THE UNIVERSITY OF NEW SOUTH WALES

SCHOOL OF ECONOMICS

THE IMPACT OF CHILD CARE POLICIES ON MATERNAL LABOUR FORCE PARTICIPATION AND HOURS OF WORK IN AUSTRALIA

BY TUONG BAO TRAN NGUYEN

STUDENT ID: 5107690

BACHELOR OF ECONOMICS (QUANTITATIVE METHODS)

SUPERVISOR: DR. EVGENIA DECHTER

28 OCTOBER 2016

An Honours Thesis submitted to the School of Economics, The University of New South Wales, in partial fulfilment of the requirements for the degree of BEcon(Honours)

Abstract

Australia has a relatively lower female labour force participation rate than comparable countries, particularly for childbearing-aged women. Several studies have shown that the birth and care of young children has a significant impact on the decision to enter the labour market; more specifically, women who provide care for their own children have significantly lower participation rates than those who are able and willing to make use of childcare services. As a result, decisions by women with young children about participation in the labour force are often linked to decisions about whether or not to place their children in childcare. In recent years, Australia has had several child care reforms in place to encourage more women to participate in the labour force. While there are several related papers which discussed the labour supply of Australian women, few specifically analyse the effectiveness of childcare subsidies.

This thesis aims to provide a detailed analysis of the effectiveness of two childcare subsidies: Child Care Tax Rebate and Child Care Rebate by applying panel data techniques to the Household Income and Labour Dynamics in Australia (HILDA) data. The results of the empirical analysis lend support to the hypothesis that CCTR increased the probability of participating in the labour force for partnered women. I find no sufficient evidence that the CCTR increased or decreased the change in the hours of work.

Declaration

I declare that the work presented in this Honours thesis is, to the best of my knowledge and belief, original and my own work, except as acknowledged in the text, and that material has not been submitted, either in whole or in part, for a degree at this or any other university.

.....

Tuong Bao Tran Nguyen

Octocber 28, 2016

Acknowledgements

I would like to express my greatest appreciation to my supervisor, Dr. Evgenia Dechter. Thank you for encouraging me to develop confidence and independence in my work and for your advice, and comments and support. Without your help and enthusiasm, this thesis could not have come together.

I would also like to thank Associate Professor Gigi Foster for her detailed feedback and Professor Denzil Fiebig for his advice and wisdom.

To my parents, my sister Kim, my boyfriend Minh, and my best friend Sophie. Thank you for your support and unending love.

I am also incredibly thankful for my fellow Honours students, who have shared this challenging and amazing journey with me.

Contents

List of Tables

List of Abbreviations

CCB	Child Care Benefit
CCTR	Child Care Tax Rebate
CCR	Child Care Rebate
DD	Difference-in-Differences
DDD	Difference-in-Difference-in-Differences
EITC	Earned Income Tax Credit
FTB-A	Family Tax Benefit Part A
FTB- B	Family Tax Benefit Part B
HILDA	Household Income and Labour Dynamics in Australia
PPS	Parenting Payment Single
WFTC	Working Families Tax Credit

Chapter 1

Introduction

Previous research has demonstrated that female labour force participation rate in Australia is lower than in other OECD countries. In 2013, while the overall participation rates including males and females were above the OECD average, Australia ranked 25th out of 35 OECD countries for labour force participation rate of childbearing-aged women(ABS, 2013).

Several studies show that labour supply of women with young children is strongly tied to the accessibility, quality and affordability of childcare services (Connelly, 1992; Breunig et al., 2011; Daley and McGannon, 2014). Many studies in US, Canada, United Kingdom suggest that child care costs act like a tax on labour, which has a significantly negative impact on maternal labour supply.

On the other hand, studies in Australia give mixed evidence of the impact of child care costs on maternal labour supply. Some find statistically insignificant child care price elasticity of labour supply (Doiron and Kalb, 2005; Kalb and Lee, 2008; Rammohan and Whelan, 2005; Rammohan and Whelan, 2007), whereas a more recent study finds a negative, statistically significant child care price elasticity of labour supply (Gong, Breunig, and King, 2012).

Many governments provide child care subsidies to assist families with the costs of child care and to encourage more women with young children to enter the

labour market. For example, in Canada, the federal government provides a combination of the Canada Child Tax Benefit (CCTB) and the Universal Child Care Benefit (UCCB) program to support the costs of child care for children under 6 years old and costs of raising children under the age of 18 (Service, 2013). Some European countries also provide universal public programs to support families with child care expenses (OECD, 2013). In the US, while child care is not financed by the federal government, there are several state programs which provide child care subsidies for low income families such as the New Jersey Cares for Kids program (New Jersey DHS, 2016). In Australia, the federal government provides a combination of means-tested Child Care Benefit (CCB) and non means-tested Child Care Rebate (CCR) for families with young children.

However, public subsidies are costly, as citizens' taxes are used to finance those programs. As a result, evaluating the effectiveness of child care subsidies is important for both governments and citizens.

There are few studies that specifically analyse the effectiveness of Australian childcare subsidies. The most relevant and recent research uses the method of simulated maximum likelihood simulate the effects and compare the effectiveness of the Child Care Benefit and Child Care Tax Rebate (Gong and Breunig, 2015). Another related one studies the effectiveness of several family welfare subsidies with a focus on single mothers as these women are eligible to receive other types of welfare payments besides child care subsidies, such as Family Tax Benefit Part B, and Parenting Payment Single (Gong and Breunig, 2014).

Using the Household Income and Labour Dynamics in Australia (HILDA) data, I examine the effects of two policies: the introduction of the Childcare Tax Rebate (CCTR) on 1 July 2004, and the expansion of the CCTR on 1 July 2008 from 30% to 50% and from $4,000 to $7,500 annual limit. Moreover, I focus on the effect of the

reform on partnered women with pre-school children whose child care expenses are the highest.

I estimate a probit Difference-in-Differences model and a Difference-in-Difference-in-Differences model to evaluate the impact of these policies on maternal labour force participation and hours of work decisions.

I find that, on average, the introduction of the CCTR increased the probability of participating in the labour force for women with pre-school children by between 3.97% and 6.13%. Partnered women appear to be most responsive to the CCTR, with an increase in the probability of participation between 7.35% and 12.9%.

I also provide detailed analyses of the effect of CCTR for subgroups of partnered women such as women with partner income below or above the sample mean. I find that mothers of pre-school children with less wealthy partners are more likely to enter the labour market following the introduction of the CCTR than women with relatively wealthier partners. In addition, less educated partnered women with pre-school children are more likely to participate in the labour force than more educated partnered women. These results are consistent with the standard labour supply theory as higher partner income increases reservation wages of partnered women. Therefore, we find that women with partner income above average are less responsive to the policy compared to women with below-average partner income. These results also indicate some evidence of a positive assortative mating where men and women with the same level of education tend to marry each other or be in a defacto relationship more frequently than those with different levels of education.

In terms of intensive margin, I find no sufficient evidence that the CCTR increased or decreased the change in the hours of work, which is consistent with labour

supply theory.

However, I find that eligible partnered women with relatively wealthy partners reduced the change in the hours of work following the introduction of the CCTR. This result contributes to existing literature where the effects of tax credits on hours of work are small and statistically insignificant. Another contribution to existing studies on child care subsidies is showing that a partnered woman's labour decision depends on the level of her partner's income which is a source of non-labour income for these women.

Finally, I compare the effects of the CCTR on 1 July 2004 and the expansion of the CCTR on 1 July 2008 from 30% to 50% and from $4,000 to $7,500 annual limit. I find no sufficient evidence to support the hypothesis that the CCTR expansion in 2008 increased the probability of entering the labour market and increased or reduced the change in the hours of work.

Chapter 2 provides an overview of child care services and recent child care subsidies in Australia. **Chapter 3** provides a review of the existing literature of the topic. **Chapter 4** describes the data sample, defines the constructed variables, and provides summary statistics of key covariates. **Chapter 5** discusses the empirical model specification and the econometric techniques that are used to ensure robust and consistent results. **Chapter 6** presents and analyses the estimation results. Finally, **Chapter 7** discusses the results , compares with other existing studies, possible policy directives and suggestions for further, related research.

Chapter 2

Child Care Subsidies in Australia

I distinguish between two types of child care services: formal and informal child care. In Australia, formal care includes long day care, family day care, outside school hours care, occasional care and pre-school. Informal care includes care provided by grandparents, siblings, other relatives or other unrelated people. In 2002, only 7% of children under one year old attended formal care. Around 27% of children aged one attended some forms of formal care. Attendance increased rapidly for children aged two or three years old and decreased gradually for children aged four years old(ABS, 2002). Similar pattern persists in subsequent years. In 2014, around 54% of children aged two or three years old attended formal care and 41.8% of children aged four old attended formal care (ABS, 2014). Once children reach primary-school age, they are less likely to receive any childcare services(AIFS, 2015). Children aged six to twelve are more often in informal care than in formal care. In 2014, only 14% of children aged five years old and over attended formal child care, while 32% used informal child care.

In addition, 92% of informal child care is provided at no cost, and the most common source is care provided by grandparents. On the other hand, formal child care is provided at a much higher cost than informal care. Long day care is the most expensive care, with the weekly median cost is increasing significantly overtime from $38 in 2002 to $102 in 2014. Family day care is the second most expen-

sive service, with the weekly median cost of $21 in 2002 and $60 in 2014. The weekly median cost of care for outside school hours care was $13 in 2002 and $30 in 2014 (ABS, 2002; ABS, 2014). These imply that cost of child care is highest for children aged between one and four years old due to higher child care usage and higher costs of formal care.

2.1 Child Care Benefit (CCB)

The Child Care Benefit (CCB) was introduced on 1 July 2000. CCB was designed to provide financial assistance to families up to 50 hours of approved child care per week. As an means-tested subsidy, eligible families could receive different amounts of benefits, depending on family income levels. The higher the taxable family income, the lower the CCB family receives. When CCB was first introduced in 2000, there was a minimum payment of $21.70 per child per week for one-child families who had income exceeding $85 653 (APH, 2002). Families with more than one eligible child had higher income rates. Hence, regardless of the level of family income, families who were eligible to receive CCB would receive at least a minimum amount in 2002. From 1st July 2008, for high income eligible families, the minimum rate was removed. This means that the CCB payment would continue to decline until the family's payment was zero instead of reducing to a minimum rate.

To be eligible for CCB, parents must use an approved child care service. Most formal care such as long day care, family day care, outside school hours care, occasional care and pre-school are approved child care services. CCB is not paid for care provided for schooling once children attend primary school. Children can begin first year of primary school - Kindergarten in NSW or Preparatory in QLD if they turn five on or before 31st July in that year.

To be eligible for CCB, each parent must also meet the Work, Training, Study test. More specifically, parents who are either working; are looking for work; are involved with volunteer or charity for at least 15 hours per week; are studying or training or have a disability or caring for a child that has a disability are eligible to receive CCB of up to 50 hours per week.

2.2 Child Care Tax Rebate (CCTR)

Child Care Tax Rebate (CCTR) was first introduced on September 2004 by the Howard administration, with the limit of $\$4000$ per child per year (APH, 2005). Families with a tax liability will be eligible for 30% of out-of-pocket approved child care expenses up to a maximum of $4,000 per child per year. CCTR is a non means-tested payment which provides additional financial assistance to eligible families on top of CCB. Out-of-pocket expenses which incurred between 1 July 2004 and 30 June 2005 could be claimed for the first time in 2005-06 income tax returns. This indicates that the first payment for eligible mothers was in late 2006.

To be eligible for CCTR, families need to be receiving CCB, use an approved child care service as well as satisfy the Work, Training, Study as in the CCB. Using CCB rates from 1 July 2005, assume long day care costs $200 a week for one child, Table 2.1 provides detailed information on the amount of CCB and CCTR eligible families could receive with respect to different total families taxable income (APH, 2005). Column 1 is the annual total family taxable income. Column 2 is the corresponding CCB eligible families could receive using 1 July 2005 rates. It can be seen that families with the lowest income receive the highest CCB since CCB is an income-tested payment. Column 3 is the out-of-pocket expense which is calculated as the difference between total weekly child care cost $200 and the weekly CCB received in Column 2. Column 4 is the additional weekly CCTR which is

Table 2.1: Weekly CCB and Weekly CCTR received using 1 July 2005 rates

Family income	Weekly CCB	Out of pocket	Weekly CCTR
30000	144.00	56.00	16.80
50000	112.00	88.00	26.40
70000	73.54	126.46	37.94
100000	24.15	175.85	52.76

(APH, 2005)

calculated as 30% of out-of-pocket expense amount from Column 3. From this table, it can also be seen that high income families benefit the most from CCTR, as they receive lower CCB than lower income families, which result in higher out-of-pocket expenses. Since CCTR does not depend on income and is proportional to the out of pocket expenses, families with total income of $100000 could receive the highest CCTR of $52.76 a week.

2.3 CCTR expansion and Child Care Rebate (CCR)

On 1 July 2008, the CCTR increased from 30% to 50% of out-of-pocket child care costs from up to $7,500 per child per year for approved child care.

On 1 July 2009 CCTR was renamed CCR. Rebate is no longer a tax offset but is paid directly to families by Centrelink. There is no change to eligibility or entitlements.

2.4 The new Child Care Subsidy

In the Budget 2015-2016, the Australian Government proposed a reform in child care subsidies in Australia. More specifically, from July 2018, the new Child Care Subsidy which is a means-tested subsidy will replace the current CCB and CCR.

Chapter 3

Literature Review

3.1 Childcare affordability

It has been shown by various studies in US, Canada, United Kingdom that child care costs have a significantly negative impact on maternal labour force participation rate and hours of work. More specifically, in the US, Connelly (1992) uses a sample of 2,784 married women aged between 21 and 55 from the 1984 Panel of the Survey of Income and Program Participation (SIPP) who had at least one child under the age of 13. Using a structural probit model of labour force participation, she finds that a decrease in the child care costs will increase the probability of participation. More specifically, if child care costs decrease by 50%, then 64% of married women would be employed. She also finds that if child care costs are fully subsidised, then 68.7% of married women would be employed. In addition, women with young children under 5 year olds are more sensitive to child care costs compared to women with older children.

On the other hand, using data from the 1980 baseline household survey of the Employment Opportunity Pilot Projects, Blau and Robins (1988) find a more substantial labour supply effect. The decision to be employed and using child care services are sensitive to child care costs such that 87% of married women would be employed if child care are fully subsidised.

In Canada, Powell (1998) and Powell (2002) show that child care cost elasticities

for labour force participation and hours of work for partnered women are -0.38 and -0.32, respectively. This implies that a 1% increase in child care costs would reduce the labour force participation rate and hours of work by 0.38% and 0.32% respectively.

More recently, several studies also showed significant negative effects of childcare costs on maternal labour supply. For instance, Kornstad and Thoresen (2007) use a sample of 770 married or defacto parents with pre-school children from the Norway Home Care Allowance Survey 1998 to study the labor supply effects of an increase in child care costs. They find that mothers would reduce their participation by 0.12% and hours worked by 0.14% for a 1% increase in child care costs. The magnitudes of these child care cost elasticities for labour force participation and hours of work are much smaller compared to previous studies.

Boca and Vuri (2007) use a combination of Italian datasets with the final sample comprised of married parents with the youngest child under three years old. They specify a bivariate probit model to estimate the probability of working and using child care. Using child care costs as a proxy variable for child care price, they do not find statistically significant evidence that formal child care price has a significant impact on these two probabilities. Other studies in European countries such as Wrohlich (2011) and Lokshin (2004) investigate child care markets which are characterised by low availability of centre-based child care. Using a discrete choice labour supply model, they show that high child care price hinders labour supply of women with young children.

