

**The labour participation response of mothers to changes in early childhood education costs**

Selective review of the evidence

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1. Main themes

1.1. Purpose and scope of this review

This is a selective review of the evidence on the link between the cost and availability of early childhood education (ECE), and parents’, particularly mothers’, participation in work. This review is intended to inform policy advice on what impact changes in ECE costs would be likely to have on New Zealand mothers’ participation in work.

This review was selective, examining a number of studies, and selecting the most relevant, robust and recent, for discussion. A wider range of studies are briefly described, at the end of this report.

1.2. Effective tools for raising maternal employment

Child care subsidy is a policy that has been found, on a macroeconomic level, to be effective in stimulating female labour force participation. Other policies that have also been found to be effective include neutral tax treatment of second earners in a household, tax incentives to share market work between spouses, and paid parental leaves. Child benefits that are un-linked to child care participation are not effective in stimulating female labour force participation.

1.3. Effects of child care prices on labour participation

There is a general consensus that labour force participation among mothers of pre-school children is sensitive to child care costs, with elasticities usually in the range of -0.1 to -0.8. That is, for every 1% increase in the cost of child care, maternal employment rates drop by 0.1 to 0.8%.

At least one study (Lefebvre et al., 2009) shows that the increase in maternal employment stimulated by lower child care costs can be long lasting: mothers remained employed at higher rates than they would have been otherwise, even after their children had graduated from child care.

Decreases in the cost of child care (for example through provision of subsidies) consistently have a greater impact on child care use than on maternal employment, even when the subsidies include a requirement that the parent be employed. This may be in part due to substitution effects, where mothers who are already working are encouraged by the subsidy to move their children from unpaid informal care to paid formal care.

A number of contextual factors influence the extent to which maternal labour force participation responds to changes in child care prices. These factors include the following.

* *Maternal education levels and earning potential:* morehighly educated mothers are more likely to be employed, presumably due to their higher earning potential, and their labour participation is less sensitive to changes in child care costs. That is, they are less likely than low education mothers, to exit employment when child care costs increase.
* *Non-earned and household income:* there is some evidence that mothers from higher income households are more sensitive to changes in child care costs, presumably because income earned by a partner, or via non-wage sources such as investments provides the freedom to exit the labour force when child care costs increase. However, this effect may be small.
* *Age of youngest child:* in investigating the effects of child care costs on maternal employment, a number of international studies have included after-school care costs for older children, as well as early childhood care costs for pre-schoolers. Studies consistently find that mothers of pre-school children are more sensitive to child care costs than mothers of school-age children.
* *Sole versus partnered parents:* evidence is mixed on the differential responses between sole and partnered parents. The labour participation of both groups appears to be sensitive to child care costs, but few studies compare the two, and comparisons between studies are difficult due to methodological and contextual differences.
* *Type of working arrangement:* the evidence is mixed on whether employment rates for part-time or full-time workers are more responsive to changes in child care costs. Some studies find that part time employment rates are more sensitive to child care costs, while others find that full time employment rates are more sensitive. This phenomenon may be context-dependent. For example, a subsidy that promotes full-time child care may have more of an impact on full-time employment decisions than on part-time work decisions.
* *Under-supply of child care:* any labour force response to a decrease in child care costs will be suppressed if the supply of child care places does not increase to meet the extra demand. This issue has been encountered in a number of studies.
* *Universal versus targeted child care subsidies:* the evidence on whether universal child care policies increase maternal employment is mixed, with some studies showing universal subsidies have a very large effect, and others showing little or no effect. The effects of a universal child care policy may depend on other factors, such as the extent to which targeted subsidies are also available.
* *Shrinking elasticities:* some of the more recent studies have found smaller female labour supply responses to child care prices than they were expecting. The authors speculate that, with the overall increase in female workforce participation, the ability of child care prices to influence maternal work decisions at the margin has decreased; mothers are now more likely to be working, regardless of child care price. Other work has demonstrated recent reductions in female wage response elasticities. It should be noted that this phenomenon is currently only found in a small number of studies, and there are other contextual and methodological issues that may account for the smaller elasticities.
* *Macroeconomic context:* strong economic growth is likely to facilitate a positive employment response to decreased child care prices, as work is more available to mothers who are induced by the lowered prices to seek work.

In addition to the differences in context between studies, comparison between studies is compromised by the different methods that they use, and the resulting differences in their estimates of effects. Because of this and the complicated relationship between context and labour responses to child care prices, comparisons across jurisdictions and across time periods are difficult. It would be inadvisable to attempt to predict New Zealand responses on the basis of the findings from any one comparison country.

1.4. Cost-benefit analyses of ECE subsidisation

There is little robust evidence available on the cost-benefit or cost-effectiveness of child care subsidies. Estimates are very dependent on context, and on the variables that are chosen for inclusion in the equation.

One study (Tekin, 2007) has found that child care subsidies are more cost-effective than wage subsidies, in terms of extra hours of work generated, per dollar of subsidy. While wage subsidies are associated with a larger increase in the hours worked per percentage wage increase, in this study, child care subsidies were more tightly targeted and provided to fewer women, so were of lower cost, per extra hour generated.

Another study (Lefebvre et al, 2011) estimates the cost-benefit of a universal low cost child care policy, and finds that the revenue returned to the government, in terms of tax gains and welfare savings, fell short of the costs of the programme. This estimate is very specific to the policy context and to the assumptions and variables incorporated into the cost-benefit equation. The finding is therefore not generalisable, but it does demonstrate that a short term benefit to government revenue cannot be assumed.

