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# Childcare Policy Options for Wales

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Gillian Paull and Xiaowei Xu

Frontier Economics

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For further information please contact:

Dan Bristow

Public Policy Institute for Wales

Tel: 029 2087 5345

Email: [info@ppiw.org.uk](mailto:info@ppiw.org.uk)

# Contents

Summary .....	2
Introduction.....	3
Methodology .....	5
Government Budget Costs for Additional Free 20 Hours.....	7
Impacts on Family Income and Poverty .....	11
Impacts on Parental Work.....	16
Conclusions .....	19
References .....	21
Appendix 1: Technical Details on Methodology.....	22
Appendix 2: Examples of Previous Evidence on Work Responses to Childcare Policies.....	23



## Summary

This study estimates the potential impacts of an additional 20 hours free childcare for three to four year-old preschool children in Wales. It considers two options: one of a universal offer for all children of the target age and one with a work requirement for parents.

The key findings indicate:

- Just under 47,500 children would be eligible for the universal option and just over 20,000 children for the option with the work requirement.
- The annual budget cost for the Welsh Government would be £144 million for the universal offer and £61 million for the option with the work requirement, assuming 100 percent take-up and an hourly delivery cost of £4. Lower take-up would reduce the budget cost and higher hourly costs would raise the budget cost proportionately.
- The annual financial benefit to the UK Government from reduced expenditure on the childcare element of Universal Credit and on Tax Free Childcare would be around £20 million for both options. The impact is similar for both options because savings are derived only from reduced payments to families with parents in work.
- Using a measure which deducts childcare costs from net income, the proportion of families with an eligible three or four year old child in poverty would be reduced by 2 percentage points for the universal offer and by 1 percentage point for the option with the work requirement. The impact is limited because a low proportion of poorer families use paid formal childcare and only small numbers would benefit from a reduction in childcare costs.
- The impact on work participation and work hours for mothers in families with a child of target age is extremely small. The universal option is estimated to reduce work participation by 0.2 percentage points because it effectively raises out-of-work income as well as in-work income, while the option with a work requirement is estimated to raise work participation by 0.1 percentage points. The impact is limited because the policies have extremely small impacts on the net financial return to working.

Given the relative budget costs, these findings indicate that the option with a work requirement would provide better value for money in encouraging parental employment, but the options have similar value for money in reducing poverty. However, neither option is likely to achieve either objective to any notable, possibly even discernible, degree.



## Introduction

The Public Policy Institute for Wales was asked by the First Minister to support the Welsh Government in developing options for extending support for childcare in Wales. Free pre-school childcare is currently offered through two policies in Wales. As part of the Foundation Phase, Local Authorities (LAs) have a statutory requirement to provide a minimum of 10 hours of free Early Years Education to three to four year old pre-school children (following the term after their third birthday) for 38 weeks a year. In practice there is considerable variation in provision between LAs with hours ranging from 10 to 25 hours with the Welsh Government providing funding for the initial 10 hours and any additional hours funded by LAs. In addition, Flying Start provides part time childcare for all two to three year olds living in a Flying Start area for 12.5 hours a week, 39 weeks of the year. This study considers the potential impacts of two possible extensions to the first of these policies:

- a) A “universal” offer of 20 hours of free childcare in addition to the 10 free hours of Early Years Education currently offered in the Foundation Phase from the start of the term following a child’s third birthday until they enter reception class.
- b) The offer of the 20 hours of additional free childcare with a work requirement that the lone parent or both parents in a couple must earn the equivalent of at least 16 hours a week at the new National Living Wage (£7.20 an hour)<sup>1</sup>.

In addition, the analysis was undertaken with eligibility for the additional free hours restricted to families where no parent has annual earnings in excess of £100,000.

The potential impacts of these two policy options are considered for:

- The cost to the Welsh Government budget of offering the additional hours;
- Any potential benefit to the UK Government budget;
- Average net family income (subtracting childcare costs) and poverty; and
- Mothers’ work choices.

Two baseline scenarios are presented as comparisons for the policy options:

- The “current” 2015/16 tax and benefit system (before the introduction of Universal Credit); and

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<sup>1</sup> The work requirement has been defined to match that proposed for the extension for the Free Early Education Entitlement from 15 to 30 hours in England and for eligibility for the UK Tax Free Childcare scheme, as announced in the Spending Review in November 2015.

- A “planned” system using 2015/16 tax and benefit parameters but with Universal Credit (UC) and Tax Free Childcare (TFC) fully implemented.

The Welsh policy options are applied to the “planned” baseline as this is the one likely to be in place when they might be implemented and UC and TFC contain important childcare subsidies which interact with the Welsh policy options<sup>2</sup>. UC is currently being rolled out and will repay 85 percent of eligible childcare costs for working families on lower incomes<sup>3</sup> up to a maximum monthly amount of £532 for one child and £912 for two or more children (in comparison to the 70 percent currently reimbursed in the Working Tax Credits (WTC) with corresponding maximum weekly amounts). TFC is planned to be introduced in 2017 and will repay 20 percent of childcare costs (up to a maximum of £2,000 per year per child) for working families with higher incomes (i.e. those not eligible for Tax Credits or Universal Credit). The work requirement for childcare support is weaker in UC than WTC (only that a lone parent or both parents in a couple simply be in work rather than work at least 16 hours each week) but TFC requires that the lone parent or both parents in a couple must earn the equivalent of at least 16 hours a week at the new National Living Wage (£7.20 an hour).