In Australia, there are conflicting results of the impact of child care costs on labour force participation and hours of work. There are four recent studies by Doiron and Kalb (2005), Kalb and Lee (2008), Rammohan and Whelan (2005), Rammohan and Whelan (2007) which estimate child care price elasticities for labour force

participation and hours of work of partnered and single women. Doiron and Kalb (2005) use data from the 1996 Child Care Survey which consists of 11,419 observations of children under the age of 12 to model the effects of child care costs on the decision to work. They find that a 1% increase in child care costs would reduce the labour force participation rate and hours of work by 0.012% and 0.014% respectively for partnered women, and reduce by 0.022% and 0.025% for single women. Rammohan and Whelan (2005) find slightly larger, but statistically insignificant elasticities and Rammohan and Whelan (2007) also find no effect of child care price on the choice between part-time and full-time work. The lack of significant results in the context of child care in Australia is in contrast with the significantly negative effects found in labour force studies of other countries.

On the other hand, Gong, Breunig, and King (2012) argue that measurement error in the constructed child care price is the reason for the insignificant child care price elasticity of partnered women. They construct the local average child care price from the Labour Force Survey, as well as the data from three waves of HILDA 2005-2007. They find a negative, statistically significant child care price elasticities, which is consistent with findings in other countries.

3.2 Evaluation of maternal welfare programs

There are several studies which study the effects of different welfare programs on maternal labour force participation and hours of work decisions . I will summarise the main findings of these papers which analyse the impact of different policy reforms to labour force participation and hours of work decisions of mothers in both US and Australia. I will also identify my main contributions in this thesis.

3.2.1 Eissa and Liebman (1996)

Eissa and Liebman examine the impact of the Earned Income Tax Credit (EITC) on labour force participation and hours of work. EITC was introduced in 1986 as a refundable tax credit, which provided financial assistance to low-income and middle-income families with children.

They use data from the 1985 to 1987 and 1989 to 1991 March Current Population Surveys with approximately 57,000 households. Using the method of Difference-in-Differences, they compare labour force participation rates and hours of work between single women with children and single women with no children before and after the introduction of EITC. They also use multiple control groups to ensure that the empirical model estimates the true effect of the policy instead of capturing the effects of trend differences between control and treatment groups. They find that single women with children increased their labor force participation by 2.8%. There is no sufficient evidence of any negative change in the hours of work by single women with children who were already in the labour force.

These results are consistent with standard labour supply theory. Since EITC was only available for taxpayers with positive earned income, standard labour supply theory suggests that EITC would have a positive effect on labour force participation of women with children. On the other hand, since EITC initially increases with income, some eligible families would face both substitution and income effects due to an increase in their effective wage rates. Some families who were working full-time might have received the maximum EITC whether they work one more hour or one fewer hour. Hence, these only face income effects, which actually encouraged them to reduce their hours of work.

3.2.2 Blundell et al. (2000), Blundell, Brewer, and Shephard (2005)

These papers study the effects the WFTC (Working Families Tax Credit) reform on hours of work and participation of single and partnered mothers. WFTC is a tax credit which provided financial assistance to low-income working families with or without children in the UK. They use the Family Resources Survey (FRS), which is an annual cross sectional data covering almost 50,000 women per year. Using a discrete behavioural model to simulate the labour supply responses to the reform, they find that the labour force participation rate of single mothers increased by 2.2% follwing the introduction of the WFTC. On the other hand, married women with employed partnered have a decrease in the labour force participation rate. The overall effect of the reform was found to be a small increase in participation.

3.2.3 Gong and Breunig (2014); Gong and Breunig (2015)

Gong and Breunig (2014) evaluate the impact of three welfare reforms on single mothers during 2004-2007. The first reform was the reduction in the taper rate of Family Tax Benefit Part A (FTB-A) and Family Tax Benefit Part B (FTB-B) from 30% to 20% on 1st July 2004. This means that families could earn more income before the benefit phased out. For each additional dollar which exceeded the $31,755 threshold, only 20 cents instead of 30 cents of FTB payment is withheld until the base rate of allowance is reached.

FTB-A and FTB-B are subsidies provided by the federal government to families with dependent children. Parents are eligible to receive these benefits if they provide care for their children at least 35% of the time while having to satisfy the income test. In other words, the higher the family income, the less FTB-A and FTB-B families might receive. In addition, FTB-B provides extra subsidies for

single parents who satisfy the above requirements.

The second reform is the change in the eligibility rules of the Parenting Payment Single (PPS) which was introduced on 1st July 2006. This reform is only applicable for single women with children. Before 2006, single parents with children were eligible to receive PPS if their youngest child was under age 16. After this reform, new single parents were only eligible to receive PPS if the youngest child was under 6 years old.

The third reform is the introduction of the CCTR on 1 July 2004. They use nine waves of the HILDA data and employ a Difference-in-Differences specification to look at the effects of these programs for the probability of being employed and change in the hours of work for job changers and jobs stayers. They compare single women with children aged between 0 and 17 as the treatment group and single women with no children as the control group. They concentrate the effects on single mothers with lower education and with fewer and older children.

In this paper, they focus on the impacts of the change in the eligibility rule of the PPS as well as the introduction of the CCTR during the period 2006-2008 as they find that the introduction of the CCTR did not affect single mothers' decisions during the 2005-2006 period. In **Chapter 6** of this thesis, I also provide an estimate of the impact of CCTR on single mothers and find consistent results with Gong and Breunig (2014). The rationale for these findings is that single women are more responsive to other welfare payments such as FTB-B and PPS than CCTR where they are not required to spend on formal child care services. In particular, low income single mothers might face financial constraints to be able to use formal child care services, which is the main criteria for receiving CCTR. In addition, FTB-B and PPS provided financial assistance to single parents who provide care for their children for at least 35% of the time, which might actually encouraged

these single women to stay at home to provide care for their young children.

In the second paper, they use the method of simulated maximum likelihood to compare the simulated effects of non means-tested CCTR in 2005 and means-tested CCB in 2005 on partnered mothers with young children between 0 to 5. They find that both programs increase labour supply of mothers, with CCTR has a greater impacts on labour supply and less expensive.

The main contribution of my thesis to the existing Australian studies is to evaluate the effects of the introduction of the CCTR on partnered women aged between 20 and 45 years old with pre-school children or had the youngest child between 1 and 4 using both a Difference-in-Differences and Difference-in-Difference-in-Differences specifications. I use three control groups instead of one to check for the consistency and robustness of results.

I also provide detailed analyses for different subgroups of women, particularly those from relatively low socio-economic backgrounds with below average years of completed schooling and those with relatively less wealthy partners.

Instead of using other household income which is calculated as household income subtracts the mother's income which may include other sources of non-labour income, I construct each woman's partner income by matching each woman with her partner using the unique partner identifier of each woman. Single women who have no partners do not have partner identifiers. Partner income is the current weekly wages and salaries of the corresponding partner of a married or de-facto woman. This allows me to study how partnered women with different levels of partner income responded to the introduction of the CCTR.

Finally, my thesis also provides detailed analyses of the economic effects of the second expansion of the CCTR on 1 July 2008.

Chapter 4

Data Description

HILDA is a household-based longitudinal study developed by the Melbourne Institute of Applied Economic and Social Research in collaboration with the Commonwealth Government Department of Family and Community Services. The survey currently consists of fourteen waves. The first wave was conducted in 2001, and the fourteenth wave was conducted in 2014. The initial sample comprised 19,914 individuals, with a top-up sample of 5,477 added in Wave 11; the sample size also increases slowly over time, as each year any new family members in sampled households are surveyed.

HILDA is a unique source of labour market data of Australian mothers, and includes several modules which provide relevant information, including hours worked per week, life events such as marriage and childbirth, family status, age of the youngest child in the family, current gross wages and salaries per week as well as several demographic characteristics. As a longitudinal panel survey, the same woman can be observed before and after the introduction of the Childcare Tax Rebate (CCTR), which allows elimination of time invariant unobserved individual heterogeneity.

4.0.4 Time of survey

Since CCTR was introduced on 1 July 2004, some women might not have been informed about the policy at the time of Wave 4 (2004). It is essential to know the time of survey of each wave to identify the year before and the year after the policy took place to capture the treatment effect.

The survey in Wave 4 was conducted across months starting from August 2004 to February 2005. More specifically, 12.4% of the interviews were conducted in August, 60.1% of the interviews were conducted in September, 18% were conducted in Octocber, and the rest were conducted across November 2004 to February 2005 (HILDA, 2016).

In Wave 5, 3.2% of the interviews were conducted in August, 53.3% of the interviews were conducted in September, 30.5% were conducted in Octocber, and the rest were conducted across November 2005 to February 2006. As a result, some women might start putting their children into approved childcare services to file the tax offset the following year, as well as started to look for work to be eligible to receive this childcare rebate. It is possible that mothers started to change their decisions to participate in the labour force and work less or more hours in Wave 5.

Therefore, I use Wave 3 (2003) and Wave 5 (2005) of the HILDA survey to compare the labour force participation and hours of work decisions of mothers before and after the introduction of the CCTR in 2004. I also use waves before Wave 3 to conduct the Placebo test to test whether there is any signficant treatment effects due to other macroeconomic conditions before the actual policy took place.

Similarly, in Wave 7, 4.4% of the interviews were conducted in August, 55.7% of the interviews were conducted in September, 29.3% were conducted in Octocber,

and the rest were conducted across November 2007 to February 2008. In Wave 8, 7.7% of the interviews were conducted in August, 57.6% of the interviews were conducted in September, 23.1% were conducted in Octocber, and the rest were conducted across November 2008 to February 2009.

Therefore, I use Wave 7 (2007) and Wave 9 (2009) to compare the labour force participation and hours of work decisions of mothers before and after of CCTR in 2008.

4.1 Dependent variables

The variable for labour force participation status is constructed from the "Current labour force status" variable, which takes values for "Employed", "Unemployed", and "Not participating in the labour force". The labour force participation variable takes value 1 if the individual is employed or unemployed and value 0 if the individual does not participate in the labour force.

I also construct a variable for employment status, which takes value 1 if the individual is employed and 0 if the individual is unemployed or does not participate in the labour force.

The variable for hours of work per week comes from a single variable which asks respondents for their "Hours worked per week in all jobs". Therefore, there are missing data for individuals who are either unemployed or do not participate in the labour force. I replace these missing data with 0 for individuals who are either unemployed or do not participate in the labour force. I also drop observations where individuals reported "Employed" but have zero hour of work.

In the hours of work regression analysis, I only use mothers who are already employed or have strictly positive hours of work. To control for selection into labour force participation, I perform a median regression analysis using all observations

of hours of work including zero to account for selection bias.

4.2 Independent variables

Table 4.2 provides a list of covariates which are used in the regression analysis. Variables which require no construction are the respondent's age, sex, and current weekly gross wages and salary in all jobs.

However, some variables are not given explicitly in HILDA and are instead extracted from others. Marital status regressors are constructed from a single variable which asks respondents for their "Marital status". This variable was transformed into two dummy variables, with the category "Single" takes value 1 if the individual is never married and not living with someone in a relationship, seperated, divorced or widowed and 0 otherwise."Partnered" takes value 1 if the individual is married or in a defacto relationship and value 0 if the individual is single.

Partners can be matched using the unique individual identifer and partner identifier which provides the individual identifier of the individual's partner. Single women who have no partners do not have partner identifiers. Partner income is constructed from current weekly wages and salaries of the corresponding partner of a married or defacto woman.

The "Years of schooling" variable is constructed from the variable "Highest education level achieved" as in Table 4.1.

"Total number of children" variable is constructed by summing up the total number of children in the household aged between 0-4, 5-9, 10-14, 15-24.

Table 4.1: "Years of schooling" variable

Highest education level achieved	Years of schooling
Year 11 and below	11
Year 12	12
Cert III or IV	13
Adv diploma, diploma	14
Bachelor or honours	16
Grad diploma, grad certificate	17
Postgrad - masters or doctorate	18

Table 4.2: List of covariates

Variable	**Description**
Individual characteristics	
Sex	Dummy variable equal to 1 if the respondent is female
Age	The age of the individual in years
Age squared	The age of the individual in years squared
Education	
Years of Schooling	Number of years of schooling constructed from the highest level of education of each individual
Marital status	
Partnered	Dummy variable equal to 1 if the respondent is married or unmarried but living in a relationship
Single	Dummy variable equal to 1 if the respondent is never married or separated from their spouse, or divorced or if the respondent is widowed
Family characteristics	
Partner Income	Current weekly gross partnered wages and salaries for partnered women
Total number of children	Total number of children of age 0-4, 5-9, 10-14, 15-24 in the household

4.3 Adjustments to data

For the main regression analysis, I use only observations of women of working age - women aged between 20 and 45 in both groups. As described in Chapter 2, only a small proportion of chidren under one year old attended formal care. It is more likely that mothers of these children might choose not to participate in the labour force whether or not they receive child care subsidies. In addition, besides child care subsidies, there are other incentives which may encourage women with newborn babies to stay at home such as maternity leave and payment which might intefere with the results. Therefore, I drop observations of women with children under one year old. Similarly, I exclude women who were pregnant or on maternity leave at the time of the survey.

I exclude any woman with the youngest children aged five years old because it is not clear whether children start primary school at this age, which depends on preferences of parents and states or territories they live in. If they do not attend primary school, parents are eligible to receive the same amount of CCTR as children aged between one and four years old given child care expenses are the same. If they attend primary school, parents are only eligible to receive subsidies on before - after school care, which costs substantially lower than long day care or family day care as shown in Chapter 2.

I exclude any women who were studying full time or part time as they might choose not to participate in the labour force or work more hours because of study commitments. Parents who have study commitments are also eligible to receive CCTR even if they do not participate in the labour force. Hence, the introduction of CCTR might not encourage these women to participate in the labour force or to work.

In addition, parents who are on a job related training program or do volunteer or charity work more than 15 hours per week are eligible to receive CCTR even when they are not working. Therefore, I also drop these observations where mothers are not looking for work because of these commitments, but are still able to receive child care subsidies.

I compare one eligible group - Women with children aged between 1 and 4 with four control groups. Control group 1: Women with children aged between 6 and 10 years old. Control group 2: Women with children aged between 10 and 18 years old. Control group 3: Women with no children.

After making adjustments above, there are a few observations of women (less than 5 observations) who changed treatment status from 2003 to 2005. For example, some women went from having the youngest child aged between 6 and 10 in 2003 to having the youngest child aged between 1 and 4 in 2005 or vice versa. I exclude those women in my regression analysis for consistency across all observations. The sample derivation process is described in details in Appendix.

4.4 Summary statistics

Table 4.3 to 4.7 present summary statistics of key dependent and independent variables in Wave 3 and Wave 5 which are used in the labour force participation regression analysis. Since I only use observations of women aged between 20 and 45, the number of observations for Control group 3 reduces dramatically compared to Control group 1 and 2 as women with the youngest child aged between 10 and 18 are more likely to be older than 45 years old. Control group 1 (841 obs), and Control group 3 (2,299 obs) are more comparable to the eligible group than Control group 2 (732 obs). We can see that a woman with no children, on average, are 29.64 years old, which is younger compared to the average age

in other groups: 33.54 (Eligbile group), 38.61 (Control group 1), 40.80 (Control group 2). Therefore, Eligible group and Control group 3 are quite comparable in terms of age. Women in control group 3 are different in some characteristics compared to women in other groups. On average, only 47.5% of these women are married, or in a defacto relationship, which explains why the average partner income is much lower than in other groups, at $233.2 a week. In Control group 3, 90% of women participated in the labour force compared to 60.1% in Eligible group. We can see that mothers of older children are more likely to participate in the labour force than mothers of pre-school aged children.