1.5. New Zealand context

No empirical evidence on New Zealand labour supply responses to ECE costs has been found.

While there was a sharp drop in ECE costs in 2007, due to the introduction of the ‘20 hours ECE’ policy, the publicly available data shows no associated detectable increase in labour force participation. However, this does not mean that there was no effect, as a number of other factors influenced employment at this time. In particular, the economic downturn may have masked any effects of ’20 hours ECE’. More detailed econometric work would be needed to investigate whether the policy had any impact on labour force participation.

Data on labour force participation and child care use shows that New Zealand has low employment rates among sole mothers, as compared to other OECD countries. In addition, a significant minority of parents who worked or wanted to work, especially mothers, report work difficulties relating to child care use, including having to turn down, or stop searching for paid work. There may therefore be room for New Zealand to increase its maternal labour force participation by addressing the child care-related constraints on employment.

1. Evidence from international comparisons

2.1. Jaumotte (2003) Female labour force participation: past trends and main determinants in OECD countries

Jaumotte (2003) used multivariate analysis across 17 OECD countries to assess the role of various policies and labour market factors in determining the pattern of female labour participation rates among 25-54 year old women. The time period covered is 1985-1999, although most countries only had data for a sub-set of those years.

Jaumotte (2003) found that, on this macroeconomic level, policies that stimulate female labour force participation included:

* a more neutral tax treatment of second earners
* tax incentives to share market work between spouses
* child care subsidies
* paid parental leaves.

Jaumotte found that child care subsidies and paid parental leaves tended to stimulate full-time rather than part-time participation. Child benefits, that is, per-child subsidies that were not linked to child care, had a negative effect on part-time female participation.

The following other issues were also found to correlate positively with female participation.

* The prevalence of part time work (used as a proxy indicator of the flexibility of the country’s labour market; although this measure suffers from endogeneity[[1]](#footnote-1)).
* Higher female education levels.
* Low overall unemployment.

In addition to the multivariate analysis, Jaumotte (2003) provides a useful review of the factors that are thought to underlie the increase in female labour force participation that occurred from 1981 to 2001. This review includes a summary of the pre-2003 evidence for the effects of child care subsidies on female labour supply, making the following main points.

* While child care subsidies reduce the relative price of child care and, therefore, increase the relative return of market work, child benefits have only an income effect and may lead to a reduction in labour supply.
* A number of studies have found negative elasticities[[2]](#footnote-2) of female employment to child care costs. That is, employment decreases as child care costs increase.
* Studies vary in their estimates of the size of the effects of child care support on female labour participation, with elasticities ranging from 0.06 to -1.24 for the United States, and with some argument that the more plausible values are within the range of -0.1 to -0.4.
* There is evidence that elasticities may be higher for low income/less skilled mothers. That is, low income mothers are more likely than high income mothers to decrease their use of child care as the cost increases.
* The evidence on whether elasticities vary by marital status is mixed, but elasticities are consistently higher for mothers of younger children, as compared to mothers of older children.
* The effectiveness of child care support in encouraging labour force participation is compromised by substitution effects. That is, it may encourage working mothers to move their children from unpaid informal care to paid formal care. The increases in labour supply that are seen in response to child care subsidies are generally smaller than the increases in child care use.
* There is some mixed evidence on the direction of causation. For some countries such as the United Kingdom and the United States, there is strong evidence of causality from child care support to female participation, while in other countries, such as Denmark, the sequencing of policy changes and labour market changes appears to suggest a reverse causality.

1. Evidence from Australia

3.1. Gong, Breunig and King (2010) How responsive is female labour supply to child care costs – new Australian estimates

The degree of responsiveness of Australian women’s labour supply to child care cost has been a matter of debate, with four studies, published prior to 2010, finding that the level of responsiveness is very low or negligible (Doiron and Kalb, 2005; Rammohan and Whelan, 2005, 2007; Kalb and Lee, 2008). In the most recent paper on this topic, Gong et al. (2010) review this literature, and find that the previous papers suffered from measurement error arising from the following issues.

* Limited data on actual childcare prices, and the use of estimates derived from average child care costs divided by the number of hours worked. This leads to endogeneity, because the estimated child care prices are dependent on the parent’s hours worked: the variable that they are supposed to explain.
* Small sample sizes.
* The use of data that presents child care costs, net of government subsidies. Again this leads to endogeneity, as subsidies are partly determined by parents’ labour supply.
* The use of aggregated and noisy measures of average child care prices at the state level, which do not capture the variation in local market prices, to which households react, when making child care and labour decisions. This adds a large amount of measurement error.

Gong et al. (2010) undertake a new analysis of Australian labour supply and child care demand elasticities with respect to child care price, using data from the 2005-2007 ‘Household, Income, and Labour Dynamics in Australia’ (HILDA) survey. This data provides more detail than has been available previously on child care use and costs. The authors use an econometric model with a finer treatment of child care prices, addressing measurement error problems and estimating gross costs relative to the actual child care usage, tackling the endogeneity problems. Their analysis is restricted to married mothers only, as the sample size for sole mothers was too small.

