



The value of childcare

Quality, cost and time



New Economics Foundation (NEF)

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Summary

High quality childcare can help children to flourish, whatever their family circumstances. It can help parents to flourish, too, knowing that their children are being well-cared for while they go out to work. But not everyone has access to high quality childcare, and this has far-reaching consequences for children, parents, and society as a whole. Unequal access to high quality, affordable childcare triggers and intensifies a range of income, gender, and social inequalities.

This report aims to stimulate a fresh debate about one of the most important issues facing our society: how best to care for our children.

Towards better childcare for all

We propose three changes to help overcome inequalities and move towards better childcare for all.

1. Improve the quality of all formal childcare

High quality childcare is known to provide important cognitive and emotional benefits for all children, but especially for those from poorer backgrounds or whose parents have little education. The effects are strongest in children's early years and benefits continue to be felt through school years and into adulthood.

We propose that high quality childcare can be achieved by increasing the wages of childcare workers and routes of progression within the sector. We present a sequence of stylised models which examine the financial implications of this, indicating the potential costs of providing full-time formal childcare (calculated on the basis of 45 hours per week for 52 weeks per year) for all children in England aged 6 to 36 months, at three different wage levels for childcare workers. This cost would be £6,390 per child per year at current wage levels; £7,268 at a Living Wage (at 2012 rates); and £18,075 if childcare workers were paid on a par with primary school teachers. We also model the costs of this to households, which shows that the higher wage scenario would make full-time childcare unaffordable for most families without government support.

2. Move towards a standard 30-hour working week

Moving towards a shorter working week for all could ensure that paid and unpaid time is more evenly balanced between women and men and reduce inequalities. It could enable children and parents (fathers as well as mothers) to spend more time together, improve parents' work-life balance, and help us all to live within environmental limits. Moving towards shorter hours will not be straightforward (e.g. the impact on workers' earnings will need to be addressed), but we argue that the advantages of a shorter working week far outweigh the barriers to achieving it, enabling us to move towards a more sustainable economy and greater well-being for all.

The second stage of our financial modelling – summarised in Table 1 – demonstrates that a shorter working week would reduce the number of hours of formal childcare necessary. Thus, adopting a standard 30-hour working week could reduce the cost of providing full-time formal childcare for all children aged 6 to 36 months in England to £3,553 per child per year. If childcare workers were paid a Living Wage (adjusted upwards to take account of their reduced working hours), this cost would be £5,111; and if childcare workers were paid at the same level as primary school teachers, it would be £10,041.

If childcare workers were paid at the same level as primary school teachers, working a 30- rather than a 40-hour week would significantly improve the net disposable income of households paying the full costs of childcare (for all except dual earners on high incomes).

Table 1. Summary of childcare costs per child per year.

Wage levels for childcare workers	Standard working week	
	40 hours	30 hours
Current	£ 6,390	£ 3,533
Living Wage	£ 7,268	£ 5,111
On a par with primary school teachers	£18,075	£10,041

3. Make high quality childcare universally available

We propose that free, high quality childcare should be available for everyone. Our current system of childcare provision locks in a range of inequalities and perpetuates cycles of disadvantage, unfulfilled human potential and failure to flourish. These have very costly consequences, for individuals, for society as a whole, for the economy, and for the public purse. Physical and mental ill-health, poor learning, undeveloped skills, unemployment, substance misuse, social conflict, and criminal behaviour all trigger demand for services and benefits that could be avoided by tackling the underlying causes of disadvantage and inequality.

Since childcare can play a pivotal role in entrenching or reducing income and gender inequalities, public investment to raise quality and make it universally accessible will reap valuable returns to individuals, society, and the public purse. Public spending to make high quality childcare affordable to all must be seen as a vital investment in social and economic infrastructure.

1. Introduction

Childcare provision has risen on the political agenda, from being a relatively marginal issue in the 1980s to being a major aspect of government policies and party manifestos today. It is not uncommon, or even contentious, to argue for more and better childcare. But this report goes further than this and scrutinises underlying questions: What factors influence the quality of childcare and how can these be changed? What are the probable consequences of improving the quality of childcare? What can be done to make high quality childcare accessible to all, regardless of their ability to pay? How can we ensure that our methods of caring for our children are consistent with our aspirations for a fair and sustainable future?

To begin to answer these questions, we build on existing studies, and add two new dimensions. First, we build on and update work conducted in 2009 by the Social Market Foundation (SMF) and Daycare Trust, which argues that better quality childcare is necessary and can be achieved through an increase in qualifications and pay for childcare workers.¹ We add to this the dimension of gender. Childcare workers, at present, are almost all women in low-paid jobs with minimal training and few opportunities for advancement. We propose that giving childcare workers better pay, training, and opportunities would not only improve the quality of childcare, but could also help to raise the status of the sector, reflect its value more accurately, redress the gender imbalance in the workforce, and improve the well-being of the workers. This report explores, through modelling, how this would affect the affordability of childcare.

Secondly, we consider changing the distribution of paid and unpaid time. Childcare matters for most families because of the demands of the paid labour market, where it is considered normal for people to work five days a week, for up to (and often well over) eight hours a day. This pays no attention to the fluctuating needs of children and families, or to the school timetable. Our modelling also explores how reducing the normal length of the paid working week would affect the affordability of childcare and the mix of formal and parental care.

In Section 2, we consider what care is currently available for our children, and explore what the consequences of this existing system of childcare are, in relation to our children's well-being and to social, financial, and gender inequalities.

In Section 3, we discuss possible solutions to some of the problems inherent in the system: raising the quality of childcare, making high quality childcare available to everyone and reassessing how we divide our time between paid and unpaid work.

In Section 4, we introduce a sequence of stylised models to calculate the costs of higher quality childcare, both across the population and to individual households. We also calculate the effects of changing the distribution of paid and unpaid time for childcare workers and parents, and discuss the findings of our modelling. Further details about the model can be found in the appendices.

In Section 5, we set out areas which we think would benefit from further discussion, and we end with some broad conclusions. We do not claim to have all the answers to the complex questions raised here; instead, we aim to present a fresh perspective, and provoke thought and debate.

This report focuses on two common family models: two-parent families (one woman and one man) and lone-parent families. We recognise that there are other types of families, and that the issues discussed here may be different for them. Some of the gender-related issues we describe are different for families where both parents are of the same gender; lone parents face challenges beyond those which we have outlined in this report; and of course some couples and single people do not have children, but play a crucial role in our core economy through the time, wisdom, and energy they bring to other relationships, including those with other people's children.

Towards a New Social Settlement

This report is part of a series of discussions, working papers and blogs exploring the challenge and opportunity of building a New Social Settlement in the UK. It is NEF's contribution to broader debates about the future of the welfare system.

At the heart of this work is a quest for policies and practice that recognise the vital links between social justice and environmental sustainability. We celebrate and champion the best elements of our embattled welfare state. And we address new challenges such as rising inequality, climate change, and the likelihood of little or no economic growth over the coming decade.

Our work on a New Social Settlement is jointly supported by NEF and Oxfam. Working papers, blogs and news of events will be posted on our website during 2014 with a final report published towards the end of the year. Visit www.neweconomics.org/newsocialsettlement to find out more.



2. Childcare, work and time: exploring the issues

The value of high quality childcare

Childcare is crucial for the healthy reproduction of society, not only because it allows parents to do paid work while they raise a family, but also because it helps children to develop. Studies have shown that there are significant cognitive and emotional benefits to children receiving high quality care in their early years, which enhance both their well-being and their school-related achievement and behaviour.^{2,3,4} These effects are strongest for children from poorer backgrounds and for children whose parents have little education.⁵ The benefits of early years childcare continue to be felt through late primary school and secondary school years.⁶

Evidence on the effects of childcare outside the home in the first year of a child's life suggests that centre-based childcare at this age is beneficial to children only if it is of a sufficiently high quality, with low ratios of adults to children, creating warm and stable relationships.⁷ This is particularly important where informal and/or home-based parental care is negligent, missing, or of poor quality, because it can help to level the playing field and prevent social and economic disadvantage being passed from one generation to the next.

High quality childcare can thus be seen as early action to prevent a range of social, educational, and economic problems for individuals, families, and society at large, helping to improve well-being and to avoid costly downstream interventions to cope with such things as mental ill-health, substance misuse, unemployment, and criminal activity in later life.^{8,9}

Costs and quality in the current childcare system

Childcare provision has expanded over the last two decades, fuelled by both greater financial support, such as child benefit, and through the childcare elements of working tax credits, and some free entitlement.

Childcare is expensive and growing in cost; for example, data from the Office of National Statistics (ONS) shows that in 2012 average earnings in the UK were at the level they were in 2003, yet the Family and Childcare Trust has shown that in 2012 a nursery place now costs 77 per cent more in real terms than it did in 2003.^{10,11} The government provides up to 15 hours' free entitlement for three- and four-year-olds, and has recently extended free provision to some disadvantaged two-year-olds. Beyond this, formal childcare can be affordable only to parents on higher incomes.

In spite of rising costs, the sector continues to be characterised by patchy and often poor quality. This is widely acknowledged, and is reflected in recent (2013) government policy which aims to improve the quality of early education and childcare. This includes reforming qualifications for early years childcare workers, by introducing Early Years Teachers and ensuring new and better qualifications at Level 3, to qualify people to become Early Years Educators;

and reforming the Ofsted inspection system.^{12,13} However, we believe that such government policies only begin to address the problems inherent in our current childcare system.

Childcare workers are paid low wages: the average hourly wages of workers in full-day care settings in 2011 were £10.60 for senior managers, £8.10 for supervisory staff, and £6.60 for other paid staff.¹⁴ And they have little opportunity for career development (including training, and skills development): in full-day care settings in 2011, only 11 per cent of paid staff held at least a relevant Level 6 (degree-level equivalent) qualification. The sector is low status, undervalued, and highly gendered, with men accounting for only 2 or 3 per cent of childcare and early years workers.¹⁵

Box 1: The policy context in brief

In 2013, the government published a number of plans aimed at improving the quality and range of education and childcare from birth to five years.

*More great childcare*¹⁶ was published in January 2013, and included detail on planned reforms to raise the standard and quality of the early years workforce; to give high quality providers the freedom to offer more places; and to give parents more choice. *More affordable childcare*¹⁷ was published in July 2013, and set out plans to help working parents access the childcare they need when they need it.