Table 4.3: Summary statistics of Wave 3 and Wave 5 - Eligible mothers: Women with children aged between 1 and 4 years old

Variable name	**Obs**	**Mean**	**S.D**	**Min**	**Max**
Age	1,059	33.54	5.528	20	45
Age of the youngest child	1,063	2.367	1.140	1	4
Years of schooling	1,059	13.17	2.224	11	18
Total number of children	1,059	2.170	1.098	1	10
Weekly partner income	1,059	660.3	744.6	0	4,603
Partnered	1,059	0.821	0.384	0	1
Labour force participation	1,059	0.601	0.490	0	1

Table 4.3 provides summary statistics for women in the Eligible group by pooling all observations in 2003 and 2005. **Table 4.4** provides a more detailed comparison between women in the Eligible group in each year. From the table, we can see that eligible women in 2003 and eligible women in 2005 are quite comparable in demographic characteristics such as age, years of schooling, total number of children, partner income, the proportion of partnered women. Most importantly, we can observe a significant increase in the average labour force participation rate of these women after the introduction of the CCTR in 2004 from 56.4% to 64.2%.

Table 4.4: Summary statistics of Wave 3 and Wave 5 - Eligible group

Variable name	Wave 3	Mean	Min	Max	Wave 5	Mean	Min	Max
Age	567	33.51	20	45	492	33.57	20	45
Youngest	567	2.467	1	4	492	2.252	1	4
Schooling	567	13.05	11	18	492	13.32	11	18
Total children	567	2.206	1	10	492	2.128	1	7
Partner income	567	728.2	0	4,603	492	655.3	0	4,400
Partnered	567	0.827	0	1	492	0.813	0	1
LFP	567	0.564	0	1	492	0.642	0	1

Table 4.5: Summary statistics of Wave 3 and Wave 5 - Control group 1: Women with children aged between 6 and 10 years old

Variable name	Obs	Mean	S.D	Min	Max
Age	841	38.61	4.388	22	45
Age of the youngest child	841	7.850	1.436	6	10
Years of schooling	841	12.99	2.133	11	18
Total number of children	841	2.208	0.893	1	7
Weekly partner income	841	648.7	759.3	0	5,293
Partnered	841	0.768	0.422	0	1
Labour force participation	841	0.765	0.425	0	1

Table 4.6: Summary statistics of Wave 3 and Wave 5 - Control group 2: Women with children aged between 10 and 18 years old

Variable name	Obs	Mean	S.D	Min	Max
Age	732	40.80	3.472	26	45
Age of the youngest child	732	12.53	2.118	10	18
Years of schooling	732	12.83	2.055	11	18
Total number of children	732	1.863	0.785	1	7
Weekly partner income	732	601.5	724.8	0	4,971
Partnered	732	0.745	0.436	0	1
Labour force participation	732	0.817	0.387	0	1

Table 4.7: Summary statistics of Wave 3 and Wave 5 - Control group 3 : Women with no children

Variable name	Obs	Mean	S.D	Min	Max
Age	2,299	29.64	7.830	20	45
Years of schooling	2,299	13.71	2.170	11	18
Total number of children	2,299	0	0	0	0
Weekly partner income	2,299	233.2	540.8	0	5,500
Partnered	2,299	0.475	0.500	0	1
Labour force participation	2,299	0.900	0.300	0	1

4.5 Average labour force participation rates comparison

Based on data which is used in the extensive margin regression analysis, I compute the average labour force participation rates for women in each group before and after the introduction of CCTR. Table 4.8 and Table 4.9 present the average labour force participation rates for women in the Eligible group, Control group 1 and Control group 3 in 2003 and 2005. Table for women in control group 2 is presented in the Appendix. The standard error of the difference between the means of two samples A and B is calculated as: $SE_{\bar{A}-\bar{B}} = \sqrt{\frac{{s_A}^2}{n_A} + \frac{{s_B}^2}{n_B}}$ where SE is the standard error, s_A is the standard deviation of sample A, s_B is the standard deviation of sample A, n_A is the size of sample A, and n_B is the size of sample B. Labour force participation rates are rounded to four decimal places. Standard errors are rounded to three decimal places.

Table 4.8: Average labour force participation rates of Eligible and Control 1 in 2003 and 2005

	2003	2005	Difference	Difference-in-Differences
Eligible (N_1 = 1,059)	0.5644	0.6423	0.0779	0.084
	(0.021)	(0.022)	(0.030)	(0.042)
Control 1 (N_2 = 841)	0.7674	0.7609	-0.0066	
	(0.019)	(0.022)	(0.030)	

Table 4.9: Average labour force participation rates of Eligible and Control 3 in 2003 and 2005

	2003	2005	Difference	Difference-in-Differences
Eligible (N_1 = 1,059)	0.5644	0.6423	0.0779	0.073
	(0.021)	(0.022)	(0.030)	(0.033)
Control 4 (N_2 = 2,299)	0.8973	0.9026	0.0053	
	(0.009)	(0.009)	(0.013)	

The difference-in-differences estimate of labour force participation rates is in the last column of each table and has been rounded to three decimal places . The labour force participation rate of the Eligible group increased by a statistically significant 7.79 percentage points from 56.44% to 64.23%. There was a statistically insignificant drop of 0.66% in the labour force participation rate of women with the youngest child aged between 6 and 10, results in a difference-in-difference estimate of 8.4 percentage points increase in labour force participation rates for the eligible group affected by the policy. On the other hand, there was a statistically insignificant increase of 0.53% in the labour force participation rate of women with no children, results in 7.3 percentage points increase in labour force participation rates. Control group 1 and Control group 3 seem to be reasonable control groups as we do not observe substantial changes in the labour force participation rates after the policy.

4.6 Average hours of work comparison

Based on data which is used in the intensive margin regression analysis, I compute the average hours of work for each group before and after the introduction of CCTR. Table 4.10 and Table 4.11 present the average hours of work for women in the Eligible group, Control group 1, Control group 3 in 2003 and 2005. Table for women in control group 2 is presented in the Appendix. Standard errors are

rounded to three decimal places.

Table 4.10: Average hours of work of Eligible and Control 1 in 2003 and 2005

	2003	**2005**	**Difference**	**Difference-in-Differences**
Eligible (N_2 = 320)	25.4157	26.1569	0.7412	0.991
	(1.049)	(1.084)	(1.509)	(2.021)
Control 1 (N_1 = 375)	28.7104	28.4610	-0.2494	
	(0.829)	(1.058)	(1.344)	

Table 4.11: Average hours of work of Eligible and Control 3 in 2003 and 2005

	2003	**2005**	**Difference**	**Difference-in-Differences**
Eligible (N_2 = 335)	25.5698	26.1166	0.5468	0.137
	(1.023)	(1.045)	(1.462)	(1.593)
Control 3 (N_1 = 1519)	37.6618	38.0713	0.4096	
	(0.466)	(0.429)	(0.634)	

The difference-in-differences estimate of hours of work is in the last column of each table and has been rounded to three decimal places . The average hours of work of women in the Eligible group increased by between 0.5468 and 0.741. There was a statistically insignificant drop of 0.2494 in the average hours of work of women in Control group 1, results in a difference-in-differences estimate of 0.991 hours for women in the eligible group affected by the policy. On the other hand, there was a statistically insignificant increase of 0.5468 hours for women in Control group 3, results in a 0.137 hours increase for women in the eligible group affected by the policy. There appears to be a slight and insignificant increase in hours of work after the introduction of the CCTR regardless of which control group is used.

Chapter 5

Methodology

Since the Eligible and the Control groups have different demographic characteristics, the observed average labour force participation rates and hours of work above might reflect the differences between the Eligible and Control groups rather than the average treatment effects. It is essential to control for demographic characteristics, particularly if these characteristics are correlated with the dependent variables. Controlling for demographic characteristics also decreases the residual variance of the regression and generates more efficient estimates.

To do so, I specify two main empirical models which estimate the impact of CCTR on labour force participation rates and hours of work. For the labour force participation decision, I use a probit Difference-in-Differences model.

For the hours of work decision, I specify a Difference-in-Difference-in-Differences model to account for time-invariant unobserved effects as well as aging effects. I exclude women who are not employed because I want to estimate the average number of hours a woman would work if they were employed. However, there are some sample selection issues that arise from dropping these observations since working women form a self-selected sample which is not a random sample. In addition, dropping these observations also leads to the hours of work variable not normally distributed. To deal with this selection issue, I estimate a Median regression of the Difference-in-Differences model on the hours of work

per week. The key idea behind this method is that median values are less affected by outliers including zero hour of work observations, which provides a more accurate estimate of the number of hours an employed woman would work. I also compare the estimation results between Median regression and usual OLS where I drop observations of women who were not working.

5.1 Extensive margin - Labour force participation

The model used in this analysis is given below:

$$P(LFP_{i,t}=1)=\Phi(\alpha_1+\beta_1 post04_t+\beta_2 eligible_i+\beta_3(post04\times eligible)_{i,t}+\mathbf{x}'_{i,t}\delta_{\mathbf{1}}+\varepsilon_{i,t}) \tag{5.1}$$

where $LFP_{i,t}$ is a dummy variable which equals 1 if a woman participates in the labour force and 0 otherwise; $post04_t$ is dummy variable which equals 1 if observations are from Wave 5 (2005) and 0 if observations are from Wave 3 (2003).

In addition, $eligible_i$ is a dummy variable which equals 1 if individual i's youngest child is between 1 and 4 (Eligible group) and 0 if the individual i's youngest child is between 6 and 10 (Control group 1) or if the individual i's youngest child is between 10 and 18 (Control group 2) or if individual i has no children (Control group 3). In the next section, I provide estimation results using Control group 1 or Control group 2 or Control group 3 as the comparison group to the Eligible group.

Finally, $\boldsymbol{x}_{i,t}$ is a vector of controls which include Age, Age^2, Years of Schooling, Partner income, Marital status, Total number of children and a set of state dummies. These variables control for observable differences in the characteristics of the Eligible and Control groups which affect labour force participation.

The variable $post04_t$ captures the average change in the labour force participation level from 2003 to 2005. The variable $eligible_i$ captures systematic differences between the Eligible and Control group before the policy took place in 2003. The coefficient β_3 captures the average treatment effect after controlling for other factors. We expect β_2 to be negative if women with the youngest child aged between 1 and 4 have lower participation rates than women with the youngest child aged between 6 and 10 years old or women with the youngest child aged between 10 and 18 years old or women with no children, after controlling for $\boldsymbol{x}_{i,t}$.

In this model, I drop a few observations observations (less than 5 observations) where an individual changed from being in the Control group in Wave 3 to being in the Eligible group in Wave 5 and vice versa for consistency across all observations. Therefore, $eligible_i$ is constant across time (does not depends on time t).

My hypothesis is that the introduction of the CCTR encouraged more women to participate in the labour force as childcare became more affordable or to be eligible to receive CCTR. To test this hypothesis, I test whether the coefficient β_3 is strictly positive and statistically significant.

5.2 Intensive margin - Hours of work

The model used in this analysis is given below:

$$\Delta H_{i,t} = \alpha_2 + \gamma_1 post04_t + \gamma_2 eligible_i + \gamma_3 (post04 \times eligible)_{i,t} + \Delta \mathbf{x}'_{i,t} \delta_{\mathbf{2}} + \Delta \eta_{i,t} \quad (5.2)$$

where

$$t = 2003, 2005;$$

$\Delta H_{i,t}$ is individual i's change hours of work per week between t and $t-1$. I construct the change in the hours of work between t and $t-1$ for:

Eligible group:

- Each individual i who had the youngest child aged 1,2,3 in 2002 and, consequently aged between 2,3,4 in 2003.
- Each individual i who had the youngest child aged 1,2,3 in 2004 and, consequently aged between 2,3,4 in 2005.

If **Control group 1** is used:

- Each individual i who had the youngest child aged 6,7,8,9 in 2002 and, consequently aged between 7,8,9,10 in 2003.
- Each individual i who had the youngest child aged between 6,7,8,9 in 2004 and, consequently aged 7,8,9,10 in 2005.

If **Control group 2** is used:

- Each individual i who had the youngest child aged between 10 and 17 in 2002 and, consequently aged between 11 and 18 in 2003.
- Each individual i who had the youngest child aged between 10 and 17 in 2004 and, consequently aged between 11 and 18 in 2005.

If **Control group 3** is used:

- Each individual i who had no children in 2002 and in 2003.

- Each individual i who had no children in 2004 and in 2005.

The coefficient γ_1 captures the average change in the hours of work between 2003 and 2005. The coefficient γ_2 captures different aging effects of Eligible and Control groups which affect the change in the hours of work between t and $t-1$. The coefficient γ_2 is expected to be positive because mothers of younger children tend to work more over time when their children become older, whereas mothers of older children or women with no children tend to have a more stable trend in hours of work. In other words, we expect $\Delta H_{i,t}$ to be larger for the Eligible group than for Control group 1, 2, 3. The coefficient γ_3 therefore captures the average treatment effect of the policy.

In addition, taking these first differences also eliminates the time-invariant unobserved effects such as preference to work, which may affect hours of work per week. $\Delta \mathbf{x}_{i,t}$ includes change in years of schooling, in marital status, and in partnered income between t and $t-1$ for individual i. Since I drop women who were pregnant or had a newborn baby between 2003 and 2005, the change in the total number of children is zero for every individual i and is dropped from the equation because of collinearity.

In this model, I drop observations where women moved from being in the Control group in 2003 to being in the Eligible group in 2005 and vice versa. Therefore, $eligible_i$ is constant across time. Some women may appear twice in the same Control or Eligible groups in 2003 and 2005 because of aging, hence, there is a positive correlation among observations for the same individual. To account for that, I treat these individuals as different women, and I cluster standard errors by the individuals. The resulting transformed model is estimated using ordinary

least squares.

5.3 Selection bias

One of the most popular methods to correct for non-randomly selected samples is to specify a two-step Heckman selection model (Heckman, 1976; Heckman, 1977). In the first step, a probit model for the probability of working can be specified (selection equation). In the second step, the outcome equation (hours of work decision) can be specified. There needs to be an exclusion restriction which appears in the selection equation but does not appear in the outcome equation. However, it is difficult to find an exogenous variable which has a substantial impact on the probability of choosing to work, but does not directly impact the hours of work.

Another method which is easier to implement is to run a median regression of hours of work (Neal and Johnson, 1996; Johnson, Kitamura, and Neal, 2000). To do so, I impute the value of zero on the hours of work variable for women who were not working, and estimate a median regression equation including all observations of women who were not working and women who were already working. The intuition behind this method is that median values are less affected by zero hour of work observations, which provides a more accurate estimate of the number of hours an employed woman would work.

However, if there are many observations of women who were not working, the median value might underestimate the number of hours an employed woman would work. More specifically, in the extensive margin regression using Control group 1, the average hours of work for employed women is 26.37. Out of 1,900 observations, there are 686 women who did not participate in the labour force. As a result, the 50% percentile value is only 15, which is much lower than 26.37.

On the other hand, in the extensive margin regression using Control group 3, the average hours of work for employed women is 33.61 and the 50% percentile value is 30. Therefore, I also estimate 75% quantile regression where observations are less affected by outliers as in the first scenario.

