IMPACTS OF POLICIES ON FERTILITY RATES

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Executive summary

The Centre for Population has commissioned this report from the Australian National University to explain trends and drivers of fertility in Australia and better understand the impact of government policies on fertility decisions.

Modern life, particularly the ability to negotiate work and family lives, has led to declining fertility rates across high-income countries. Many individuals' preferences for desired number of children are higher than the number of children that people eventually have, suggesting that there are barriers to having children. Over time, childbearing has increasingly been delayed to later ages, potentially contributing to fertility difficulties for couples if left too late in the reproductive lifespan.

This report includes three components: a literature review, an analysis of the Household, Income and Labour Dynamics in Australia (HILDA) panel study, and questions about fertility intentions and family policies that were included in a survey of Australians.

The literature review demonstrates the importance of policies that provide stability and support for raising children, for participation in employment through parental leave and child care, and that reduce the financial costs for parents. It also points to the importance of shared gender roles supported by public policies which support both parents' involvement in work and family, through the availability of leave and the provision of child care.

The HILDA analysis investigates the impacts that policies have on fertility using quasi-experimental methods. The policies considered include the introduction of the baby bonus, paid parental leave, paid partner leave, and adjustments to family tax benefits. The analysis does not provide convincing causal evidence of changes in births due to the introduction of these policies.

The survey analysis reinforces which issues are important to people when considering having children. Among the top five were the cost of raising children, the security of their or their partner's job, the cost of housing, having someone to love, and their age.

Taken together, these components provide insight into the issues that Australian parents and prospective parents face when considering having a child, and what measures can be considered to support parenting. In a setting like Australia, where it is usual and expected that parents are involved in both paid work and raising of children, supportive family policies are needed to prevent a rapid decline in fertility.

Part 1: Literature Review

The purpose of the literature review is to understand the features of Australian fertility, and what is known about public policies to support childbearing. The review encompasses trends in Australian fertility, and how they compare internationally. It considers how fertility is measured, and the limitations of those measures for considering policy interventions.

Following the trends, the review discusses the factors associated with fertility at the macro- and micro-levels, which together lead to fertility outcomes at the population level. The review then moves to consider the main policies which have been found to be associated with supporting fertility: financial transfers, parental leave and child care. The review ends with considerations of other policy settings surrounding issues such as housing and assisted reproductive technologies as they relate to fertility.

Trends in Fertility

Fertility rates have been declining in most high-income countries: with all having Total Fertility Rates (TFRs) below 'replacement-level' fertility, that is the fertility level required to replace the previous generation, usually around 2.1 births per woman. Some countries, including South Korea, Singapore and Italy, have TFRs that are described as 'lowest-low', that is, below 1.3. Australia has typically maintained relatively higher fertility rates compared to other high-income countries, however the TFR fell to its lowest recorded level of 1.58 in 2020 (Australian Bureau of Statistics, 2021a).

One of the reasons for the decline in the TFR is because Australians are having children at later ages. Since the mid-1970s there has been a constant increase in the mean age at childbearing in Australia. At the population level, it has been observed that later entry into parenthood is associated with lower fertility levels.

Framework for understanding changes in fertility

Fertility rates are the result of individual childbearing decisions and outcomes that occur within the wider societal context. As such a macro-micro framework incorporates the societal and individual factors that influence the timing of childbearing and number of children born, which at the population level contribute to contemporary fertility rates. Conceptualising fertility as a system, where individuals make their reproductive choices within a wider macro-context can aid understanding of the multiple influences on fertility, how these interact with each other, as well as what roles policies have in shaping factors that are important in fertility decision making.

Fertility theories highlight a number of important societal factors that influence the decision to have a child. These include: the costs and benefits of having a child for the parents in that historical place and time; economic conditions such as labour market stability, recessions or other uncertainty; and social attitudes and norms including gender-role attitudes and autonomy.

Measuring effects of policies

Financial support for families

Financial transfers are often provided by governments to help reduce the direct costs of children to parents. Australia has relatively generous, means-tested financial transfers in the form of Family Tax Benefit A and B, which provide a monthly transfer to families based on the number of children, the ages of the children, and the family income.

Evidence from other countries suggests that financial transfers have an overall positive effect on fertility. However, the effect on fertility is usually small because the transfers only represent a small fraction of the large direct costs of children.

Parental leave

Paid parental leave policies decrease the opportunity cost of childbearing for women by allowing for career continuity and compensating for lost income due to time taken away from the workforce. Australia has had paid parental leave for the primary carer, usually the mother, since 2011, and paid paternity leave since 2013. The uptake of paternity leave by fathers has been low.

Evidence from reforms introduced in other countries suggests that well-paid maternity leave has a positive effect on fertility, at least in the short term. Evidence of the effect of paternity leave on fertility is less clear.

Child care

While child care is not designed to support fertility, it can have a positive effect on childbearing by increasing work-family compatibility. In Australia, child care is primarily market based, and subsidised by the government through the Child Care Subsidy. Evidence from overseas suggests that increased child care provision has a positive effect on fertility.

Assisted reproductive technology

As the average age at having children has increased over time, the proportion of women experiencing difficulty in achieving a pregnancy has increased. Assisted reproductive technology (ART) treatments are becoming increasingly used to counteract this decline.