This recent government work acknowledges the importance of good quality childcare in children's earliest years to 'help them succeed at school and later in life, contributing to a society where opportunities are equal regardless of background', and recognises the importance of childcare being affordable and easily accessible. It also states that the quality of childcare can be improved by building 'a stronger and better qualified early years workforce'.¹⁸

Childcare and inequalities

The way in which childcare is provided can play a pivotal role in either entrenching or reducing social, economic, and gender inequalities.

As discussed, children from poorer backgrounds benefit most from high quality childcare. However, high quality formal childcare is not available or affordable to all families. Parents on low incomes are less able to afford formal childcare. An analysis of Ofsted ratings from 2012 by the Policy Exchange shows that 79 per cent of nurseries and childminders in the least deprived areas of the country were judged 'good' or 'outstanding' by Ofsted last year compared to only 64 per cent of nurseries and childminders in the most deprived areas of the country.¹⁹ A private market for childcare – where only some can afford or gain access to high quality childcare – accentuates inequalities and cements class structures over generations.

Social and economic inequalities are affected not only by the quality of childcare, but also by the impact of childcare costs on patterns of employment. Childcare is a large component of household budgets; research by OECD suggests that childcare costs can be more than 30 per cent of a household's net income.²⁰ How much parents can purchase often determines how much

time they spend in paid employment. In today's labour market, opportunities for progression and higher pay tend to be linked with longer hours and full-time rather than part-time employment. Low-income-earning parents – especially lone parents – who take on part-time work because they cannot afford enough childcare to cover full-time employment are left at a significant disadvantage. This can cut the costs of childcare but is also likely to leave them trapped in low-paid jobs. Better-off parents (both women and men) who can afford formal childcare have more choice in the matter: their decisions about paid employment are less constrained by prohibitive childcare costs and they will find it easier to stay in jobs with better rates of pay and career development.

These dynamics affect women more than men and so entrench gender inequalities. The rise of female participation in the labour market has not been matched with an equivalent movement of men into unpaid childcare. (Men do more unpaid childcare than in the past but still on nothing like an equivalent scale.²¹) Where childcare responsibilities and costs have limited parents' abilities to progress in the labour market, these effects have been felt almost exclusively by women, who have become trapped in low-paid, low-status, part-time employment.²² A 2007 study shows that part-time work not only fails to give access to higher earnings, but also has a sustained negative impact on future pay levels.²³ Those who leave the labour market entirely for a few years when their children are very young, lose contacts, confidence, and prospects, so that when they return to paid work, they are at an even greater disadvantage.

Women may start out in their working lives earning as much as men, but once they have children, they tend to migrate towards part-time or intermittent employment to fit in with childcare, often because they cannot afford high quality childcare, or cannot afford enough of it to enable them to work longer hours. In coupled families with children aged 0–2 years, 73.1 per cent of men work 40 hours or more and only 4.3 per cent work between 1 and 29 hours, the corresponding figures for women are 16.9 and 56.4 per cent, respectively.²⁴ The pattern is reinforced when subsequent children arrive, as the higher-earning partner, usually the father, tends to stay in full-time work. Gendered expectations, cultural norms, and patterns of employment and pay interact over the life cycle, creating a cumulative effect.

Our childcare system also entrenches social inequalities. Children in low-income families benefit more from high quality care in their early years. Where this high quality care is unaffordable or unavailable, they miss out on proven social and educational benefits. Children tend to carry these disadvantages – and advantages – with them through much of their lives.

A labour market that values full-time over part-time employment, interacting with a childcare market where parents bear some or all of the costs, has a regressive effect, contributing to widening income and gender inequalities. There is a growing body of evidence to show that such inequalities have a range of negative impacts, including stress and anxiety, family breakdown, social conflict, and disorder, as well as contributing directly to poor child development.²⁵

It is reasonable to suppose that good quality childcare available to all would have the reverse effect, significantly eroding such inequalities.

3. Towards better childcare for all

Our current system of providing care for our children rests on undervalued, low-paid work by a primarily female workforce; it reinforces inequalities in gender and income; it can make it difficult for parents (and particularly men) to take time away from work to care for their children; and it can fail to provide good enough quality care, especially for children from poorer backgrounds for whom the quality of care matters most.

We propose that two changes are needed in order to address these issues and ensure that childcare better meets the needs of our children, our families, and our society. First, we need to improve the quality of childcare, and ensure that high quality childcare is available for everyone. And secondly, we need to rebalance how we spend our time.

Understanding poor quality childcare

There are several reasons behind poor quality childcare.

First, childcare is a low-paid, low-status occupation. While childcare used to be a private matter dealt with largely by women at home, it has been carried into the formal paid economy with the gendered division intact. Women are often employed in occupations which are undervalued because they are associated with traditionally unpaid female labour. Childcare is a striking example of this, where low pay and low status offer little encouragement to improve the quality of the service.

Second, childcare is not susceptible to conventional productivity gains as a route to increasing workers' pay. In childcare – as in many public services – workers are not simply an input whose efficiency in producing an output can be enhanced through technological developments or better time management systems. They themselves embody the output, which is the care of children. They can't do more for less by caring faster or being substituted by machinery. Good quality childcare requires knowledge of what is best for a child's development, which can be gained through training and experience, and by having enough time to deliver that care and enough carers per child. Improving the quality of care will entail higher levels of training and experience, and lower carer-to-child ratios; essentially greater numbers of more costly workers.

Thirdly, since childcare is a labour-intensive industry with wages the most important cost component and little room for technological improvements, providers who want to remain profitable can only expand the volume of service by keeping wages low. Some providers and individual childcare workers do an excellent job regardless of pay and conditions. Some training is available and providers are inspected by Ofsted. But there is little built in to the system to develop skills, to attract workers with higher qualifications or more experience, or to drive up standards significantly. As a result, the overall quality of provision is inconsistent and often poor.

Valuing childcare workers and raising quality in childcare provision

In order to improve the quality of childcare, therefore, it will be necessary to address the problems of low pay, low status, and poor opportunities that afflict this largely female sector of the labour market. Under these conditions, childcare employers struggle to recruit and retain staff.²⁶ We accept the findings of the Daycare Trust that '[in] order to provide high quality ECEC [early childhood education and care] provision, research findings show there must be more highly qualified, better paid staff',²⁷ and suggest that increasing childcare workers' pay would encourage them to remain longer in the job and improve their qualifications, both of which would improve the quality of care they are able to deliver.

Better pay and conditions could improve not only the quality of care, but also the lives of childcare workers themselves; through valuing the work they do, both their earning potential and their well-being would be increased. These changes would also encourage more men to enter the sector, which would enable children to gain a more rounded experience of care and a more balanced picture of how men and women can live their lives. As such, the changes we propose would go some way towards addressing gender segregation in our economy, which is currently reinforced and exacerbated by low pay in the (currently highly gendered) childcare sector.

Making high quality childcare available to everyone

If higher quality childcare can be achieved by improving the pay and opportunities of childcare workers, it is bound to cost more. If only better-off families can afford it, this would widen existing inequalities. We have already shown that the consequences of high quality childcare not being available to all include poor child development; the reinforcement of existing social, income and gender inequalities; and a resulting range of social, educational, and economic problems for individuals, families, and society. How, then, can high quality childcare be made available to all who need it?

We propose that there is a strong case for publicly funded high quality childcare, for two main reasons. First, it is a social good that will improve the well-being of children, parents, and childcare workers both immediately and over time. Secondly, it is a sound investment to prevent harm and thereby avoid heavier public expenditure in the future.

We have already argued in *Backing the future: why investing in children is good for us all*²⁸ for an investment in high quality, universal childcare services. Here we propose that investing in universal services and provisions to help achieve a transition towards a more preventative system is essential to:

- Provide genuine options for parents, irrespective of their income.
- Give all children a positive start in life, thus increasing the chances of them achieving their full potential.
- Create a level playing field where we reduce inequality and its socially corrosive consequences (inequality is a strong predictor of lower child well-being).

Rebalancing how we spend our time: a 30-hour working week

The demand for childcare is a function of long hours in the labour market, and we would like to explore the implications of a shorter standard working week for our need for childcare. Many of the issues we have identified with the current system of childcare are wrapped up with our use of time, and in particular with the need for parents to work long hours. This means that parents have limited time to spend caring for their children, and it perpetuates inequalities of gender and time. What generally happens is that women take time out of the labour market to have children, accept lower-paying and lower-status part-time jobs, but are able to spend more time with their children; and men (because they have taken less time out of work) are better able to develop higher-earning careers, but their family's growing dependence on their income makes it difficult for them to subsequently reduce their working hours or to take time out to care for their children.

Here we would like to explore the social and financial implications, in relation to childcare, of reducing our standard working week from 40 to 30 hours.

A 30-hour working week: the social, economic, and environmental argument

A shorter working week is central to NEF's vision of a new economics for a sustainable future. This acknowledges the need to make social and economic policies that are compatible with planetary boundaries and to plan for environmental sustainability as well as for social justice, because these are inextricably linked. We set out the arguments for a shorter working week in *Time on Our Side* and *21 Hours*.^{29,30} There are two key points to make here.

Calls for more and better publicly funded services, including childcare, are usually made on the assumption that the economy will continue to grow, yielding more tax revenues to fund expansion and improvement. We can no longer make this assumption. Continuing economic growth in the rich world cannot be decoupled from greenhouse gas (GHG) emissions fast enough to avert catastrophic levels of global warming. Indeed, the target for reducing emissions to prevent global temperatures rising to dangerous levels require emissions to fall from a UK average of 10 tonnes per capita per annum, to less than two. This cannot be achieved unless we change the way we manage the economy. This has serious implications for public expenditure, since an economy without growth, or a 'steady-state' economy, will yield less revenue from taxation. In addition, there is an urgent need to invest public money

in environmental measures to avert climate change and safeguard natural resources. Any call for investment in childcare must be considered in this context.

Without growth there are risks of higher unemployment and on this ground NEF, with support from academics and analysts, has called for paid work to be distributed more widely across the population by reducing hours worked per capita. In addition, there is a strong case for reducing hours of paid work to release time for unpaid activities, including childcare. This challenges the assumption that the labour market has first call on people's time, which in turn defines the amount of childcare parents need. The distribution of paid and unpaid time is a key co-ordinate in the childcare debate and deserves much closer attention.