To see whether there is a selection bias in estimation results, I perform three estimations for the Difference-in-Differences specification below:

$$H_{i,t} = \alpha_3 + \pi_1 post04_t + \pi_2 eligible_i + \pi_3 (post04 \times eligible)_{i,t} + \mathbf{x}'_{i,t}\delta_{\mathbf{3}} + \omega_{i,t} \quad (5.3)$$

In Estimation 1, I exclude women who were not employed and perform OLS on the specified equation above. In Estimation 2 and 3, I include all observations of women and estimate a 50% (median) and a 75% quantile regression on the specified equation above.

5.4 Robustness

The key identification assumption in this Difference-in-Differences methodology is the Parallel trend assumption. This implies that there are no underlying long run trends in labour force participation rates and hours of work that differ between the Eligible and Control groups. The second assumption is that there are no contemporaneous shocks other than the effect of CCTR which affect labour market decisions of the Eligible and Control groups.

The first assumption is likely to hold because each of the three control groups I pick has similar demographic characteristics such as age, years of schooling, partner income, marital status, total number of children to the Eligible group. To

verify the strength of the results, I provide estimation results for three control groups. Hence, the credibility of the results will base on the consistency across three control groups rather than on only one estimate.

To test for the second assumption, I conduct a Placebo test, where I assume that the CCTR took place in 2003 instead of 2004. I perform the same analysis, comparing labour force participation rates and hours of work between 2002 and 2004. If the average treatment effect is statistically significant in any specification, there are other macroeconomic shocks other than the effect of CCTR which affect labour market decisions of the Eligible and Control groups. On the other hand, if we do not find statistically significant average treatment effects of the Placebo policy, we can be more confident that the original results capture the true effects of CCTR on labour force participation and hours of work.

I also provide estimates on a wide range of subgroups, partitioned by partner income, by marital status, by full-time or part-time work, by years of schooling to see which group is most responsive to the introduction of the policy, which can provide some insights into possible policy implications and directions.

Chapter 6

Estimation Results

This section describes the results of estimating the empirical models specified in **Chapter 5** for the first policy - CCTR in 1st July 2004. I also include estimates for Control group 2 and 3 to check for robustness of results. In addition, I re-estimate these models to evaluate the effect of the second expansion in 1st July 2008 in **Section 6.5**.

6.1 Extensive margin - Labour force participation

6.1.1 All women

Table 6.1 and **Table 6.2** present estimation results on labour force participation. The sample is all women including partnered and single women. The estimation results show sufficient evidence to support the hypothesis that CCTR increased the probability of partipating in the labour force for women with pre-school children, as the coefficient on $Post04 \times Eligible$ is positive and statistically significant at 10% level of significance when I use Control group 1 (women with the youngest child aged between 6 and 10) and Control group 3 (women with no children).

While the coefficient on $Post04 \times Eligible$ is positive when I use Control group 2, it is statistically insignficant at 10%, 5%, 1% level of significance. Hence, in this

scenario, I do not find statistically significant evidence to support the hypothesis that CCTR increased the probability of partipating in the labour force for women with preschool children. There are possible explanations for this finding.

First of all, the average age of a woman in Control group 2 is 40.80, compare to 33.54 (Eligible group), and 29.64 (Control 3). While I have controlled for observable demographic characteristics, there could be other unobserved characteristics which differ between Control group 2 and the Eligible group such as preference to work. These unobserved characteristics may differ between women of different age groups.

Another possible reason might be that the sample size for Control group 2 is quite small to make inferences due to restricting the sample to women aged between 20 and 45. More specifically, while the sample size for Control group 2 is 732, there are only 394 observations in 2003 and 338 observations in 2005.

The third reason is that partnered and single women might respond differently to the CCTR due to the latter group also received other forms of family payment such as Parenting Payment Single (PPS) and Family Tax Benefit Part B (FTB - B). Therefore, in the next section, I provide a more detailed analysis to compare the effects of CCTR on partnered and single women.

Table 6.1: Extensive margin - Labour force participation

Labour force participation - Samples: All women	(1) Control 1	(2) Control 2	(3) Control 3
Post04	0.00202	0.0767	0.0103
	(0.0851)	(0.0963)	(0.0632)
Eligible	-0.560***	-0.706***	-0.802***
	(0.0955)	(0.113)	(0.119)
Post04× Eligible	0.193*	0.117	0.176*
	(0.117)	(0.121)	(0.0961)
Age	0.198***	0.175***	0.0517
	(0.0617)	(0.0606)	(0.0422)
Age^2	-0.00262***	-0.00234***	-0.000947
	(0.000899)	(0.000882)	(0.000651)
Years of schooling	0.164***	0.164***	0.141***
	(0.0181)	(0.0187)	(0.0160)
Total number of children	-0.164***	-0.151***	-0.154***
	(0.0356)	(0.0369)	(0.0407)
Partnered	0.264***	0.273***	0.207***
	(0.0945)	(0.0955)	(0.0759)
Partner income	-0.000187***	-0.000124**	-5.33e-05
	(5.39e-05)	(5.41e-05)	(5.21e-05)
VIC	0.123	0.0455	0.0245
	(0.0968)	(0.101)	(0.0837)
QLD	-0.0983	-0.123	-0.0482
	(0.101)	(0.103)	(0.0848)
SA	0.0202	-0.0693	-0.0699
	(0.138)	(0.137)	(0.118)
WA	-0.324**	-0.327**	-0.231**
	(0.129)	(0.127)	(0.106)
TAS	0.0987	0.190	-0.113
	(0.205)	(0.203)	(0.183)
ACT	0.318	0.130	0.262
	(0.268)	(0.298)	(0.215)
NT	0.614	0.356	0.588*
	(0.385)	(0.327)	(0.328)
Constant	-4.743***	-4.203***	-1.285**
	(1.034)	(1.016)	(0.631)
N	1,900	1,791	3,358

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Eligible: Women with the youngest child aged 1-4
Control 1: Women with the youngest child aged 6-10
Control 2: Women with the youngest child aged 10-18
Control 3: Women with no children

In terms of magnitude, since the probit model is a non-linear model, we cannot directly interpret these coefficients in **Table 6.1** as marginal effects. Results for the average marginal effects for main coefficients are provided in **Table 6.2**.

From this table, we can see that the average marginal effects differ between different control groups. I cannot test which control group is better since each control group has different strengths and weaknesses. For example, Control group 3 has a lot more observations than Control group 1 and Control group 2, and women who have no children are not eligible to receive any child care payments such as CCB and CCTR, which is the key requirement of a good control group.

However, women with no children may have a different preference to work which is unobserved. For example, they might have a preference to work more hours or to participate more in the labour force compared to women with pre-school children. If these unobserved characteristics are correlated with $Post04 \times Eligible$, then the average treatment effect could be biased. On the other hand, Control group 1 is more comparable to the Eligible group in terms of demographic characteristics. However, there are only 841 observations, with less than 500 observations in each wave. Therefore, I will report the range of magnitude for each coefficient instead of based on one specific value from one estimation.

Table 6.2: Average marginal effects - Labour force participation - All women

Samples: All women	(1) Control 1	(2) Control 2	(3) Control 3
Post04	0.000640	0.0235	0.00232
	(0.0270)	(0.0295)	(0.0143)
Eligbile	-0.178***	-0.216***	-0.181***
	(0.0295)	(0.0334)	(0.0263)
Post04× Eligible	0.0613*	0.0358	0.0397*
	(0.0371)	(0.0371)	(0.0217)
Age	0.0628***	0.0537***	0.0117
	(0.0194)	(0.0184)	(0.00952)
Age^2	-0.000832****	-0.000718***	-0.000214
	(0.000283)	(0.000269)	(0.000147)
Years of schooling	0.0521***	0.0503***	0.0320***
	(0.00542)	(0.00540)	(0.00349)
Total number of children	-0.0520***	-0.0464***	-0.0349***
	(0.0110)	(0.0112)	(0.00911)
Partnered	0.0838***	0.0836***	0.0469***
	(0.0297)	(0.0290)	(0.0171)
Partner income	-5.92e-05***	-3.80e-05**	-1.21e-05
	(1.70e-05)	(1.65e-05)	(1.18e-05)
N	1,900	1,791	3,358

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Eligible: Women with the youngest child aged 1-4
Control 1: Women with the youngest child aged 6-10
Control 2: Women with the youngest child aged 10-18
Control 3: Women with no children
State dummies are included, but not reported here

From **Table 6.2**, we can see that the average marginal effects of $Post04 \times Eligible$ vary across two control groups (with statistically significant coefficients) between 3.97% and 6.13%. This suggests that on average, the introduction of the CCTR increased the probability of labour force participation of women with pre-school children by between 3.97% and 6.13%.

The coefficient on $Eligible$ is negative and statistically significant at 1% level of significance confirms that women with pre-school children have lower probabilities of participation than women in control groups by between 17.8% and 21.6%, even after controlling for demographic characteristics.

The coefficients on the other demographic variables all have the expected signs and statistically significant. The coefficient on age is positive and age squared is negative, which indicates a concave relationship with labour force participation over time. In other words, labour force participation increases rapidly throughout early life and gradually decreases in old age.

Less educated women have lower probabilities of participation than more educated women. Having one extra year of schooling increases the probability of participating in the labour force by between 3.20% and 5.21%. The more children a woman has, the less likely she would participate in the labour force. More specifically, having one extra child decreases the probability of participating in the labour force by between 3.49% and 5.2%. Partnered women are between 4.69% and 8.38% more likely to be in the labour force than single women. Women with higher partner income have lower probabilities of participation than women with less partner income.

Most state dummies are statistically insignificant, except for Western Australia. The coefficients are negative, suggesting that women living in Western Australia are less likely to participate in the labour force than women in New South Wales.

6.1.2 By Marital status

Partnered and single women might respond differently to the introduction of the CCTR as single women with children are also eligible to receive other payments such as FTB-B and PPS. Therefore, I re-estimate the probit model using two samples: Partnered and Single women.

Table 6.3 and **Table 6.4** provide estimation results for Partnered women. The estimation results find sufficient evidence to support the hypothesis that CCTR increased the probability of partipating in the labour force for partnered women with pre-school children, as the coefficient on $Post04 \times Eligible$ is positive and statistically significant at 5% level of significance. The results are robust regardless of any control group I use.

Table 6.3: LFP - Extensive margin - Partnered women

Labour force participation - Sample: Partnered women	(1) Control 1	(2) Control 2	(3) Control 3
Post04	-0.120	-0.0355	-0.0300
	(0.0955)	(0.114)	(0.0960)
Eligible	-0.616***	-0.777***	-0.828***
	(0.110)	(0.132)	(0.149)
Post04× Eligible	0.413***	0.327**	0.311**
	(0.130)	(0.121)	(0.125)
Age	0.200***	0.189**	0.0961
	(0.0736)	(0.0736)	(0.0605)
Age^2	-0.00257**	-0.00246**	-0.00145
	(0.00107)	(0.00107)	(0.000918)
Years of schooling	0.149***	0.147***	0.133***
	(0.0195)	(0.0205)	(0.0195)
Total number of children	-0.174***	-0.155***	-0.175***
	(0.0414)	(0.0429)	(0.0472)
Partner income	-0.000184***	-0.000123**	-8.40e-05
	(5.40e-05)	(5.45e-05)	(5.25e-05)
N	1,515	1,414	1,962

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Eligible: Partnered women with the youngest child aged 1-4
Control 1: Partnered women with the youngest child aged 6-10
Control 2: Partnered women with the youngest child aged 10-18
Control 3: Partnered women with no children
State dummies are included, but not reported here
Summary statistics for these women are provided in Appendix

Table 6.4: LFP - Average marginal effects - Partnered women

Partnered women	(1) Control 1	(2) Control 2	(3) Control 3
Post04	-0.0375	-0.0107	-0.00709
	(0.0299)	(0.0344)	(0.0227)
Eligible	-0.193***	-0.235***	-0.196***
	(0.0333)	(0.0383)	(0.0343)
Post04× Eligible	0.129***	0.0988**	0.0735**
	(0.0405)	(0.0421)	(0.0295)
Age	0.0626***	0.0571***	0.0227
	(0.0228)	(0.0220)	(0.0143)
Age^2	-0.000804**	-0.000741**	-0.000344
	(0.000331)	(0.000320)	(0.000217)
Years of schooling	0.0466***	0.0445***	0.0314***
	(0.00581)	(0.00587)	(0.00441)
Total number of children	-0.0544***	-0.0469***	-0.0413***
	(0.0127)	(0.0127)	(0.0110)
Partner income	-5.77e-05***	-3.72e-05**	-1.99e-05
	(1.67e-05)	(1.63e-05)	(1.24e-05)
N	1,515	1,414	1,962

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Eligible: Partnered women with the youngest child aged 1-4
Control 1: Partnered women with the youngest child aged 6-10
Control 2: Partnered women with the youngest child aged 10-18
Control 3: Partnered women with no children
State dummies are included, but not reported here
Summary statistics for these women are provided in Appendix

From **Table 6.4**, we can see that the average marginal effects of $Post04 \times Eligible$ vary across three control groups between 7.35% and 12.9%. This suggests that, on average, the introduction of the CCTR increased the probability of labour force participation of partnered women with pre-school children by between 7.35% and 12.9%. The coefficients on the other demographic variables all have the expected signs and statistically significant. The magnitude of the average marginal effects are quite similar to the sample with all women.

Table 6.5 provides average marginal effects for Single women. While we can see that coefficients on $Post04 \times Eligible$ are negative and statistically significant at 5% level of significance across two control groups, the samples sizes which include single women with pre-school children and single women with older children are too small for us to trust the credibility of these results (379 and 371 for Column (1) and (2) respectively). More details on the summary statistics for these women are provided in the Appendix.

Table 6.5: LFP - Average marginal effects - Single women

Partnered women	(1) Control 1	(2) Control 2	(3) Control 3
Post04	0.148**	0.115*	0.00832
	(0.0597)	(0.0615)	(0.0181)
Eligible	-0.0741	-0.142**	-0.140***
	(0.0628)	(0.0707)	(0.0451)
Post04× Eligible	-0.212**	-0.175**	-0.0415
	(0.0867)	(0.0837)	(0.0421)
Age	0.0495	0.0478	0.00688
	(0.0356)	(0.0335)	(0.0127)
Age^2	-0.000693	-0.000696	-0.000173
	(0.000529)	(0.000492)	(0.000199)
Years of schooling	0.0889***	0.0800***	0.0331***
	(0.0136)	(0.0143)	(0.00588)
Total number of children	-0.0406*	-0.0381	-0.0306
	(0.0221)	(0.0238)	(0.0191)
N	379	371	1,372

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Eligible: Single women with the youngest child aged 1-4
Control 1: Single women with the youngest child aged 6-10
Control 2: Single women with the youngest child aged 10-18
Control 3: Single women with no children
State dummies are included, but not reported here
Summary statistics for these women are provided in Appendix

Using Control group 3 yields statistically insigificant results with a much larger sample size (1,372 observations). It can be concluded that there is no sufficient

evidence to support the hypothesis that the introduction of the CCTR increased or decreased the probability of labour force participation of single women with pre-school children. This finding is consistent with a related Australian study where Gong and Breunig (2014) find no significant evidence of an increase in the probability of unconditional employment for eligible single women before 2005. This may suggest that these women were less responsive to the CCTR since they might already have received other welfare payments. In addition, FTB-B provides financial assistance to single parents who provide care for their children for at least 35% of the time, which might actually encouraged these single women to stay at home to provide care for their young children. Another possible reason is that low income single mothers face financial constraints which discouraged them to use formal child care services, which is the criteria for receiving CCTR.

6.1.3 By Partner income

From the previous section, I find that partnered women with pre-school children are most responsive to the introduction of the CCTR, with statistically significant results across three control groups.