Contrary to the prior Australian work, Gong et al. (2010) find that the cost of child care does have a statistically significant negative correlation with the labour supply of married mothers with young children. For an average mother, the elasticity of employment with respect to the gross child care price was -0.3 (for every 1% increase in the price of child care, the employment rate of those women dropped by 0.3%), and the elasticity of hours worked was ‑0.7 (for every 1% increase in the price of child care, the hours worked by those women dropped by 0.7%). These findings are closer to international estimates, than those of Doiron and Kalb, 2005; Rammohan and Whelan, 2005, 2007; and Kalb and Lee, 2008.

Interestingly, Gong et al. (2010) found an indication that the price elasticity of child care demand was greater for higher income households (mothers from higher income households were more likely to reduce their use of paid child care, when the price increased), while the price elasticity of labour supply was smaller for lower income households (mothers from lower income households were less likely to decrease their labour participation in response to increased child care prices). This suggests that an increase in the price of child care may have a greater negative impact on the labour force participation of women from higher income households, while women from lower income households are more likely to continue to work, but to substitute in lower cost, informal child care options. However, it should be noted that this variation in responsiveness was small, and the confidence intervals were wide.

Gong et al. (2010) also note that their elasticity estimates are based on changes in the gross childcare prices, and that therefore their modelling does not take account of assistance that translates the gross price into net price, for families in different situations. The elasticities they calculate are therefore specific to the policy settings in Australia, in 2005-2007, and caution should be applied in generalising from their findings.

1. Evidence from the United States

4.1. Kimmel (2006) Child care, female employment, and economic growth

Kimmel (2006) describes the United States context with respect to federal child care subsidies, reviews the evidence for the responsiveness of female employment and welfare participation to child care prices, and provides some discussion of the shortcomings of certain econometric methods for estimating responsiveness.

At the time of writing, four major federal child care subsidy programmes existed.

* The Dependent Care Tax Credit, and the Exclusion of Employer-Provided Dependent Care Expenses subsidy, both of which largely benefit the middle classes, which have employment-related eligibility criteria, and which subsidise the care of both pre-school and school age children.
* The Child Care and Development Fund, for pre-school child care, which is designed to benefit only very low income working families, but which has limited reach even for low income families as few states set the income eligibility at the maximum limit allowed by federal law.
* Head Start, which is focused on child development and targeted to assistance for four year olds, and is not contingent on parental employment, but is means tested.

Kimmel (2006) points out that, despite the existence of these schemes, child care affordability is still a problem for middle income families, and government child care subsidies often fail to reach eligible low income families. For example, the Child Care Development Fund subsidy has been estimated to be received by only 12-15% of eligible families (Blau and Tekin, 2005).[[3]](#footnote-3)

Kimmel describes the use of probit models and multinomial logit models to estimate the responsiveness of maternal labour participation to child care prices. These methods use data on employment, child care prices, and other relevant factors, for a large sample of mothers, including mothers who are, and are not paying for child care. The analyses seek statistical correlations between child care prices and mothers’ rates and types of labour participation. A drawback of these methods is that the models tend not to incorporate the reality of child care supply shortages in some markets. Supply shortages suppress the responsiveness of labour participation: if child care supply does not increase as prices drop, parents are still unable to find child care, and they cannot increase their employment, even though child care has become more affordable. Kimmel also points out that, because of low wages, many lower or middle income families cannot afford child care. Therefore, within the range of child care prices included in the analyses, a threshold of affordability may not have been met for many families, again suppressing the responsiveness of labour participation.

Kimmel reviews the pre-2006 United States evidence for the responsiveness of labour participation and welfare participation to childcare costs. In summary:

* research estimates elasticities of between -0.2 and -0.8 (that is, for every 1% increase in child care prices, maternal employment decreases by 0.2 to 0.8%)
* welfare participation is strongly responsive to child care prices; one study estimates elasticities from 1 to 1.9. (for every 1% increase in the price of child care, welfare participation rises by 1 to 1.9%).
* one study shows that mothers employed part time or in non-standard work hours are more responsive than others to changes in child care prices.[[4]](#footnote-4)

4.2. Herbst (2010) The labor supply effects of child care costs and wages in the presence of subsidies and the earned income tax credit

Herbst (2010) examines the labour supply effects of wages and child care costs, among single mothers, and then adjusts those effects by incorporating the Child Care Development Fund (CCDF) child care subsidy, and the Earned Income Tax Credit (EITC) wage subsidy into the equations.[[5]](#footnote-5)

Herbst (2010) uses data collected every three years between 1990 and 2004. Data is derived from two sources: a sample of 74,042 single mothers, each with at least one child aged 0-12, extracted from the ‘Current Population Survey’ (which provides details on labour market behaviour, income and demographics), and data on child care expenditures, extracted from the ‘Survey of Income and Program Participation. Herbst integrates this data into an econometric model that applies a number of statistical corrections for endogeneity (for example, controlling for the effects of unobserved factors such as child care quality on the decisions to work and to obtain child care), and assesses single mothers’ employment responses to changes in child care costs and wages. He also assesses the effects of the CCDF and EITC subsidies, and examines the differences in effects across different demographic and work characteristics.

This paper differs from other United States work in the following ways.

* It simultaneously estimates the effects of child care expenditures and wages on the employment of single mothers, while incorporating controls for the CCDF and EITC subsidies.
* It provides an opportunity to examine whether the employment response to the subsidies varies over price and wage distributions.
* It uses a time series, rather than a single cross section of data at a single time point, allowing the author to use statistical controls for time-varying social reforms and macroeconomic conditions that may be correlated with employment conditions.
* It includes mothers of children up to 12 years old. Many other studies only include the mothers of pre-school children.

