source: UK – 2016–17 figures from table 1.1 of HM Revenue and Customs (2018b), in-work families only; total number of families from Family Resources Survey 2016–17. US – Internal Revenue Service, Statistics of Income, table 2.5; Tax Policy Center, table T13-0274; total number of families from Census Bureau, Current Population Survey, table POV36 2016.

rates were 89 per cent and 38 per cent).²⁴ For those with children, these take-up rates are comparable to those for the key welfare programmes, but the take-up rate of WTC for those without children remains much lower than take-up rates of the main welfare programmes, which are around 80 per cent.²⁵ In the US, the EITC take-up rates are about 80 per cent for families with children and 56 per cent for taxpayers without children.²⁶ In the US, these rates are fairly high compared with those for other programmes serving low-income families.²⁷

How does the generosity compare across the two countries? Panel B of Figures 1 and 2 provide tax credit schedules for the UK and US, respectively, for a family with two children. To facilitate comparisons across the two countries, earnings (on the horizontal axis) and the credit amount (on the vertical axis) are both expressed as a percentage of median individual earnings in each country. The graphs show that in-work credits are considerably more generous in the UK than in the US – the maximum WTC+CTC for a family with two children is more than 40 per cent of median earnings in the UK, compared with about 22 per cent in the US for the combined EITC and ACTC. As further evidence, Table 1 shows average expenditures per claimant (for families with children) of £7,474 in the UK (WTC+CTC) compared with \$3,181 for the EITC or \$4,484 for EITC+ACTC. (For reference, the US\$ to UK£ PPP²⁸ exchange rate was 0.691 in 2017.) Additionally, the UK WTC+CTC credits are entirely phased out between 120 per cent and 140 per cent of median earnings (depending on family size), while the combined EITC+ACTC phases out at about 140 per cent of US median earnings. (As noted earlier, the non-refundable CTC extends to incomes of \$200,000–\$400,000.)

The greater generosity in the UK is in line with the relative generosity of the overall welfare state in the two countries, but we remind readers that Figures 1 and 2 do not allow a comparison of the generosity of all of the ways that the UK and the US support families with children, whether through the tax system, with cash benefits or with benefits-in-kind. Figures A1 and A2 in the online appendix present more comprehensive budget sets for the two countries. For the UK, as well as the tax credit programmes, this includes the cash programme known as Child Benefit, which is withdrawn once income reaches about twice median earnings, and the cash benefit paid to the unemployed (labelled 'JSA'). For the US, in addition to the in-work credits, it includes the Supplemental Nutrition Assistance Program (SNAP, commonly known as food stamps), the child and dependent care tax credit (CDCTC) and the dependent exemption.²⁹

²⁴HM Revenue and Customs, 2018d.

²⁵Department for Work and Pensions, 2018.

²⁶Scholz, 1994; Plueger, 2009.

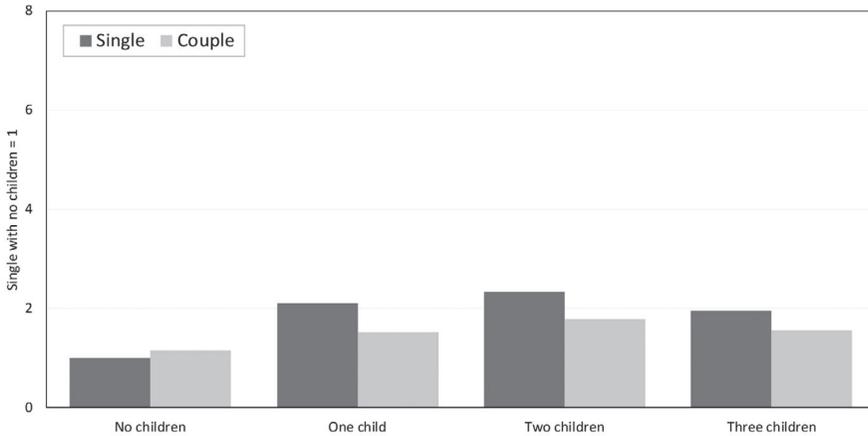
²⁷Currie, 2006.

²⁸PPP stands for purchasing power parity.

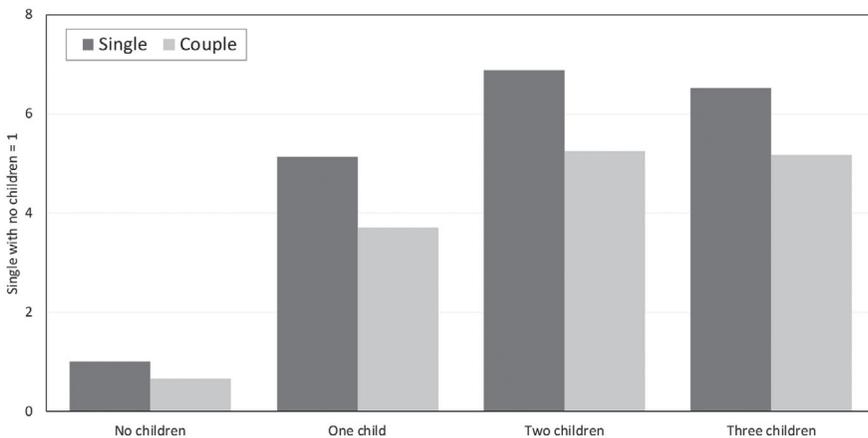
²⁹Figure A2 includes cash and near-cash assistance that is entitlements. It therefore excludes cash welfare (Temporary Assistance for Needy Families, TANF) and housing assistance as neither is entitlements. We also

FIGURE 3
Equivalence-scale-adjusted maximum credit by family size
(relative to credit for single with no children)

Panel A. UK (sum of Working Tax Credit and Child Tax Credit)



Panel B. US (Earned Income Tax Credit)



Source: UK – authors’ calculations based on HM Revenue and Customs (2018a). US – Internal Revenue Service, Revenue Procedure 2018-18. Equivalence scale defined as OECD modified equivalence scale; see OECD (undated).

Figure 3 shows how the generosity of the in-work programmes (for the UK, we show the sum of WTC and CTC; for the US, we show the EITC) varies with

exclude Medicaid (public health insurance) as this is not considered ‘near-cash’ assistance. More generally, the US out-of-work benefits impose a great deal of conditionality, often based on work requirements. This started with welfare reform in the 1990s and is now being considered by many states for SNAP and Medicaid.

the number of children and adults, by plotting the equivalence-scale-adjusted maximum entitlement for a given family type relative to the equivalence-scale-adjusted maximum entitlement of a single adult with no children.³⁰ If maximum benefits varied in a way that was consistent with equivalence scales, then all of the measures would equal 1. It is clear that this is not how the programmes have been designed. If we accept that ‘maximum entitlement’ is a proxy for generosity, Figure 3 shows that both programmes are relatively more generous to families with children than to families without children and particularly so in the US. In the UK, this reflects the size of CTC relative to WTC; in the US, it reflects that credits are much larger for families with children than for those without (and the comparison would be more dramatic had we included the ACTC). The figure also shows that both programmes are relatively more generous to single-parent families than to couple families with children (this reflects that, in both programmes, the maximum entitlement for those with children does not vary with the number of adults in the family) and are relatively more generous to two-children families than to families of other sizes (in the UK, this reflects that, as of April 2017, the maximum entitlement does not increase with the number of children beyond the second; in the US, it reflects that the maximum entitlement increases with a third child, but by less than equivalence scales suggest is needed).

Figure 4 shows that in-work credits are reaching a large share of the population of families with children. In the UK (Panel A), the fraction of families with children receiving an in-work benefit has risen from 7 per cent in 1993 to 31 per cent in 2017. The reasons for the rise vary over time. From 1993 to 1998, caseloads grew steadily through both small increases in entitlement and growth in low-income working families. The increased generosity of WFTC led to a step up in caseloads in 2000, which grew further as maximum entitlements continued to rise in 2001 and 2002. In 2003, when WFTC was replaced by WTC and CTC, caseloads rose again, so that 28 per cent of families with children were receiving in-work support. This was mostly due to a rise in the take-up rate, especially among couples with children, rather than to changes to maximum entitlements.³¹ Caseloads peaked at 35 per cent in 2011–12, as

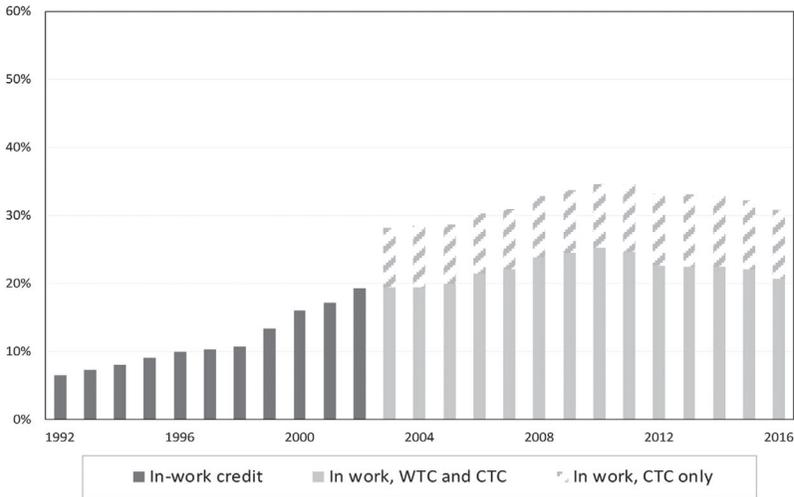
³⁰We use the OECD equivalence scale, which equals 1 for the head plus 0.5 for each additional adult (aged 14 and over) plus 0.3 for each child (aged under 14).