It should be noted that the scope of this study does not include consideration of the take-up or supply of the extended offer of longer hours. With one exception<sup>4</sup>, it assumes that parents wish to take up the additional hours and that suitable childcare places to do so are available for all parents as they demand them. Impacts may be less than the estimates presented here if parents do not wish to take-up the offer or places are not available for them to do so. In addition, the scope of this study does not consider the potential impacts of the longer hours on child development.

The next section describes the methodology used to estimate the impacts with additional details provided in Appendix 1. Estimates of the impacts on the Welsh and UK Government budgets are presented in the third section, while the fourth and fifth sections present findings for the impacts on family income and poverty and on mothers’ work choices respectively. The final section concludes.

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<sup>2</sup> It should be noted that UC in the planned scenario uses 2015/16 parameters with the addition of the rise to 85 percent reimbursement of childcare costs but does not include any of the changes announced in the Spending Review in November because these were unknown at the time of modelling.

<sup>3</sup> There is no set upper income threshold for the Working Tax Credit because it depends on family circumstances. For example, the upper limit for eligibility is £18,000 for a couple without children or £13,100 for a single person without children, but these thresholds are higher when there are children.

<sup>4</sup> In presenting budget costs to the Welsh Government for the additional hours, estimates are presented for a take-up rate of 87 percent.

## Methodology

The modelling of impacts used data from nine years of the Family Resources Survey (FRS) from 2005/6 to 2013/14. The FRS is a large-scale household survey which collects information on just over 20,000 households in the UK each year. It contains information on childcare usage and expenditure for all children in the household, on employment for all adults and on all other sources of income from which household income and poverty measures can be derived. The sample contained data on 2,604 families in Wales and an additional 44,000 families in England which is used to model potential work responses to Welsh childcare policy changes. Survey weights were used throughout to ensure the sample is representative of all families in Wales and to gross the sample numbers to Welsh population levels<sup>5</sup>.

There are two issues with the childcare data in the FRS. First, it is based on respondents' reported use of childcare in the past seven days which means that it collects snapshots of usage. The month of August had substantially lower childcare usage than any other month, most likely due to a high prevalence of parents being on holiday from work. Data for this month was therefore dropped as it was unlikely to reflect typical childcare usage. Second, the FRS records hours and payments for each childcare provider which means that free and paid formal childcare hours are bundled together if parents pay for additional hours with the same provider. The number of free hours was therefore derived based on the child's eligibility for free hours (by age, region and family income), assuming that families who pay for formal hours and are not receiving any free formal hours from another provider are receiving the free hours they are entitled to from the provider that they are also paying.

As data is not available for the current or planned systems, the observed outcomes for the years 2005/6 to 2013/4 were indexed to 2015/16<sup>6</sup> and the observed taxes, benefits and childcare subsidies replaced with calculations for the two 2015/16 baseline scenarios to generate estimates of net income. Hence, budget costs and all monetary values are in 2015/2016 prices. In the simulations, complete take-up of all benefits, tax credits and TFC has been assumed. This is unlikely to have a significant effect on the comparisons drawn between the baseline scenarios and the Welsh childcare policy options, but does mean that simulated poverty rates are slightly lower than official statistics.

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<sup>5</sup> No allowance has been made for demographic change between the data period and 2015, implicitly assuming that any change over this relatively short period would not substantively affect the findings.

<sup>6</sup> Earnings were indexed using the earnings index and the Consumer Price Index (CPI) for all other values. The poverty line was interpolated to 2015 from the five years 2008 to 2013.

Two main assumptions were made in modelling the impacts of an additional 20 hours of free childcare for three to four year old preschool children:

- Complete take-up of the offer (unless otherwise stated). There is no evidence to suggest what take-up might actually be: while take-up of the 10 hour offer in Wales and the 15 hour offer in England has been almost complete<sup>7</sup>, it is not certain that parents will wish children of this age to be in childcare for the longer hours even if at zero cost.
- The extra 20 hours are always used in addition to any existing use of the 10 free hours of Early Years Education in the Foundation stage. Use of the additional free hours replaces ongoing care beginning with free formal care (above the 10 free hours of Early Years Education); then paid informal care and finally unpaid informal care.

By extending childcare support, the Welsh policy options being considered may reduce spending on childcare. This may reduce reimbursements for childcare costs from UC and TFC, reducing the costs of these policies to the UK government and having a counter-intuitive effect of reducing net income. In order to better capture the financial benefit to families, a measure of net income after childcare costs (and corresponding poverty measure) was considered.