Herbst (2010) presents the following main findings.

* Among the single mothers, there was an average elasticity of the employment rate, relative to child care expenditures, of -0.05, meaning that for every 1% rise in child care prices, the employment rate decreased by 0.05%.
* There was an average elasticity of the employment rate, relative to wages, of 0.33, meaning that for every 1% increase in wages, the employment rate increased by 0.33%.
* Compared to the results across all work situations, the decision to work without any supplemental welfare receipt was more sensitive to child care prices (with an elasticity of -0.08) and more sensitive to wages (with an elasticity of 0.77).
* Compared to the results across all work situations, the decision to work full time was less responsive to child care prices (with an elasticity of -0.03) and more responsive to wages (with an elasticity of 0.74).
* The CCDF had its largest effects on labour supply for mothers with the highest child care costs.
* The EITC generated its largest effects on labour supply for mothers with the lowest wages.

Herbst notes that this work finds elasticities of employment responses to child care prices that are at the low end of the range found in previous work. He suggests the following explanations.

* This study includes mothers of older children, for whom elasticities are known to be considerably lower, relative to those of mothers with pre-school children. Even accounting for this, however, these elasticities are at the low end of the range found previously for mothers of older children.
* This study uses data over time, allowing the author to control for time-varying social reforms and macroeconomic conditions that correlate with employment conditions, possibly lending greater accuracy to this work.
* This study uses more recent data than has been used in some other studies, and single mothers’ overall employment rates have risen over time, raising the possibility that employment decisions have become less responsive to child care prices.

4.3. Fitzpatrick (2010) Preschoolers enrolled and mothers at work? The effects of universal prekindergarten

Fitzpatrick (2010) examines the effects of universal pre-school programmes for four year olds, in Georgia and Oklahoma. The work focuses explicitly on what effects those universal programmes had, over and above other more targeted programmes, such as Head Start (section 4.1).

In 2000, Georgia and Oklahoma offered free pre-school to all children aged four. Both programmes were voluntary, free, and available to all age-eligible children, regardless of parental income or employment status. Subsidies were provided directly to the child care centres selected by the parents. While Georgia and Oklahoma were the only states providing universal pre-school in 2000, many other states had targeted pre-school programmes. and in all states, including Georgia and Oklahoma, means-tested federal subsidies, such as Head Start, were available.

Fitzpatrick (2010) used census data from 2000 to examine differences in childcare enrolment and maternal employment between Georgia, Oklahoma, and other states. To control for macroeconomic and other factors that could influence differences in employment conditions between states, childcare enrolment and employment was compared, within each state, between mothers whose youngest children met the age eligibility requirements for pre-school participation, and mothers whose youngest children just missed the age eligibility cut-off date for pre-school enrolment. Fitzpatrick used a regression discontinuity framework to estimate the effects of universal pre-school on pre-school enrolment and maternal labour supply.

The work generated the following main findings.

* The universal pre-school programmes increased statewide pre-school enrolment in Georgia and Oklahoma by around 14%.
* Universal pre-school in Georgia and Oklahoma had little or no effect on maternal labour supply: no statistically significant effect was found on mothers’ employment participation rates, or hours worked. At most, there may have been a 2% increase in employment, but this was not statistically significant.
* No significant effect of universal pre-school was seen on mothers’ welfare receipt.
* Married and single mothers’ labour supply were equally unaffected by the universal pre-school; neither group showed any significant employment response to universal pre-school.

Fitzpatrick comments that the lack of maternal employment response is somewhat surprising, given previous literature. She offers the following explanations.

* This study focuses on the effects of universal childcare programmes, rather than childcare more generally. It deliberately excludes the effects of targeted child care subsidy programmes. It is possible that many of the women who could be induced by child care subsidies to change their employment behaviour, were already induced to do so by targeted subsidies such as Head Start.
* Female labour supply elasticities may have shrunk in recent years, as evidenced by some studies suggesting that female wage elasticities have gotten smaller. Economic theory suggests that the mothers who were most likely to be influenced by the universal pre-school programme would be those who worked less than the number of hours of care provided by the programmes. In 2000, those mothers accounted for less than one third of the mothers whose four year olds missed the cut-off date in Georgia. In other words, in Georgia, at least, two thirds of the mothers of four year olds already worked more hours than those that would be provided-for by universal pre-school, despite their children not receiving the universal pre-school education.

4.4. Tekin (2007) Childcare subsidies, wages. and employment of single mothers

Tekin (2007) examines the effects of child care prices and wages on the employment of single mothers, and makes a distinction between the mothers’ choices of full time and part time employment. The study also takes account of child care subsidy receipt, and it is one of the more recent studies from the United States, using data from 1997; after the passage of some major welfare reforms.

Tekin extracted data from the 1997 National Survey of America’s Families, on 4,029 single mothers with at least one child younger than 13 years. The survey data includes information on employment earnings, child care subsidy receipt, child care costs, and other factors.

The major findings were as follows.