³¹As noted earlier, the 2003 reform hardly affected the calculation of entitlements for individual families, and, to avoid any discontinuities, our series on caseloads in Panel A of Figure 4 excludes out-of-work families and those families receiving only the family element of CTC. The rise in caseload shown in 2003, then, was mostly caused by a large rise in the take-up rate amongst couples with children, which jumped from 62 per cent to 73 per cent. As a result, the number of lone parents in receipt of in-work support rose from 787,000 to 882,000 between the final months of WFTC and the first year of CTC and WTC, and the number of couples with children in receipt rose from 694,000 to 1,197,000. (Take-up rates come from table 1 of Inland Revenue (2003b) and table 6 of HM Revenue and Customs (2006); caseloads come from table 1 of Inland Revenue (2003a) and table 1.3 of HM Revenue and Customs (2005).)

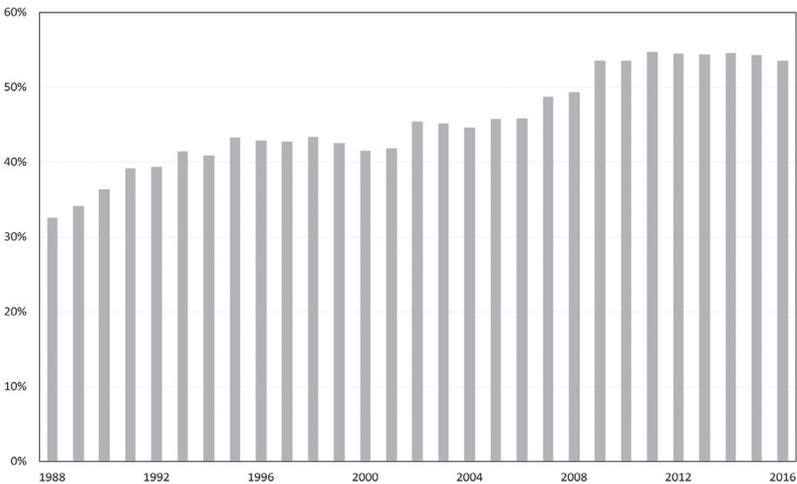
FIGURE 4

Fraction of families with children receiving an in-work credit

Panel A. UK (until 2003: any in-work credit; after 2003: Child or Working Tax Credit for working families)



Panel B. US (Earned Income Tax Credit)



Source:

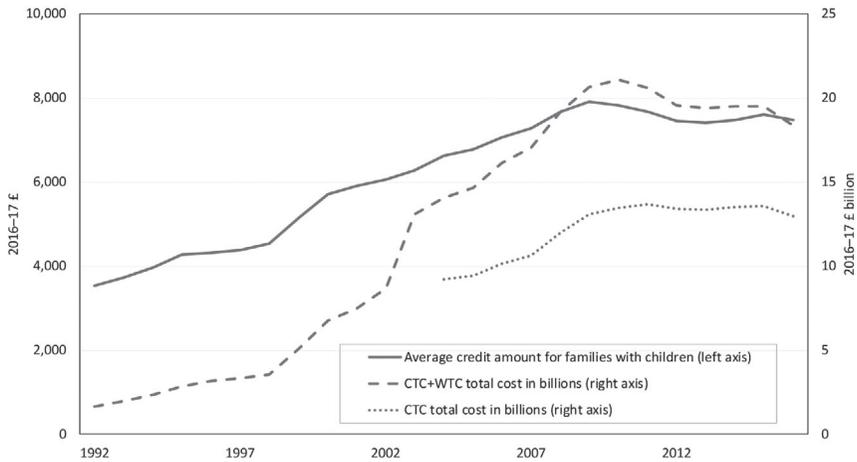
UK: Tax credit claimants from table 1.2 of HM Revenue and Customs (2018b) and <https://www.ifs.org.uk/uploads/publications/ff/taxcredits.xlsx>. From 2003 to 2011, CTC recipients exclude those getting family element or less. Number of children estimated from Child Benefit recipients (1993–96) and Office for National Statistics (1997–2017).

US: Number of EITC claimants from Internal Revenue Service, Statistics of Income, tables A, 2.3 and 2.5 (1993–2016); Committee on Ways & Means, Green Book (1988–92). Number of families with children from Census Bureau, table F09AR.

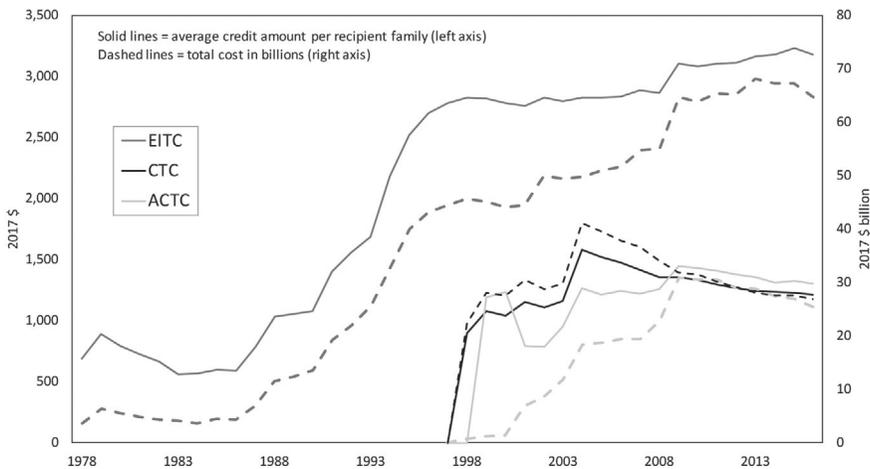
FIGURE 5

Average spend per claimant and total spending: families with children

Panel A. UK (until 2003: any in-work credit; after 2003: Child or Working Tax Credit for working families)



Panel B. US (Earned Income Tax Credit and Child Tax Credit)



Source:

UK: Table 1.2 of HM Revenue and Customs (2018b). Expressed in constant 2016-17 pounds using September Consumer Prices Index. Spending on tax credits in 2003 could not be split between WTC and CTC. From 2004 to 2011, spending on CTC excludes those getting family element or less.

US: Average and total EITC amounts calculated from Internal Revenue Service, Statistics of Income, table 2.5 (1996-2016); public-use micro data (1978-95). Average and total ACTC and CTC amounts calculated from Internal Revenue Service, Statistics of Income, table 3.3 (1998-2016). Expressed in constant 2017 dollars using CPI-U-RS.

US\$ to UK£ PPP exchange rate was 0.691 in 2017.

maximum entitlements grew and as earnings fell in real terms from 2008, and they have since fallen, as eligibility was tightened and generosity reduced.

In the US (Panel B of Figure 4), the share receiving the EITC has expanded from about 40–45 per cent in the 1990s to 55 per cent in the most recent years. The increases have come through the 1990 and 1993 credit expansions, the 2002 married couple expansion and the 2009 three-children expansion. Additionally, as wages in the US are stagnating for lower-skilled workers,³² more families are becoming eligible.³³

Figure 5 shows total spending on the programmes, and the average spending per recipient, for working families with children. In the UK, total spending has grown by more than a factor of 10 since 1992, from £1.7 billion to £18.4 billion (in 2016–17 pounds) (as discussed above, this includes spending on CTC for working families with children, but not spending on families receiving only the family element, to help maintain consistency over time; it also includes spending on the Childcare Tax Credit, which is paid with WTC). This rise mostly reflects the expansion in caseload shown in Figure 4; mean (annualised) awards in real terms have slightly more than doubled over the same period. In the US, expenditures on the EITC have increased sixfold in real terms from the early 1990s (at \$11 billion) to \$67 billion (at the end of the period). The average EITC annual credit (in 2017 dollars) has increased from about \$500 in the mid 1980s to \$2,000 after the 1993 expansions and to just over \$3,000 by the end of the period. The CTC and ACTC have also increased substantially over this period, such that in 2016 their combined cost was \$52 billion.³⁴

2. Labour market context

Table 2 shows key labour market statistics both for all adults in families with children and for those in families with children where the head has a low education (defined as less than a university degree), as well as relative poverty rates (defined as living in a household with equivalised after-tax-and-transfer income less than 60 per cent of the (country-specific) median equivalised household income). The first row of Table 2 shows that the UK has a smaller proportion of families with children where the couple is legally married than does the US (61 per cent versus 72 per cent) and a larger number who are lone parents (23 per cent versus 17 per cent). Employment rates (defined as

³²Autor, 2014.

³³In Panel B of Figure 4, the numerator comes from administrative tax data and the denominator comes from survey data (the Current Population Survey). As others have noted, this share eligible is higher than one would expect given that 44 per cent of tax filers with children receive the EITC. This may in part be due to complexities around children moving between family members and some non-compliance around qualifying children.

³⁴The parameters of the ACTC and the CTC are set in nominal terms; thus the expenditures and average benefit per recipient fall over time in real terms between tax expansions. The EITC, in comparison, is set in real terms.