In this section, I investigate whether partnered women with below average partner income are more likely to participate in the labour force than partnered women with above average partner income.

The sample means of weekly partner income across the combined samples Eligible and Control 1, Eligible and Control 2, Eligible and Control 3 are 655.15, 636.26, 367.88 respectively. I estimate regressions on women with weekly partner income $<=$ Sample mean, and women with weekly partner income $>$ Sample mean so

that the number of observations are divided around sample means.

Table 6.6: LFP - Average marginal effects - Weekly partner income <= Sample mean

Partner income <= Sample mean	(1) Control 1	(2) Control 2	(3) Control 3
Post04	-0.0302	-0.0425	-0.0111
	(0.0503)	(0.0630)	(0.0278)
Eligible	-0.190***	-0.263***	-0.222***
	(0.0510)	(0.0586)	(0.0442)
Post04× Eligible	0.135**	0.132*	0.105**
	(0.0655)	(0.0740)	(0.0415)
Age	0.0518*	0.0756**	0.0361**
	(0.0294)	(0.0301)	(0.0172)
Age^2	-0.000608	-0.00102**	-0.000602**
	(0.000433)	(0.000446)	(0.000267)
Years of schooling	0.0505***	0.0479***	0.0325***
	(0.00927)	(0.00947)	(0.00609)
Total number of children	-0.0467***	-0.0439**	-0.0175
	(0.0172)	(0.0173)	(0.0136)
N	628	572	904

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Eligible: Partnered women with the youngest child aged 1-4
Control 1: Partnered women with the youngest child aged 6-10
Control 2: Partnered women with the youngest child aged 10-18
Control 3: Partnered women with no children
(1): Partnered women with Partner income <= 655.15
(2): Partnered women with Partner income <= 636.26
(3): Partnered women with Partner income <= 367.88
State dummies are included, but not reported here
Summary statistics for these women are provided in Appendix

Based on results from **Table 6.6**, we can see that partnered women with weekly partner income below average are more likely to participate in the labour force following the introduction of the CCTR, with statistically significant results across three control groups. In terms of magnitude, the introduction of the CCTR increased the probability of labour force participation of eligible partnered women with weekly partner income below average by between 10.5% and 13.5%.

Table 6.7: LFP - Average marginal effects - Weekly partner income > Sample mean

Partner income > Sample mean	(1) Control 1	(2) Control 2	(3) Control 3
Post04	-0.0415	0.0149	-0.00182
	(0.0381)	(0.0433)	(0.0384)
Eligible	-0.188***	-0.205***	-0.175***
	(0.0430)	(0.0499)	(0.0524)
Post04× Eligible	0.128**	0.0837	0.0583
	(0.0526)	(0.0539)	(0.0459)
Age	0.0379	0.0137	0.00191
	(0.0395)	(0.0357)	(0.0243)
Age^2	-0.000480	-0.000108	3.76e-06
	(0.000557)	(0.000507)	(0.000362)
Years of schooling	0.0470***	0.0442***	0.0321***
	(0.00728)	(0.00743)	(0.00628)
Total number of children	-0.0573***	-0.0448**	-0.0621***
	(0.0178)	(0.0188)	(0.0164)
N	877	830	1,048

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Eligible: Partnered women with the youngest child aged 1-4
Control 1: Partnered women with the youngest child aged 6-10
Control 2: Partnered women with the youngest child aged 10-18
Control 3: Partnered women with no children
(1): Partnered women with Partner income > 655.15
(2): Partnered women with Partner income > 636.26
(3): Partnered women with Partner income > 367.88
State dummies are included, but not reported here
Summary statistics for these women are provided in Appendix

On the other hand, from **Table 6.7**, there is no sufficient evidence to conclude that the CCTR increase the probabilities of participation for partnered women with weekly partner income above average as results are only statistically significant if I use Control group 1.

These results are consistent with the standard labour supply theory. Higher partner income increases reservation wages of partnered women. Therefore, we find that women with partner income above average are less responsive to the policy compared to women with below-average partner income. In addition, some women with partner income above average might find that their partner's income are sufficient to cover child care expenses without receiving child care subsidies. Some of these women might value leisure over work, and marginal benefits of leisure are likely to exceed their marginal costs of leisure. On the other hand, partnered women with partner income below average have lower reservation wages, hence, they are more responsive to the CCTR. They also have more incentives to participate in the labour force as child care became more affordable and to be able to receive CCTR.

6.1.4 By Years of schooling

In this section, I investigate whether less educated partnered women are more likely to participate in the labour force than relatively more educated partnered women. The sample means of completed years of schooling across the combined samples Eligible and Control 1, Eligible and Control 2, Eligible and Control 3 are 13.09, 13.03, 13.54 respectively . I perform regressions on women with years of

schooling <= Sample mean, and women with years of schooling > Sample mean so that the number of observations are divided around sample means.

Table 6.8: LFP - Average marginal effects - Years of schooling <= Sample mean

Years of schooling <= Sample mean	(1) Control 1	(2) Control 2	(3) Control 3
Post04	-0.0895**	-0.0190	-0.0400
	(0.0371)	(0.0431)	(0.0331)
Eligible	-0.229***	-0.263***	-0.248***
	(0.0440)	(0.0482)	(0.0493)
Post04× Eligible	0.168***	0.0919*	0.0992**
	(0.0528)	(0.0541)	(0.0432)
Age	0.0578*	0.0510*	0.0313
	(0.0295)	(0.0269)	(0.0197)
Age^2	-0.000720*	-0.000646	-0.000477
	(0.000435)	(0.000395)	(0.000302)
Years of schooling	0.0737***	0.0873***	0.0625***
	(0.0219)	(0.0194)	(0.0179)
Total number of children	-0.0729***	-0.0502***	-0.0554***
	(0.0163)	(0.0159)	(0.0150)
Partner income	-5.50e-05**	-3.16e-05	-1.35e-05
	(2.65e-05)	(2.33e-05)	(1.98e-05)
N	945	918	1,095

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Eligible: Partnered women with the youngest child aged 1-4
Control 1: Partnered women with the youngest child aged 6-10
Control 2: Partnered women with the youngest child aged 10-18
Control 3: Partnered women with no children
(1): Partnered women with Years of schooling <= 13.09
(2): Partnered women with Years of schooling <= 13.03
(3): Partnered women with Years of schooling <= 13.54
State dummies are included, but not reported here
Summary statistics for these women are provided in Appendix

Based on results from **Table 6.8** and **Table 6.9**, we can see that partnered women with completed years of schooling below average are more likely to participate in the labour force following the introduction of the CCTR, with statistically signif-

icant results across three control groups. In terms of magnitude, the introduction of the CCTR increased the probability of labour force participation of eligible partnered women with completed years of schooling below average by between 9.19% and 16.8%.

On the other hand, there is no sufficient evidence to conclude that the CCTR increased the probabilities of participation for partnered women with completed years of schooling above average as results are statistically insignificant across three different control groups.

Table 6.9: LFP - Average marginal effects - Years of schooling > Sample mean

Years of schooling > Sample mean	(1) Control 1	(2) Control 2	(3) Control 3
Post04	0.0753	0.00984	0.0285
	(0.0487)	(0.0540)	(0.0281)
Eligible	-0.129***	-0.179***	-0.137***
	(0.0491)	(0.0637)	(0.0457)
Post04× Eligible	0.0294	0.0980	0.0413
	(0.0620)	(0.0645)	(0.0373)
Age	0.106**	0.103**	0.0220
	(0.0422)	(0.0467)	(0.0241)
Age^2	-0.00142**	-0.00137**	-0.000329
	(0.000583)	(0.000655)	(0.000355)
Years of schooling	0.0469***	0.0547***	0.0233**
	(0.0141)	(0.0149)	(0.0101)
Total number of children	-0.0220	-0.0350	-0.0194
	(0.0210)	(0.0218)	(0.0170)
Partner income	-5.69e-05***	-4.17e-05*	-2.32e-05*
	(1.84e-05)	(2.13e-05)	(1.39e-05)
N	567	491	862

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Eligible: Partnered women with the youngest child aged 1-4
Control 1: Partnered women with the youngest child aged 6-10
Control 2: Partnered women with the youngest child aged 10-18
Control 3: Partnered women with no children
(1): Partnered women with Years of schooling > 13.09
(2): Partnered women with Years of schooling > 13.03
(3): Partnered women with Years of schooling > 13.54
State dummies are included, but not reported here
Summary statistics for these women are provided in Appendix

A possible explanation for these findings is because of a positive assortative mating. In other words, men and women with the same level of education tend to marry each other or be in a defacto relationship more frequently than those with different levels of education. Many recent studies have shown evidence of a positive assortative mating using US and Norway data (Eika, Mogstad, and Zafar, 2014; Greenwood et al., 2014). In addition, there is a positive correlation between education and income. Therefore, women with low level of education are more likely to marry men with low level of education, which results in lower partner income than more educated partnered women. These women are more responsive to the policy than women with higher level of education and consequently higher partner income as shown in the previous section.

To illustrate my argument, I provide summary statistics of partner income using observations from the regressions above. From this table, we can see that partnered women with below-average years of completed schooling tend to have lower partner income than partnered women with above-average years of completed schooling. This confirms that results for labour force participation are robust across different subgroups of women.

Table 6.10: Summary statistics of partner income by women's years of schooling

Partner income	Obs	Mean	Min	Max
Years of schooling $<= 13.09$	945	758.92	0	4500
Years of schooling > 13.09	567	925.61	0	5293
Years of schooling $<= 13.03$	918	758.48	0	4833
Years of schooling > 13.03	491	893.67	0	4971
Years of schooling $<= 13.54$	1095	614.66	0	4603
Years of schooling > 13.54	862	648.54	0	5500

First two rows are for Eligible + Control group 1
Next two rows are for Eligible + Control group 2
Last two rows are for Eligible + Control group 3

6.2 Intensive margin - Hours of work

Labour supply theory suggests that child care subsidies will have two effects on hours worked: substitution and income effects. The income effect encourages individuals to consume more leisure and work fewer hours. The substitution effect encourages individuals to consume fewer leisure hours and work more hours. As a result, the impact of the CCTR on hours worked for these women depends on the magnitude of these two effects.

More specifically, women who were not working started to work a few hours to be eligible to receive the CCTR. Families who did not receive the maximum subsidies of $4,000 face a higher effective wage rate due to the amount of CCTR received increased with the number of hours of work per week (as the higher hours of work, the more likely women use child care services, and consequently face higher child care expenses). These women face both a substitution and income effects. We expect the effect on hours of work to be ambiguous according to labour supply theory.

In addition, both partners who were working full time and used formal child care (have highest child care expenses) might receive the maximum CCTR whether they worked one more hour or one fewer hour . Hence, there is a pure income effect, which encouraged them to work fewer hours assuming leisure is a normal good. Since women are traditionally considered relatively more productive in household production, full-time women are more likely to reduce their hours of work as a result of the policy than their partners.

On the other hand, both partners who were working full time might use a combination of formal and informal child care, which implies that they might not reach the maximum CCTR. As a result, these parents face both a substitution and

income effects due to a higher effective wage rate, which can motivate them to work more or less hours depending on the magnitudes of these effects.

Overall, the total effect on the change in hours of work is either positive, negative or ambiguous.

Table 6.11 provides estimates for all women who were working (Hours of work > 0) - including partnered and single women using three control groups for robustness check. I also provide estimates for different subgroups - partitioned by marital status, by below - above average hours of work and by below - above average partner income.

Table 6.11: Difference in difference in difference - All women

	(1) Control 1	(2) Control 2	(3) Control 3
Post04	0.542	-0.198	1.514***
	(0.935)	(0.807)	(0.549)
Eligible	0.169	0.530	1.737**
	(0.990)	(0.954)	(0.853)
Post04× Eligible	-0.660	0.377	-1.446
	(1.361)	(1.261)	(1.126)
ΔYears of schooling	0.578	-0.790	3.571***
	(1.285)	(1.446)	(0.640)
ΔPartner Income	-0.00110*	-0.00116**	-0.000366
	(0.000619)	(0.000565)	(0.000572)
Δ Partnered	0.547	3.239***	3.522***
	(1.413)	(1.230)	(0.938)
Constant	1.401**	1.088*	-0.156
	(0.621)	(0.590)	(0.371)
N	694	672	1,854

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Eligible: Women with the youngest child aged 1-4
Control 1: Women with the youngest child aged 6-10
Control 2: Women with the youngest child aged 10-18
Control 3: Women with no children

6.2.1 All women

For all women, there is no sufficient evidence to support the hypothesis that CCTR impacts Hours of work per week, as the coefficient on $Post04 \times Eligible$ is statistically insignificant across three control groups. This is consistent with what we expect from the results.

There are several reasons why results from using Control group 3 is more credible than using the first two Control groups. Firstly, the number of observations are substantially larger than using the first two groups. Secondly, as described in **Chapter 5**, the coefficient on $Eligible$ captures different aging effects of Eligible and Control groups which affect the change in the hours of work between t and $t-1$. Hence, constructing these first differences eliminate labour supply effects due to the changing ages of children in the Eligible group that Control group 3 did not experience. In addition, taking these first differences also eliminates time-invariant unobserved effects such as preference to work, which may differ between Eligible group and Control group 3.

The coefficient on $Post04$ is positive and statistically significant at 1% level of significance suggesting a positive time trend in the change of hours of work. The coefficient on $Eligible$ is positive and statistically significant 5% level of significance implies that women with pre-school children, have greater change in the hours of work between t and $t-1$ than women with no children, ceteris paribus. The coefficient on Δ *Years of schooling* is positive, suggesting that an extra year of schooling increased average hours of work per week by 3.571 hours. Partnered women, on average, worked more than single women by 3.522 hours per week.

6.2.2 By marital status

Table 6.12 provides estimation results for Partnered women. The estimation results find insufficient evidence to support the hypothesis that CCTR increased or decreased the change in the hours of work of partnered women with preschool children, as the coefficient on $Post04 \times Eligible$ is statistically insignificant. The results are robust regardless of any control group I use. Results for single women are not reported here since the number of observations is very small (around 100 observations for estimations using Control group 1 and 2).

Table 6.12: DDD - Partnered women

	(1) Control 1	(2) Control 2	(3) Control 3
Post04	0.0802	-0.689	1.922***
	(1.017)	(0.920)	(0.727)
Eligible	-0.555	-0.217	1.247
	(1.042)	(1.013)	(0.934)
Post04× Eligible	0.0298	0.879	-1.787
	(1.453)	(1.367)	(1.263)
ΔYears of schooling	0.103	0.925	3.295**
	(1.205)	(1.235)	(1.289)
ΔPartner Income	-0.00109*	-0.00112*	-0.000179
	(0.000634)	(0.000577)	(0.000598)
Constant	1.673**	1.363**	-0.113
	(0.682)	(0.665)	(0.501)
N	585	554	1,078

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Eligible: Partnered women with the youngest child aged 1-4
Control 1: Partnered women with the youngest child aged 6-10
Control 2: Partnered women with the youngest child aged 10-18
Control 3: Partnered women with no children

6.2.3 By hours of work

In this section, I investigate whether women with weekly hours of work below average started to work more hours and whether women with weekly hours of

work above average reduced the change in hours of work. The sample means of hours of work across the combined samples Eligible and Control 1, Eligible and Control 2, Eligible and Control 3 are 29.14, 27.30, 35.38 respectively.