* Lower costs of child care were associated with increases in employment and increases in the use of paid childcare. The overall child care price elasticity with respect to employment was found to be -0.12. That is, a 1% increase in the cost of child care would be expected to reduce employment by 0.12% among single mothers. This is at the lower end of the range reported in other studies, but it is important to note that this study includes of mothers with older children (whose employment decisions are less responsive to child care prices), and Tekin reports that the result is consistent with other studies that, like his, use a multinomial choice model.
* An increase in the full-time wage rate increases single mothers’ employment rates and use of paid child care, and does so more markedly than an increase in the part time wage rate. The elasticity of the employment rate with respect to the full time wage rate was 0.66, and with respect to the part time wage rate was 0.08. The full time wage rate was therefore a much stronger determinant of overall employment than the part time wage rate.
* Single mothers who were employed full-time were more sensitive to the price of child care than those employed part-time. The child care price elasticity with respect to full-time employment was -0.14, while, with respect to part-time employment it was -0.07. Tekin states that this difference is consistent across studies that differentiate between part-time and full-time employment, and one possible explanation is that the income from part-time employment may not be rewarding enough to induce mothers to leave welfare and seek work, even when there is a reduction in the price of childcare. Additionally, part-time mothers may have more flexible work schedules, and thus be more able to find alternative lower cost child care alternatives.
* A higher non-wage income decreased the likelihood of a mother choosing employment, consistent with previous work.
* Higher education levels increased the likelihood of mothers choosing employment, again consistent with previous work.
* Simulations in which either wages were hypothetically increased, or child care prices were hypothetically decreased, indicated that a child care subsidy would be more cost-effective than a wage subsidy. That is, a child care subsidy would generate more extra hours worked, per dollar of subsidy, than a wage subsidy. While wage subsidies are associated with higher elasticities, in this simulation, the child care subsidy was provided only to working mothers who used paid childcare, whereas the wage subsidy was provided to all working mothers. The wage subsidy therefore cost more per extra hour of work generated.

1. Evidence from Canada

5.1. Lefebvre, Merrigan and Verstraete (2009) Dynamic labour supply effects of childcare subsidies: evidence from a Canadian natural experiment on low fee universal child care

In 1997, Québec introduced a new child care policy that provided day care spaces for four year olds, at the subsidised fee of $5 per day, per child (increasing to $7 in 2004). This new policy included a change to full time provision, rather than part time child care. The low cost regime was universal; all families paid the same price (with the exception of mothers returning to the labour market, who paid reduced fees). Prior to 1997, Québec had a policy of refundable tax credits, with the refund amount determined by child care expenses and family income. No similar policies were enacted, at this time, in any other Canadian provinces.

Lefebvre et al. (2009) took advantage of this situation, taking a ‘differences in differences’ approach, in which they compared maternal labour force participation in Québec before, and after the introduction of low fee universal child care, and simultaneously, over the same time period, in other Canadian provinces. The comparison with other Canadian provinces controls for macroeconomic changes other than the child care policy, which could influence employment rates over the period studied.

The paper uses data from Statistics Canada’s Surveys on Labour and Income Dynamics, from 1994 (before the introduction of the policy), through to 2004 (seven years after the introduction of the policy). This allows the authors to estimate the longer term effects of the policy, They ask whether there have there been long lasting effects on the employment of mothers whose children benefitted from the policy, but whose children are now of school age, and are no longer in subsidised care.

So as to examine the longer term effects on maternal employment, Lefebvre et al. extracted data for mothers whose children were over four at the time of the survey, but who had been of an age to benefit from the policy in previous years. They found that from 2000/2001 onwards, there was a marked growth in employment participation, hours worked, and earnings for mothers in Quebec with low education levels (secondary school or less), relative to the same group of mothers in the rest of Canada. For these low education mothers, the policy was estimated to increase employment by 8-10% in 2002, rising to 17-19% in 2004. It was estimated to increase annual hours worked by 114 to 181 hours in 2002, rising to 318 to 385 hours in 2004, and to increase annual earnings by $2,521 to $3,785 in 2002, rising to $4,545 to $5,796 in 2004.

These effects were restricted to mothers with lower education levels. No statistically significant effects on the employment of high-education mothers were seen. Lefebvre et al. note that prior to the introduction of the policy, there was a very low labour participation rate among less educated mothers, and this may partially explain the large changes observed.

Lefebvre et al. note the following issues, which may also have had an impact on the employment changes observed.

* The low cost child care policy was introduced during a period of strong GDP growth, and this is likely to have helped mothers who were induced by the policy to search for a job, to actually find a job. It is not clear that such a policy would have the same effects during a period of more sluggish GDP growth.
* Québec’s labour market is relatively flexible, which may also have facilitated increased labour market participation among the mothers who were induced to search for work.
* The effects of the policy cannot be strictly interpreted as the effects of a price change; several other changes were introduced, including financial help to fund new child care centres, and increased wages for child care workers.

5.2. Lefebvre, Merrigan and Roy-Desrosiers (2011) Québec’s childcare universal low fees policy 10 years after: effects, costs and benefits

This paper extends the work of Lefebvre et al. (2009). The study confirms the effects of Québec’s low fee universal child care policy on maternal labour force participation, examines its effects on child development,[[6]](#footnote-6) and investigates the cost-benefit of the policy with respect to government revenue.

As in previous work (section 5.1), Lefebvre et al. (2011) use a ‘differences in differences’ approach to assess the effects of Québec’s low fee universal child care policy on child development and maternal labour participation, with reference to other Canadian provinces. Lefebvre et al. (2011) use Statistics Canada’s ‘National Longitudinal Survey of Children and Youth’ for this work, which provides more recent data, and a larger sample than that used in their previous work.