TABLE 2
Statistics on populations of interest

Panel A. UK, 2016–17

	<i>Lone parents</i>		<i>Cohabiting couples</i>		<i>Married couples</i>	
Percentage of children, by family type	23%		16%		61%	
Relative poverty rate, by family type	28%		19%		16%	

	<i>Lone mothers</i>		<i>Cohabiting couples</i>		<i>Married couples</i>	
	All	Low education	All	Low education	All	Low education
<i>Female employment rate (last week)</i>						
Any	58%	54%	61%	58%	69%	67%
Full-time	26%	21%	31%	28%	38%	34%
Part-time	32%	33%	30%	30%	32%	32%
<i>Male employment rate (last week)</i>						
Any	-	-	87%	85%	91%	89%
Full-time	-	-	82%	79%	85%	83%
Part-time	-	-	6%	6%	6%	6%

Panel B. US, 2017

	<i>Lone parents</i>		<i>Cohabiting couples</i>		<i>Married couples</i>	
Percentage of children, by family type	17%		11%		72%	
Relative poverty rate, by family type	53%		34%		18%	

	<i>Lone mothers</i>		<i>Cohabiting couples</i>		<i>Married couples</i>	
	All	Low education	All	Low education	All	Low education
<i>Female employment rate (last week)</i>						
Any	73%	70%	45%	58%	63%	56%
Full-time	54%	50%	31%	38%	45%	38%
Part-time	19%	20%	15%	20%	18%	18%
<i>Male employment rate (last week)</i>						
Any	-	-	80%	77%	84%	83%
Full-time	-	-	68%	66%	76%	75%
Part-time	-	-	12%	11%	8%	9%

Source: The table shows the fraction of households with children with various characteristics, by family type and country. UK – authors’ calculations from the Family Resources Survey for 2016–17. US – authors’ calculations from Annual Social and Economic Supplement to the Current Population Survey 2018. Relative poverty defined as disposable income below 60 per cent of national median (equalised using the modified OECD definition) in 2016–17 (UK) or 2017 (US). ‘Low education’ defined as households where the head has less than a university degree. Employment defined as any work in the previous week (2016–17 (UK) or 2018 (US)); full-time employment defined as working at least 35 hours. Cohabitation defined as residing with an unmarried partner (UK) or the father of one of the household’s children (US, following Kennedy and Fitch (2012)).

whether you worked in the previous week) are considerably lower amongst lone mothers in the UK than in the US, particularly amongst low-education lone mothers, and particularly when considering full-time work (21 per cent in the UK versus 50 per cent in the US). However, they are a little higher for adults in couple families with children in the UK than in the US. Relative poverty rates are very similar for married couples with children in the two countries (16 per cent in the UK and 18 per cent in the US), but poverty rates for lone-parent families and for cohabiting families with children are considerably lower in the UK than in the US. The lower relative poverty rates and employment rates for lone parents in the UK than in the US are consistent with the more generous out-of-work benefits and commensurately weaker work incentives in the UK than in the US; the higher poverty rate for cohabiting couples in the US is consistent with them not being entitled to the benefits that married couples receive, unlike in the UK.

Figure 6, based on figure 3 in Bitler, Hoynes and Kuka (2017), overlays the credit schedule onto the distributions of earnings for different family types. We truncate earnings at £52,000 in the UK and \$75,000 in the US (and limit the earnings tabulations to workers) – both at about twice the median annual earnings. In the UK, the majority of working lone parents with one child (and the vast majority of lone parents with two or more children) are entitled to some in-work credit (the graph tabulates annualised earnings for those reporting positive earnings in the Family Resources Survey). Amongst cohabiting and married couples, only a minority have earnings low enough to be entitled. In the US, among single parents with children, the EITC extends to a large share of the earnings distribution (the graph tabulates earned income among those filing taxes). In contrast, married couples, with higher family earnings levels, have a large share of the distribution with earnings beyond the EITC phase-out range. (In notes to the figure, it can be seen that about half of married couples with children have earnings beyond the truncation point.)

3. Why in-work credits?

It is beyond the scope of this paper to assess comprehensively the appeal of in-work credits to policymakers, but we note that there are economic arguments that support their use, and that the expansion of in-work credits can fit well with certain political narratives.³⁵

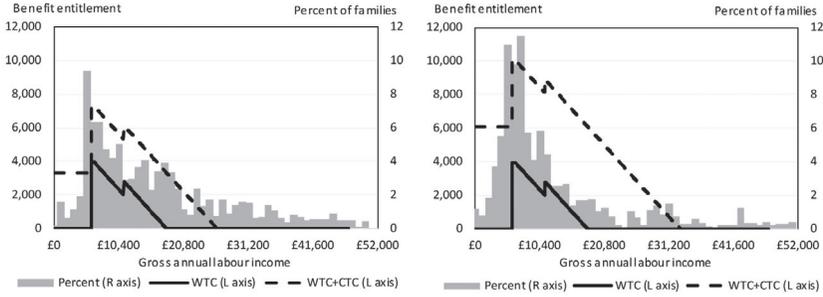
If the goal is to redistribute to lower-income households or reduce poverty rates, then the economic argument in favour of in-work credits is that, if they do act to encourage labour supply, it is possible for household incomes to rise by more than government spending on the credit. In contrast, a

³⁵See also section 2.4.2 of Nichols and Rothstein (2016).

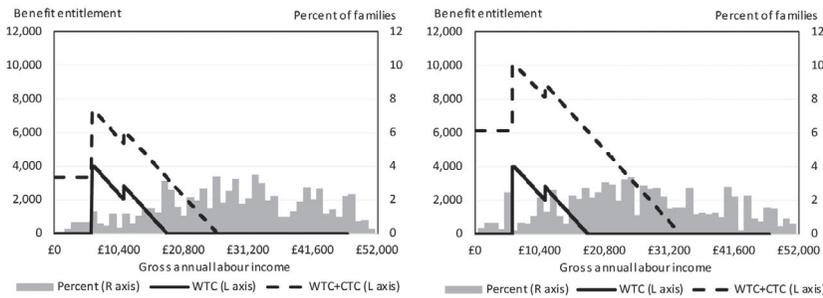
FIGURE 6
Credit schedules and the distribution of earnings, by family type

Panel A. UK

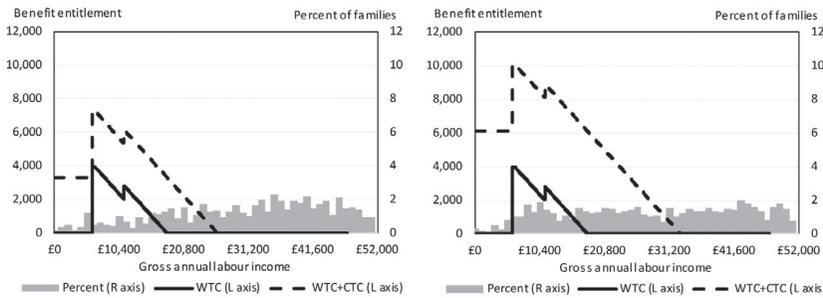
Lone parent (1 child = left, 2+ children = right)



Cohabiting (1 child = left, 2+ children = right)



Married (1 child = left, 2+ children = right)



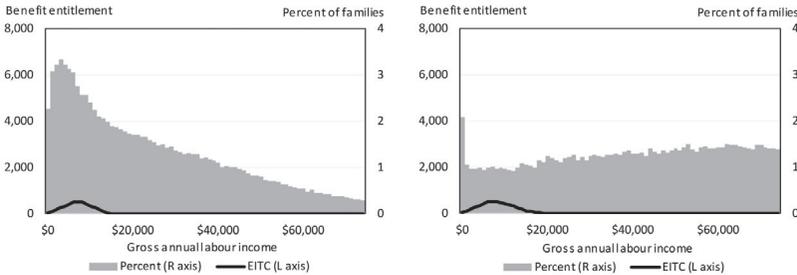
Note: Shares of families with annual earnings above £52,000 are 4 per cent for both lone parents with 1 child and lone parents with 2+ children; 24 per cent and 21 per cent (respectively) for cohabiting couples with 1 child and 2+ children; 44 per cent and 41 per cent (respectively) for married couples with 1 child and 2+ children.

(Continued)

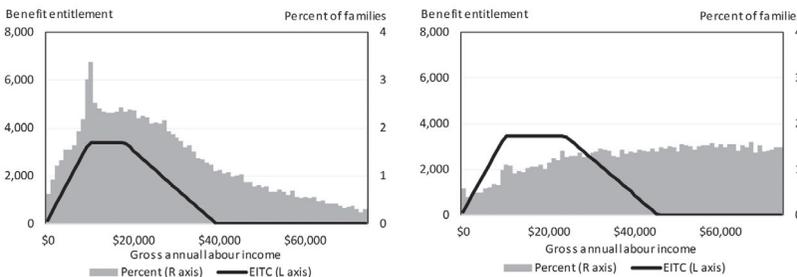
FIGURE 6
Continued

Panel B. US

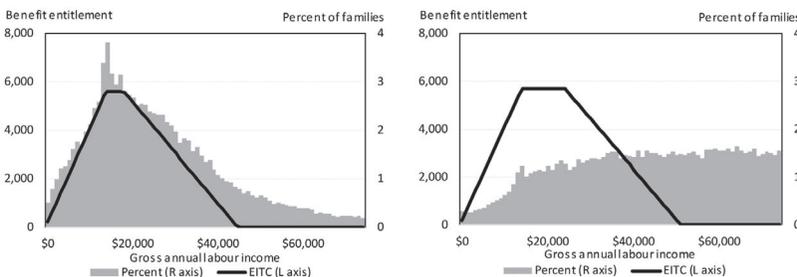
No children (single = left, married = right)



1 child (single = left, married = right)



2+ children (single = left, married = right)



Note: Shares of families with annual earnings above \$75,000 are 7.4 per cent and 46.1 per cent (respectively) for single people and married people with no children, 7.0 per cent and 47.4 per cent (respectively) for single people and married people with 1 child, and 4.5 per cent and 49.9 per cent (respectively) for single people and married people with 2+ children.

Source:

Schedules: as for Figure 1.

Earnings distributions: UK calculations from Family Resources Survey, 2016–17, for those with positive earnings. US calculations from Internal Revenue Service, Statistics of Income, public-use micro data (2012). US dollar amounts adjusted for inflation using the CPI-U-RS.

standard negative income tax, or a means-tested safety-net programme, would discourage labour supply, and so household incomes would rise by less than government spending on the programme. A more formal argument is found in Saez (2002), who shows how in-work programmes could form part of the optimal tax schedule if agents are sufficiently responsive at the extensive margin. Alternative economic justifications might rest on there being externalities to society to having parents being in work or on there being a failure by individuals to appreciate the long-run payoffs to being in work.

In the UK, the large expansion of the role of in-work credits, as well as two of the three structural reforms, came about under the Labour government of 1997 to 2001 (WTC and CTC were introduced in 2003, but the policy had been set out in advance of the 2001 general election). The Labour government of 1997 had a strong work-first narrative: its election manifesto stated baldly that ‘the best way to tackle poverty is to help people into jobs’,³⁶ with variants being ‘work is the best route out of poverty’ or ‘work as the best form of welfare’.³⁷ This was seen at the time as part of Labour’s ‘third way’ approach to welfare reform, which was ‘responsive to criticism from the right, but without abandoning the principles of the founders of the social democratic welfare state’.³⁸ Arguably, though, this rhetoric was more a justification for a separate set of reforms to make activation and conditionality a more important part of welfare policy.³⁹ Instead, tax credits were seen as a way to ‘make work pay’, something that was seen as important to ensure both that a sufficient financial incentive to work existed, especially for families with children (at the time, lone parents could receive welfare benefits with no obligation to look for work until their children reached the age of 16), and that being in work should lead to a better standard of living than not working, out of a sense of fairness.