The modelling of the impact of the Welsh childcare options cannot explicitly take into consideration the effect of the number of weeks each year that the additional free hours are offered. The reason for this is partly because the data source does not provide information on childcare use during term time and school holidays and partly because there has been no variation in the number of weeks offered for free childcare on which to model how parents might respond to more or fewer weeks. Therefore, it is assumed that parents base their childcare (and work) choices on the availability of free childcare hours during the majority of the year (i.e. 38 weeks) and find alternative free arrangements to make up for the absence of the free hours in other weeks, including taking holiday from work or using informal childcare such as that provided by friends and relatives.

The impacts of the Welsh childcare policies were first calculated assuming that parents do not alter their work choices and then with potential impacts on mother's work choices. Potential impacts on fathers' work choices were not considered for two reasons. First, previous evidence suggests that male workers tend to be unresponsive in their work hours to wage or other financial incentives and that fathers' work choices are unresponsive to childcare policy (for example, see Kalb and Lee,2008). Indeed, almost all evaluations of childcare policy have

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<sup>7</sup> In England, 94 percent of three year-olds and 99 percent of four year-olds take up some funded early education (Department for Education (2015a)).

considered only maternal employment. Second, a large proportion of fathers not in work are likely to be constrained from working by health issues or (temporary) unemployment, but the approach used here ignores such potential constraints on the realisation of choices and would not accurately estimate fathers' responses.

The impact on mothers' work choices was estimated using two steps. First, mothers' responsiveness to different levels of net incomes (subtracting childcare costs) at different levels of work hours was estimated using a large sample of mothers in Wales and England. Second, these estimates were used to simulate the changes in work choices for mothers in Wales in response to the changes in net incomes at different levels of work hours choices brought about by the Welsh childcare policy options. The model categorises maternal employment into three different work options: no work, part-time work (less than 30 hours each week) and full-time work (30 hours or more each week).<sup>8</sup> Further technical details on the model used to estimate work responses are presented in Appendix 1.

## Government Budget Costs for Additional Free 20 Hours

Just under 46,000 families are estimated to be eligible for the universal offer of the additional 20 hours of childcare, with almost 47,500 three to four year old pre-school children eligible for the additional hours (table 1)<sup>9</sup>. With the work requirement, less than half of these would be eligible (43 percent), amounting to roughly 19,500 families with just over 20,000 eligible children. Assuming each eligible child used the full 20 hours, the universal offer and offer with the work requirement would involve the delivery of around 950,000 and 400,000 hours of childcare each week.

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<sup>8</sup> Several other options were considered for dividing mothers' work hours, including into five and eight categories but these did not generate substantively different findings from using the three categories.

<sup>9</sup> Throughout this section, it is assumed that there is no change in maternal employment in response to the additional 20 hours. However, as will be shown below, these employment responses are negligible and the findings presented here are applicable even when allowance is made for these responses.

**Table 1: Eligibility for additional free 20 hours**

	<b>Universal</b>	<b>Work requirement</b>
Number of families (Percentage of families with target age child)	45,893 (100%)	19,585 (43%)
Number of children (Percentage of target age children)	47,416 (100%)	20,129 (42%)
Total weekly number of hours	948,320	402,580

Data source: Authors' calculations using data from the FRS for 2005/6 to 2013/4.

**Table 2: Annual cost to Welsh Government of additional free 20 hours**

<b>£ million</b>	<b>Universal</b>	<b>Work requirement</b>
Policy of 38 weeks per year		
100 percent take-up, £4 hourly cost	£144	£61
87 percent take-up, £4 hourly cost	£125	£53
100 percent take-up, £5 hourly cost	£180	£76
87 percent take-up, £5 hourly cost	£157	£67
Policy of 48 weeks per year		
100 percent take-up, £4 hourly cost	£182	£77
87 percent take-up, £4 hourly	£158	£67
100 percent take-up, £5 hourly	£228	£97
87 percent take-up, £5 hourly	£198	£84

Data source: Authors' calculations using data from the FRS for 2005/6 to 2013/4.

With 100 percent take-up and an average hourly cost of delivery of £4, the annual budget cost to the Welsh Government of the universal option is estimated to be £144 million and the cost of the option with the work requirement is estimated to be £61 million (table 2). However, the cost will depend on actual take-up and the average cost of delivery of each hour of childcare. Table 2 also presents the costs for combinations with take-up rates of 87 percent and an hourly cost of £5. The take-up rate of 87 percent is the current take-up of the 10 hour offer,

but there is no evidence to indicate what take-up of the longer hours might be. In particular, some parents may not wish their children of this age to be in childcare for this length of time each day. Current evidence suggests that the costs of delivery are around £4 per hour per child<sup>10</sup>, but these may rise in the future, particularly with the implementation of the national living wage. If either option were for 48 weeks rather than 38 weeks, potential budget costs would rise proportionately (as shown in the lower panel in table 2), but, for reasons described in the methodology, it is not possible to estimate whether the longer weeks each year would generate larger impacts on families.

Impacts were also estimated for both Welsh childcare policy options with eligibility restricted to families with no parent earning more than £100,000 per year.<sup>11</sup> This restriction affected 0.8 percent of otherwise eligible families (382 families for the universal option and 148 for the option with the work requirement) and would reduce the Welsh budget cost by £1.2 million and £0.4 million for the universal option and option with the work requirement respectively (based on 100 percent take-up and an hourly delivery cost of £4). This restriction had no substantive effects on the other findings presented below.