In addition, they use data from the Statistics Canada Survey on Labour and Income Dynamics, to simulate the fiscal benefits of the policy, for 2004. Due to data constraints, this analysis does not use a ‘differences in differences’ approach, but instead:

* assumes, based on previous findings (Lefebvre and Merrigan, 2005; Baker et al., 2008; Lefebvre et al., 2009), that the policy resulted in a 10% increase in the labour participation of mothers of children aged 1 to 11 years
* computes the fiscal impacts on the government of removing 10% of those mothers from the workforce, in terms of decreases in tax revenue, and increases in tax credit payments
* carries out these computations for a number of scenarios that differ in terms of the income ranges of the mothers who are removed from the workforce
* compares the losses of 2004 tax revenue, computed in the different scenarios, to the net cost of the policy in 2004 ($1.4 billion).

Lefebvre et al. (2011) present the following main findings.

* Findings from the ‘National Longitudinal Survey of Children and Youth’ confirm that the policy has been associated with large increases in the hours of child care used in Quebec, and increases in the rate, and the hours, of maternal labour force participation. These increases continued to be seen in 2006/2007.
* Calculation of the tax gains and credit savings attributable to the programme ranged from 150 million to 1.1 billion dollars in 2004, depending on the income ranges of the mothers who were assumed to have increased their labour participation as a result of the policy. Given that the total net cost of the programme was about $1.4 billion in 2004, even in the highest return scenarios, the return to government in terms of tax revenue fell short of the public costs of the policy.

It should be noted that the estimated return on revenue is dependent on a number of factors, including the following.

* Assumptions with respect to the long term labour participation effects of the policy (although it should be noted that long term effects are, at least to some extent, accounted for by including mothers of children aged over 4 years in 2004).
* The costs of the policy in 2004. Lefebvre et al. (2011) point out that the policy’s costs, in terms of GDP, have more than quadrupled in ten years, due to the rising staff costs associated with the increase in the number of child care places offered.
* Whether the downstream effects of the child care on participating children, are factored in (in this analysis, they are not).

1. Evidence from Norway

6.1. Black, Devereux, Løken and Salvanes (2012) The effect of child care subsidies on student performance

Black et al. (2012) examine the effects of a discontinuity in Norway, in the 1990s, in which there was a sharp increase in the means-tested child care subsidy offered by the government. They examine the effects of this change on childcare use, student outcomes, and parental labour force participation.

The Norwegian situation, at the time of the subsidy increase, was one of significant over-demand for child care places. Access to day care centres was rationed, and a family could only apply for the subsidy once their child had been allocated a place. Black et al. (2012) found that the subsidy increase had no statistically significant effect on formal child care utilisation, consistent with a situation in which supply continued to be the limiting factor. There was no significant effect on labour force participation either.

While this study, therefore does not provide information on the impact of child care prices on labour force participation, it does highlight the need to address any child care supply limitations, if an increase in labour force participation is sought.

1. New Zealand context

I have not been able to find any New Zealand-based analyses of the effects of the cost of child care on parental employment. Kesting and Fargher (2008) address this issue on a theoretical level, with reference to overseas-based literature and feminist economic theory, but do not present any new empirical data. I therefore do not describe this paper in any detail in this review. The two reports summarised below provide some contextual information on child care use and parental employment in New Zealand. This information may assist in estimating the likely New Zealand labour force outcomes from targeting Early Childhood Education (ECE) subsidies, but unlike the overseas studies described in the previous sections of this report, they do not explicitly address this question.

7.1. Statistics New Zealand (2010) New Zealand childcare survey 2009

Statistics New Zealand (2010) report on the 2009 survey of New Zealand childcare. The survey sample consisted of 3,656 households, and the questions covered childcare participation, child care subsidy use, difficulties in accessing ECE, and costs of ECE. Overall, the survey showed that ECE availability and cost were a hindrance to labour force and education participation, particularly for sole parents, and that there may therefore be some room for New Zealand to improve labour force participation by tackling these issues.

Main findings included the following.

* Of pre-school children, in 2009, 54% attended at least one type of formal child care, and 44% attended at least one type of informal care (these groups overlapped, with a number of children attending both formal and informal care). Informal care was predominantly provided by grandparents.
* The use of formal ECE was most common in two-parent families where both parents worked, or in one-parent families where that parent was employed. It was less common for children of non-employed parents.
* Formal ECE arrangements were also more prevalent in higher income households
* Of the 46% of pre-school children who were not using any formal ECE, the most common reason (for 71.2% of them) was that the parent preferred to look after the child themselves, or had no need to use care. For a minority, formal child care was not used because it was too expensive, or it was not available at the places and times needed.
* 81% of children aged 3 to 5, who were using formal ECE arrangements, used the ’20 hours ECE’ subsidy.
* Work difficulties related to child care constraints were not uncommon. Of parents who worked, or wanted to work, in the previous 12 months, 15% experienced difficulties in obtaining childcare. By gender, this corresponded to 22% of mothers and to 7% of fathers.
  + Of the 15% who experienced difficulties, 49% had made changes to their usual work as a result, 29% had turned down paid work as a result, 24% had stopped searching for paid work, and 21% were prevented from making changes to their usual work. Of the parents who experienced difficulties, the difficulties most often cited were that care was not available when needed, no spare places were available, or child care was too expensive.
  + Being prevented from searching for paid work, turning down paid work, and resigning from paid work was more prevalent among sole parents than two-parent families.
* High numbers of parents also reported that child care difficulties had prevented them from studying or training. Of those who had studied or trained, 14% reported difficulties getting child care (and difficulties were also more prevalent among mothers and sole parents). Three quarters of the parents who experienced these difficulties had either ceased study at some stage as a consequence, or had been prevented from changing the hours that they regularly studied or trained.