Childcare and time

The amount of time people spend in the labour market has direct implications for the amount of time left to spend on unpaid work such as caring for children and others, contributing to communities, volunteering, building relationships, playing sports, and partaking in other leisure activities. On average, people of working age in the UK put in just over 36 hours of paid work a week. For those classified as full-time workers, the average is nearly 43 hours a week.³¹ There is nothing fixed or inevitable about these hours: they are a consequence of the way modern capitalism has developed in the UK over the last 60 years. Keynes famously anticipated in 1930 that technological progress would drive up rates of productivity so that people would need to work no more than 15 hours a week by the twenty-first century. Instead, workers have taken a diminishing share of the gains of rising productivity and have tended to trade this for money rather than time – not least because they have been urged to accumulate consumer goods to stoke the engines of economic growth. When the drive to consume has outstripped their earning power, they have been encouraged to borrow money and keep on shopping, locked in ever more tightly to long hours of working by the need to service debt. For white-collar workers, putting in long hours has become a prestigious and career-enhancing thing to do. For all these reasons and more, economic and cultural imperatives have squeezed the amount of time left for unpaid labour, such as childcare, within the confines of what is considered a 'normal' working week.³²

Leaders from both the main political parties are keen to emphasise their support for 'hardworking people'. This rhetoric elevates paid time to the moral high ground. Putting in long hours of paid work is conveyed as the best way of making a contribution to society. Those who work hard for no pay, caring for others, bringing up children, and looking after their families, homes, and neighbourhoods – without which constant effort, the formal economy would grind to a halt – are not credited as 'hardworking people'. This is how work, care, and time are currently valued.

NEF argues that a slow but steady move towards a shorter, paid working week would help to address a range of urgent, interlinked problems: overwork, unemployment, over-consumption, high carbon emissions, low well-being, entrenched inequalities, and the lack of time to live sustainably and care for each other – including, of course, our children.

Crucially, the proposition applies to men as much as to women. This matters because one of the main causes of persistent gender inequality has been the unequal distribution of paid and unpaid work between men and women. If the standard working week were reduced to, say, 30 hours instead of 40, ‘part-time’ would become the new ‘full-time’. Part-timers would no longer be marginalised. Men would be able to contribute towards childcare and other domestic responsibilities. Women would have a chance to do more with their lives. The corrosive inequalities of income and power between women and men would begin to ebb and change. Men could build their capabilities as parents and carers. Children would get more time with their fathers as well as their mothers and develop less polarised views about male and female roles and identities.

If the two objectives are pursued together – a shorter ‘standard’ paid working week alongside high quality childcare for all – new possibilities emerge. Introducing shorter hours into the equation could help to change attitudes about the social value of unpaid childcare. It would help to reduce the gender and income inequalities that currently prevail. It could help to mitigate the costs of raising pay and quality in the childcare sector. And it would challenge the widespread assumption that the interests of the formal economy must take priority over the interests of people and the planet, rather than the other way around.

Some notes and clarifications

Ought children to be in care?

We are not arguing that children ought to be in full-time formal care. Likewise, we are not suggesting that all mothers of toddlers should be employed full time. However, we are suggesting that a mix of formal and parental care can be beneficial to both children and parents. Childcare can be especially beneficial to children from disadvantaged backgrounds, as we have already discussed. For parents, childcare enables them to participate in the labour market and remain engaged in it, developing skills, relationships, and other assets that might be lost if they were absent from paid work altogether. And it helps to reduce the cumulative disadvantages that accrue to mothers (who are usually the ones to take responsibility for childcare), tackling an important structural cause of gender inequalities. Equally, looking after children can be a valued and fulfilling experience, and some parents actively choose to do so on a full-time basis.

Our interest is in extending choices, so that parents in all income groups (and both women and men) can decide how to balance their time between paid work and caring for their children, and can make these choices knowing that formal childcare is of sufficiently high quality to be a viable alternative to parental care at home.

Reduced hours for whom?

In our vision of reduced working hours, the standard paid working week (currently about 40 hours for full-time workers) would be shortened to 30 hours – following a gradual transition over several years. This would apply to everyone: men as well as women, non-parents as well as parents. Proposals for making the transition are set out elsewhere.^{33,34} These do not attempt to make a 30-hour week compulsory, but to encourage and support a voluntary transition so that what we now regard as ‘part-time’ eventually becomes the new ‘full-time’.

Valuing paid and unpaid childcare

The value of informal and unpaid childcare is almost impossible to calculate. The scale is vast. In 2011, only 36 per cent of families with children under two years used formal childcare;³⁵ the remainder was provided informally or at home as unpaid care. If unpaid childcare were priced at rates equivalent to the formal childcare modelled in this study, the total would be formidable. The exercise would be futile, however, because informal, unpaid care operates within a different kind of economy (the core economy) where time is provided as a gift or as part of a reciprocal exchange, rather than as uniform, priced, and saleable units. The quality of unpaid care is driven by different motivations, such as the obligations of kinship and reciprocity; it is fuelled by uncommodified human and social assets, such as love, empathy, energy, inventiveness, and the wisdom of experience.

Many of these qualities are shared by childcare workers. But when people are paid to look after other people’s children, we have different expectations of them – just as we do of teachers, nurses, and other public service workers. Instead of entering into an informal contract based on relational knowledge and trust, we make a formal contract underpinned by assurances that the paid workers have appropriate skills and experience, as well as suitable personal qualities.

We therefore consider it appropriate to seek better training, career development, and pay for childcare workers in order to raise the quality of formal childcare and improve the well-being and prospects of the workers themselves. But we would argue that it is neither desirable nor feasible in human or fiscal terms to seek to do the same for informal carers.

4. Modelling the costs of high quality childcare

In this section we present a childcare model that calculates the cost of childcare per child per hour for different wage levels for childcare workers, reflecting (notionally) different levels of quality. We then apply these to population figures in England to work out total costs.

We then introduce the scenario of a 30-hour paid working week, and investigate how these shorter hours of paid work (which would result in a reduction in the amount of formal childcare needed by parents) would affect both the overall costs of full-time childcare provision, and net household income after childcare costs.

Our assumptions and parameters

Our modelling is based on a number of assumptions and parameters, a full discussion of which is set out in Appendix 2. The most important of these are:

- We assume that an increase in the wages of childcare workers would result in an increase in the quality of childcare provision. This follows the same reasoning as the modelling previously conducted by the SMF and the Daycare Trust, upon which we build.³⁶
- We have chosen to focus our research on childcare provision for children under three years of age. In our model, we assume that parents will make use of statutory maternity pay to cover parental care for the first six months, so we calculate the costs of childcare from six months to thirty-six months. We focus on children under three because there is currently no universal coverage for this age group and, apart from maternity and paternity leave for working parents, little institutional support.³⁷ Mothers frequently drop out of the labour market in part or altogether when their children are young. For example, in 2009 the female employment rate in the UK was 74.3 per cent, but the rate for mothers was 67.1 per cent and 55.9 per cent for mothers whose youngest child was under three years old.³⁸
- We have excluded informal care from our calculations, meaning that our costs represent maximums; actual use of formal childcare (and therefore costs of provision) would be lower than our models suggest.

The limitations of the model are outlined in Appendix 1.

The childcare cost model

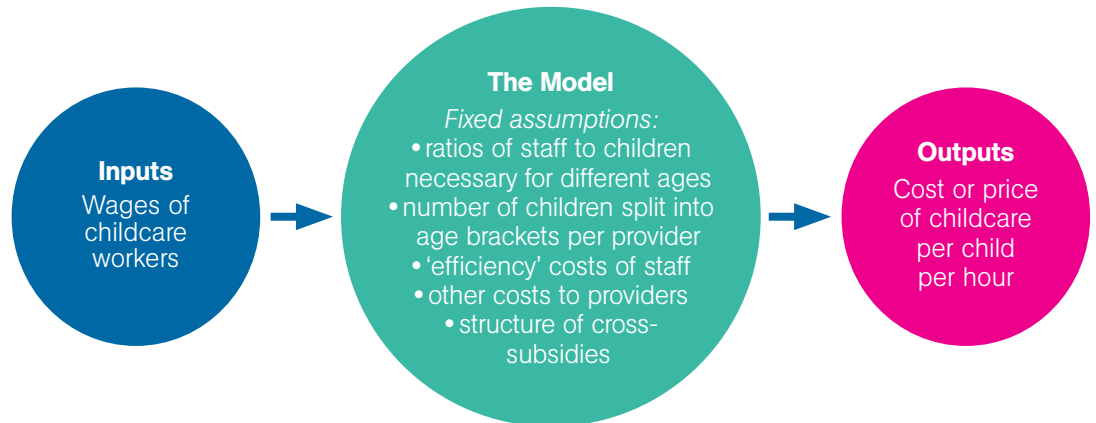
The aim of this model is to estimate the cost of providing childcare under different scenarios where workers' wages are modestly or substantially increased (which we assume would lead to an increase in the quality of childcare). These estimates are used in the first instance to calculate the total costs of providing childcare to cover the full working day for all children aged from 6 to 36 months in England.³⁹ The model is presented in Appendix 2.

In developing our childcare cost model, we have built on modelling by the SMF and the Daycare Trust.⁴⁰ The main input we vary is the wage-rate of childcare workers. Following the SMF/Daycare Trust model, we assume that if childcare workers had the same training, qualifications, and wage levels as primary school teachers, this would improve the quality of childcare provided. As in education, pay would vary according to qualifications.⁴¹ It is not, of course, a perfect proxy. We recognise that some childcare workers deliver excellent standards of care regardless of pay or qualifications. However, we take it as a reasonable assumption that most childcare workers would be able to provide higher quality care if they had the opportunity to continue their education and training to graduate level, and felt valued and rewarded appropriately.⁴²

Because the wages of primary school teachers are significantly higher than childcare workers' current wages, we recognise that it may be necessary to make a gradual transition to these, and we assume that some increase in wages will bring some improvements in quality. We therefore also look at how much it would cost to raise the wages of lowest paid childcare workers to the Living Wage⁴³ (at 2012 rates; Appendix 1).⁴⁴

Following the SMF/Daycare Trust model, we calculate the price per child per hour through estimates of the number of children of different ages who are cared for by each provider,⁴⁵ adopting the legal staff-to-child ratios for different ages, calculating wage costs, and then adding on additional costs such as a staff efficiency cost, which covers time spent doing paper work, designing sessions, and meeting with parents, and other costs such as accommodation, materials, furniture, etc. The final cost obtained is not one specifically for children under three; instead, it assumes childcare providers, as they tend to now, cater for a range of ages and cross-subsidise the higher costs for younger children by the cheaper costs of providing care for older children. We arrive at the final costs by averaging costs for children in different age groups. Given current instances of cross-subsidising costs of different age groups this is not an unrealistic assumption. Below is a simple diagram of how the childcare cost model works.