Yet, after just over two years, the narrative from HM Treasury changed from one about encouraging work to one about supporting families: the fifth of its reports on *The Modernisation of Britain’s Tax and Benefit System* was titled ‘Supporting children through the tax and benefit system’ and, while suggesting that the government needed to ‘ensure that the tax and benefit policies support and reward work’, also said that the policy approach would ‘provide direct financial support to all families recognising the extra costs of children’. The

³⁶Labour Party, 1997.

³⁷Hills, 2002.

³⁸From Hills and Waldfogel (2004). The ‘third way’ approach generally was seen as an approach that was different both from European social democratic approaches and from US-style economically liberal, free-market approaches (see Giddens (2000), for example).

³⁹See Walker and Wiseman (2003), for example.

subsequent policy measures have been seen as a comprehensive assault on child poverty regardless of parental employment status.⁴⁰

The EITC has had bipartisan support, having been expanded by both Republican and Democratic administrations. This reflects a preference, historically, among median voters, for greater support among working than among non-working poor. In the US, Bill Clinton ran in 1991 on the slogan 'if you work you will not be poor', and the expansion of the EITC played a central role in the Clinton presidency. Also during the Clinton years, the US reformed cash welfare, adding work requirements and time limits and ultimately leading to a large reduction in the role of cash welfare in the US.⁴¹

4. Discussion

This section has compared the in-work credit programmes in the UK and the US, in terms of their generosity in the present day, and how this has changed over time. It has also given an overview of the different labour market contexts in which the programmes operate.

We do not claim that these are identical programmes serving identical populations in anything like identical institutional or labour market contexts. One of the key differences is that the UK has tended to provide cash benefits to non-working families with children that are considerably more generous than what is available in the US, as shown in Figures A1 and A2 in the online appendix. As a result, in the UK, the support paid to in-work families also needs to be generous to ensure there is still a financial gain to work. In contrast, the EITC's high phase-in rate, in combination with a weak out-of-work safety net, leads to incentives to enter work that are far stronger than in the UK. This difference may partially explain that, compared with the UK, employment rates amongst lone parents in the US are high, but relative poverty rates in the US also remain high. Another difference is the much higher phase-out or withdrawal rate in the UK: this means that there is more potential for discouraging work among those in the labour market. Overall, as we discuss below, we have robust research findings that in-work credits in both countries increase labour supply at the extensive margin, especially of lone parents, with very modest effects on the intensive margin of labour supply. But research to date has not yielded any conclusions about whether these differences in programme design have material differences on the resulting labour supply behaviour.

Both countries provide only a small credit for those without children, which in both countries accounts for less than 5 per cent of all spending on in-work credits. The reasons for this very low spend are different in the two countries:

⁴⁰See, for example, Brewer et al. (2010) or Waldfogel (2010).

⁴¹Bitler and Hoynes, 2016.

in the UK, WTC for those without children is less generous than the total value of in-work support for those with children, but additionally the take-up rate for those without children is considerably lower than amongst families with children. In the US, the take-up rate of the EITC amongst those without children is reasonably high, and those without children make up a quarter of all EITC recipients, but the maximum entitlement to EITC for those without children is about an order of magnitude less generous than the credit for those with children (as shown in Figure 2).

IV. What impacts have the programmes had?

Given the explicit aims of the programmes, most research has looked at the impact of in-work credits on labour market outcomes or assessed their effectiveness as an anti-poverty programme. A smaller strand has looked at the impact of the programmes on family structures and fertility. A few papers have assessed the impacts of the EITC on children's outcomes. We summarise these below.⁴²

1. Labour market

Using a simple static labour supply model, compared with a world with no in-work credits (and ignoring the way that in-work credits in the UK subsidise spending on formal childcare), both the in-work credits in the UK and the EITC alter financial incentives to work in the following way:

- (a) The main earner in eligible families (the lone parent or the primary earner in a married couple) has a stronger incentive to work compared with not working. In the case of the UK, the credit increases the incentive to work at least the minimum number of hours required. Higher credit entitlements increase this effect.

⁴²It is notable that there has been little research on the labour supply or employment effects of in-work credits in the UK in the past decade, and almost none that relates explicitly to the post-2003 regime (i.e. to the Child and Working Tax Credits). This is partly due to the absence of large reforms to the tax credit schedule between 2003 and 2011 (such as occurred between October 1999 and April 2002), and to the fact that the post-2011 reforms to tax credits took place alongside a general programme of cutbacks to welfare programmes, making identification problematic for research designs that rely on comparing affected with unaffected groups. Additionally, research designs based on a more structural approach became a little less compelling after the 2003 reforms because entitlements to the Child and Working Tax Credits depend, in effect, on a complicated function of the current tax year's and the previous tax year's earnings and family circumstances. This makes it hard to use typical household survey data to estimate what families would be entitled to; it also highlights that it is important to understand how families form their expectations over how much they will receive. Additionally, there has been no research on the labour supply implications of Universal Credit for families with children, mainly reflecting that, at the time of writing (Summer 2019), very few families with children were in receipt.

- (b) The phase-out range of the credits lowers the after-tax wage, which leads to a reduction in incentives at the intensive margin of work for the main earner. Higher credit entitlements, whether through higher maximums or reduced phase-out rates, extend the reach of the credits to families on higher earnings, reducing intensive-margin labour supply for the newly eligible.
- (c) The impact on the labour supply of secondary earners in eligible families is ambiguous, but overall they are expected to experience a weakening of the incentive to work compared with not working, and a weaker incentive to earn more.⁴³

A considerable body of research has assessed these predictions.

In the UK, the research shows that the additional generosity of WFTC over FC increased lone-parent employment by 4–5 percentage points.⁴⁴ Using longitudinal data, Francesconi and van der Klaauw (2007), Blundell, Brewer and Francesconi (2008) and Gregg, Harkness and Smith (2009) attribute this to an increase in job entry rates, an increase in hours worked by those already in work, and the fact that women were less likely to stop work when they became a lone-parent family through family breakdown.⁴⁵

Theory gives an ambiguous prediction for the impact of expanding in-work credits on the labour force participation and hours worked of women in couples: the way that incentives to work at all or to work more change depends on the potential earnings of both spouses. Brewer et al. (2006) suggest that the employment rate of women in couples was largely unaffected by WFTC. Francesconi, Rainer and van der Klaauw (2009) find a very small increase and they also find evidence of higher employment and hours worked among women whose partners do not work. This last finding is in line with point (a) above, but there are very few couples with children where the man does not work (or works at a very low level), and so the overall impact is very small. The working paper version of Brewer et al. (2006)⁴⁶ shows that WFTC was expected to encourage some women in couples to work

⁴³In the US, some secondary earners may experience an increase in the incentive to work if the primary earner has earnings sufficiently low to place the household in the phase-in portion of the schedule. See Eissa and Hoynes (2004) for more discussion of the incentives for secondary earners.

⁴⁴See Brewer et al. (2009), who summarise results from Brewer et al. (2006); Francesconi and van der Klaauw (2007); Francesconi, Rainer and van der Klaauw (2009); and Gregg, Harkness and Smith (2009). Brewer and Browne (2006) compare (early versions of) these studies in detail. See also Blundell and Shephard (2012). Note that Azmat (2014) argues that some of these studies overestimated the impact by not allowing for differential trends in labour market behaviour of women with and without children.

⁴⁵HM Treasury (2008) estimates the impact of WTC for those without children, comparing employment rates of those just above and just below the age 25 cut-off. But the estimated impacts imply that the majority of WTC recipients aged 25–29 would not have worked in the absence of WTC, which would be a very low level of deadweight for an in-work credit (see Brewer (2009)).

⁴⁶Brewer et al., 2003.

more and some to work less – fully in line with points (b) and (c) above – but both effects were small in magnitude and they broadly cancelled out in aggregate.

For the US, there is a large body of research that confirms and quantifies these predictions.⁴⁷ Most studies take a quasi-experimental approach leveraging the variation across tax regimes and family size in the credit, using women without children as controls. The 1993 expansion provides a particularly attractive policy reform because it represents the largest expansion of the credit in its history, and the expansion for families with two or more children was much larger than the expansion for families with one child (thus allowing for a comparison among single women with children, comparing those with two or more children and those with one child). On the other hand, the 1993 expansion occurred during a period of broader changes including welfare reform and a very strong labour market.⁴⁸

The evidence shows that the EITC leads to substantial increases in employment for lone mothers.⁴⁹ For example, Meyer and Rosenbaum (2001) find that the EITC raised labour force participation by 7.2 percentage points for single women with children relative to those without children between 1984 and 1996. Hoynes and Patel (2018) find that the 1993 expansion increased employment by 6.1 percentage points, with larger effects for women with two or more children. In contrast, there is less consistent evidence of the effect of the EITC on the intensive margin of labour supply, though studies do show that workers adjust to maximise the credit along the phase-in region.⁵⁰ There are fewer studies of married couples, but the available evidence shows that the EITC leads to small reductions in the employment of married women, consistent with the predictions above, and there is little evidence of any effects on men.⁵¹

The EITC is the largest anti-poverty programme for children in the US. Fox (2018) performs a simple static simulation (assuming no changes in behaviour) that shows that more than 4 million children in 2017 were raised from poverty due to the EITC and the (US) Child Tax Credit, although Jones and Ziliak (2019) suggest that data issues with the Current Population Survey mean that this could be an overestimate. On the other hand, Hoynes and Patel (2018) show that static estimates of the EITC's anti-poverty effect will understate the truth because the EITC also leads to poverty-reducing increases in earnings, as well as the additional income from the credit amount (net of reductions in out-of-work benefits). The same paper finds that the 1993 expansion of

⁴⁷See reviews by Hotz and Scholz (2003), Eissa and Hoynes (2006a), Nichols and Rothstein (2016) and Hoynes and Rothstein (2017).