7.2. Treasury (2010) Labour market and broader outcomes. Introductory briefing to the ECE Taskforce

The Treasury (2010) provided a briefing to the ECE Taskforce, that summarised a number of factors relevant to the relationship between labour force participation and ECE in New Zealand. The most relevant points of this briefing are as follows.

* The overall labour force participation rate for New Zealand women has been steadily increasing during the last 20 years. It has risen from approximately 55% in 1990, to around 62% in 2010. However this rate still falls short of male participation rates. By age, female labour participation rates display an ‘m’ shaped curve, where the participation rate dips between the ages of 25 and 45, consistent with women leaving the labour force to raise children and then returning to work some years later.
* Compared with other OECD countries, New Zealand’s labour force participation rate among men and women is relatively high (6th and 9th out of 33 countries respectively (2009)), but the employment rate among sole parents is well below the OECD average (19th out of 20 countries (around 2007)).
* New Zealand women with dependent children have a much lower labour force participation rate than men and women without dependent children, and their participation rate falls further as the number of their dependent children increases. Furthermore:
  + labour force participation increases with the age of the youngest child
  + sole mothers are less likely to be in the labour force than partnered mothers
  + sole mothers that are in the labour force are more likely to be unemployed than partnered mothers.
* Consistent with overseas findings, the labour force participation of sole and partnered women with dependent children increases with higher educational attainment.
* The cost of ECE has been steadily falling since 2005, and dropped sharply in July 2007 as a result of the ‘20 hours ECE policy’ that was introduced at that time.
* Participation in ECE increased by approximately 50% between 1990 and 2009, and most of the growth was due to an increase in enrolment rates of children under 3 years. Labour force participation also grew during this time, especially among women.
* The data that is publicly available shows no detectable increase in labour force participation, associated in time with the introduction of the ’20 hours ECE’ policy. This does not necessarily mean that there was no effect, as a number of other factors influenced employment during this period, including the economic downturn, which may mask any effects of ’20 hours ECE’.

1. Other studies, in brief

A number of other papers were considered for inclusion in this selective review, but rejected for detailed coverage as they were not central to the scope, were adequately covered by one of the review papers that has been described, or had issues with robustness or credibility. These references are listed, and very briefly described below.

Baker, Gruber and Milligan (2008) Universal Child Care, Maternal Labor Supply, and Family Well‐Being

*Examines the effects of the introduction of low cost universal child care on maternal labour supply in Québec. Relevant to this review, but its findings are adequately covered by the discussion of two more recent papers: (Lefebvre et al., 2009, 2011).*

Ben-Galim (2011) Making the case for universal childcare

*This United Kingdom report makes a case for a return on government revenue of £4,000 to £20,000 per woman, as a result of the extra tax revenue generated from the introduction of a hypothetical universal child care subsidy. The credibility of these figures is highly questionable, as the report assumes that all women who are employed upon receiving the subsidy are employed because of the subsidy. That is, they assume that the employment decisions of working mothers who receive the subsidy can be 100% attributed to the receipt of the subsidy. This assumption ignores the evidence for substitution effects, in which subsidies for formal care result some replacement of informal care with formal care (Kimmel, 2006), and it ignores evidence that child care costs sit within a context of many factors that influence employment decisions (section 1).*

Berlinski and Galiani (2005) The effect of a large expansion of pre-primary preschool attendance and maternal employment

*Examines maternal employment responses to a large increase in child care facility construction in Argentina in the 1990s. Finds indications that there was a positive employment response, but the results are not statistically significant and they cannot rule out the null hypothesis of no effect.*

Blau and Tekin (2005) The determinants and consequences of child care subsidies for single mothers in the USA

*Focuses on single mothers in the United States, and compares the employment among recipients and non-recipients of child care subsidies. Recipients are more likely to be employed, and more likely to be on welfare, corresponding to the eligibility requirements for the child care subsidies, which give priority to families on welfare, and which restrict eligibility to working parents. While some statistical corrections were applied to account for this endogeneity, conclusions about the impact of the subsidies on work decisions are likely to remain confounded by the fact that eligibility for subsidies is contingent on employment.*

Breunig, Gong, Mercante, Weiss, and Yamauchi (2011) Child Care Availability, Quality and Affordability: Are Local Problems Related to Labour Supply?

*This Australian paper examines the relationship between labour force participation, and parents’ perceptions of availability, quality, and cost of child care. The authors find significant correlations between these perceptions and labour force participation. Both partnered women, and lone parents who live in areas of Australia with more reports of unavailability, low quality, or costly child care, work fewer hours, and are less likely to work than women in areas with fewer reported difficulties with child care.*

Doiron and Kalb (2005) Demands for Child Care and Household Labour Supply in Australia

*Estimates Australian parental labour supply elasticities relative to child care prices, and finds elasticities at the low end of the range that had been found internationally. This work is critiqued and superseded by Gong et al., 2010.*

Herbst and Barnow (2008) Close to Home: A Simultaneous Equations Model of the Relationship Between Child Care Accessibility and Female Labor Force Participation

*Examines the association of local supply of child care with labour force participation in the United States. Finds that there is a significant association, emphasising the importance of child care supply-side issues.*