Table 6.13: DDD - Hours of work $>$ Sample mean

	(1) Control 1	(2) Control 2	(3) Control 3
Post04	0.0790	0.239	1.221**
	(1.392)	(0.976)	(0.596)
Eligible	2.541	3.659**	5.216***
	(1.651)	(1.413)	(1.658)
Post04$\times$ Eligible	-2.143	-1.649	-3.642*
	(2.141)	(1.823)	(2.136)
ΔYears of schooling	-0.0116	-0.320	5.225***
	(1.236)	(1.454)	(0.512)
ΔPartner Income	0.000699	-0.00101	-0.000810
	(0.00113)	(0.00114)	(0.000703)
Δ Partnered	3.999	5.452***	3.762***
	(2.936)	(1.618)	(0.947)
Constant	3.887***	2.313***	1.467***
	(1.243)	(0.732)	(0.378)
N	304	358	1,171

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Eligible: Women with the youngest child aged 1-4
Control 1: Women with the youngest child aged 6-10
Control 2: Women with the youngest child aged 10-18
Control 3: Women with no children
(1): Women with Hours of work $>$ 29.14
(2): Women with Hours of work $>$ 27.30
(3): Women with Hours of work $>$ 35.38

Table 6.13 provides estimation for women who were above average number of hours. The coefficient on $Post04 \times Eligible$ are negative, but statistically insignificant using Control group 1 and 2. However, the number of observations are too small to make a conclusion.

On the other hand, the coefficient is negative, statistically significant at 10% level of significane in Column 3 suggesting that women with pre-school children who were working above 35 hours a week reduced the change in hours of work between t and $t-1$ from the introduction of the CCTR. This is consistent with what we expect from labour supply theory. However, out of 1,171 observations, there are only 91 observations of women from the Eligible group. As a result, the number of observations is too small to make the conclusion that that women who were working full-time reduced the change in hours of work as a result of this policy.

Table 6.14: DDD - Part time - Hours of work <= Sample mean

	(1) Control 1	(2) Control 2	(3) Control 3
Post04	0.519	-1.374	1.446
	(1.123)	(1.296)	(1.061)
Eligible	-1.200	-0.570	3.150***
	(1.095)	(1.234)	(1.120)
Post04× Eligible	0.766	2.949*	0.0690
	(1.565)	(1.683)	(1.490)
ΔYears of schooling	0.816	-1.557	0.409
	(1.802)	(2.023)	(1.024)
ΔPartner Income	-0.00146**	-0.00134**	-0.000242
	(0.000713)	(0.000656)	(0.000916)
Δ Partnered	-1.387	-0.211	2.921
	(1.556)	(2.000)	(2.064)
Constant	-0.314	-1.103	-3.747***
	(0.703)	(0.943)	(0.795)
N	390	314	683

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Eligible: Women with the youngest child aged 1-4
Control 1: Women with the youngest child aged 6-10
Control 2: Women with the youngest child aged 10-18
Control 3: Women with no children
(1): Women with Hours of work <= 29.14
(2): Women with Hours of work <= 27.30
(3): Women with Hours of work <= 35.38

Table 6.14 provides estimation for women who were working part time (worked less than 35 hours a week). We can see that there is no statistically significant evidence that CCTR impacts the change in the hours of work for women who were working part time. This result is robust across across three control groups (observations from using control group 2 is too small) and consistent with what we expect from labour supply theory. More specifically, some women who were not working may start working very few hours to get the benefit. These women face only a substitution effect which encouraged them to work more hours. Other women have a higher wage rate as a result of the CCTR, which implies that these face both both a substitution effect and an income effect. As a result, the total effect on hours of work is unambiguous.

6.2.4 By partner income

In this section, I investigate whether partnered women with weekly partner income below average started to work more hours and whether partnered women with weekly partner income above average reduced the change in hours of work. The sample means of partner income across the combined samples Eligible and Control 1, Eligible and Control 2, Eligible and Control 3 are 770.08, 678.43 , 362.60 respectively.

Table 6.15: DDD - Partner income > Sample mean

	(1) Control 1	(2) Control 2	(3) Control 3
Post04	-0.856	-1.120	2.194**
	(1.242)	(1.115)	(0.871)
Eligible	-1.885	-1.558	0.929
	(1.382)	(1.287)	(1.074)
Post04× Eligible	0.231	0.708	-2.759*
	(1.875)	(1.705)	(1.456)
ΔYears of schooling	-0.140	0.0637	-0.434
	(1.331)	(1.175)	(2.723)
ΔPartner income	-0.00152	0.000164	0.000952
	(0.00112)	(0.00109)	(0.000918)
Constant	2.764***	2.115***	-0.358
	(0.889)	(0.798)	(0.600)
N	334	339	591

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Eligible: Partnered women with the youngest child aged 1-4
Control 1: Partnered women with the youngest child aged 6-10
Control 2: Partnered women with the youngest child aged 10-18
Control 3: Partnered women with no children
(1): Partnered women with partner income > 770.08
(2): Partnered women with partner income> 678.43
(3): Partnered women with partner > 362.60

Table 6.15 provides estimation for women with weekly partner income above average . The coefficient on $Post04 \times Eligible$ are statistically insignificant using Control group 1 and 2. However, the number of observations are too small to make a conclusion. On the other hand, the coefficient is negative, statistically significant at 10% level of significane in Column 3 suggesting that eligible women with weekly partner income above average reduced the change in hours of work between t and $t-1$ by 2.759 hours from the introduction of the CCTR. Out of 591 observations, 213 observations of women are in the Eligible group. While the number of observations are quite small, the number of observations is distributed quite evenly across two groups.

Table 6.16: DDD - Part time - Partner income <= Sample mean

	(1) Control 1	(2) Control 2	(3) Control 3
Post04	1.156	-0.500	1.552
	(1.742)	(1.586)	(1.139)
Eligible	0.937	1.514	2.595
	(1.600)	(1.629)	(1.876)
Post04× Eligible	-0.0544	1.869	0.174
	(2.311)	(2.267)	(2.409)
ΔYears of schooling	1.574	2.623	4.682***
	(1.435)	(2.587)	(1.242)
ΔPartner Income	-0.000855	-0.00177***	-0.000654
	(0.000777)	(0.000578)	(0.000817)
Constant	0.610	0.155	0.0326
	(1.113)	(1.123)	(0.897)
N	251	215	487

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Eligible: Partnered women with the youngest child aged 1-4
Control 1: Partnered women with the youngest child aged 6-10
Control 2: Partnered women with the youngest child aged 10-18
Control 3: Partnered women with no children
(1): Partnered women with partner income <= 770.08
(2): Partnered women with partner income<= 678.43
(3): Partnered women with partner <= 362.60

Table 6.16 provides estimation for women women with weekly partner income below average. We can see that there is no sufficient evidence to conclude that CCTR impacts the change in the hours of work for these women.

6.3 Selection bias - Quantile regression analysis

To correct for selection bias, I estimate three regressions using Control group 1 and Control group 3. In estimation 1, I exclude women who were not employed and perform OLS on the specified Difference-in-differences model as in **Chapter 5**. In estimation 2 and 3, I include all observations of women and estimate a 50% percentiles (median) and 75% percentiles regression. Since I use a Difference-in-Differences model for these estimations, the number of observations increases significantly as I do not construct the change in hours of work between t and $t-1$. In addition, it is not reasonable to impute value of zero on the change of the hours of work between t and $t-1$ as it simply means that individual i does not change the number of hours of work between t and $t-1$. Therefore, I only use the Difference-in-Differences model for these estimations instead of the Difference-in-Difference-in-Differences model.

Having the youngest child aged between 1 and 4 appears to decrease the average hours of work before the CCTR took place, with significantly negative coefficients on $Eligible$ in all three models. From **Table 6.17**, the coefficient on $Eligible$ in Model 1 is -4.643, suggesting that women in the Eligible group, on average, work approximately 4 hours less than women in Control group 1. However, we can see that the coefficient on $Eligible$ is substantially higher in magnitude in Model 2, with the coefficient of -11.07 suggesting that the median hours of work for women in the Eligible group is approximately 11 hours less than women in Control group 1. The reason why there is such a large gap in magnitudes is because of the number of observations of women who did not work in the sample.

More specifically, out of 1,900 observations, there are 686 observations of women who did not work. In this scenario, 75% quantile regression is most likely to be more accurate in estimating the hours of work for employed women than the 50% quantile regression.

Even after I control for selection bias by estimating two quantile regressions, we can see that the coefficient on $Post04 \times Eligible$ is still statistically insignificant, which is consistent with findings in previous sections.

Table 6.17: DD with Hoursworked > 0 compare to Quantile regressions using Control 1

		(1)	(2)
	DD	50%	75%
Post04	-0.291	0.683	-0.236
	(0.874)	(1.565)	(2.146)
Eligible	-4.643***	-11.07***	-9.822***
	(1.113)	(1.517)	(2.081)
Post04× Eligible	0.281	1.189	1.386
	(1.330)	(2.088)	(2.864)
Age	-1.017	2.046**	0.960
	(0.755)	(0.953)	(1.307)
Age^2	0.0127	-0.0268*	-0.0159
	(0.0108)	(0.0138)	(0.0189)
Years of schooling	0.956***	2.483***	2.134***
	(0.183)	(0.247)	(0.339)
Total children	-0.832*	-2.096***	-2.967***
	(0.474)	(0.536)	(0.736)
Partnered	0.866	4.414***	5.234***
	(1.173)	(1.447)	(1.985)
Partner income	-0.00180***	-0.00218***	-0.00336***
	(0.000609)	(0.000783)	(0.00107)
N	1,214	1,900	1,900

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Eligible: Women with the youngest child aged 1-4
Control 1: Women with the youngest child aged 6-10
State dummies are included, but not reported here

Table 6.18: DD with Hoursworked > 0 compare to Quantile regressions using Control 1

	DD	(1) 50%	(2) 75%
Post04	0.337	0.601	0.0256
	(0.464)	(0.802)	(0.766)
Eligible	-12.51***	-24.93***	-12.07***
	(1.522)	(1.575)	(1.503)
Post04× Eligible	-0.298	2.360	1.844
	(1.091)	(2.280)	(1.364)
Age	3.372***	3.887***	1.415***
	(0.368)	(0.467)	(0.445)
Age^2	-0.0490***	-0.0575***	-0.0211***
	(0.00571)	(0.00721)	(0.00688)
Years of schooling	0.677***	1.484***	1.167***
	(0.130)	(0.158)	(0.151)
Total children	-0.997	-2.188***	-3.363***
	(0.623)	(0.545)	(0.520)
Partnered	1.819***	2.507***	1.233
	(0.645)	(0.798)	(0.761)
Partner income	-0.000800	-0.000180	-0.000635
	(0.000504)	(0.000607)	(0.000580)
N	2,593	3,358	3,358

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Eligible: Women with the youngest child aged 1-4
Control 3: Women with no children
State dummies are included, but not reported here

After controlling for selection bias by estimating two quantile regressions, we can see that the coefficient on $Post04 \times Eligible$ is still statistically insignificant regardless of which control group is used, which is consistent with findings in previous sections.

6.4 Placebo regression analysis

In this section, I create a "placebo" policy where I assume that the CCTR took place in 2003 instead of 2004. I conduct the same analysis, comparing labour force participation rates and hours of work between 2002 and 2004 to test whether the average treatment effect is statistically significant in any specification.

Table 6.19: Extensive margin - Labour force participation - Placebo policy 2003

	(1)	(2)	(3)
Labour force participation - Samples: All women	Control 1	Control 2	Control 3
Post03	0.0547	0.0279	-0.0333
	(0.0770)	(0.0912)	(0.0632)
Eligible	-0.573***	-0.652***	-0.904***
	(0.0901)	(0.109)	(0.113)
Post03× Eligible	0.0162	0.0407	0.106
	(0.106)	(0.114)	(0.0930)
Age	0.211***	0.112*	0.0664
	(0.0592)	(0.0590)	(0.0404)
Age^2	-0.00296***	-0.00140	-0.00120*
	(0.000856)	(0.000857)	(0.000622)
Years of schooling	0.153***	0.152***	0.142***
	(0.0171)	(0.0177)	(0.0154)
Total number of children	-0.104***	-0.0979***	-0.104***
	(0.0337)	(0.0362)	(0.0398)
Partnered	0.217**	0.0974	0.147**
	(0.0914)	(0.0919)	(0.0729)
Partner income	-6.40e-06	6.03e-07	2.46e-05
	(4.97e-05)	(4.92e-05)	(4.87e-05)
N	2,129	1,976	3,485

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Eligible: Women with the youngest child aged 1-4
Control 1: Women with the youngest child aged 6-10
Control 2: Women with the youngest child aged 10-18
Control 3: Women with no children
State dummies are included, but not reported here

From **Table 6.19**, we can see the coefficients on $Post03 \times Eligible$ are statistically insignificant across three control groups. This implies that there are no other macroeconomic shocks other than the effect of CCTR which affect labour market decisions of the Eligible and Control groups. Based on these results, we can be more confident that the original results capture the true effects of CCTR on labour force participation. Results for subgroups of women are provided in Appendix.

Since the effects of the CCTR on change in hours of work is ambiguous in the original estimations, we cannot conclude anything if we also find statistically insignificant results in the Placebo tests. However, in the original estimations, I find that women with pre-school children who were working full time reduced the change in hours of work between t and $t-1$ from the introduction of the CCTR using women with no children as the control group. In this section, I will re-estimate this using the "placebo" policy to test whether the average treatment effect is statistically significant for these women.

I report estimation results for women who were working full time using women with no children as the control group since sample sizes for control group 1 and 2 are likely to be too small to trust the credibility of results.

I also find that eligible women with weekly partner income above average reduced the change in hours of work between t and $t-1$ from the introduction of the CCTR. Hence, I will also report estimation results for these eligible women using women with no children as the control group.

From **Table 6.20**, we can see that the coefficients on $Post03 \times Eligible$ are statistically insignificant, suggesting that the "placebo" did not reduce the change in the hours of work for women who were working full time or for partnered women with partner income above average as the actual CCTR which took place in 2004.

Table 6.20: DDD - Placebo

	(1)	
	Full time	Above average partner income
Post03	-0.114	0.555
	(0.530)	(0.822)
Eligible	3.902***	3.376***
	(1.352)	(0.968)
Post03× Eligible	0.537	0.428
	(2.256)	(1.548)
ΔYears of schooling	4.296***	2.648*
	(0.497	(1.418)
ΔPartner Income	9.04e-05	0.000469
	(0.000691)	(0.000586)
Δ Partnered	2.140	5.090
	(1.356)	(7.282)
Constant	1.789***	-1.250**
	(0.372)	(0.532)
N	1,260	666

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Eligible: Women with the youngest child aged 1-4
Control 1: Women with the youngest child aged 6-10
Control 2: Women with the youngest child aged 10-18
Control 3: Women with no children

6.5 Comparison to the 1st July 2008 policy

From **Table 6.21**, we can see that while the coefficients on $Post08 \times Eligible$ are positive across three control groups, it is statistically insignficant at 10%, 5%, 1% level of significance. Hence, in this scenario, I do not find sufficient evidence to support the hypothesis that the expansion of CCTR in 2008 increased the probability of partipating in the labour force for women with pre-school children.

A possible explanation for this finding is that there are other policies which took place in this period, which makes it difficult to separate the effect of CCTR expansion on labour force participation. For example, from 1 July 2008 there was no longer be a minimum payment of Child Care Benefit (CCB) for high-income families. If families income exceeds a certain threshold, CCB continued to reduce until the family payment is zero instead of reducing to a minimum payment.