⁴⁸Blank, 2001; Hoynes and Patel, 2018.

⁴⁹Eissa and Liebman, 1996; Meyer and Rosenbaum, 2000 and 2001.

⁵⁰Saez, 2010; Chetty, Friedman and Saez, 2013; Chetty and Saez, 2013.

⁵¹Eissa and Hoynes, 2004 and 2006b.

the EITC led to a 7 percentage point reduction in poverty rates among low-educated single-mother families, and fully half of this reduction is due to the behavioural response of labour supply. Surprisingly, no equivalent calculation has been done for the UK programmes.

2. Family structures

As Brewer et al. (2009) and Eissa and Hoynes (2006a) discuss, simple economic models give ambiguous predictions about how in-work credits might affect the processes of family formation and dissolution. While not explicit goals of these tax credits, these incentives are inherent in a credit administered through a family-based tax system and tied to number of children. In particular, for families with children in the UK, entitlements to FC, WFTC and WTC were relatively more generous for lone-parent families than for couples with children, and this is the explanation given by Francesconi and van der Klaauw (2007), Anderberg (2008) and Francesconi, Rainer and van der Klaauw (2009) for why low-income families with children were more likely to separate (and lone parents were less likely to marry) under WFTC than under FC.⁵² Brewer and Shaw (2006) show that one implication of the relative generosity towards lone-parent families might be to lead some unmarried but cohabiting couples to claim tax credits as if the children were living in a lone-parent family; HM Revenue and Customs (2018c) estimates that £0.3 billion a year is lost to fraud or mistakes of this type. Brewer, Ratcliffe and Smith (2012) find that fertility rose amongst low-education families through the 1999–2003 period, but this cannot be attributed exclusively to reforms to in-work credits (and the research was not able to distinguish between timing and tempo effects).

Tax credits in the UK unambiguously create incentives for low-income two-earner couples to avoid living together.⁵³ The same is true in the US, except that the relevant margin is whether a couple marries rather than cohabits or lives apart. The EITC also creates incentives for low-income one-earner couples to marry rather than to live apart or cohabit. The EITC therefore, like ordinary income taxes in the US, creates marriage penalties for some and marriage bonuses for others.⁵⁴ Additionally, because CTC in the UK and both the CTC and the EITC in the US increase with the number of children (up to the second child for the UK CTC from 2017), they may incentivise additional births.

In the US, there are a handful of studies that examine the effect of the EITC on marriage.⁵⁵ The empirical evidence is largely inconclusive and any effects

⁵²Entitlement to these programmes depends or depended on the number of children and total family earnings, but not directly on the number of adults.

⁵³Adam and Brewer, 2010.

⁵⁴Eissa and Hoynes, 2000.

⁵⁵For example, Ellwood (2000), Rosenbaum (2000), Herbst (2011) and Michelmore (2018).

are quite small. There is less evidence on the effects of the EITC on fertility,⁵⁶ but again the results suggest small effects.

3. Family and child well-being

Researchers have not yet found a compelling research design with which to assess the impact of in-work credits in the UK on health and well-being outcomes across all recipient families. Gregg, Harkness and Smith (2009) focus on families who move into lone parenthood (through parental separation) and find that the (normally) adverse impacts such a move has on the mother and the children are smaller under WFTC than under FC; they attribute this to the additional generosity, but in fact their method does not allow them to isolate the causal impact of WFTC from the effect of the many other reforms at the time that benefited lone-parent families.

Most of the evidence on health and well-being comes from studies on the EITC. As shown by Hoynes and Patel (2018), the EITC leads to an increase in after-tax-and-transfer income as a result of an increase in employment and the government outlay from the EITC. This is important as it establishes a strong ‘first stage’ for the effect of the EITC on family resources, which creates the potential for downstream effects on family and child well-being.⁵⁷ Additionally, though, increases in maternal employment may have direct effects on children – potentially negative to the extent that the child attends low-quality childcare or receives fewer time investments from his or her parents. Thus any effect of the EITC on family and child well-being comes through the potential dual ‘treatment’.

Several studies find that the EITC leads to increases in infant health, including an increase in average birth weight⁵⁸ and a reduction in low birth weight.⁵⁹ Evans and Garthwaite (2014) find that the EITC leads to improvements in maternal health, including reducing the incidence of risky biomarkers and improving mental health. Additionally, there are several studies documenting a link between the EITC and children’s cognitive outcomes⁶⁰ and educational attainment.⁶¹

V. What more would we like to know?

In this section, we highlight areas where we think new research has the potential to inform policy debates and discussions.

⁵⁶Baughman and Dickert-Conlin, 2009.

⁵⁷Hoynes and Schanzenbach, 2018.

⁵⁸Baker, 2008; Strully, Rehkopf and Xuan, 2010.

⁵⁹Hoynes, Miller and Simon, 2015.

⁶⁰Chetty, Friedman and Rockoff, 2011; Dahl and Lochner, 2012.

⁶¹Bastian and Micheltore, 2018; Manoli and Turner, 2018.

1. Paying in-work support to those with no children

In the UK, low-income working adults aged 25 and over without children have been able to claim WTC since 2003 (although only if they work full time), and maximum entitlement is considerably higher than what those without children get from the EITC (Table 1). Despite this, programme participation (i.e. the fraction of those who are entitled who actually receive WTC) is very low, at 31 per cent for this group. The move from tax credits to Universal Credit continues this policy shift, as adults without children aged under 25 or working less than full-time hours will become eligible to in-work support for the first time. In the US, although low-income working adults aged 25–64 without qualifying children have been able to claim the EITC since 1994, as Figure 2 shows, maximum entitlements for those without children are extremely low compared with maximum entitlements for those with children.

We know much less about how in-work credits affect those without children. In part, this reflects that the existing programmes are small (in the US) or payable to small numbers of individuals (in the UK). In fact, many labour supply studies leverage this variation in credit generosity by using adults without children as an explicit or implicit comparison group. In principle, in-work credits affect choices about how much labour to supply in the same way that they do for those with children, though much more weakly given the low amount of the credit. WTC and EITC (weakly) encourage participation for single people at the extensive margin, but (mostly) discourage it (weakly) at the intensive margin; for couples, WTC and EITC (weakly) encourage participation at the extensive margin for one earner, but (weakly) discourage it in all other regards. But robust evidence on how much in-work credits do affect labour supply decisions of those without children would help inform ongoing debates about (for example) the merits of paying Universal Credit to those without children and in work, or whether to level up the EITC for those without children to something in line with that for those with children.⁶²

2. Assessment periods and payment frequencies

Most income transfer programmes are provided at the monthly frequency, to assist in making ends meet throughout the year. However, the tax credits have varied in their payment frequencies.

The UK has tried different systems for assessing and paying tax credits. Entitlements to FC and WFTC were based on past earnings (typically assessed over 2–3 months; those beginning a new job had to provide evidence of what

⁶²The MDRC Paycheck Plus experiment implements a randomised experimental design to estimate the impacts of a larger EITC (up to \$2,000 compared with \$519 under current law) for childless workers. The final report for the experiment in New York City shows modest increases in employment rates, with effects concentrated among women and the more disadvantaged men (Miller et al., 2018).

their earnings would be) and family circumstances at the time of applying. The entitlement was then fixed for 6 months, regardless of any subsequent change in circumstances, and payments were made regularly over this period. From 2003, entitlements to the Child and Working Tax Credits were initially intended to depend on annual income to stress their link with the income tax system. But UK policymakers did not want to make tax credit recipients wait until after the end of the tax year to receive their entitlements, and so payments were made during the current year based on an estimate of the current year's income; entitlement was then corrected once the tax year had ended. The downside of this approach was that, if the initial estimate of earnings was too low, or family circumstances changed in ways that reduced entitlement, then the end-of-year correction could require recipients to pay back tax credits that they had already received (these were known as 'overpayments'). Continual political outcry over the extent of overpayments led the government to let claimants effectively keep overpayments: between 2006 and 2011, if the initial estimate of earnings was too low, then claimants could ignore the initial £25,000 difference between the current year's finalised income and the previous estimate. For most people, this meant that the amount of tax credits that they would be entitled to in a year depended on $\text{Max}\{\text{last year's income}, \text{this year's income} - £25,000\}$.⁶³ At the same time, any overpayments that did occur (these usually happened through changes in family circumstances not being reported immediately) were allowed to be repaid out of future tax credit entitlement, and the maximum deduction that could be made from future entitlement was capped, initially at 25 per cent, but later reduced to 10 per cent for the poorest recipients.⁶⁴ Universal Credit uses a third model, where payments are made monthly depending on the previous month's earnings (and after a 7-day window for processing) as reported by employers. At the time of writing, the government is being criticised for choosing this design; the most common complaints are that payments are highly dependent on employers reporting earnings on time and correctly, and that monthly assessment periods lead some workers to appear to have fluctuating earnings (for example, people paid fortnightly).⁶⁵

The different choices made by successive UK governments reveal the inherent trade-offs involved when deciding over what period to assess income, and how frequently to make the payments, that are common to any income-related cash transfer programme. Paying credits in arrears means that all the information needed to assess entitlements is known and potentially verifiable.

⁶³This disregard was successively cut from April 2011 and is now £2,500. A further complication was that entitlement was always based on the current, and not the past year's, family circumstances, and so any delay in reporting a change in family circumstances that would reduce entitlements would usually lead to an overpayment.

⁶⁴See Brewer (2006). Current repayment limits can be seen at <https://www.gov.uk/tax-credits-overpayments/repay-your-tax-credits>.

⁶⁵Butler, 2018.