Kalb and Lee (2008) Childcare use and parents' labour supply in Australia

*Estimates Australian parental labour supply elasticities relative to child care prices, and finds elasticties at the low end of the range that has been found internationally. This work is critiqued, and superseded by Gong et al., 2010.*

Kesting and Fargher (2008) The Effect of Early Childhood Education and Care (ECE) Costs on the Labour Force Participation of Parents in New Zealand

*New Zealand-authored paper that reviews overseas literature, and on the basis of this and feminist economic theory, argues for changes to New Zealand’s policies on child care provision. Relevant to the scope of this review, but does not add any new empirical evidence.*

Lefebvre and Merrigan (2005) Low fee ($5/day/child) regulated child care policy and the labor supply of mothers with young children: a natural experiment from Canada

*Examines the effects of the introduction of low cost universal child care on maternal labour supply in Québec. Relevant to this review, but its findings are adequately covered by the discussion of two more recent papers: (Lefebvre et al., 2009, 2011).*

OECD (2011) Doing Better for Families

*Chapter 4 of this report describes the ways in which parental leave policy, child care policy, flexible workplace practices, national tax/benefit systems and financial incentive structures may influence parental decisions to engage in paid work. While the report is not directly addressing the issue of how child care costs affect parental employment, it does provide some useful context. For example, it shows that the average effective tax rate (the proportion of gross earnings foregone, as a result of taking up employment, due to tax increases and benefit reductions) is variable across countries, and is strongly influenced by child care costs. New Zealand is one of only a handful of OECD countries in which the average effective tax rate in 2008 was significantly lower for lower income families, than it was for higher income families, suggesting that child care supports in New Zealand were most effectively targeted at the lower income families.*

Press, Fagan and Laughlin (2006) Taking Pressure Off Families: Child-Care Subsidies Lessen Mothers’ Work-Hour Problems

*This paper looks at the effects of child care subsidy receipt on low income mothers’ experiences at work, in Philadelphia. They found that mothers who received subsidies were significantly less likely to report work-hour-related problems, suggesting that as well as facilitating entry into employment, subsidies may make it easier for mothers in low wage labour to comply with employer demands for additional work hours, and be retained in the work force.*

Rammohan and Wheelan (2005) Child Care and Female Employment Decisions

*Finds that for married Australian mothers, the cost of child care is relatively unimportant in both the decision to work, and the number of hours worked. This work is critiqued and superseded by Gong et al., 2010.*

Rammohan and Wheelan (2007) The impact of childcare costs on the full-time/part-time employment decisions of Australian mothers.

*Estimates Australian maternal labour supply elasticities relative to child care prices, distinguishing between part time and full time work. Found that child care costs had no statistically significant effect on the decision to work either full- or part-time. This work is critiqued and superseded by Gong et al., 2010.*

van Gameren and Ooms (2009) Childcare and labor force participation in the Netherlands: the importance of attitudes and opinions

*Netherlands-based paper that focuses on the effects of attitudes and opinions on parental employment decisions, in the context of a model that also includes economic factors such as wages and child care costs. Finds that opinions on the intrinsic value of work, and the acceptability of leaving children in non-parental care are significantly correlated with decisions on child care and labour force participation. Some relevant findings include that, within this context, the price of childcare did not have a significant impact on the decisions. Higher non-labour incomes were associated with reduced probabilities of maternal employment, although an increase in the husband’s income increased the probability of using child care.*

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1. Glossary of terms

**Child care price elasticity**

The percentage change in the specified variable, when there is a one percent increase in the child care price. For example, the child care price elasticity of labour force participation is the percentage change in labour force participation that occurs when there is a one percent increase in the price of child care.

**Endogeneity**

A [variable](https://en.wikipedia.org/wiki/Variable) is said to be endogenous when there is a [correlation](https://en.wikipedia.org/wiki/Correlation) between it and the [error term](https://en.wikipedia.org/wiki/Error_term). That is, if there is a loop of [causality](https://en.wikipedia.org/wiki/Causality) between the [independent](https://en.wikipedia.org/wiki/Independent_variable) and [dependent variables](https://en.wikipedia.org/wiki/Dependent_variable). For example, child care subsidies effectively reduce the price of child care, and may thereby increase labour force participation. But in some jurisdictions, receipt of a childcare subsidy is contingent on employment, meaning that labour force participation can lead to subsidy receipt. In this situation, there is a causal loop: subsidy receipt leads to employment, and employment leads to subsidy receipt. The relationship between employment and subsidy receipt is therefore endogenous, and statistical corrections need to be applied.

1. See section 10 for a definition [↑](#footnote-ref-1)
2. See section 10 for a definition [↑](#footnote-ref-2)
3. Cited from Administration for Children and Families (1999), Access to child care for low-income working families, http://www.acf.dhhs.gov/news/ccreport.htm

   Administration for Children and Families (2000), New statistics show only small percentage of

   eligible families receive child care help. http://www.acf.dhhs.gov/news/ccstudy2.htm [↑](#footnote-ref-3)
4. Note that this finding is at odds with the findings of other studies described in this report. [↑](#footnote-ref-4)
5. The CCDF is described in section 4.1. The EITC is a wage subsidy intended to encourage the transition from welfare to work, with the subsidy amount dependent on the number of children. [↑](#footnote-ref-5)
6. These findings are not summarised here as they are outside of the scope of this review. [↑](#footnote-ref-6)