The policy options have implications for the UK Government budget because the additional free childcare hours potentially reduce the amounts spent by parents on childcare and the reimbursements paid through the childcare element in UC and in TFC. The potential effects on the use of the UK support and savings to the UK government (assuming 100 percent take-up of the Welsh policy options) are presented in tables 3 and 4. It should be noted that both the universal Welsh option and the option with the work requirement have very similar effects because childcare support in UC and TFC are only available to working parents, virtually all of whom are eligible for both Welsh policy options.<sup>12</sup>

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<sup>10</sup> Recent estimates for England indicate an average hourly cost per child for three and four year olds of £4.25 for private settings, £3.81 for voluntary settings and £4.37 for primary schools with nursery provision (Department for Education, 2015b).

<sup>11</sup> This restriction was announced in the Spending Review in November for the extension of the Free Early Education Entitlement from 15 to 30 hours in England

<sup>12</sup> The only cases eligible for UK support who are not eligible for both Welsh options are those receiving the childcare element in UC but earning less than the equivalent 16 hours a week at the national living wage. These families are eligible for the Welsh additional 20 free hours in the universal option but not the option with the work requirement.

**Table 3: Impact on use of UK childcare support in Wales**

	Baselines		With additional free 20 hours	
	Current	Planned (UC/TFC)	Universal	Work requirement
Number of families in receipt of childcare element of WTC/ UC (Percentage of families)	44,300 (12%)	47,990 (13%)	44,016 (12%)	44,897 (12%)
Average weekly amount of childcare element of WTC/ UC	£41	£47	£43	£43
Number of families in receipt of TFC (Percentage of families)	n/a	31,383 (9%)	29,579 (8%)	29,579 (8%)
Average weekly amount of TFC	n/a	£13	£12	£12

Data source: Authors' calculations using data from the FRS for 2005/6 to 2013/4.

**Table 4: Impact on UK Government cost of childcare support in Wales**

£ million	Baselines		With additional free 20 hours	
	Current	Planned (UC/TFC)	Universal	Work requirement
Annual cost of childcare element of WTC/ UC	£93m	£117m	£99m	£101m
Annual cost of TFC	n/a	£21m	£18m	£18m
Total annual cost of UK childcare support	n/a	£138m	£117m	£119m
Total benefit to UK Government childcare budget of additional 20 hours	n/a	n/a	£21m	£19m

Data source: Authors' calculations using data from the FRS for 2005/6 to 2013/4.

The effect of the Welsh policy options is to reduce the number of families in Wales eligible for the childcare element of UC by almost 4,000 for the universal option and by around 3,000 families for the option with the work requirement and to reduce the average weekly payment by £4. Both Welsh policy options have the same effect on TFC: eligibility is reduced by almost

2,000 families in Wales and the average weekly payment is very slightly lower. The annual savings to the UK government are £18 million and £16 million for the childcare element in UC for the universal option and work requirement option respectively and £3 million for TFC for both Welsh options. Overall, it is estimated that the UK Government budget would benefit by around £20 million a year from either variant of the additional 20 hours of Welsh childcare.

## Impacts on Family Income and Poverty

Table 5 presents the impacts on net family income and poverty for families “with a target age child”, that is, families who have a three or four year old pre-school child<sup>1314</sup>. It also shows the net income with childcare costs deducted and a corresponding poverty measure<sup>15</sup>. Deducting childcare costs is useful for assessing the Welsh childcare policy options because they do not directly affect income but can affect families’ living standards by raising the amount of disposable income they have to spend on items other than childcare.

The first two columns of table 5 present the estimated effects of the implementation of U C and TFC. These estimates indicate substantial rises in the average net income for families with children and sharp decline in the poverty rate by 7 percentage points. This is largely due to more generous earnings disregards before support is withdrawn for U C than under the previous combination of benefit and tax credits that it replaces, particularly for lone parents. The cuts to work allowances in UC announced in the November Spending Review will mean that new UC claimants from April 2016 will not face the same generous threshold and this may potentially increase the poverty rate to a similar level under the current system.

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<sup>13</sup> As in the previous section, it is assumed throughout this section that there is no change in maternal employment in response to the additional 20 hours. As before, as these employment responses are negligible and the findings presented here are applicable even when allowance is made for these responses.

<sup>14</sup> In the absence of date of birth information in the publically available FRS datasets, the impacts have been estimated for all three years olds some of whom may not yet be eligible for the free childcare. In calculating the Welsh and UK budget costs, an adjustment was made for this by multiplying the estimated costs by 0.92 (because ineligible three year olds are approximately 8 percent of all three to four year old pre-school children), but no adjustment is made to the remaining numbers as it would have little effect on the overall findings.

<sup>15</sup> This compares net income with childcare costs deducted to the official poverty threshold for the UK. This poverty threshold defines a household as being in poverty if the household equivalised net income (approximately income per person allowing for household size and age of children) is below 60 percent of the median. The poverty line used for 2015/16 was interpolated from the most recent years that it is currently available (see footnote 6).