Figure 1. The childcare cost model. The hourly costs of childcare per child



The hourly costs of childcare per child

We start by estimating the cost per hour per child obtained when we enter three sets of wages for childcare workers into the model: first, average wages as they currently exist in the sector; secondly, the wages that would result from raising those most poorly paid to the Living Wage, keeping the same wage ratios of earnings of higher to lower paid staff in the sector; and finally wages that are equivalent to primary school teachers' salaries.

Tables 2, 3, and 4 show these different wage levels as hourly costs to the provider and resulting costs per child per hour. Wages are depicted for three types of workers which follow the definitions used in the Department for Education (DfE) Providers Survey.⁴⁶ Wages have been adjusted to include the cost to the employer of national insurance and pension contributions.⁴⁷ Full details of the model can be seen in Appendix 2.

Table 2. The hourly cost of staff and the resulting cost per child per hour to providers for the Current Wage model.

Hourly cost of staff in the Current Wage model		
Senior managers	Supervisors	Other staff
£11.84	£8.92	£7.16
Resulting cost per child per hour: £ 3.31		

Table 3. The hourly cost of staff and the resulting cost per child per hour to providers for the Living Wage model.

Hourly cost of staff in the Living Wage model		
Senior managers	Supervisors	Other staff
£13.43	£10.13	£8.16
Resulting cost per child per hour: £ 3.76		

Table 4. The hourly cost of staff and the resulting cost per child per hour to providers for the High Quality model.

Hourly cost of staff in the High Quality model		
Senior managers	Supervisors	Other staff
£29.41	£26.29	£20.01
Resulting cost per child per hour: £ 9.35		

The total cost of full-time childcare for all children under three

From these costs we can estimate the total cost of providing full-time care for all children aged 6 to 36 months in England. We have done so by:

scaling up the cost per child per hour by the number of children in the country; and estimating how much full-time childcare would cost providers each year, where full-time childcare is given as 45 hours per week – an eight-hour working day plus two half-hours for parents to take and collect their child at the start and end of each working day – for 52 weeks a year,⁴⁸ with 26 weeks deducted for children under 12 months to account for statutory maternity leave.^{49,50}

The model shows the maximum costs of full-time childcare being made available to parents of children in this age bracket. The results are shown in Table 5. (As we note, arrangements for informal care greatly reduce these costs in most cases.)

Table 5. Estimated total cost of providing full-time childcare for every child aged six months to under three years in England.

Model	Total cost 2013	Costs per child per year 2013
Current Wage	£13,268,000,000	£6,390
Living Wage	£15,091,000,000	£7,268
High Quality	£37,495,000,000	£18,057

Our calculations suggest that it would cost just over £13 billion per year to provide full-time childcare for all children aged six months to under three years at current prices, £15 billion at costs based on childcare workers being paid the Living Wage, and nearly £37.5 billion if childcare workers were to have salaries equivalent to those of primary school teachers.

The reduction in costs through informal care

The costs presented here represent maximum costs based on all children under three being in full-time formal childcare from the age of six months. We have not attempted to estimate in this model the reduction in overall costs that would, in reality, result from the provision of informal care which many parents would use alongside or in place of formal childcare. However, it is certain that actual costs, if childcare was made available to all, would be lower than those presented here. Even without a move to shorter working hours (see below) no

parents would make use of formal childcare for 45 hours a week and for 52 weeks a year.⁵¹

The cost of childcare under a 30-hour working week

Here we show the costs associated with providing full-time childcare for all children in England aged 6 to 36 months, in a scenario in which a 30-hour working week was standard. This would mean that parents could spend the additional hours they were not in paid work caring for their children, saving on childcare costs.

Our assumptions and parameters

The model follows the same assumptions as those in the childcare cost model above. In addition:

- We assume that any time spent not working can instead be used to care for a child. Because weekly paid working hours have been reduced from 40 to 30, each parent can therefore contribute 10 hours to caring for a child plus an additional hour for every full day a child no longer requires to be taken to and picked up from a childcare provider. This translates into a saving of 22 hours of necessary formal childcare for coupled parents and an 11-hour saving for lone parents who are able to work full time (where full time is 30 hours rather than 40 hours a week).⁵²
- While we recognise that increasing the amount of time parents devote to unpaid childcare is not universally beneficial to all children in all families, our modelling does not take this into account.

The Living Wage 30 cost

As well as pricing childcare at the high quality cost, the Living Wage cost and the current cost, we also calculate a revised Living Wage cost, which we have termed the Living Wage 30 cost. This is based on scaling up the Living Wage so that a childcare worker who works a 30-hour week would take home the same income as a childcare worker currently working a 37.5-hour week on the hourly Living Wage of £7.45. This works out as an hourly wage of £9.31. The associated salaries and final childcare costs which results from this Living Wage 30 childcare cost model are shown in Table 6.

Table 6. The hourly cost of staff and the resulting cost per child per hour to providers for the Living Wage 30 model.

Hourly cost of staff in the Living Wage 30 model		
Senior managers	Supervisors	Other staff
£16.92	£12.80	£10.33
Resulting cost per child per hour: £ 4.76		

Table 7 shows us the total cost of providing full-time formal childcare to all children under three from the age of six months, introducing the Living Wage 30 scenario, and under two working-week scenarios: one with the current standard working week of 40 hours, and one with a standard working week of 30 hours. Full details of our calculations can be seen in Appendix 2.

Table 7. The scaled-up costs of providing full-time childcare for every child under three in England for each of the different childcare cost scenarios under the 40-hour and 30-hour working-week scenarios.

	Childcare cost scenarios	Total cost 2013	Cost per child 2013
40 Hr wk scenario	Current	£13,268,000,000	£6,390
	Living Wage	£15,091,000,000	£7,268
	Living Wage 30	£19,084,000,000	£9,191
	High Quality	£37,495,000,000	£18,057
	Childcare cost scenarios	Total cost 2013	Cost per child 2013
30 Hr wk scenario	Current	£7,378,000,000	£3,553
	Living Wage	£8,392,000,000	£4,041
	Living Wage 30	£10,612,000,000	£5,111
	High Quality	£20,850,000,000	£10,041

It should be noted that this model is highly idealised. For example, it does not take into account changes in household spending patterns which might result from a shorter working week, or the wider economic effects of adopting a shorter working week (such as effects on the labour market, and government spending on tax revenues and unemployment benefits). These are beyond the scope of this exercise.

The reduction in costs through informal care

As with our calculation of the costs of providing formal childcare to all children under three, these reduced costs are maximum figures that are likely to be further reduced if we included the take-up of informal childcare in our modelling. As we have noted, it is common for parents to use a mix of formal and informal childcare. A shorter working week would free up more time for a range of informal childcare by grandparents, siblings, friends, and neighbours. It is therefore likely that many parents would increase the informal share of the childcare mix, reducing the costs to well below the levels represented in our model.

The cost of childcare to households

In this section we explore how increasing the wages of childcare workers (and thus the hourly costs of childcare) and reducing the number of hours in the paid working week would affect household income after the cost of childcare has been deducted, assuming that the costs of childcare were borne by parents. In particular we wish to explore whether these changes would leave households with unacceptable levels of income.

Taking the minimum income standard (MIS) for a lone parent or a couple with a toddler as benchmark household budget, we investigate how much disposable income households would have above a minimum income standard if working a 30- or 40-hour week.

Box 2: The minimum income standard

The MIS is calculated each year by the Centre for Research in Social Policy (CRSP).⁵³ It provides detailed figures of what households need in order to have a minimum acceptable standard of living, based on research with groups of members of the public specifying what items need to be included in a minimum household budget. The groups are informed by expert knowledge where needed, for example on nutritional standards. The results show how much different households – based on the number of earners and dependent family members – need in a weekly budget. These figures are updated annually taking account of inflation and changes in the tax and benefit system, and every two years revisions are made on the basket of items used to calculate the budgets in light of changes in society. Given this combination of price changes, as well as subjective measures of what is required for an acceptable minimum household income, it is a suitable figure to use as a benchmark for our purposes. When reducing people's income through reducing their working hours, we can use the MIS to check whether their household income falls below an acceptable minimum.

The revised minimum income standard

The revised MIS used here takes account of changes in childcare costs in different scenarios, assuming all other costs remain the same.⁵⁴ It is calculated through replacing the costs of childcare specified in the MIS, with the different costs associated with each scenario presented so far in this report (varying childcare workers' wages and the standard number of hours in a working week). For example, the current MIS for a lone parent with a toddler is £502.80 per week including childcare costs of £149.78. If we were to assume their childcare costs changed to £200 per week their revised MIS would be £553.02 (£502.80 - £149.78 + £200).

Household net incomes are calculated through taking hourly gross earnings figures from the Annual Survey of Hours and Earnings (ASHE),⁵⁵ adding any additional support families would currently get from Working Tax Credits, Child Tax Credits, and Child Benefit, and calculating their net earnings after income tax and national insurance have been deducted.⁵⁶

Our assumptions and parameters

The model follows the same assumptions as those in the childcare cost model above. In addition:

- For two-parent households, we assume that both parents work full time. For lone-parent households, we assume the parent works full time. We assume that each household has only one child.
- We assume that any time spent not working can instead be used to care for a child: under a 30-hour working week, this would include an additional 10 hours for each parent plus an additional hour for every full day a child no longer requires to be taken to and picked up from a childcare provider. This translates into a saving of 22 hours of necessary formal childcare for

coupled parents and an 11-hour saving for lone parents.

- Household disposable incomes include additional support that would be received through the current benefits system based on gross earnings and childcare costs. This includes tax credits; however, we exclude the new free entitlement for the 20 per cent most disadvantaged two-year-olds.⁵⁷

The effects on household income of changes in childcare cost and the standard working week

Table 8 shows how far household annual net incomes would be above or below the revised MIS, under different childcare cost scenarios, and under both a standard 40-hour and 30-hour working week. We have calculated these values for dual earners and lone parents at three income levels. Where incomes remain above the MIS, the figures are in black. Where the incomes fall below the MIS, the figures are in pink and marked with a minus sign. Where final incomes after childcare are higher under the 30-hour scenario than under the 40-hour scenario, these figures (whether above or below the MIS) are highlighted in bold.

Table 8. Net income minus the revised MIS for lone and dual parents at different income levels under the different childcare cost scenarios and 40-hour and 30-hour working-week scenarios.