Another reason is that women with pre-school children in 2007 have already increased their labour force participation rates due to the effect of 2004 CCTR. Hence, if we compare two groups of women controlling for observable demographic characteristics, a woman who participated in the labour force in 2007 would also participate in the labour force in 2009. Women with pre-school children who did not participate in the labour force in 2007 might have relatively higher reservation wages than their counterparts. Women with pre-school children in 2009 who share those characteristics might also do not participate in the labour force in 2009. One can argue that the higher cap at $\$7{,}500$ may encourage them to participate more. However, to be eligible to receive the maximum of $\$7{,}500$ a year, women who did not participate in 2007 had to at least work full time and used formal child care to be able to receive such high amount.

Finally, the Difference-in-Differences specification requires an assumption that there are no underlying long run trends in labour force participation rates that differ between the Eligible and Control groups. The financial crisis which took place between 2007 and 2009 might affect the Eligible group and Control group differently.

Therefore, we expect that the effect on extensive margin is smaller compared to the effect of CCTR in 2004. Results for subgroups of women are consistent with these findings and are provided in the Appendix.

Table 6.21: Extensive margin - Labour force participation - 1 July 2008

	(1)	(2)	(3)
Labour force participation - Samples: All women	Control 1	Control 2	Control 3
Post08	0.126	-0.0324	-0.0639
	(0.103)	(0.114)	(0.0620)
Eligible	-0.673***	-0.808***	-0.594***
	(0.109)	(0.125)	(0.127)
Post08× Eligible	-0.132	0.0297	0.0546
	(0.134)	(0.139)	(0.101)
Age	0.111*	0.0701	0.0505
	(0.0642)	(0.0621)	(0.0420)
Age^2	-0.00152	-0.000961	-0.000951
	(0.000944)	(0.000907)	(0.000651)
Years of schooling	0.124***	0.123***	0.118***
	(0.0208)	(0.0210)	(0.0164)
Total number of children	-0.191***	-0.171***	-0.201***
	(0.0410)	(0.0410)	(0.0449)
Partnered	0.257**	0.263***	0.166**
	(0.0999)	(0.0978)	(0.0696)
Partner income	-0.000104**	-4.78e-05	3.08e-05
	(4.65e-05)	(4.74e-05)	(4.69e-05)
N	1,574	1,522	3,241

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Eligible: Women with the youngest child aged 1-4
Control 1: Women with the youngest child aged 6-10
Control 2: Women with the youngest child aged 10-18
Control 3: Women with no children
State dummies are included, but not reported here

In terms of intensive margin, some women who were working part-time might increase their hours of work to receive more CCTR as a result of the increase in the cap from $4,000 to $7,500. On the other hand, both partners who were working full time and used formal child care (have highest child care expenses) might receive the maximum CCTR of $7,500 whether they worked one more hour or one fewer hour . Hence, there is a pure income effect, which encouraged them to work fewer hours assuming leisure is a normal good. Overall, the total effects can be positive, negative or ambiguous.

Table 6.22: DDD - All women - 1 July 2008

	(1) Control 1	(2) Control 2	(3) Control 3
Post08	0.772	0.203	0.253
	(0.939)	(1.088)	(0.523)
Eligible	-0.500	0.490	0.348
	(0.911)	(0.934)	(0.808)
Post08× Eligible	-1.751	-1.350	-1.176
	(1.408)	(1.516)	(1.173)
ΔYears of schooling	4.196***	4.604***	3.988***
	(1.404)	(1.072)	(0.592)
ΔPartner Income	0.00155	-0.00128*	0.000893
	(0.00120)	(0.000738)	(0.000631)
Δ Partnered	-1.397	0.520	-0.0963
	(2.140)	(1.762)	(1.007)
Constant	1.490***	0.747	0.710*
	(0.574)	(0.584)	(0.372)
N	725	617	1,891

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Eligible: Women with the youngest child aged 1-4
Control 1: Women with the youngest child aged 6-10
Control 2: Women with the youngest child aged 10-18
Control 3: Women with no children

There is no sufficient evidence to support the hypothesis that CCTR expansion impacts Hours of work, as the coefficient on $Post08 \times Eligible$ is statistically insignificant in this across three control groups. This is consistent with what we expect. Results for subgroups of women are provided in the Appendix.

Chapter 7

Discussion and Conclusion

7.1 Primary results and Discussion

This thesis provides detailed analyses of the impact of the introduction of the CCTR on 1 July 2004 and the expansion of CCTR on 1 July 2008 on labour force participation and hours of work decision. I use three different control groups: Control group 1 (Women with the youngest child aged between 6 and 10), Control group 2 (Women with the youngest child aged between 10 and 18), Control group 3 (Women with no children) for each analysis to check for the consistency and robustness of results.

I find that, on average, the introduction of the CCTR increased the probability of labour force participation of women with pre-school children by between 3.97% and 6.13%.

Partnered women appear to be more responsive to the CCTR than single women. More specifically, on average, the introduction of the CCTR increased the probability of labour force participation of partnered women with pre-school children by between 7.35% and 12.9%. On the other hand, I do not find sufficient evidence to support the hypothesis that CCTR increased the probability of participation for eligible single women. This is consistent with findings from a related Australian study where Gong and Breunig (2014) find no significant evidence of an increase in the probability of unconditional employment for eligible single women before

2006. This implies that single women are more responsive to other welfare payments such as FTB-B and PPS than CCTR. In addition, FTB-B provides financial assistance to single parents who provide care for their children for at least 35% of the time, which might actually encouraged these single women to stay at home to provide care for their young children. Another possible reason is that low income single mothers face financial constraints to be able to use formal child care services, which is the main criteria for receiving CCTR.

I also provide detailed analyses for subgroups of women by partner income, by full-time or part-time work, by years of schooling to see which group is most responsive to the introduction of the policy.

The analysis performed in this thesis suggests that, the introduction of the CCTR increased the probability of entering the labour market of eligible partnered women with relatively less wealthy partners by between 10.5% and 13.5%. CCTR also increased the probability of labour force participation of relatively less educated partnered women with pre-school children by between 9.19% and 16.8%.

These results are consistent with the standard labour supply theory. Higher partner income increases reservation wages of partnered women. Therefore, eligible women with relatively more wealthy partners are less responsive to the policy compared to eligible women with less wealthy partners.

These results are similar and consistent with a recent Australian study where Gong and Breunig (2015) find that $1 of CCTR increases the employment rate of women with no tertiary education by 0.069% compares to 0.047% for women with tertiary education. While my thesis only studies labour force participation decision instead of employment rate, the results are quite consistent with previous findings.

Data from HILDA also suggests a positive correlation between a woman' years of schooling and her partner's income. These results are also consistent with many recent studies which have shown evidence of a positive assortative mating using US and Norway data (Eika, Mogstad, and Zafar, 2014; Greenwood et al., 2014).

In terms of the intensive margin, I find no sufficient evidence that the CCTR increased or decreased the change in the hours of work, which is consistent with labour supply theory and findings from a study which evaluated the EITC in the US (Eissa and Liebman, 1996). However, I find that eligible women with weekly partner income above the sample average reduced the change in the hours of work by 2.759 hours a week after the introduction of the CCTR.

Finally, I compare the effects of the CCTR on 1 July 2004 and the expansion of the CCTR on 1 July 2008 from 30% to 50% and from \$4,000 to \$7,500 annual limit. I find no sufficient evidence to support the hypothesis that the CCTR expansion in 2008 increased the probability of entering the labour market and increased or reduced the change in the hours of work.

7.2 Further research and limitations

This study has presented a number of opportunities for further research. The Difference-in-Difference-in-Differences model offers some advantages such as capturing different labour supply effects of two groups due to the aging of children, as well as eliminating time-invariant heterogeneity which may be correlated with the average treatment effect and consequently might cause biases in results.

However, this method requires constructing the change in the hours of work which may have some limitations and disadvantages. Firstly, constructing these changes might introduce certain degrees of measurement errors into our model. Secondly, constructing these changes also reduces the number of observations

substantially, particularly after restricting the sample to women aged between 20 and 45. This prevents more detailed analyses of subgroups where the number of observations are too small to be credible.

In addition, this thesis only examines the short term impact of the CCTR on labour force participation and hours of work decisions. In the long run, we might expect different effects due to rising child care costs partially as a result of higher demand for child care, which in turn might decrease the magnitudes of these effects or might even encourage some women to stay at home rather than to enter the labour market. As a result, there are many possibilities for further empirical analysis of the long run effects of CCTR.

Finally, this thesis finds no significant impact of the CCTR expansion on labour force participation and hours of work decisions. These analyses may be hindered by the presence of other policies as well as other macroeconomic conditions. Further research should be undertaken to compare with the findings from this thesis.

7.3 Concluding remarks

This thesis is consistent with recent research performed in Australia and finds that CCTR is effective in increasing the probability of participating in the labour force for partnered women in Australia, particularly those from relatively low socio-economic backgrounds. However, there appears to be no significant effect on the hours of work for these eligible women as some women with higher family income might actually reduce their hours of work due to income effects.

These results support the proposal of the Australian Government to replace CCTR and CCB with a single means-tested payment from July 2018, which might be more cost-effective for the Government. However, more further research needs to be done to study the economic effects of the new Child Care Subsidy.

Bibliography

ABS (2002). *Child Care, Australia, Jun 2002*. /http://www.abs.gov.au/ausstats/abs@.nsf/ProductsbyReleaseDate/CD468A2B26EBC39DCA2571750079CEF6. Accessed: 2016-09-29.

— (2013). *Barriers and Incentives to Labour Force Participation, Australia, July 2012 to June 2013*. http://www.abs.gov.au/ausstats/abs@.nsf/products/934AC3BAE21ABDCECA257C3000140B11. Accessed: 2016-09-29.

— (2014). *Childhood Education and Care, Australia, June 2014*. /http://www.abs.gov.au/ausstats/abs@.nsf/cat/4402.0. Accessed: 2016-09-29.

AIFS (2015). *Child care and early childhood education in Australia*. https://aifs.gov.au/publications/child-care-and-early-childhood-education-australia. Accessed: 2016-08-19.

APH (2002). *Commonwealth Support for Childcare*. /http://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/Publications_Archive/archive/childcaresupport. Accessed: 2016-09-29.

— (2005). *Tax Laws Amendment (2005 Measures No. 4) Bill 2005*. http://www.aph.gov.au/Parliamentary_Business/Bills_Legislation/bd/bd0506/06bd022. Accessed: 2016-08-19.

Blau, David M. and Philip K. Robins (1988). "Child-Care Costs and Family Labor Supply". In: *The review of Economics and Statistics* 70 (3), pp. 374–381.

Blundell, Richard, Mike Brewer, and Andrew Shephard (2005). "Evaluating the labour market impact of Working Families' Tax Credit using difference-in-differences". In:

Blundell, Richard et al. (2000). "The Labour Market Impact of the Working Families Tax Credit". In: *Fiscal Studies* 21, pp. 75–104.

Boca, Daniela Del and Daniela Vuri (2007). "The mismatch between employment and child care in Italy: the impact of rationing". In: *Journal of Population Economics* 20 (4), pp. 805–832.

Breunig, Robert et al. (2011). "Child Care Availability, Quality and Affordability: Are Local Problems Related to Labour Supply?" In: *Economic Record* 87 (276), pp. 109–124.

Connelly, Rachel (1992). "The Effect of Child Care Costs on Married Women's Labor Force Participation". In: *The review of Economics and Statistics* 74 (1), pp. 83–90.

Daley, John and Cassie McGannon (2014). "Submission to the Productivity Commission Inquiry on Childcare and Early Childhood Learning". In: *Productivity Commision*.

Doiron, Denise and Guyonne Kalb (2005). "Demands for childcare and household labour supply in Australia". In: *Economic Record* 81 (254), pp. 215–236.

Eika, Lasse, Magne Mogstad, and Basit Zafar (2014). "Educational Assortative Mating and Household Income Inequality". In: *National Bureau of Economic Research* w20271.

Eissa, Nada and Jeffrey B. Liebman (1996). "Labour Supply Response To The Earned Income Tax Credit". In: *The Quarterly Journal of Economics* 111 (2), pp. 605–637.

Gong, Xiaodong and Robert Breunig (2014). "Channels of labour supply responses of lone parents to changed work incentives". In: *Oxford Economic Papers* 66 (4), pp. 916–939.

— (2015). "Child Care Assistance: Are subsidies or tax credits better?" In: *Fiscal Studies*.

Gong, Xiaodong, Robert Breunig, and Anthony King (2012). "Partnered Women's Labour Supply and ChildCare Costs in Australia: Measurement Error and the ChildCare Price". In: *Economic Record* 88 (1), pp. 51–69.

Greenwood, Jeremy et al. (2014). "Marry your like: Assortative mating and income inequality". In: *The American Economic Review* 104 (5), pp. 348–353.

Gustafsson, Siv and Frank Stafford (1992). "Child care subsidies and labor supply in Sweden". In: *Journal of Human resources*, pp. 204–230.

Heckman, James (1977). "Sample selection bias as a specification error". In:

Heckman, James J. (1976). "The common structure of statistical models of truncation, sample selection and limited dependent variables and a simple estimator for such models". In: *Annuals of Economic and Social Measurement* (4), pp. 475–492.

HILDA (2016). *HILDA User Manual Release 14*. `https://www.melbourneinstitute.com/hilda/doc/doc_hildamanual.html`. Accessed: 2016-08-19.

Johnson, William, Yuichi Kitamura, and Derek Neal (2000). "Evaluating a simple method for estimating black-white gaps in median wageso". In: *The American economic review* 90 (2), pp. 339–343.

Kalb, Guyonne and Wang-Sheng Lee (2008). "Childcare Use and Parents Labour Supply in Australia". In: *Australian Economic Papers* 47 (3), pp. 272–295.

Kornstad, Tom and Thor O. Thoresen (2007). "A discrete choice model for labor supply and childcare". In: *Journal of Population Economics* 20 (4), pp. 781–803.

Lokshin, Michael (2004). "Household childcare choices and womens work behavior in Russia". In: *The Journal of Human Resources* 39 (4), pp. 1094–1115.

Neal, Derek A. and William R. Johnson (1996). "The Role of Premarket Factors in Black-White Wage Differences". In: *The Journal of Political Economy* 104 (5), pp. 869–895.

New Jersey DHS, State of (2016). *State Subsidies for Child Care*. `http://www.state.nj.us/humanservices/dfd/programs/child/subsidies/`. Accessed: 2016-08-19.

OECD (2013). *Babies and Bosses: Reconciling Work and Family Life*. `https://www.oecd.org/els/family/39689983.pdf`. Accessed: 2016-08-19.

Powell, Lisa M. (1998). "The impact of child care costs on the labour supply of married mothers: evidence from Canada". In: *Canadian Journal of Economics* 30 (3), pp. 577–94.

— (2002). "Joint labor supply and childcare choice decisions of married mothers". In: *Journal of Human Resources* 37, pp. 106–28.

Rammohan, Anu and Stephen Whelan (2005). "Child care and female employment decisions". In: *Australian Journal of Labour Economics* 8 (2), p. 203.

— (2007). "The impact of childcare costs on the full-time/part-time employment decisions of Australian mothers". In: *Australian Economic Papers* 46 (2), pp. 152–169.

Service, Canada (2013). *Income Assistance - For Families and Children*. `http://www.servicecanada.gc.ca/eng/audiences/families/benefits.shtml`. Accessed: 2016-08-19.

Wrohlich, Katharina (2011). "Labor supply and child care choices in a rationed child care market". In: *IZA*.