**Table 5: Impact on income and poverty for families with target age children**

	Baselines		With additional free 20 hours	
	Current	Planned (UC/TFC)	Universal	Work requirement
Average weekly net income	£639	£652	£649	£650
Average weekly net income after childcare costs	£620	£633	£641	£639
Number of families in poverty (Percentage of all families)	12,627 (25%)	8,911 (18%)	8,911 (18%)	8,911 (18%)
Number of families in poverty after childcare costs (Percentage of all families)	13,383 (27%)	9,809 (20%)	9,030 (18%)	9,687 (19%)

Data source: Authors' calculations using data from the FRS for 2005/6 to 2013/4.

The estimated impacts of the additional 20 hours of free childcare are shown in the last two columns of table 5. The universal offer has the counter-intuitive effect of reducing average net income by £3 per week due to the loss in income from the reimbursement of childcare costs through UC and TFC, but increases net income after childcare costs by £8 per week. Correspondingly, there is no detectable effect on the poverty rate as usually measured, but the rate based on net income after childcare costs is 2 percentage points lower with the universal additional 20 hours. As would be expected, the option with a work requirement has slightly more moderate impacts, raising average net income after childcare costs by £6 and reducing the corresponding poverty measure by 1 percentage point.

Table 6 presents these impacts for couple families and lone parents who constitute 78 percent and 22 percent of families with a target age child respectively. Both family types experience a rise in average net income after childcare costs for the universal Welsh option (£8 for families in couples and £5 for lone parents), but lone parents experience a greater reduction in the corresponding poverty rate measure (by 5 percentage points compared to 1 percentage point for couple families). The option with the work requirement has only slightly lower impacts for couple families, but no detectable impact for lone parents, partly explained by the fact that only 21 percent of lone parents in this target group of families meet the work requirement in comparison to 49 percent of couple families.

**Table 6: Impacts for couple and lone parent families with target age children**

	Baselines		With additional free 20 hours	
	Current	Planned (UC/TFC)	Universal	Work requirement
Proportion eligible for 20 additional free hours				
- couples with children	n/a	n/a	100%	49%
- lone parents			100%	21%
Average weekly net income after childcare costs				
- couples with children	£711	£712	£720	£719
- lone parents	£305	£362	£367	£362
Percentage in poverty after childcare costs:				
- couples with children	16%	14%	13%	13%
- lone parents	64%	41%	36%	41%

Data source: Authors' calculations using data from the FRS for 2005/6 to 2013/4.

Notes: Families with target age children include 35,620 families in couples (78 percent) and 10,274 lone parents (22 percent).

The estimated distributional impacts of the Welsh policy options are presented in table 7 which considers the impacts by initial income quintile (using quintile income thresholds for the entire population<sup>16</sup>). It is possible for some families in the middle quintile to be in poverty due to the subtraction of childcare costs from their net income. Impacts on net income are much greater for those in the higher income quintiles: the increase in average net weekly income for the lower two quintiles is only £2 at most, while the highest three quintiles are estimated to gain by between £5 and £20 a week. Part of the difference for the option with the work requirement is explained by the fact that the proportion meeting the work requirement is much higher in the

<sup>16</sup> The income quintile groups are based on the position of the equivalised net income for the household (approximately income per person allowing for household size and age of children) within the entire distribution for the UK. Households in the bottom 20 percent are in the lowest quintile, households in the next 20 percent in the second quintile, and so on. The thresholds for the quintile groups for 2015/16 are interpolated from the thresholds for earlier years in the same way as the poverty line (see footnote 6).

top three groups (between 67 and 89 percent) than in the bottom two groups (only 2 percent and 26 percent respectively).

**Table 7: Impacts for families with a target age child by initial income quintile**

	Baselines		With additional free 20 hours	
	Current	Planned (UC/TFC)	Universal	Work requirement
Proportion eligible for 20 additional free hours:				
- lowest quintile			100%	2%
- 2 <sup>nd</sup> quintile	n/a	n/a	100%	26%
- 3 <sup>rd</sup> quintile			100%	67%
- 4 <sup>th</sup> quintile			100%	89%
- highest quintile			100%	71%
Average weekly net income after childcare costs:				
- lowest quintile	£291	£399	£400	£399
- 2 <sup>nd</sup> quintile	£538	£493	£495	£494
- 3 <sup>rd</sup> quintile	£614	£578	£588	£583
- 4 <sup>th</sup> quintile	£869	£862	£882	£881
- highest quintile	£1615	£1607	£1621	£1621
Percentage in poverty after childcare costs:				
- lowest quintile	86%	60%	57%	60%
- 2 <sup>nd</sup> quintile	0%	3%	2%	2%
- 3 <sup>rd</sup> quintile	4%	4%	1%	4%
- 4 <sup>th</sup> quintile	0%	0%	0%	0%
- highest quintile	0%	0%	0%	0%

Data source: Authors' calculations using data from the FRS for 2005/6 to 2013/4.