Annual disposable income above the revised MIS (£)							
Working week scenario:		40hr week	30hr week	40hr week	30hr week	40hr week	30hr week
Income level (percentile):		20th	20th	Median	Median	80th	80th
Childcare cost scenario	Family Type						
Current	Two parents	£4,462	£3,225	£14,909	£9,707	£33,713	£25,884
Current	Lone Parents	£2,134	£1,583	£4,318	£3,221	£7,175	£6,059
LW	Two parents	£4,130	£3,083	£13,846	£9,164	£32,649	£25,341
LW	Lone Parents	£1,802	£1,328	£3,986	£2,966	£6,823	£5,804
LW30	Two parents		£2,697		£7,972		£24,149
LW30	Lone Parents		£811		£2,449		£5,287
HQ	Two parents	-£8,711	-£364	£768	£3,190	£19,572	£18,657
HQ	Lone Parents	-£11,039	-£6,816	-£8,855	-£5,178	-£6,018	-£2,340

Note: We do not present figures for the LW30 cost at a 40-hour week, as we would only suggest introducing the LW30 if a 30-hour week was standard.

Key findings from the model

Effects of raising childcare costs in order to improve quality (before moving to a shorter working week)

- **Childcare costs are already a significant burden to low-income households. Increasing childcare costs to *High Quality* levels would push even dual earning low-income families below a minimum income standard (the revised MIS).** Those earning low wages (here represented by the bottom 20th percentile of the earnings distribution, on wages of £8.80 for men working full time and £8.09 for women working full time), are only a few thousand pounds above a minimum income standard at current childcare costs. Although dual earners would be able to afford the modest increases in childcare costs of paying childcare workers the *Living Wage*, increasing costs to the level deemed necessary for high quality would push even dual-earning households below a revised minimum income standard. Dual-earning households on median incomes would be brought within only £1,000 a year of the revised MIS threshold. Increased financial support from government would be essential to protect families against falls in living standards.
- **Full time *High Quality* childcare (where high quality is assured by high wages) would only really be affordable for high earners.** Under the *High Quality* scenario (under which childcare workers are paid the same wages as primary school teachers), only dual-earning families in the 80th percentile of the earnings distribution are able to afford full-time childcare, enabling them to remain in full-time employment – and stay significantly above the revised MIS threshold. Since the median earning households would remain only just above the threshold under the *High Quality* scenario, we can conclude that only the highest earning half of dual income households would be able to afford such high childcare costs under the current level of wages and system of support.
- **Lone parents are particularly burdened by childcare costs.** Low-income lone parents of any income bracket, even those in the 80th percentile and above (earning more than £18.80 per hour), would not be able to cope with an increase in childcare costs from the *Current* rate of £3.30 to the *High Quality* rate of £9.35. In the *High Quality* scenario, they would be unable to remain in full-time employment and pay for childcare without falling below a revised MIS.
- **Paying childcare workers the *Living Wage* leaves childcare affordable for the majority of households.** For dual-earning families with both parents working full time, with earnings around the median wage, their net income after childcare remains above the revised MIS when we apply the *Living Wage* scenario. Their annual income after childcare costs would be reduced by £1,063 (a 7.1 per cent fall in disposable income above the revised MIS). For a household with a lone parent in full-time employment, their annual income after childcare costs would be reduced by £332 (a 7.7 per cent fall in disposable income above the revised MIS).
- **The effect on costs of raising childcare quality is regressive without government support.** Paying childcare workers the *Living Wage* would result in a significant reduction in the disposable incomes of lower earning households if they bore these costs. For dual-earning and lone-parent

households in the 20th percentile of the national earnings distribution, increasing childcare costs from the *Current* scenario to the *Living Wage* scenario would require, respectively, a 7.4 per cent and 15.6 per cent fall in household incomes above the revised MIS threshold. These falls are greater for lower-income households than for middle- and higher-income households. The regressive effects of raising the costs of childcare can only be avoided by financial support from government.

Effects of reducing working hours

- **Reducing standard working hours would greatly reduce the overall costs of providing higher quality formal childcare.** Our calculations show that reducing the standard working week to 30 hours and transferring the balance of parents' time from paid work to unpaid care would reduce the putative financial costs of providing high quality, full-time, formal childcare for all children under three (from the age of six months) from £37.5 billion to £21 billion per annum. This is around a 44 per cent reduction in costs due to the reduction in hours of formal childcare required. How this saving is distributed depends on whether the provision is publically or privately funded, or on the balance between public and private funding, as well as on the fiscal implications of a shorter working week.
- **The overall costs of paying childcare workers a living wage would fall if standard working hours were reduced from £15 billion to £10 billion.** Comparing our different models, we find that these costs are lower than the overall costs of paying childcare workers at current levels under a 40-hour working week, which amount to £13 billion.⁵⁸
- **If parents were to bear the costs for high quality childcare, all but the highest-earning dual-income households would be materially better off on a 30-hour than on a 40-hour working week.** If childcare workers were paid to reflect training and qualifications equivalent to primary school teachers, and parents were to bear these costs, the majority of parents would be materially better off working 30 rather than 40 hours a week. Under current costs, the earnings households forfeit through working fewer hours are usually greater than the savings they make through a reduced childcare bill. The effect holds until childcare costs rise to the level assumed to reflect high quality care. At this point the material incentives for working 40 instead of 30 hours disappear, and the savings on childcare made from releasing time from paid employment more than compensate for lost earnings (after taxes).
- **Dual-earner households on median earnings and above could reduce hours of employment to 30 hours and remain above the revised MIS while paying for childcare under the *High Quality* scenario.** Households in the 80th percentile would find that the gap between their annual income and the revised MIS fell by no more than £915 a year, or 4.7 per cent. Some may consider the increase in disposable time more valuable than a loss of earnings on this scale.

5. Childcare, work, and time: areas for discussion

Our modelling is – by necessity – idealised and simplified. Questions remain to be answered: How would informal care affect our modelling? What would be the effects of reduced hours of employment on the labour market, tax revenues, and unemployment benefits, and on household spending patterns? What would be the effects on gender relations, on GHG emissions, and on the capacity of people to live more sustainably? Our modelling cannot take into account these complex factors, and this report alone cannot answer these questions. We hope that by posing questions, however, and offering some areas for discussion, we can open a debate on these important matters..

In this section, we outline some of the issues which we think have arisen from this report, and which would benefit from further exploration, discussion and debate.

A vision for the future of childcare

We suggest three changes to achieve a better system of childcare. We should improve the quality of childcare services; we should make higher quality childcare available to all, not just the rich; and we should alter the balance between paid-for and unpaid care – or between the formal and the core economy⁵⁹ – by shortening the working week to release more parental time for uncommodified childcare.

This last objective is not simply to make childcare less costly to households, but to achieve – over time – a range of social, environmental, and economic benefits that we consider essential for a sustainable future.

Improving the quality of childcare

Young children require stable, warm, predictable relationships. When childcare is provided outside the home, high standards of care are needed, with low

ratios of adults to children and dedicated, qualified childcare workers on hand to meet children's developmental needs. The quality of care is a pivotal factor in giving parents of young children more opportunity to participate in the labour market. The higher the quality, the more confident parents can be that, while they are out at work, their children will flourish under the care they are in. And where parents are unable or unwilling to provide high quality care themselves, for whatever reason, the quality of care their children receive becomes all the more important.

Making high quality childcare accessible and affordable to all

We propose that ensuring that childcare is of a high quality calls for education, training, and qualifications for childcare workers, combined with reasonable prospects of career progression and appropriate levels of pay. This would make it much more expensive, as we have seen.

If the costs were borne by parents, only those who were already better off could afford it. High quality childcare provides a route for children to overcome disadvantages associated with their background, and for parents, especially mothers, to have better opportunities in the labour market and to improve their income and life chances. High quality childcare can create the conditions for social mobility and greater equality; it can help to end the heavily gendered and undervalued nature of the childcare sector – but only if it accessible and affordable for low and middle income families, not just for the rich. This requires support from government.

Investment not expenditure

Paying the costs of high quality childcare must be seen as an investment in social and economic infrastructure. Investing in the healthy development of children brings benefits to society as a whole. It encourages people of all backgrounds to flourish; it is likely to have a positive effect on the future earnings of those from disadvantaged backgrounds; and it reduces the need for costly interventions later in their lives. It is for these reasons, among others, that we invest collectively in education. Current public spending on primary, secondary, and tertiary education is around £5,700, £6,300, and £10,300 per child per year, respectively.⁶⁰ Given that many studies show that investment in children's early years is more effective than in their later years,^{61,62,63} there is a strong argument that investment in childcare would have comparable or greater benefits.

Childcare and gender

While women's participation in paid work has risen dramatically over the last 50 years,⁶⁴ men have not taken on anything like an equivalent share of the unpaid work conducted within the family. It is this unequal distribution of paid and unpaid time between men and women that has entrenched gender inequalities, creating systemic disadvantages for women in the labour market and making it difficult for men to spend as much time as women with their children. Reducing working hours for both women and men begins to address this gender inequality, opening up the possibility of sharing paid and unpaid work more equally between parents.

Combining high quality paid-for care with more hours of unpaid care

A shorter working week would enable both men and women to spend more time caring for their children; it would also reduce the costs of formal childcare provision, as less of it would be needed. There are obvious difficulties in moving towards a shorter working week, not least the impact on earnings; we argue elsewhere^{65,66} that shortfalls in earnings which might initially result from a move to a shorter working week should be addressed by tackling the issue of low pay. We have also argued elsewhere^{67,68} that reduced hours of paid employment could bring a range of benefits, not only to the labour market and the economy, but also to gender relations, GHG emissions, and the capacity of people to live more sustainably. It is beyond the scope of this report to model these effects: there is crucial work in this area that remains to be done.

We do know that shorter hours of paid work would reduce the income of most households. But, as the model shows, it reduces the costs to households of paid-for childcare if parents transferred some or all of the released time to care for their children without pay. If both parents continued in paid employment for, say, 30 hours a week, they would still need a considerable amount of formal care for their children. If these costs were covered fully or partly by public funding, it could further offset the effects on family income of working shorter hours.

6. Conclusion

Current debates about childcare policy focus on how to make it more affordable and accessible, and sometimes how to improve quality. They tend to overlook the need to improve the pay and conditions of care workers, and they take little or no account of the gendered distribution of paid and unpaid time. We argue, instead, that childcare, paid work, gender, and time are inextricably linked.

To achieve higher quality care requires a fresh approach to training, career development, and pay for childcare workers. This is costly and could only be made affordable to everyone through financial support from government. The manifest benefits of improving the quality of childcare and reducing inequalities make a strong case for treating public expenditure on childcare as an investment in essential social and economic infrastructure.