The downside is that the money that claimants receive now will relate to lagged, not current, circumstances, and so will be less well targeted than it could be. This can be minimised by having short assessment periods (as for Universal Credit), but this increases administration and compliance costs, and, given the non-linearities in the calculation of entitlement, can penalise those with fluctuating earnings. The idea of basing entitlements on an estimate of current circumstances was the UK's attempt to sidestep this trade-off, but it merely introduced another policy dilemma of what to do if the initial estimates proved wrong, or of how aggressively to pursue or claw back overpayments. Even a generous regime of allowing recipients to repay tax credit debt out of future entitlements, and with a zero nominal interest rate, did not seem palatable to politicians or the public.

In contrast, eligibility and credit amount for the EITC have always been based on earnings over the calendar (tax) year. From 1975 through 2011, a household could opt into the Advance EITC and receive the tax credit throughout the year as part of its wage bill, but very few households took up this option. Thus, throughout the life of the EITC, most recipients (and all recipients now) receive the credit as an annual payment, as a tax refund, mostly in February and March that relates to their earnings over the previous calendar year. Many scholars and policymakers argue that households would be better off to receive the EITC throughout the year. However, recipients have satisfaction with the annual credit because it provides incentives for 'forced saving' and protects them from the risk of owing taxes at the end of the year if circumstances change.⁶⁶

Nonetheless, the annual payment may affect how households spend the income. Research shows that the EITC leads to more durable purchases in the quarter when refunds are usually received⁶⁷ and, using survey evidence at tax time, recipients report devoting some of the refund to savings or paying off bills.⁶⁸ This is all consistent with the ethnographic evidence that households view the annual EITC as a refund as a 'forced saving' device.⁶⁹

3. In-work credits and secondary earners

As discussed in Section IV, in-work credits based on family income will weaken work incentives for most secondary earners at both the extensive and intensive margins (the exception is secondary earners for whom the primary earner is not working or only working at a very low level). In the UK, many working poor families with children consist of couples with one worker and, where these families are receiving in-work credits, the withdrawal rate that

⁶⁶Halpern-Meekin et al., 2015.

⁶⁷Barrow and McGranahan, 2000; Goodman-Bacon and McGranahan, 2008.

⁶⁸Smeeding, Ross Phillips and O'Connor, 2000.

⁶⁹Halpern-Meekin et al., 2015.

applies to the secondary earner from the very first pound that is earned is high: it was 70 per cent under FC and 55 per cent under WFTC; it is now 41 per cent under tax credits and will be 63 per cent under Universal Credit. This has led to substantial concerns about work disincentives for secondary earners, despite the lack of evidence that the magnitudes are large. (In the US, the relatively low phase-out rate, at 21 per cent, combined with the higher earnings for married couple households (see Panel B of Figure 6), suggests that any weakening of work incentives for this group by the EITC would be mild.)

There are several approaches to address this concern, including an increase in the maximum entitlement to WTC, a reduction in the phase-out rate, or an increase in the credit for two-earner families. All of these involve trade-offs, and would affect work incentives in a variety of ways. An increase in the maximum entitlement would strengthen incentives for the primary earner to be in work, but would further weaken the incentive for the second adult to be in work (through an income effect), and would bring more couples into the phase-out region of WTC and CTC, weakening incentives at the margin. A reduction in the phase-out rate of WTC and CTC would reduce the disincentive to work that affects secondary earners and potential secondary earners already receiving in-work support, but would also bring more couples into the phase-out region of WTC and CTC, weakening incentives for those newly eligible. An additional element to WTC that is conditional on both adults in a family working, as considered in Brewer (2007), could incentivise the second earner directly to work but would do nothing to help those couples unable or unwilling to have two adults in work, and this too would also bring more couples into the phase-out region of WTC and CTC.

As we discussed earlier, although there are robust research findings that in-work credits in both countries increase lone parents' labour supply, research to date has been less clear about the comparative impacts on labour supply of, say, changing the maximum entitlements to the credits or altering the phase-out rate, particularly on those in couples. Compared with 2000–02 – which is when the UK research on the impact on couples dates from – a greater fraction of tax credit recipients are now couples. Although the summary of the UK evidence on the impact on couples would probably conclude that any impact is small, compelling recent evidence would help inform policy choices, given the inevitable trade-offs when designing a credit for couples.

4. Limitations to redistributing through the tax system: tax incidence

Given that in-work credits encourage work and increase labour force participation, standard tax incidence models suggest that the credit will be shared between the buyers and sellers of labour.⁷⁰ Specifically, the credit may

⁷⁰Leigh, 2010; Rothstein, 2008 and 2010.

reduce pre-tax wages, allowing employers to capture a portion of the money spent on the tax credit. Additionally, workers who do not receive the tax credit, but compete in the same labour market as those who do, will also experience a reduction in pre-tax wages. The reductions in pre-tax wages will be more severe in settings with low minimum wages. The only UK study⁷¹ draws on the experience of WFTC, under which employers knew which of their employees were receiving an in-work credit. That study finds that wages of claimant workers were lowered by 30 per cent of the tax credit, or 7 per cent of the wage, and that there was a smaller negative spillover effect onto the wages of claimant and non-claimant workers. In the US, there is limited evidence but it is suggestive of potentially significant incidence effects reducing gains to EITC recipients.⁷² But incidence remains an under-studied topic, and one that may be very important for the consideration of expansions of in-work support.⁷³

VI. Conclusions

This paper has taken a comparative perspective to assess in-work credits in the UK and the US, two countries that have had credits for low-income working families for over 40 years, and which were the stated inspiration for much of the international policy learning and spread of in-work credits during the 2000s. We have reviewed the role that in-work credits play in the UK and the US, examined what is known and remains to be known about their impacts and distributional consequences, and considered possibilities for reform.

A direct comparison of working tax credits in the UK and the US shows that credits in the UK are considerably more generous. The in-work credits in both countries create incentives to enter work, though the incentives are stronger in the US due to lower out-of-work benefits and a steeper phase-in of in-work credits. As a result, relative poverty rates for families with children are considerably lower in the UK but employment rates amongst lone parents are much higher in the US.

From (at least) the early 1990s to 2011, the UK saw a considerable increase over time in the reach of in-work credits and their cost to government. However, in-work credits do not seem to have all-around political support, and tax credits did not escape the cuts that have hit all parts of government spending since 2010. On the other hand, the history of the EITC in the US has been one of growth in generosity and reach over time, not at an even rate, but with

⁷¹Azmat, 2019.

⁷²Leigh, 2010; Rothstein, 2008 and 2010.

⁷³Another potential limitation to redistributing through the tax system is the potential for non-compliance. In the US, the concerns largely exist around two elements with imperfect third-party reporting: who should be claiming the child for the tax credit and self-employment earnings. Overpayments due to these two elements are estimated at about 30 per cent of the total cost of the EITC (Internal Revenue Service, 2014).

bipartisan support. By 2016, 44 per cent of tax filers with children received EITC payments. Its popularity amongst policymakers of all stripes is due to the fact that it is a programme that supports families with children and alleviates poverty without undermining work incentives.

There was a period (in the late 1990s and early 2000s) when the policy aims and rhetoric around in-work credits in the UK closely mirrored those in the US, and there was explicit policy learning from the US to the UK. But policy thinking and political priorities have changed, and the UK has twice since overhauled entirely the way it pays support to low-income working families. The most recent of these reforms is to bring in Universal Credit; when it is fully rolled out, the UK will no longer have an identifiable in-work credit, although it will continue to pay cash support to low-income working families with the aim of strengthening the reward to work. One thing that 30 years of reforms in the UK have exposed is the trade-offs that affect any income-related programme around how to assess claimants' income and at what frequency to make the payments. Having decided that the EITC model of paying support annually in arrears would be inappropriate, successive UK policymakers have discovered that no income-related programme can provide regular, reliable payments that respond quickly to families' needs whilst also minimising the risk to the taxpayer and minimising arbitrary volatility for working families. The UK experience also highlights the limitations of focusing narrowly on the pure work-contingent programmes without also considering other financial support available to low-income working families, and being mindful of the support available to non-working families.

The research evidence on in-work tax credits, which has been comprehensively reviewed elsewhere, shows that both in-work support in the UK and the EITC in the US increased employment amongst lone parents, but had much less impact on women and men in couples. In the UK, the expansion of in-work credits in the late 1990s and early 2000s was linked to a rise in lone parenthood amongst those who already have children (i.e. by affecting partnership formation and dissolution amongst those who have children, and not because of a rise in births amongst single women). In the US, EITC has been related to improvements in mothers' and children's health and well-being. The evidence remains relatively weak in key areas, such as how the effective incidence of in-work credits is split between recipient and non-recipient workers and employers, and to what extent in-work credits affect those without children and secondary earners. And, although we know that expanding in-work support increases employment amongst lone parents, we know less about the implications for labour supply of the differences in the structure of in-work credits in the UK and the US. More research is needed in all these areas.

Where next for policy? In the UK, there has been relatively little policy debate or academic discussion about the best way to structure in-work support

for several years. There are three main reasons. First, UK governments since 2010 have shown no desire to increase spending on tax credits or welfare benefits, and the political narrative of austerity continues at the time of writing. Second, there seems little point making changes to CTC and WTC if they are to be replaced by Universal Credit in a few years. Most importantly, though, political debates about in-work support have been dominated by the operational difficulties that have accompanied the introduction and roll-out of Universal Credit (the first government documents imagined that it would be fully rolled out by 2017; the latest plan at the time of writing envisages this happening by 2023). But policymakers should not ignore these key design issues forever. At some point, debate will surely turn to how best to use in-work credits to reduce the growing rates of in-work poverty. But whether this should be done by increasing maximum entitlements or reducing phase-out rates or incentivising secondary earners explicitly is less clear, and the debate should be informed by economic analysis. In the US, there are debates over whether the credit should be made more generous for those without children and whether it should be expanded further for families with children, as well as the limitation of conditioning the main anti-poverty programme on employment (and the commensurate higher poverty rates). Research evidence should inform these debates too.