Notes: The number of families with target age children are 13,916 (30 percent), 10,217 (22 percent), 9,772 (21 percent), 8,625 (19 percent) and 3,364 (7 percent) in the in the lowest, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> and highest income quintile respectively.

However, the pattern of impacts for the universal option is explained by the differential usage of formal paid childcare across the income distribution, as shown in table 8. Lower income

families are both less likely to use formal paid childcare for children of the target age and, if used, spend less on the care on average. Interestingly, the same pattern holds even for families with working mothers, reflecting that poorer families are more likely to rely solely on other means to care for children of this age if the mother works (which could include care by a non-working partner or shift working between parents or the use of informal sources of childcare). The consequence of these patterns is that even if take-up of the additional 20 free hours were equal across the income distribution, the lowest income families would receive less benefit in their net income after childcare costs than higher income groups because they are not paying much for childcare in the absence of the policy.

**Table 8: Childcare use for target age children by initial income quintile**

Childcare use and cost for target child	All families		Mother works		
	Proportion paying for formal childcare	Average weekly amount paid for formal childcare	Proportion paying for formal childcare	Average weekly amount paid for formal childcare	Proportion using informal and/or only free formal childcare
Lowest quintile	8%	£21	9%	£45	63%
2 <sup>nd</sup> quintile	17%	£31	30%	£33	70%
3 <sup>rd</sup> quintile	33%	£54	33%	£50	70%
4 <sup>th</sup> quintile	43%	£59	43%	£63	66%
Highest quintile	25%	£112	39%	£112	66%
All	23%	£53	35%	£59	68%

Data source: Authors' calculations using data from the FRS for 2005/6 to 2013/4.

Finally, it is useful to consider the bigger picture of the potential impacts of the additional 20 free hours for all families rather than just those with a child of the target age (table 9). Unsurprisingly perhaps given the moderate impacts for families with a target child, both policy options (universal or with a work requirement) only raise average net income after childcare costs by £1 a week with no discernible impact on the poverty rate after childcare costs.

**Table 9: Impacts for all families with children**

	Baselines		With additional free 20 hours	
	Current	Planned (UC/TFC)	Universal	Work requirement
Average weekly net income	£648	£651	£651	£651
Average weekly net income after childcare costs	£639	£642	£643	£643
Number of families in poverty (Percentage of all families)	79,703 (22%)	64,433 (18%)	64,433 (18%)	64,433 (18%)
Number of families in poverty after childcare costs (Percentage of all families)	80,887 (22%)	66,315 (18%)	65,536 (18%)	66,193 (18%)

Data source: Authors' calculations using data from the FRS for 2005/6 to 2013/4.

## Impacts on Parental Work

Estimated impacts on mothers' work choices for families with a child of target age are presented in table 10. The switch from the current system to the planned system with UC and TFC is estimated to very slightly reduce work participation (from 53.3 percent to 52.7 percent) but has no discernible impact on the proportion working full-time.<sup>17</sup> The universal Welsh policy option is estimated to reduce work participation very slightly (from 52.7 percent to 52.5 percent or by 90 fewer mothers in work). This is due to the fact that effective income (that is, after childcare costs) is higher whether the mother works or does not work (if the family was previously paying for childcare for the target child) and, for some families, the balance is to make not working more attractive. The Welsh policy option with the work requirement unambiguously raises the incentive to work, but is estimated to increase mothers' work participation rate by an extremely small degree (from 52.7 percent to 52.8 percent or by 57 more mothers in work). Interestingly, there are small rises in the proportion of mothers working

<sup>17</sup> This estimated lower work participation is due to the increased generosity of UC over the previous system of Income Support, WTC and Housing Benefit for claimants not working or with low earnings, particularly lone parents (due to an effective higher basic rate and a higher but sharper threshold for the withdrawal for payments with earnings). However, this modelling has not incorporated the new conditionality requirements in UC and does not include the changes announced in the Spending Review in November which could mean that UC has greater work incentives.

full-time for both options (from 22.8 percent to 22.9 percent and 23.1 percent for the universal option and option with work requirement respectively).

**Table 10: Estimated responses in mother's work for families with a child of target age**

	Baselines		With additional free 20 hours	
	Current	Planned (UC/TFC)	Universal	Work requirement
Number of mothers in work (Percentage of mothers)	26,569 (53.3%)	26,271 (52.7%)	26,181 (52.5%)	26,328 (52.8%)
Number of mothers in full-time work (Percentage of mothers)	11,391 (22.8%)	11,381 (22.8%)	11,431 (22.9%)	11,507 (23.1%)

Data source: Authors' calculations using data from the FRS for 2005/6 to 2013/4.

**Table 11: Simulated childcare costs and net incomes across mother's work options for families with a target age child**

	Baselines		With additional free 20 hours	
	Current	Planned (UC/TFC)	Universal	Work requirement
Average weekly childcare costs:				
- if mother does not work	£19	£19	£5	£19
- if mother works part-time	£66	£66	£31	£40
- if mother works full-time	£107	£107	£59	£67
Average weekly net income after childcare costs:				
- if mother does not work	£488	£506	£520	£506
- if mother works part-time	£656	£632	£651	£645
- if mother works full-time	£758	£714	£744	£737

Data source: Authors' calculations using data from the FRS for 2005/6 to 2013/4.