If the length of a standard paid working week were cut from 40 to 30 hours, the cost of providing full-time, high quality, formal childcare would be substantially reduced, because fewer hours of care would be necessary. In addition, this change would help to reduce the gender inequalities relating to childcare, work, and time that are bound up with the long hours currently required in the labour market. Within a 30-hour standard working week, the provision of universal, free, high quality childcare would help to achieve a more equal distribution of employment opportunities, pay, discretionary time, and social mobility between women and men as well as between families in different socio-economic groups.

Appendix 1: Limitations of the model

Any conclusions drawn from this study must take account of the limitations of the model we have used here. Our calculations are set out in detail in Appendices 2 and 3. They are based on certain assumptions; the limitations these create are as follows:

- Final costs associated with each childcare scenario were taken as an average of the costs necessary for different age groups. This was to reflect the cross-subsidising that providers often use in their business models. This assumes that sufficient numbers of older children attend full-day care in order to reduce the cost of providing childcare to younger age groups. If we only took account of children under three, the costs would be higher because of the need for higher staff-to-child ratios.
- We have not taken account of the new (2013) government offer of free childcare places for 15 hours a week for the 20 per cent most disadvantaged two-year-olds, rising to the 40 per cent most disadvantaged two-year-olds in September 2014. This is likely to have improved the disposable incomes after childcare costs of the lowest earners but the incentives created by the different childcare cost and working-time scenarios would need exploring in greater detail with this entitlement added. We have excluded this from the model partly because many providers claim that the money available to them from the government does not cover the cost of providing this care.⁶⁹ This disparity between cost and actual investment means that modelling the free entitlement raises additional questions relating to models of provision not explored here.
- The household model looks only at what the effects of raising the costs of childcare would be on 'idealised' households, with dual full-time earners or single full-time earners and with only one child under three and no other children. Earners are assumed to have jobs that enable them to work 40 hours per week (under that scenario). This fails to capture the variations of household types including those with part-time earners and with other dependants such as students and elderly, unemployed, and disabled people. It is reasonable to suppose that household earnings have been over-estimated as a result of these assumptions.
- Although we are well aware that many parents combine informal care from family members, friends and/or neighbours, with paid-for childcare, we have not taken this into account in the model. The more informal care parents use, the fewer the hours for which they need paid-for care. As a result, the cost of childcare per household is likely to be lower than the cost indicated by the model. This has implications for the level of government investment required to make higher quality childcare available to lower-income households.

- Our model, for the Living Wage and the Living Wage 30 scenarios, takes the Living Wage as an input which is based on the minimum income standard (MIS). This includes calculations of the cost and amount of childcare deemed necessary for each family type.⁷⁰ Therefore altering the cost of childcare will alter the calculation of the MIS and thus the level at which the Living Wage ought to be set. We have not taken this into account, for reasons explained in Appendix 4, and have kept the Living Wage at its current national level of £7.45.
- Both the Living Wage and the teachers' salaries were based on the national level, outside London. Similarly, when calculating the childcare costs under different scenarios, no consideration was given to regional variations in prices. This would have added a significant amount of complexity to the model.

Appendix 2: Childcare cost models

Here we set out the childcare cost models in greater detail and the assumptions used.

Childcare workers' salaries

For each of the childcare cost scenarios it is assumed that three types of staff are necessary for a childcare provider: senior managers, supervisors, and other paid staff. These roles are taken from the *Department for Education's Childcare and early years providers survey: 2011*.⁷¹ It is assumed that each provider requires one senior manager, while the mix of supervisors and other staff are determined by a combination of the qualification mix and staffing ratios detailed below.

The salaries of childcare workers for the High Quality childcare scenario are taken from the *Department for Education's School teachers' pay and conditions document 2013*.⁷² Taking the mid-points of each pay scale for England and Wales, for supervisors the annual salaries of qualified teachers are used, £26,836; for other staff the annual salaries of unqualified teachers are used, £20,622; both are based on 1,265 working hours a year. For senior managers the mid-point of the annual salaries of leading practitioners is used, £47,678; this is based on 252 working days (260 working days a year minus 8 bank holidays). For reasons of comparison, based on the same hours as for the other salaries above, this is equivalent to £29,917. On top of these wages, national insurance (NI) contributions for the year 2013/14 are added⁷³ as well as the 14.1 per cent pension contributions teachers' employers currently pay. The final annual and hourly staff costs for the High Quality scenario are in Table A1.

Table A1. Staff costs for the High Quality childcare cost scenario

High Quality scenario	Senior manager	Supervisor	Other staff
Annual	£37,201.79	£33,261.20	£25,312.85
Hourly	£29.41	£26.29	£20.01

The salaries of childcare workers for the Current childcare scenario are taken from the *Department for Education's Childcare and early years providers survey: 2011*⁷⁴ which gives the average salary for each of the different roles listed in Table A1. These are £8.10 per hour for supervisors, £6.60 for other staff, and £10.60 for senior managers. Added to these are NI contributions for the year 2013/2014 as well as the 3 per cent pension contributions employers will eventually be obliged to pay towards an employee's pension due to phasing in of the automatic enrolment scheme. These final hourly staff costs for the current childcare cost model are shown in Table A2.

Table A2. Staff costs for the Current childcare cost scenario

Current scenario	Senior manager	Supervisor	Other staff
Hourly	£11.84	£8.92	£7.16

The salaries of childcare workers for the Living Wage scenario are calculated through paying those lowest paid, the other staff, the Living Wage for 2013 – £7.45 per hour, as calculated by the Centre for Research in Social Policy at Loughborough University and reported by the Living Wage Foundation, and then calculating what the other types of employees would need to be paid to keep the wage ratios between roles the same as those reported in *Childcare and early years providers survey: 2011*⁷⁵ and used in the Current childcare cost model. As with the Current childcare cost model, the NI contributions and auto enrolment pension contributions are added to the salaries to calculate the total cost per hour to employers. The final hourly staff costs are shown in Table A3.

Table A3. Staff costs for the Living Wage childcare cost scenario

Living Wage scenario	Senior manager	Supervisor	Other staff
Hourly	£13.43	£10.13	£8.16

Qualification mix of staff

The childcare cost model incorporates the same ratios of qualified staff necessary to achieve high quality childcare as the SMF/Daycare Trust model.⁷⁶ This specifies that for staff caring for children under two years, 33 per cent are qualified to Level 6 (have a graduate qualification) and 67 per cent are qualified to Level 3 (A level equivalent). For children two years and older, the qualified staff necessary for high quality are equally divided between Level 6 and Level 3 (50 per cent each).

Staffing ratios

The staffing ratios are kept in line with the legal requirements. This again mirrors the SMF/Daycare Trust model, where their research concluded that ‘as long as staff qualifications and pay are increased, the current adult-child ratios set out in the Early Years Foundation Stage (EYFS) welfare requirements are sufficient to ensure high quality provision.’⁷⁷ These ratios are 1:3 for children under two years, 1:4 for children aged two to three, and 1:8 for children aged three years and older. The ratio for children aged three years and older set out in EYFS is actually 1:13 when there is a graduate qualified member of staff present. However, given that the purpose of this model is to ensure high quality care, our model adopts the lower of these two ratios for children over three years.

Other non-wage costs

Other non-wage costs to providers are calculated using the figure quoted in the *Childcare provider finances survey*⁷⁸ which stated that on average wage costs made up 77 per cent of providers' total costs. This means that in this model non-wage costs such as building rent, furniture, utilities, and materials are directly proportional to wage costs and thus as wages increase with quality, premises and other non-wage costs also increase. This assumption seems reasonable given that it would be difficult to imagine the quality of childcare vastly improving with staff qualifications alone if the quality of the providers' premises and the resources available to staff remained the same.

Staff 'efficiency' costs

An additional cost is added to the wage costs of staff, which is for the amount of time childcare workers need to spend working on administrative tasks and other aspects of their jobs which do not involve direct contact with children. For example, as well as time spent directly with children, staff will spend time on planning, having team meetings, conducting consultations with parents, and writing reports. The *Childcare provider finances survey*⁷⁹ reported that 82 per cent of staff costs arose from contact time with children. The model incorporates this figure, scaling up the cost of staff to meet these additional costs.

Cross-subsidies and calculating a cost per child per hour

The model creates a hypothetical childcare centre which caters for three age groups, under two, two to three, and over three. The number of children within each age group is calculated by taking the mean number of Ofsted registered places in full-day care, reported in the *Childcare and early years providers survey: 2011*,⁸⁰ which is 41, and dividing this by the proportions of each age group attending full-day care, which are 20, 30, and 50 per cent for children under two years, children two to three, and children three years and older, respectively.

Each age group is split into separate rooms which are then appropriately staffed to match both the ratio requirements and the qualification requirements deemed necessary for the High Quality scenario. Salaries are then factored in with the staff efficiency costs and other non-wage costs mentioned. The final cost per child per hour can be calculated for each age group. To reach a final figure for each quality scenario, we assume providers can fully cross-subsidise between the different costs for different ages to provide care for children of all ages at the same cost. This cross-subsidy mechanism is simply taking the average of the three different costs for the three different age groups calculated in the model.

The calculations are shown for each childcare cost model in Tables A4–A6.