Supporting information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

- Appendix

References

- Adam, S. and Brewer, M. (2010), 'Couple penalties and premiums in the UK tax and benefit system', Institute for Fiscal Studies, Briefing Note no. 102.
- Alvaredo, F., Chancel, L., Piketty, T., Saez, E. and Zucman, G. (2018), *The World Inequality Report*, <https://wir2018.wid.world>.
- Anderberg, D. (2008), 'Tax credits, income support, and partnership decisions', *International Tax and Public Finance*, vol. 15, pp. 499–526.
- Autor, D. (2014), 'Skills, education, and the rise of earnings inequality among the "other 99 per cent"', *Science*, vol. 344, pp. 843–51.
- Azmat, G. (2014), 'Evaluating the effectiveness of in-work tax credits', *Empirical Economics*, vol. 46, pp. 397–425.
- (2019), 'Incidence, salience and spillovers: the direct and indirect effects of tax credits on wages', *Quantitative Economics*, vol. 10, pp. 239–73.
- Baker, K. (2008), 'Do cash transfer programs improve infant health: evidence from the 1993 expansion of the Earned Income Tax Credit', https://economics.nd.edu/assets/24011/baker_paper.pdf.

- Barrow, L. and McGranahan, L. (2000), 'The effects of the Earned Income Tax Credit on the seasonality of household expenditures', *National Tax Journal*, vol. 53, pp. 1211–43.
- Bastian, J. and Michelmores, K. (2018), 'The long-term impact of the Earned Income Tax Credit on children's education and employment outcomes', *Journal of Labor Economics*, vol. 36, pp. 1127–63.
- Baughman, R. and Dickert-Conlin, S. (2009), 'The Earned Income Tax Credit and fertility', *Journal of Population Economics*, vol. 22, pp. 537–63.
- Bitler, M. and Hoynes, H. (2010), 'The state of the safety net in the post-welfare reform era', *Brookings Papers on Economic Activity*, Fall 2010, pp. 71–127.
- and — (2016), 'Strengthening Temporary Assistance for Needy Families', Policy Proposal 2016-04, Washington DC: The Hamilton Project.
- , — and Kuka, E. (2017), 'Child poverty, the Great Recession, and the social safety net in the United States', *Journal of Policy Analysis and Management*, vol. 36, pp. 358–89.
- Blank, R. (2001), 'Declining caseloads/increased work: what can we conclude about the effects of welfare reform?', *Economic Policy Review*, vol. 7, no. 2, pp. 25–36.
- Blundell, R., Brewer, M. and Francesconi, M. (2008), 'Job changes and hours changes: understanding the path of labor supply adjustment', *Journal of Labor Economics*, vol. 26, pp. 421–53.
- , Duncan, A., McCrae, J. and Meghir, C. (2000), 'The labour market impact of the Working Families' Tax Credit', *Fiscal Studies*, vol. 21, pp. 75–103.
- and Hoynes, H. (2004), 'Has "in-work" benefit reform helped the labour market?', in D. Card, R. Blundell and R. Freeman (eds), *Seeking a Premier Economy: The Economic Effects of British Economic Reforms, 1980–2000*, Chicago, IL: University of Chicago Press.
- , Joyce, R., Norris Keiller, A. and Ziliak, J. (2018), 'Income inequality and the labour market in Britain and the US', *Journal of Public Economics*, vol. 162, pp. 48–62.
- and Shephard, A. (2012), 'Employment, hours of work and the optimal taxation of low-income families', *Review of Economic Studies*, vol. 79, pp. 481–510.
- Brewer, M. (2001), 'Comparing in-work benefits and the reward to work for low-income families with children in the US and UK', *Fiscal Studies*, vol. 22, pp. 41–77.
- (2003), 'The new tax credits', Institute for Fiscal Studies, Briefing Note no. 35.
- (2006), 'Tax credits: fixed or beyond repair?', in R. Chote, C. Emmerson, R. Harrison and D. Miles (eds), *The IFS Green Budget: January 2006*, London: Institute for Fiscal Studies.
- (2007), 'Supporting couples with children through the tax system', in R. Chote, C. Emmerson, A. Leicester and D. Miles (eds), *The IFS Green Budget: January 2007*, London: Institute for Fiscal Studies.
- (2009), 'How do income support systems in the UK affect labour force participation?', IFAU, Working Paper no. 2009:27.
- and Browne, J. (2006), 'The effect of the working families' tax credit on labour market participation', Institute for Fiscal Studies, Briefing Note no. 69.
- , —, Chowdry, H. and Crawford, C. (2011), 'The impact of a time-limited, targeted in-work benefit in the medium-term: an evaluation of In Work Credit', Institute for Fiscal Studies, Working Paper no. 11/14.
- , — and Jin, W. (2012), 'Universal Credit: a preliminary analysis of its impact on incomes and work incentives', *Fiscal Studies*, vol. 33, pp. 39–71.
- , —, Joyce, R. and Sibieta, L. (2010), 'Child poverty in the UK since 1998–99: lessons from the past decade', Institute for Fiscal Studies, Working Paper no. 10/23.
- , Clark, T. and Wakefield, M. (2002), 'Social security in the UK under New Labour: what did the Third Way mean for welfare reform?', *Fiscal Studies*, vol. 23, pp. 505–37.
- , Duncan, A., Shephard, A. and Suárez, M. (2003), 'Did Working Families' Tax Credit work? Analysing the impact of in-work support on labour supply and programme participation', mimeo, <https://www.ifs.org.uk/publications/2546>.

- , —, — and — (2006), 'Did working families' tax credit work? The impact of in-work support on labour supply in Great Britain', *Labour Economics*, vol. 13, pp. 699–720.
- , Finch, D. and Tomlinson, D. (2017), *Universal Remedy: Ensuring Universal Credit Is Fit for Purpose*, London: Resolution Foundation.
- , Francesconi, M., Gregg, P. and Grogger, J. (2009), 'Feature: in-work benefit reform in a cross-national perspective – introduction', *Economic Journal*, vol. 119, pp. F1–14.
- , Ratcliffe, A. and Smith, S. (2012), 'Does welfare reform affect fertility? Evidence from the UK', *Journal of Population Economics*, vol. 25, pp. 245–66.
- and Shaw, J. (2006), 'How many lone parents are receiving tax credits?', Institute for Fiscal Studies, Briefing Note no. 70.
- Browne, J., Hood, A. and Joyce, R. (2016), 'The (changing) effects of universal credit', in C. Emmerson, P. Johnson and R. Joyce (eds), *The IFS Green Budget: February 2016*, London: Institute for Fiscal Studies.
- Butler, P. (2018), 'Women launch legal challenge to "irrational" universal credit system', *The Guardian*, 27 November.
- Chetty, R., Friedman, J. and Rockoff, J. (2011), *New Evidence on the Long-Term Impacts of Tax Credits*, Washington DC: US Internal Revenue Service.
- , — and Saez, E. (2013), 'Using differences in knowledge across neighborhoods to uncover the impacts of the EITC on earnings', *American Economic Review*, vol. 103, pp. 2683–721.
- and Saez, E. (2013), 'Teaching the tax code: earnings responses to an experiment with EITC recipients', *American Economic Journal: Applied Economics*, vol. 5, no. 1, pp. 1–31.
- Currie, J. (2006), 'The take-up of social benefits', in A. Auerbach, D. Card and J. Quigley (eds), *Poverty, the Distribution of Income, and Public Policy*, New York, NY: Russell Sage.
- Dahl, G. and Lochner, L. (2012), 'The impact of family income on child achievement: evidence from the Earned Income Tax Credit', *American Economic Review*, vol. 102, pp. 1927–56.
- Department for Work and Pensions (2018), 'Income-related benefits: estimates of take-up', https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/757268/income-related-benefits-estimates-of-take-up-2016-17.pdf.
- Eissa, N. and Hoynes, H. (2000), 'Explaining the fall and rise in the tax cost of marriage: the effect of tax laws and demographic trends, 1984–97', *National Tax Journal*, vol. 53, pp. 683–711.
- and — (2004), 'Taxes and the labour market participation of married couples: the Earned Income Tax Credit', *Journal of Public Economics*, vol. 88, pp. 1931–58.
- and — (2006a), 'Behavioral responses to taxes: lessons from the EITC and labor supply', in J. M. Poterba (ed.), *Tax Policy and the Economy*, vol. 20, Cambridge, MA: MIT Press.
- and — (2006b), 'The hours of work response of married couples: taxes and the Earned Income Tax Credit', in J. Agell and P. B. Sørensen (eds), *Tax Policy and Labor Market Performance*, Cambridge, MA: MIT Press.
- and Liebman, J. (1996), 'Labor supply response to the Earned Income Tax Credit', *Quarterly Journal of Economics*, vol. 111, pp. 605–37.
- Ellwood, D. (2000), 'The impact of the Earned Income Tax Credit and social policy reforms on work, marriage, and living arrangements', *National Tax Journal*, vol. 53, pp. 1063–105.
- Evans, W. and Garthwaite, C. (2014), 'Giving mom a break: the impact of higher EITC payments on maternal health', *American Economic Journal: Economic Policy*, vol. 6, no. 2, pp. 258–90.
- Fontenot, K., Semega, J. and Kollar, M. (2018), 'Income and poverty in the US: 2017', Current Population Reports, P60-263, Washington DC: US Census Bureau.
- Fox, L. (2018), 'The supplemental poverty measure: 2017', Current Population Reports, P60-265, Washington DC: US Census Bureau.