The underlying reasons for such small impacts on mothers' work choices is that the additional 20 free hours does not have a large impact on childcare costs for most families and, even

when these impacts are larger, tend to only have small impacts on differences in net income across the work choices for mothers. This is highlighted in table 11 which presents the simulated average childcare costs for families with a target age child at the three alternative work hours options considered for mothers. As noted above, the universal offer can make not working more attractive by reducing the average amount that would be spent on childcare (estimated to be from £19 a week to £5) and increasing net income after childcare costs to the same degree. This is counter-balanced to some extent by lower childcare costs if the mother works, but only to a partial degree according to the overall estimated impact on work participation. However, the important point to note from table 11 is the magnitude of the impacts of both Welsh policy options on net income across the options. For the universal offer, the gap in net income after childcare costs between not working and part-time work is increased by only £5 (from £126 to £131) and between not working and full-time by only £16 (from £208 to £224). For the option with the work requirement, the changes are only slightly greater: £13 for the gap between no and part-time work and £23 for the gap between no and full-time work. Such small average changes in the relative returns to working are unlikely to reflect large increases in the incentive to work for many families, particularly as most mothers with children of the target age have a preference to work part-time if working at all.

There are three factors driving these small impacts of the additional 20 free hours childcare on the return to working. First, as highlighted above in examining the impacts by quintile group, the free hours do not greatly reduce childcare costs because of the low usage of formal paid childcare. Second, any change in childcare costs if the mother works (if any partner also works) is partially offset by a reduction in the reimbursement of costs through the childcare element of UC and through TFC. For lower income families, this offset is as much as 85 percent through the childcare element of UC. Finally, the estimated model of mothers' work choices (not shown) highlights that net income is a relatively small influence compared to other factors. For example, an increase in net income of £350 per week if working part-time is estimated to have the same effect on the likelihood of working part-time as a mother having a highest qualification level of GCSEs rather than no qualifications. The overall lack of responsiveness is consistent with previous evidence on the impacts of childcare policy, as highlighted by the examples described in Appendix 2.

In order to highlight the larger picture of the effect of the Welsh policy options on work participation for all families, table 12 presents the estimated impacts on mothers' work choices for all families rather than just families with a child of target age. The only notable impact is the very small reduction in the proportion of mothers in work for the universal option of the additional 20 hours free childcare.

**Table 12: Impact on mothers' employment for all families**

	Baselines		With additional free 20 hours	
	Current	Planned (UC/TFC)	Universal	Work requirement
Number of mothers in work (Percentage of mothers)	238,444 (65.4%)	236,168 (64.8%)	236,078 (64.7%)	236,225 (64.8%)
Number of mothers in full-time work (Percentage of mothers)	129,990 (35.4%)	127,864 (35.1%)	127,914 (35.1%)	127,990 (35.1%)

Data source: Authors' calculations using data from the FRS for 2005/6 to 2013/4.

If there had been any notable impact on mothers' employment choices, these would have led to additional impacts on Government budget costs and family net income and poverty to those presented above. This would have included potential additional benefits to the UK Government budget in the form of reduced spending on UC and increased Income Tax and National Insurance receipts from any rise in work participation or longer work hours for mothers. However, the lack of any substantial impacts on maternal employment means that the findings for the estimated impacts for these outcomes presented in the previous sections are applicable even when allowance is made for parental work responses to the additional 20 hours of free childcare.

## Conclusions

The policy options of an additional 20 hours free childcare for three to four year old preschool children with or without a work requirement would not have substantial impacts on net income, poverty or work behaviour for families with children.

The underlying reason for these small impacts is that a relatively small proportion of families with children of the target age use formal paid childcare and tend to pay moderate amounts for it if they do. In addition, any saving in childcare spending from the additional free 20 hours for working parents would be partially offset by reductions in reimbursements for costs when Universal Credit and the Tax Free Childcare are fully implemented. The policy benefits poorer families the least because they are less likely than families with higher income to use paid

formal childcare. The universal policy has a slightly greater impact in reducing poverty (using an income measure net of childcare costs) than the option with the work requirement.

Estimates of work responses indicate that a key objective of the policy to encourage parental work participation is unlikely to be achieved by the policy. Indeed, the estimated work responses suggest that the universal offer may have a very small negative impact on mothers' work participation because it effectively raises out-of-work income as well as in-work income, while the offer with the work requirement would have very small positive effects.

Given the relative annual budget costs for the Welsh Government (£144 million for the universal option and £61 million for the option with the work requirement), these findings indicate that the latter option with the work requirement would provide better value for money in encouraging parental employment, but both policies offer similar potential value for money in reducing poverty. However, neither option is likely to achieve either objective to any notable, possibly even discernible, degree.