Table A4. Calculating the High Quality Cost scenario

Quality model - where wages are equal to qualified and unqualified teachers' salaries

Calculating the senior manager costs

Hours worked per week (mean)	35
Opening hours	45
Places	41
SM hourly wage cost	£29.41
SM weekly wage cost	£1,029.30
SM cost per hour open	£22.87
SM cost per hour open per child	£0.56

Decimal version	Ratio	No of place	No of staff	Graduate (L6)	L3 staff	L6 wage costs p/hr	L3 wage costs p/hr	Staff costs per hour	Staff costs per place p/hr	With senior manager*	Staff efficiency	Additional costs
Room1	under 2s	1:3	8.2	2.733333	0.902	£26.29		£23.72				
					1.831333		£20.01	£36.65	7.36121331	£7.92	£9.66	£12.54
Room2	2 to 3	1:4	12.3	3.075	1.5375	£26.29		£40.43				
					1.5375		£20.01	£30.77	5.78794926	£6.35	£7.74	£10.05
Room3	3+	1:8	20.5	2.5625	1.28125	£26.29		£33.69				
					1.28125		£20.01	£25.64	2.89397463	£ 3.45	£4.21	£5.47

*cost per place p/h

Staff costs per place per hr averaged over different age costs

£9.35

Table A5. Calculating the Current Cost scenario

Current Costs - where wages are equal to average hourly pay (full-day care)

Calculating the senior manager costs

Hours worked per week (mean)	35
Opening hours	45
Places	41
SM hourly wage cost	£11.84
SM weekly wage cost	£414.27
SM cost per hour open	£9.21
SM cost per hour open per child	£0.22

Decimal version	Ratio	No of place	No of staff	Graduate (L6)	L3 staff	L6 wage costs p/hr	L3 wage costs p/hr	Staff costs per hour	Staff costs per place p/hr	With senior manager*	Staff efficiency	Additional costs
Room1	under 2s	1:3	8.2	2.733333	0.902	£8.92	£8.04					
					1.831333		£7.16	£13.12	2.58077333	£2.81	£3.42	£4.44
Room2	2 to 3	1:4	12.3	3.075	1.5375	£8.92	£13.71					
					1.5375		£7.16	£11.01	2.01004	£2.23	£2.73	£3.54
Room3	3+	1:8	20.5	2.5625	1.28125	£8.92	£11.42					
					1.28125		£7.16	£9.18	1.00502	£1.23	£1.50	£1.95

*cost per place p/h

Staff costs per place per hr averaged over different age costs:

£3.31

Table A6. Calculating the Living Wage Cost scenario

Living wage Costs - where lowest wage equals living wage and others are scaled up on same ratios

Working out the senior manager costs

Hours worked per week (mean)	35
Opening hours	45
Places	41
SM hourly wage cost	£13.43
SM weekly wage cost	£470.07
SM cost per hour open	£10.45
SM cost per hour open per child	£0.25

Decimal version	Ratio	No of place	No of staff	Graduate (L6)	L3 staff	L6 wage costs p/hr	L3 wage costs p/hr	Staff costs per hour	Staff costs per place p/hr	With senior manager*	Staff efficiency	Additional costs
Room1	under 2s	1:3	8.2	2.733333	0.902	£10.13	£9.14					
					1.831333	£8.16	£14.94	2.93652667	£3.19	£3.89	£5.05	
Room2	2 to 3	1:4	12.3	3.075	1.5375	£10.13	£15.58					
					1.5375	£8.16	£12.54	2.28644455	£2.54	£3.10	£4.02	
Room3	3+	1:8	20.5	2.5625	1.28125	£10.13	£12.98					
					1.28125	£8.16	£10.45	1.14322227	£1.40	£1.70	£2.21	

*cost per place p/h

Staff costs per place per hr averaged over different age costs £3.76

Childcare cost model - Living Wage 30

The salaries of childcare workers for the Living Wage 30 childcare cost model are calculated through paying those lowest paid – the other staff – the Living Wage for 2013 of £7.45 per hour recalculated to amount to the same weekly income if the worker put in 30 rather than 37.5 hours a week. As with the Living Wage model, the wages of the other employees are calculated through keeping the wage ratios between roles the same as those reported in *Childcare and early years providers survey: 2011*⁸¹ and used in the Current childcare cost model. As with the Current childcare cost model, the NI contributions and auto enrolment pension contributions are added to the salaries to calculate the total cost per hour to employers. The final hourly staff costs are shown in Table A7.

Table A7, Staff costs for the Living Wage 30 childcare cost scenario

Living Wage 30 model	Senior Manager	Supervisor	Other staff
Hourly	£16.92	£12.80	£10.33

It should be noted that there is a methodological issue with scaling up the Living Wage, given that the Living Wage is based on expenditure requirements for a typical household whose spending pattern is based on a 37.5- or 40-hour working week lifestyle. Households may need less income if they have more time.

The Living Wage 30 childcare cost model uses the same assumptions as those used in the other childcare cost models. The results are shown in Table A8.

Table A8. Calculating the Living Wage Cost scenario

Living wage 30 Costs - where lowest wage equals living wage and others are scaled up on same ratios

Working out the senior manager costs

Hours worked per week (mean)	35
Opening hours	45
Places	41
SM hourly wage cost	£16.92
SM weekly wage cost	£592.36
SM cost per hour open	£13.16
SM cost per hour open per child	£0.32

Decimal version	Ratio	No of place	No of staff	Graduate (L6)	L3 staff	L6 wage costs p/hr	L3 wage costs p/hr	Staff costs per hour	Staff costs per place p/hr	With senior manager*	Staff efficiency	Additional costs
Room1	under 2s	1:3	8.2	2.733333	0.902	£12.80	£11.55					
					1.831333		£10.33	£18.92	3.716045	£4.04	£4.92	£6.39
Room2	2 to 3	1:4	12.3	3.075	1.5375	£12.80	£19.69					
					1.5375		£10.33	£15.89	2.89209568	£3.21	£3.92	£5.09
Room3	3+	1:8	20.5	2.5625	1.28125	£12.80	£16.41					
					1.28125		£10.33	£13.24	1.44604784	£1.77	£2.16	£2.80

*cost per place p/h

Staff costs per place per hr averaged over different age costs £4.76

Appendix 3: Household model

The household model calculates the effects of increasing childcare costs and varying working hours on annual income for two family types: lone parents and dual-earner households. Numerous simplifying assumptions are made which need to be taken into account.

The model uses the median wages from the Annual Survey of Hours and Earnings 2012.⁸² It uses the median gross hourly rate for full-time male and full-time female earnings for the coupled household and the median gross hourly full-time female earnings for the lone-parent household. The 20th, median, and 80th percentiles of the gross hourly earnings distribution are used to represent households on low, medium, and high incomes. These hourly wages are shown in Table A9.

Table A9. Wages as shown in the Annual Survey of Hours and Earnings 2012

Gross hourly wages	Male - median	Female - median
20th percentile	£8.80	£8.09
Median (50th percentile)	£13.41	£12.01
80th percentile	£21.87	£18.80

In all the household scenarios, it is assumed each earner works 40 hours per week and earns a gross income of their hourly earnings multiplied by 40. For example, a dual-earner household on median earnings would have a gross weekly income of £536.40 (£13.41 x 40) + £480.40 (£12.01*40) = £1016.80 and a lone parent would have a weekly income of £480.40 (£12.01*40). It is assumed each family has a single child and needs childcare for every hour the parents are at work, plus an additional hour for each day that both parents are at work, to incorporate two half-hour pick-up and drop-off times. Therefore a dual-earner household, where both parents are working 40 hours, will require 45 (40 + 5) hours of childcare per week. If childcare were to cost the amount deemed necessary by the high quality model, this would work out as £420.75 per child per week (£9.35 x 45).

Gross incomes are converted into net incomes using 2012/2013 income tax and NI rates and thresholds. Gross incomes have also been put through the tax benefit calculator on the HMRC website which gives a rough annual figure of tax credit entitlements based on gross income and childcare costs. Each household also receives child benefit applicable for a single child which in 2012/2013 was £20.30 a week, or £1,055.60 a year.

The revised MIS threshold is what is deemed a minimum income standard for a couple or lone parent with a toddler, minus the childcare costs within this figure, plus the specific childcare costs relevant for that particular scenario. For example, for a dual-earner household working 40 hours with high quality childcare costs of £420.75 per week, the revised MIS is £795 (£523.95 - 149.78 + 420.75). How far a household is above or below this threshold

is simply the threshold taken away from a household's net income: gross income after tax and childcare costs plus any support they receive from the government in the form of tax credits and child benefit.

This model was then run for dual- and single-earner households with one child, with 20th percentile, median, and 80th percentile gross hourly earnings, under the four childcare cost scenarios of the current costs, the Living Wage costs, the Living Wage 30 costs, and the High Quality costs. All these household scenarios were run first with every earner working 40 hours a week and then with every earner working 30 hours. The examples in Table A10 show how the calculations were done for a dual and single earner household with median gross hourly earnings, for the High Quality costs, first working 40 hours and then working 30 hours.

Table A10. Calculating the High Quality childcare, median earnings scenario

High Quality childcare, median earnings scenario	2 parents (FT median wages)		Lone parent (F) working FT	
	40 hours	30 hours	40 hours	30 hours
Wages per hour (M)	£13.41	£13.41		
Wages per hour (F)	£12.01	£12.01	£12.01	£12.01
Working hours (M)	40	30		
Working hours (F)	40	30	40	30
Male able to contribute	0	10		
Female able to contribute	0	10	0	10
Days off (male)	0	1.25	0	0
Days off (female)	0	1.25	0	1.25
Days off rounded down (male)	0	1	0	0
Days off rounded down (female)	0	1	0	1
Additional hours necessary for transporting child to childcare	5	3	5	4
Amount of childcare necessary (hours)	45	23	45	34
Childcare cost per week (High Quality)	£421	£215	£421	£318
Household earnings per week gross	£1,017	£763	£480	£360
Gross annual salary (M)	£27,893	£20,920	£ -	£ -
Gross annual salary (F)	£24,981	£18,736	£24,981	£18,736
Gross annual salary (household)	£52,874	£39,655	£24,981	£18,736
Childcare element of working tax credits	£ -	£ -	£1,851	£3,219
Child tax credit	£ -	£383	£1,747	£1,747
Working Tax Credit (less the childcare element of Working Tax Credit)	£ -	£ -	£ -	£ -
Gov spend on tax credits	£ -	£383	£3,598	£4,966
Annual gov spend on tax credits	£ -	£710	£6,769	£9,343
Child benefit (£20.30 a week)	£1,056	£1,056	£1,056	£1,056
Annual income gross (gov support and wages)	£53,929	£41,094	£29,634	£24,757
Annual income net (less childcare)	£32,043	£29,908	£7,748	£8,221
Annual government support	£1,056	£1,766	£7,825	£10,398
Annual net income (after taxes) M	£21,518	£16,776	£ -	£ -
Annual net income (after taxes) F	£19,538	£15,291	£19,538	£15,291
Annual net income (after taxes) HH	£41,056	£32,067	£19,538	£15,291
Annual net salary	£42,111	£33,833	£27,363	£25,689
weekly net salary	£810	£651	£526	£494
Revised MIS (weekly)	£795	£589	£696	£594
Net salary minus revised MIS (wk)	£15	£61	- £170	- £100
Net salary minus revised MIS (annual)	£768	£3,190	- £8,855	- £5,178