- Francesconi, M., Rainer, H. and van der Klaauw, W. (2009), 'The effects of in-work benefit reform in Britain on couples: theory and evidence', *Economic Journal*, vol. 119, pp. F66–100.
- and van der Klaauw, W. (2007), 'The socioeconomic consequences of in-work benefit reform for British lone mothers', *Journal of Human Resources*, vol. 42, pp. 1–31.
- Giddens, A. (2000), *The Third Way and Its Critics*, Cambridge: Polity Press.
- Goodman-Bacon, A. and McGranahan, L. (2008), 'How do EITC recipients spend their refunds?', *Economic Perspectives*, vol. 32, no. 2, pp. 17–32.
- Gregg, P., Harkness, S. and Smith, S. (2009), 'Welfare reform and lone parents in the UK', *Economic Journal*, vol. 119, pp. F38–65.
- Halpern-Meehin, S., Edin, K., Tach, L. and Sykes, J. (2015), *It's Not Like I'm Poor: How Working Families Make Ends Meet in a Post-Welfare World*, Berkeley, CA: University of California Press.
- Herbst, C. (2011), 'The impact of the Earned Income Tax Credit on marriage and divorce: evidence from flow data', *Population Research Policy Review*, vol. 30, pp. 101–28.
- Hills, J. (2002), 'Following or leading public opinion? Social security policy and public attitudes since 1997', *Fiscal Studies*, vol. 23, pp. 539–58.
- , Sefton, T. and Stewart, K. (eds) (2009), *Towards a More Equal Society? Poverty, Inequality and Policy since 1997*, Bristol: Policy Press.
- and Waldfoegel, J. (2004), 'A "third way" in welfare reform? Evidence from the UK', *Journal of Policy Analysis and Management*, vol. 23, pp. 765–88.
- HM Revenue and Customs (2005), 'Child and Working Tax Credits statistics: finalised annual awards, 2003–04', <https://webarchive.nationalarchives.gov.uk/20121106034049/http://www.hmrc.gov.uk/stats/personal-tax-credits/cwct-annual-0304.pdf>.
- (2006), 'Child Tax Credit and Working Tax Credit take-up rates 2003–04', https://webarchive.nationalarchives.gov.uk/20121102201034/http://www.hmrc.gov.uk/stats/personal-tax-credits/takeup_rates_2003-04_mar06.pdf.
- (2018a), 'Tax credits, Child Benefit and Guardian's Allowance', <https://www.gov.uk/government/publications/rates-and-allowances-tax-credits-child-benefit-and-guardians-allowance/tax-credits-child-benefit-and-guardians-allowance>.
- (2018b), 'Child and Working Tax Credits statistics: finalised annual awards in 2016 to 2017', <https://www.gov.uk/government/statistics/child-and-working-tax-credits-statistics-finalised-annual-awards-2016-to-2017>.
- (2018c), 'Child and Working Tax Credits error and fraud statistics 2016–17', https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/717820/Child_and_Working_Tax_Credits_Error_and_Fraud_Statistics_2016-17.pdf.
- (2018d), 'Child Benefit, Child Tax Credit and Working Tax Credit: take-up rates, 2016 to 2017', https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/763597/Child_Benefit__Child_Tax_Credit_and_Working_Tax_Credit_take-up_rates_2016_to_2017.pdf.
- HM Treasury (2008), 'Working Tax Credit and labour supply', Treasury Economic Working Paper no. 3.
- Hotz, J. and Scholz, J. K. (2003), 'The Earned Income Tax Credit', in R. Moffitt (ed.), *Means-Tested Transfer Programs in the United States*, Chicago, IL: University of Chicago Press.
- Hoynes, H., Miller, D. and Simon, D. (2015), 'Income, the Earned Income Tax Credit and infant health', *American Economic Journal: Economic Policy*, vol. 7, no. 1, pp. 172–211.
- and Patel, A. (2018), 'Effective policy for reducing poverty and inequality? The Earned Income Tax Credit and the distribution of income', *Journal of Human Resources*, vol. 53, pp. 859–90.
- and Rothstein, J. (2017), 'Tax policy toward low-income families', in A. Auerbach and K. Smetters (eds), *Economics of Tax Policy*, Oxford: Oxford University Press.

- and Schanzenbach, D. (2018), ‘Safety net investments in children’, *Brookings Papers on Economic Activity*, Spring 2018, pp. 89–150.
- and Stabile, M. (2019), ‘How do the US and Canadian social safety nets compare for women and children?’, *Journal of Labor Economics*, vol. 37, pp. S253–88.
- Immervoll, H. and Pearson, M. (2009), ‘A good time for making work pay? Taking stock of in-work benefits and related measures across the OECD’, IZA Policy Paper no. 3.
- Inland Revenue (2003a), ‘Working Families’ Tax Credit statistics: February 2003’, https://webarchive.nationalarchives.gov.uk/20110202195410/http://www.hmrc.gov.uk/wftctables/wftc_feb03.pdf.
- (2003b), ‘Working Families’ Tax Credit: estimates of take-up rates in 2002–03’, <https://webarchive.nationalarchives.gov.uk/20110202195411/http://www.hmrc.gov.uk/stats/wftc/wftc-takeup-2002-03.pdf>.
- Internal Revenue Service (2014), ‘Compliance estimates for the Earned Income Tax Credit claimed on 2006–2008 returns’, Research, Analysis & Statistics Report, Publication no. 5162.
- (2018), *Statistics of Income – 2016 Individual Income Tax Returns*, Publication no. 1304.
- and US Department of the Treasury (2013), ‘2013 EITC income limits, maximum amounts and tax law changes’.
- Jones, M. and Ziliak, J. (2019), ‘The antipoverty impact of the EITC: new estimates from survey and administrative tax records’, US Census Bureau, Center for Economic Studies, Working Paper no. 19-14.
- Kennedy, S. and Fitch, C. A. (2012), ‘Measuring cohabitation and family structure in the United States: assessing the impact of new data from the Current Population Survey’, *Demography*, vol. 49, pp. 1479–98.
- Labour Party (1997), *Britain Deserves Better*, Labour Party election manifesto, London.
- Leigh, A. (2010), ‘Who benefits from the Earned Income Tax Credit? Incidence among recipients, coworkers and firms’, *B.E. Journal of Economic Analysis & Policy*, vol. 10, issue 1.
- Machin, S. (2011), ‘Changes in UK wage inequality over the last forty years’, in P. Gregg and J. Wadsworth (eds), *The Labour Market in Winter: The State of Working Britain*, Oxford: Oxford University Press.
- Manoli, D. and Turner, N. (2018), ‘Cash-on-hand & college enrollment: evidence from population tax data and the Earned Income Tax Credit’, *American Economic Journal: Economic Policy*, vol. 10, no. 2, pp. 242–71.
- Meyer, B. and Rosenbaum, D. (2000), ‘Making single mothers work: recent tax and welfare policy and its effects’, *National Tax Journal*, vol. 53, pp. 1027–62.
- and — (2001), ‘Welfare, the Earned Income Tax Credit, and the labour supply of single mothers’, *Quarterly Journal of Economics*, vol. 116, pp. 1063–114.
- Michelmores, K. (2018), ‘The Earned Income Tax Credit and union formation: the impact of expected spouse earnings’, *Review of Economics of the Household*, vol. 16, pp. 377–406.
- Miller, C., Katz, L., Azurdia, G., Isen, A., Schultz, C. and Aloisi, K. (2018), *Boosting the Earned Income Tax Credit for Singles: Final Impact Findings from the Paycheck Plus Demonstration in New York City*, MDRC.
- Moffitt, R. (2003), ‘The Temporary Assistance for Needy Families program’, in R. Moffitt (ed.), *Means-Tested Transfer Programs*, Chicago, IL: University of Chicago Press.
- Nichols, A. and Rothstein, J. (2016), ‘The Earned Income Tax Credit’, in R. Moffitt (ed.), *Economics of Means-Tested Programs in the United States*, vol. I, National Bureau of Economic Research Conference Report, Chicago, IL: University of Chicago Press.
- OECD (undated), ‘What are equivalence scales?’, Organisation for Economic Cooperation and Development, <http://www.oecd.org/els/soc/OECD-Note-EquivalenceScales.pdf>.

- Plueger, D. (2009), 'Earned Income Tax Credit participation rate for tax year 2005', Internal Revenue Service.
- Rosenbaum, D. (2000), 'Taxes, the Earned Income Tax Credit, and marital status', mimeo.
- Rothstein, J. (2008), 'The unintended consequences of encouraging work: tax incidence and the EITC', Princeton University, Center for Economic Policy Studies, Working Paper no. 165.
- (2010), 'Is the EITC as good as an NIT? Conditional cash transfers and tax incidence', *American Economic Journal: Economic Policy*, vol. 2, no. 1, pp. 177–208.
- Saez, E. (2002), 'Optimal income transfer programs: intensive versus extensive labor supply responses', *Quarterly Journal of Economics*, vol. 117, pp. 1039–73.
- (2010), 'Do taxpayers bunch at kink points?', *American Economic Journal: Economic Policy*, vol. 2, no. 3, pp. 180–212.
- Scholz, J. K. (1994), 'The Earned Income Tax Credit: participation, compliance, and antipoverty effectiveness', *National Tax Journal*, vol. 47, pp. 64–87.
- Semega, J., Kollar, M., Creamer, J. and Mohanty, A. (2019), *Income and Poverty in the United States: 2018*, US Census Bureau, Current Population Report, P60-266, Washington DC: US Government Printing Office.
- Smeeding, T., Ross Phillips, K. and O'Connor, M. (2000), 'The EITC: expectation, knowledge, use, and economic and social mobility', *National Tax Journal*, vol. 53, pp. 1187–209.
- Strully, K., Rehkopf, D. and Xuan, Z. (2010), 'Aspects of prenatal poverty on infant health: state earned income tax credits and birth weight', *American Sociological Review*, vol. 75, pp. 534–62.
- Waldfoegel, J. (2010), *Britain's War on Poverty*, New York, NY: Russell Sage.
- Walker, R. and Wiseman, M. (1997), 'The possibility of a British earned income tax credit', *Fiscal Studies*, vol. 18, pp. 401–25.
- and — (2003), 'Making welfare work: UK activation policies under New Labour', *International Social Security Review*, vol. 56, pp. 3–29.
- Ziliak, J. (2016), 'Temporary Assistance for Needy Families', in R. Moffitt (ed.), *Economics of Means-Tested Programs in the United States*, vol. I, National Bureau of Economic Research Conference Report, Chicago, IL: University of Chicago Press.