## References

- Adam, S. & Phillips, D. (2013). *An ex-ante analysis of the effects of the UK Government's welfare reforms on labour supply in Wales*. Institute for Fiscal Studies Report R75, February
- Brewer, M., Catton, S., Crawford, C., & Rabe, B. (2014). *The impact of free, universal pre-school education on maternal labour supply*. Institute for Fiscal Studies, October
- Department for Education. (2015a). *Provision for children under five years of age in England: January 2015*. Statistical First Release SFR 20/2015, June
- Department for Education. (2015b). *Review of childcare costs: the analytical report: An economic assessment of the early education and childcare market and providers' costs*. DFE-00295-2015, November
- Greene, W. H. (2012). "Incidental Truncation and Sample Selection". in *Econometric Analysis (Seventh ed.)*, Boston: Pearson. 912–27
- Heckman, J. (1979). "Sample selection bias as a specification error". *Econometrica*, 47 (1), 153–61
- Jenkins, S. P. & Symons, E. J. (2001). "Child Care Costs and Lone Mothers' Employment Rates: UK Evidence". *The Manchester School*, vol. 69, issue 2, March
- Kalb, G. & Lee, W. S. (2008). "Childcare Use And Parents' Labour Supply In Australia". *Australian Economic Papers*, vol. 47, no. 3, September, 272-295
- Viitanen, T. K. (2005). "Cost of Childcare and Female Employment in the UK". *Labour*, 19 (special issue), 149-179

## Appendix 1: Technical Details on Methodology

A three state multinomial logit model was used to estimate mothers' work responses to changes in net incomes (subtracting childcare costs) generated by the application of the childcare policy options. Net income in each state was calculated using the observed fathers' net earnings (for couple families) and "other income" and state-specific mothers' net earnings and childcare costs. For the two states which were not observed for each family, mothers' earnings and childcare cost were estimated in the following ways:

- The average number of mothers' work hours in the state (0, 19 and 39 for no, part and full-time work) was multiplied by the mothers' hourly wage to obtain an estimate of gross earnings from which net earnings was derived using tax and national insurance parameters. The gross wage was estimated for mothers who were not working using a Heckman selection-corrected wage regression (see, for example, Heckman, 1979; or Greene, 2012).
- The number of minimum childcare hours required in each work state was estimated as the average number of childcare hours for different age groups of children. Any shortfall of observed childcare hours and this minimum requirement was assumed to be covered by paid formal childcare for each child. The price of additional childcare was either the price already paid for childcare for that child or the average for the age group of child and region. The childcare cost was calculated as the total cost across all children in the family.

For each work state, net income was then derived using the applicable tax and benefit parameters for the scenario.

In addition to three net income variables for each state (one omitted), the logit model included a broad range of variables related to maternal labour supply including mothers' age, education, ethnicity, whether in full-time education and any disability; number and ages of children; local childcare prices by age of child; household income; number of other adults and children in the household; housing type; region dummy variables and unemployment rate; whether a couple family; and partner's work participation, work hours, whether in full-time education and any disability. Following the approach used in Adam and Phillips (2013), the use of a Wales region dummy variable and unemployment rate helps to capture specific labour market conditions in Wales.

The estimated model was used to simulate the change in the mother's probability of being in each of the three work states as a result of the policy changes. The impact on outcomes can then be estimated by weighting the outcomes in each state with the state's associated

probability. However, this was problematic in this particular application due to the method of estimating childcare costs in unobserved work states. Estimated childcare costs were generally higher in the unobserved states than actual observed childcare costs because where required hours were below observed hours there was not always a reduction in cost as some of the unneeded hours were free, but where required hours exceeded observed hours there was always an increase in cost from the assumption that additional hours would need to be purchased. Consequently, the average simulated childcare costs were notably higher than the observed ones when the outcomes were simply weighted by state probabilities. However, as the work responses to the policy options were so small, it was not necessary to estimate the impact on other outcomes.

## Appendix 2: Examples of Previous Evidence on Work

### Responses to Childcare Policies

A study by Brewer et al. (2014) estimated that the introduction of the free entitlement to 15 hour childcare places for three year old children in England increased the proportion of mothers in work with a youngest child aged three by 3 percentage points. In other research using simulation techniques, Jenkins and Symons (2001) estimated that a 100 percent childcare subsidy for lone mothers in the UK would raise the proportion in work by 4 percentage points, while Viitanen (2005) estimated that a 50 percent childcare subsidy for married mothers with a preschool child would raise the proportion in work by 6 percentage points. In research using Australian data, Kalb and Lee (2008) found that a 50 percent childcare subsidy had no impact on the proportion of fathers in work or on their weekly work hours.

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## Author Details

Dr Gillian Paull is a Senior Associate at Frontier Economics. Her research focuses on the labour market, childcare, poverty and social policy. She has previously worked at the Institute for Fiscal Studies; has held research positions at the London School of Economics, the World Bank and the International Monetary Fund; and studied and taught at Princeton University.

Xiaowei Xu is an Analyst at Frontier Economics where she undertakes research in the Public Policy Practice. She joined Frontier after completing an MPhil in Economics at the University of Oxford and has previously worked for the Government Economics Service and the Department for Work and Pensions.



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