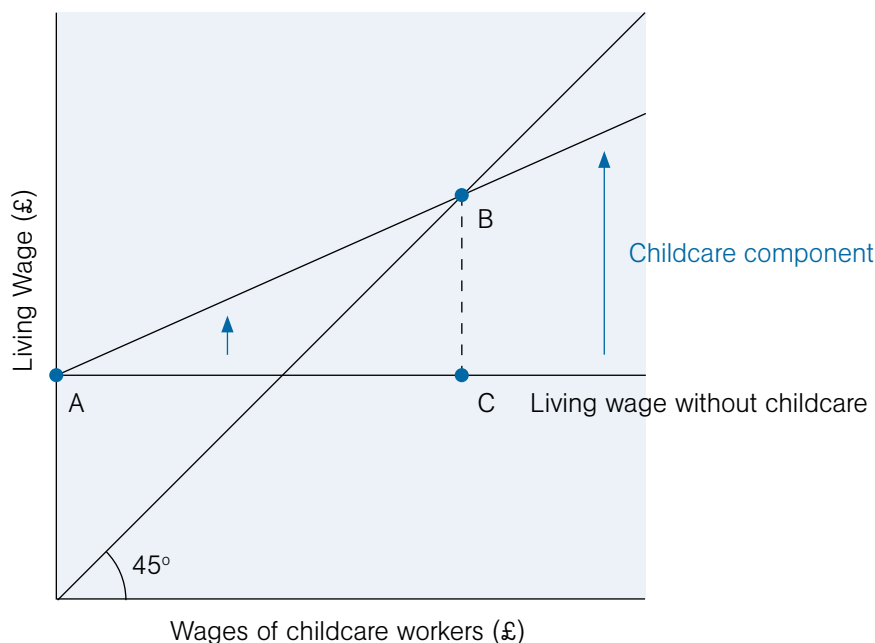
Appendix 4: The use of the Living Wage in the model

Raising wages of the lowest paid childcare workers, the majority of whom are women and some of whom are likely to be mothers, from an average of £6.60 even to only £7.45 (the Living Wage), is likely to have a significant impact on their lives and material well-being. The Living Wage recognises the dignity of work and fact that enabling people to earn a living brings important benefits to individuals, families, and society. Childcare workers would be less reliant on their partners or on the need to take on multiple jobs to gain an acceptable standard of living. Childcare providers would be more likely to find higher staff morale, better quality work, improved rates of retention and lower rates of sickness and absence.⁸³

There is, however, a conceptual problem with using the Living Wage as an input to a model that calculates the cost of childcare. The Living Wage is calculated based on the minimum income standard (MIS) which includes calculations of the cost and amount of childcare deemed necessary for each family type.⁸⁴ Therefore altering the cost of childcare will alter the calculation of the MIS and thus the level at which the Living Wage ought to be set.

If we knew the exact amount of childcare whose costs were included in the Living Wage, we could solve this problem through a simultaneous equation to find the wage for childcare workers which equalled the Living Wage needed for workers to be able to afford childcare at the price calculated through the model. This method is shown in Figure A1.

Figure A1. A method for calculating a Living Wage with an altered cost of childcare component



If we knew what the living wage was without childcare costs (point A), we could then steadily increase childcare workers' salaries from zero. Entering these salaries as inputs in our childcare cost model would create a corresponding childcare cost at each level of childcare workers' salary. Eventually we would reach the point where the childcare costs added to the Living Wage without childcare was equal to the wages of childcare workers (point B). This would be the Living Wage value compatible with our model, the childcare costs in this instance would be the distance between point B and point C.

However, although based on an MIS, the Living Wage is calculated using both weightings based on the types of households that exist, as well as the limits applied to ensure that annual increases do not deviate too far from annual increases in average gross and net earnings in the economy.⁸⁵ Therefore the childcare component of the Living Wage does not follow a consistent, linear relationship to the wage itself. This makes it impossible to solve the equation that would find the Living Wage that included a childcare cost component based on the wages of childcare workers earning that same Living Wage. In light of this, the model applies the Living Wage to childcare workers as it currently stands, £7.45 per hour, and calculates a childcare cost based on this. Since the Living Wage is created on the consideration of the cost of living on a whole bundle of goods of which childcare is only one component, it remains the best first approximation at which to set the wages of childcare workers to afford them the benefits described above on the dignity of fair pay.

End notes

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40. Gruescu, S. (2009). *Working Paper 2: What is the Cost of Quality?* in Goddard, K. & Knights, E. (2009) *Quality Costs: paying for Early Childhood Education and Care*. London: Social Market Foundation and Daycare Trust.
41. The teachers' salaries are taken from the Department for Education's *School teachers' pay and conditions document 2013*; more detail can be found in Appendix 2.
42. It is widely cited in childcare literature that high quality childcare is associated with greater numbers of staff with graduate qualifications – see Parker, I. (2013). *Early Developments: Bridging the gap between evidence and policy in early-years education*. London: Institute for Public Policy Research. p.20-23; Goddard, K. and Knights, E. (2009), *Quality costs: paying for Early Childhood Education and Care, Daycare Trust*; and Department for Education (2013) *More Great Childcare: Raising quality and giving parents more choice*.
43. Living Wage Foundation (n.d.) *The Calculation* [webpage]. Retrieved from <http://www.livingwage.org.uk/calculation> [accessed 5 February 2014]
44. The Living Wage rate used throughout the modelling in this paper was the rate set in November 2012, which was £745 for outside London. This has since risen to £7.65 in November 2013.
45. Gruescu, S. (2009). *Working Paper 2: What is the Cost of Quality?* in Goddard, K. & Knights, E. (2009) *Quality Costs: paying for Early Childhood Education and Care*. London: Social Market Foundation and Daycare Trust.
46. Department for Education. (2013). *Childcare and Early Years Providers Survey: 2011*. London: HMSO. The definitions are as follows: Senior managers - the person with overall responsibility for running the setting; Supervisory staff - staff who are qualified to look after a group of children on their own (they may or may not supervise other members of staff); Other paid childcare staff - staff who are not qualified to look after a group of children on their own.
47. Pension contributions for the high quality wages model are set at the teachers' equivalent of 14.1 per cent, while they are at only 3 per cent for all the other models, reflecting the less generous amounts employers will eventually be expected to pay through the automatic enrolment scheme (NEST pension scheme). See National Employment Savings Trust. (n.d.). Contributions. Retrieved from <http://www.nestpensions.org.uk/schemeweb/NestWeb/public/NESTforEmployers/contents/contributions.html>
48. We recognise that it is unlikely that children will be in care for 52 weeks a year; the model presents a maximum cost and we have not attempted to estimate the level of people's use of childcare.
49. Since we are interested in finding a maximum cost figure we used the assumption of 26 weeks of maternity leave as this is a minimum less than which very few mothers take.
50. Population estimates from ONS estimate that in 2012 there are 726,537 children aged 0 and 679,338 1 year olds and 670,557 2 year olds. 45 hours a week for 52 weeks for the 1 and 2 year olds and 45 hours a week for 26 weeks for those aged less than one gives a total of 4,153,697,730 hours per year. Office for National Statistics. (10 December 2013). *Population projections*. Retrieved from <http://www.ons.gov.uk/ons/taxonomy/index.html?nscl=Population+Projections#tab-data-tables>
51. Research has shown that half (51 per cent) of the pre-school children who are in any childcare while parents work spend some time with informal childcare providers. For many (23 per cent) this is part of a package that includes formal childcare. Informal childcare is particularly common for children under three. In 2008, 41 per cent of time spent in childcare by children under three from working families was in informal care with a grandparent, older sibling, another relative, friend or neighbour. See Bryson, C., Brewer, M., Sibieta, L., Butt, S. (2012). *The Role of Informal Childcare: a synthesis and critical review of the evidence*. London: Nuffield Foundation. p.29.

52. We use the ONS reported proportions of parents with a child aged 2 or under which are lone parents and coupled parents, which are 18% and 82% respectively (Labour Force Survey 2012). Additional assumptions made here are that these proportions are uniformly applicable for families with children aged 0,1 and 2, and that each family only has a single child (or that additional children do not create additional constraints on their parents use of time).
53. Centre for Research in Social Policy. (n.d.). *What is MIS?* Retrieved from <http://www.lboro.ac.uk/research/crsp/mis/whatismis/>
54. We have made this assumption for simplicity, although it may be that through reducing the working week, someone working full-time would require less disposable income; they would have more time to do things they currently pay other people to do, and would have reduced work-related costs such as transport and clothing.
55. Office for National Statistics (2012) *Annual Survey of Hours and Earnings*. London: ONS.
56. See Appendix 2 for a detailed summary of the figures and calculations.
57. Including the new free entitlement would be complex and would obscure patterns and differences in costs between households. See Appendix 1 for further discussion of this.
58. As already mentioned, the fiscal and wider macroeconomic implications of such move have not been explored here.
59. The core economy consists of the human and social resources embedded in people's everyday lives – time, wisdom, experience, energy, knowledge, skills – and in the relationships between them – love, empathy, watchfulness, care, reciprocity, teaching and learning.
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69. For example, 'in at least 19 local authorities [in London], many good and outstanding Ofsted-rated providers intend to opt out of delivering free places, as this funding will not cover their costs.' Rutter, J., Evans, B. and Singler, R. (2013). *Supporting London Local Government to Deliver Free Early Education for Disadvantaged Two-year-olds*, London: London Councils.
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Glossary

Childcare cost model: The aim of this model is to estimate the cost of providing childcare under different scenarios where the wages of childcare workers are modestly or substantially increased.

Core economy: The core economy consists of the human and social resources embedded in people's everyday lives – time, wisdom, experience, energy, knowledge, skills – and in the relationships between them – love, empathy, watchfulness, care, reciprocity, teaching, learning.

Current cost scenario: A scenario representing the costs of childcare where childcare workers are paid the current average wage in the sector.

High quality scenario: A scenario representing the costs of childcare where childcare workers are paid the same wages as primary school teachers, which we assume will raise the quality of childcare.

Household model: A model which indicates how increasing the wages of childcare workers (and thus the hourly costs of childcare) and reducing the number of hours in the paid working week would affect household income after the cost of childcare has been deducted, assuming that the costs of childcare are borne by parents.

Living Wage scenario: A scenario representing the costs of childcare where childcare workers are paid the (2012) hourly Living Wage of £7.45.

Living Wage 30 scenario: A scenario representing the costs of childcare where childcare workers are paid a Living Wage for working a 30-hour week. This is based on scaling up the Living Wage so that a childcare worker who works a 30-hour week would take home the same income as a childcare worker currently working a 37.5-hour week on the hourly Living Wage of £7.45. This works out as an hourly wage of £9.31.

Minimum income standard (MIS): The MIS is calculated each year by the Centre for Research in Social Policy. It provides detailed figures of what households need in order to have a minimum acceptable standard of living.

Revised minimum income standard: The revised MIS used here represents a minimum income standard for households, taking account of changes in childcare costs in different scenarios, assuming all other costs remain the same.

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