Appendix A

Appendix

A.1 Sample derivation process

I will describe the sample derivation process to obtain the final samples for the Extensive margin regression analyis using Control group 1. Others are similar. We start with 35,145 observations in Wave 3 and Wave 5. Drop 22,867 observations who are men after constructing the partner income variable. Drop 13 missing observations of hours of work due to not reporting. Drop 3 observations for having 0 hour of work but stated that "currently employed". Hence, we have 12,262 observations so far.

Then I drop 5,427 of women who are over 45 years old. I drop 1,096 observations who are under 20 years old. I drop 475 observations of women with newborn baby, 216 observations with the youngest child aged 5 years old, drop 2,989 observations of women with no children or the youngest child above 10 years old, 124 observations of women who were studying full time or part time, 11 observations of women who were pregnant or on maternity leave, 14 observations where women volunteered more than 15 hours a week, 1 observation where a woman was on a job related training program, 9 observations where hours of work per week is above 80. The final sample consisted of 1,900 observations including 1,059 women in the Eligible group and 841 women in Control group 1.

A.2 Extensive margin - 2004

A.2.1 Extensive margin - Partnered women

VARIABLES	Eligible	mean	min	max	Control 1	mean	min	max
Partner income	869	804.6	0	4,603	646	844.5	0	5,293
Age	869	33.91	20	45	646	39	22	45
Schooling	869	13.35	11	18	646	13.07	11	18
LFP	869	0.621	0	1	646	0.772	0	1
Total children	869	2.220	1	10	646	2.272	1	7
Youngest child	869	2.320	1	4	646	7.830	6	10

VARIABLES	Control 2	Mean	Min	Max	Control 3	Mean	Min	Max
Partner income	545	807.9	0	4,971	1,093	490.5	0	5,500
Age	545	41.03	26	45	1,093	30.70	20	45
Years of schooling	545	12.82	11	18	1,093	13.86	11	18
LFP	545	0.831	0	1	1,093	0.915	0	1
Total chilren	545	1.949	1	5	1,093	0	0	0
Youngest child	545	12.51	10	18	1,093			

A.2.2 Extensive margin - Single women

VARIABLES	Eligible	mean	min	max	Control 1	mean	min	max
Partner income	190	0	0	0	189	0	0	0
Age	190	31.84	20	45	189	37.33	24	45
Years of schooling	190	12.36	11	18	189	12.71	11	18
LFP	190	0.505	0	1	189	0.738	0	1
Total children	190	1.942	1	7	189	1.995	1	7
Youngest	190	2.584	1	4	189	7.918	6	10

VARIABLES	Control 2	mean	min	max	Control 3	mean	min	max
Partner income	191	0	0	0	1,182	0	0	0
Age	191	40.13	29	45	1,182	28.67	20	45
Years of schooling	191	12.86	11	18	1,182	13.57	11	18
LFP	191	0.775	0	1	1,182	0.886	0	1
Total children	191	1.615	1	7	1,182	0	0	0
Youngest	191	12.58	10	18	1,182			

A.2.3 Extensive margin - Partner income $<=$ Sample mean

VARIABLES	Eligible	mean	min	max	Control 1	mean	min	max
Partner income	382	169.6	0	650	246	130.6	0	650
Age	382	33.17	20	45	246	38.53	22	45
Years of schooling	382	13.22	11	18	246	12.87	11	18
LFP	382	0.594	0	1	246	0.772	0	1
Total children	382	2.233	1	10	246	2.276	1	6
Youngest	382	2.202	1	4	246	7.732	6	10

VARIABLES	Eligible	mean	min	max	Control 2	mean	min	max
Partner income	361	141.9	0	633	211	117.4	0	633
Age	361	33.25	20	45	211	40.83	26	45
Years of schooling	361	13.25	11	18	211	12.79	11	18
LFP	361	0.604	0	1	211	0.834	0	1
Total children	361	2.247	1	10	211	1.929	1	5
Youngest	361	2.208	1	4	211	12.82	10	18

VARIABLES	Eligible	mean	min	max	Control 3	mean	min	max
Partner income	278	28.58	0	360	626	11.43	0	350
Age	278	33.02	20	45	626	28.85	20	45
Years of schooling	278	13.35	11	18	626	14.02	11	18
LFP	278	0.626	0	1	626	0.912	0	1
Total children	278	2.273	1	10	626	0	0	0
Youngest	278	2.151	1	4	626			

A.2.4 Extensive margin - Partner income $>$ Sample mean

VARIABLES	Eligible	mean	min	max	Control 1	mean	min	max
Partner income	477	1,303	660	4,603	400	1,284	656	5,293
Age	477	34.49	21	45	400	39.29	26	45
Years of schooling	477	13.46	11	18	400	13.20	11	18
LFP	477	0.643	0	1	400	0.772	0	1
Total children	477	2.209	1	8	400	2.270	1	7
Youngest	477	2.413	1	4	400	7.890	6	10

VARIABLES	Eligible	mean	min	max	Control 2	mean	min	max
Partner income	496	1,276	637	4,603	334	1,244	640	4,971
Age	496	34.38	21	45	334	41.15	32	45
Years of schooling	496	13.43	11	18	334	12.84	11	18
LFP	496	0.634	0	1	334	0.829	0	1
Total children	496	2.201	1	8	334	1.961	1	4
Youngest	496	2.400	1	4	334	12.32	10	18

VARIABLES	Eligible	mean	min	max	Control 3	mean	min	max
Partner income	581	1,170	385	4,603	467	1,133	380	5,500
Age	581	34.34	21	45	467	33.17	20	45
Years of schooling	581	13.35	11	18	467	13.65	11	18
LFP	581	0.619	0	1	467	0.919	0	1
Totalkids	581	2.195	1	8	467	0	0	0
Youngest	581	2.399	1	4	467			
Partnered	581	1	1	1	467	1	1	1

A.2.5 Extensive margin - Years of schooling $<=$ Sample mean

VARIABLES	Eligible	mean	min	max	Control 1	mean	min	max
Partner income	526	748.3	0	3,982	419	772.3	0	4,500
Age	526	33.08	20	45	419	38.45	22	45
Years of schooling	526	11.70	11	13	419	11.60	11	13
LFP	526	0.529	0	1	419	0.723	0	1
Total children	526	2.344	1	10	419	2.282	1	7
Youngest	526	2.399	1	4	419	7.859	6	10

VARIABLES	Eligible	mean	min	max	Control 2	mean	min	max
Partner income	526	748.3	0	3,982	392	772.2	0	4,833
Age	526	33.08	20	45	392	40.67	26	45
Years of schooling	526	11.70	11	13	392	11.72	11	13
LFP	526	0.529	0	1	392	0.816	0	1
Total children	526	2.344	1	10	392	1.901	1	4
Youngest	526	2.399	1	4	392	12.61	10	18

VARIABLES	Eligible	mean	min	max	Control 3	mean	min	max
Partner income	581	1,170	385	4,603	467	1,133	380	5,500
Age	581	34.34	21	45	467	33.17	20	45
Years of schooling	581	13.35	11	18	467	13.65	11	18
LFP	581	0.619	0	1	467	0.919	0	1
Totalkids	581	2.195	1	8	467	0	0	0
Youngest	581	2.399	1	4	467			
Partnered	581	1	1	1	467	1	1	1

A.2.6 Extensive margin - Years of schooling $>$ Sample mean

VARIABLES	Eligible	mean	min	max	Control 1	mean	min	max
Partner income	340	891.0	0	4,603	227	977.9	0	5,293
Age	340	35.20	22	45	227	40.01	28	45
Yeras of schooling	340	15.88	14	18	227	15.79	14	18
LFP	340	0.764	0	1	227	0.863	0	1
Total children	340	2.029	1	6	227	2.256	1	5
Youngest	340	2.198	1	4	227	7.775	6	10

VARIABLES	Eligible	mean	min	max	Control 2	mean	min	max
Partner income	340	891.0	0	4,603	151	899.6	0	4,971
Age	340	35.20	22	45	151	41.95	30	45
Years of schooling	340	15.88	14	18	151	15.63	14	18
LFP	340	0.764	0	1	151	0.869	0	1
Total children	340	2.029	1	6	151	2.072	1	5
Youngest	340	2.198	1	4	151	12.25	10	18

VARIABLES	Eligible	mean	min	max	Control 3	mean	min	max
Partner income	340	891.0	0	4,603	522	489.8	0	4,358
Age	340	35.20	22	45	522	30.72	21	45
Years of schooling	340	15.88	14	18	522	15.93	14	18
LFP	340	0.764	0	1	522	0.945	0	1
Total children	340	2.029	1	6	522	0	0	0
Youngest	340	2.198	1	4	522			

A.3 Extensive margin - Placebo - Some subgroups

Table A.1: Extensive margin - Partnered women - Placebo

	(1)	(2)	(3)
Post03	0.00409	0.0271	0.000779
	(0.0289)	(0.0329)	(0.0242)
Eligible	-0.199***	-0.197***	-0.216***
	(0.0318)	(0.0383)	(0.0337)
Post03× Eligible	0.0300	0.00795	0.0272
	(0.0384)	(0.0411)	(0.0313)
currentage	0.0721***	0.0424*	0.0224
	(0.0230)	(0.0233)	(0.0144)
currentagesq	-0.000996***	-0.000545	-0.000369*
	(0.000331)	(0.000336)	(0.000217)
schooling	0.0456***	0.0450***	0.0363***
	(0.00562)	(0.00583)	(0.00436)
totalkids	-0.0344***	-0.0308**	-0.0268**
	(0.0117)	(0.0126)	(0.0109)
Observations	1,687	1,560	2,064

Table A.2: Extensive margin - Single women - Placebo

	(1)	(2)	(3)
Labour force participation	Control 1	Control 2	Control 3
Post03	0.0552	-0.0473	-0.0126
	(0.0530)	(0.0622)	(0.0182)
Eligible	-0.129**	-0.257***	-0.193***
	(0.0651)	(0.0708)	(0.0520)
Post03× Eligible	-0.0768	0.0122	-0.00305
	(0.0787)	(0.0797)	(0.0384)
currentage	0.0727**	0.00484	0.0141
	(0.0368)	(0.0330)	(0.0127)
currentagesq	-0.00106*	5.54e-06	-0.000267
	(0.000543)	(0.000490)	(0.000200)
schooling	0.0770***	0.0668***	0.0289***
	(0.0143)	(0.0148)	(0.00600)
totalkids	-0.0349	-0.0231	-0.0319
	(0.0276)	(0.0279)	(0.0239)
Observations	430	403	1,408

A.4 Extensive margin - 2008 - Some subgroups

Table A.3: Extensive margin - Partnered women - 2008 Policy

	(1)	(2)	(3)
Labour force participation	Control 1	Control 2	Control 3
Post08	0.182	0.0274	-0.0445
	(0.121)	(0.130)	(0.0957)
Eligible	-0.620***	-0.790***	-0.635***
	(0.122)	(0.142)	(0.153)
Post08× Eligible	-0.142	0.0183	0.0911
	(0.155)	(0.158)	(0.132)
currentage	0.160**	0.144**	0.0548
	(0.0746)	(0.0733)	(0.0565)
currentagesq	-0.00218**	-0.00199*	-0.000921
	(0.00109)	(0.00106)	(0.000866)
schooling	0.116***	0.108***	0.117***
	(0.0224)	(0.0226)	(0.0196)
totalkids	-0.169***	-0.142***	-0.173***
	(0.0493)	(0.0494)	(0.0540)
hincome	-0.000103**	-4.74e-05	1.13e-05
	(4.67e-05)	(4.76e-05)	(4.74e-05)
Observations	1,247	1,199	1,884

Table A.4: Extensive margin - Single women - 2008 Policy

	(1)	(2)	(3)
Labour force participation	Control 1	Control 2	Control 3
Post08	-0.0563	-0.273	-0.0880
	(0.222)	(0.251)	(0.0836)
Eligible	-0.789***	-0.849***	-0.382
	(0.253)	(0.260)	(0.260)
Post08× Eligible	-0.152	0.0226	-0.173
	(0.302)	(0.324)	(0.213)
currentage	-0.0289	-0.0920	0.0790
	(0.126)	(0.114)	(0.0644)
currentagesq	0.000468	0.00130	-0.00148
	(0.00188)	(0.00169)	(0.00101)
schooling	0.177***	0.210***	0.112***
	(0.0556)	(0.0567)	(0.0287)
totalkids	-0.231***	-0.234***	-0.302***
	(0.0749)	(0.0841)	(0.0935)
Observations	326	322	1,356

Table A.5: Extensive margin - Partner income <= Sample mean - 2008 Policy

	(1)	(2)	(3)
Labour force participation	Control 1	Control 2	Control 3
Post08	0.0720	0.0934	-0.0135
	(0.0653)	(0.0727)	(0.0231)
Eligible	-0.156***	-0.143**	-0.120***
	(0.0552)	(0.0684)	(0.0432)
Post08× Eligible	-0.0871	-0.108	-0.00217
	(0.0780)	(0.0823)	(0.0373)
currentage	0.0296	0.0234	0.00146
	(0.0304)	(0.0303)	(0.0150)
currentagesq	-0.000372	-0.000270	-5.95e-05
	(0.000452)	(0.000449)	(0.000235)
schooling	0.0337***	0.0344***	0.0281***
	(0.00983)	(0.00988)	(0.00523)
totalkids	-0.0602***	-0.0466**	-0.0358**
	(0.0195)	(0.0201)	(0.0152)
Observations	585	543	1,219

Table A.6: Extensive margin - Partner income > Sample mean - 2008 Policy

	(1)	(2)	(3)
Labour force participation	Control 1	Control 2	Control 3
Post08	0.0432	-0.0223	0.0322
	(0.0390)	(0.0436)	(0.0547)
Eligible	-0.199***	-0.271***	-0.167***
	(0.0460)	(0.0484)	(0.0638)
Post08× Eligible	-0.000450	0.0622	0.00779
	(0.0554)	(0.0554)	(0.0622)
currentage	0.0549*	0.0573*	0.0517**
	(0.0316)	(0.0304)	(0.0245)
currentagesq	-0.000772*	-0.000834*	-0.000761**
	(0.000449)	(0.000431)	(0.000364)
schooling	0.0380***	0.0317***	0.0238***
	(0.00800)	(0.00808)	(0.00745)
totalkids	-0.0461**	-0.0414**	-0.0550***
	(0.0198)	(0.0190)	(0.0208)
Observations	662	656	665

A.5 Intensive margin - 2008 - Some subgroups

Table A.7: DDD - Partnered women - 2008

	(1)	(2)	(3)
	Control 1	Control 2	Control 3
Post08	-0.689	-0.986	0.407
	(0.920)	(1.137)	(0.689)
Eligible	-0.217	-0.177	0.592
	(1.013)	(0.961)	(0.828)
Post08× Eligible	0.879	0.170	-0.977
	(1.367)	(1.510)	(1.209)
N	554	512	1,096

Table A.8: DDD - Partner income > Sample mean - 2008

	(1) Control 1	(2) Control 2	(3) Control 3
Post08	1.223	-0.317	-1.595
	(1.362)	(1.440)	(1.402)
Eligible	-1.484	-0.0436	1.246
	(1.094)	(1.162)	(1.190)
Post08× Eligible	-1.929	-0.818	0.765
	(1.887)	(1.959)	(1.877)
N	304	297	376

Table A.9: DDD - Partner income <= Sample mean - 2008

	(1) Control 1	(2) Control 2	(3) Control 3
Post08	1.525	-0.500	0.852
	(1.516)	(1.586)	(0.787)
Eligible	0.756	1.514	-0.0144
	(1.550)	(0.961)	(1.401)
Post08× Eligible	-1.958	0.869	-0.493
	(2.230)	(2.267)	(1.878)
N	250	215	720