In comparison to other countries, Australia has relatively supportive public policy for ART and has one of the highest proportion of children born as a result of ART (5%). Hence, ART can broaden the range of possible responses to low fertility rates, although its contribution to the TFR so far has been modest.

Part 2: HILDA analysis

The Household Income and Labour Dynamics (HILDA) survey is used to analyse the effect of family policies on fertility intentions and outcomes. The policies investigated are: the baby bonus program; Paid Leave Pay; Dad and Partner Pay; and, reforms to Family Tax Benefit.

A number of fertility outcomes are investigated including: actual births, preferences for children, expectations of having children, number of intended children and expected timing of next child.

The impact of policy changes is assessed using a quasi-experimental approach (Difference-in-Difference (DiD) strategy) to model fertility outcomes for treatment and control groups. The fertility behaviour of the two groups is compared before and after a particular policy changed.

Caveats about internal and external validity are discussed in detail in the report and should be considered when interpreting results. Given that the policies examined affected different cohorts of individuals and at different time periods, results for each policy should not be directly compared.

For the Baby Bonus program, overall, it is estimated that the introduction of the baby bonus increased births by less than 2%, and the effect applied mostly to those having a first birth, where a 3% increase was observed. We conclude that the baby bonus mattered most for those starting a family, possibly bringing the decision to have a first child forward.

For Paid Parental Leave the results show that there was a 5% increase in the difference between births of the treatment group compared to the control group, but this is due to a decline in births of the control group rather than an increase in births of the treatment group. Births of the treatment group are quite stable after the introduction of the policy. The effect does not vary by the number of children already born.

The introduction of Dad and Partner Pay showed a similar pattern to the introduction of paid parental leave. While there was a 3% increase in the difference between births of the treatment

group compared to the control group, this effect is a result of a decline in fertility of the control group. Again, births of the treatment group are quite stable after the introduction of the policy, while they decline slightly for the control group. This suggests that the measured effect may be a result of something which changed for the control group rather than an effect of the policy.

Family Tax Benefit A & B reform was associated with very small increases of in the expectation of having children, and in the number of intended children.

This analysis also looks at other factors which are thought to have an effect on fertility.

Consistent with previous knowledge about the patterns of childbearing, the analysis finds that women with a higher level of education (Bachelor level and above) are significantly more likely to be childless at all ages compared to women with lower levels of education. However, educational differences decreased with age, as a result of women with higher education having births at later ages. While young women with a higher disposable household income are more likely to be childless, at ages 40 and above it was women with a lower household income that were more likely to be childless.

Older women, those who were single, had low levels of education or had lower household income were the most likely to express a desire for (additional) children but a low expectation of having them. Across all birth outcomes, women born in Australia have higher fertility than women born overseas.

Part 3: Survey analysis

Data was collected by ANUpoll in April 2021 and August 2021. This survey included 3,286 respondents in April and 3,135 respondents in August, and a range of questions regarding their fertility intentions, as well as what considerations where important to respondents when considering whether to have a child.

When asked if the COVID-19 pandemic had impacted the likelihood of having children, a majority of respondents said there had been no impact (58%). However, 37% of parents and 27% of childless respondents indicated that the pandemic had decreased their likelihood of having children. Only a small minority of childless respondents (10%) and parents (9%) felt that the likelihood of them having children had increased as a result of the pandemic.

In terms of the factors people took into account when considering whether or not to have a child the top five factors where: the general cost of raising children, the security of the respondents or their partner's job, having someone to love, being able to buy a home or a better home, and how old the respondent was. However, different factors were of greater importance to different groups of people. Those without university education, as well as childless respondents were more likely to place a greater importance on being able to buy a home or a better home.

Support for paid parental leave was very high with more than 80% of respondents indicating there should be paid parental leave if one parent stops working to look after a newborn. Those with higher levels of education were particularly supportive of paid parental leave. Most respondents believed either just the Government, or a combination of Government and employers should pay for parental leave.

Support for subsidised child care was also very high. Only 10-12% of respondents felt that there should be no subsidised child care at all. Those with lower levels of education were particularly supportive of more than half the cost of child care being subsidised. Three-quarters (75%) of respondents felt the Government should pay for subsidised child care.

PART 1: LITERATURE REVIEW

1   Trends in Australian fertility

Key points:

- The total fertility rate (TFR) is the most commonly used indicator of overall fertility. It provides a summary of the fertility experience of all women aged 15-49 in a given year and it does not reflect the experience of any particular cohort. Today, almost all high-income countries are characterized by total fertility rates below the replacement level of 2.1.
- Since the mid-1970s, there has been a constant increase in the mean age at childbearing in Australia. The delay in fertility represents a risk for the successful realization of childbearing plans, because the ability to reproduce declines with age. At the population level, a strong link exists between late and low fertility.
- While the national TFR is useful for looking at trends over time, it hides a wide variation in fertility levels across sub-groups of the population. Country of birth, geographic location, education level, and Indigenous status are associated with the fertility rate.

1.1   Fertility indicators and their interpretation

The total fertility rate (TFR) is a commonly used indicator of overall fertility. For a specific year, it measures the average number of children a woman would bear if she survived through to the end of the reproductive age span and experienced at each age the age-specific fertility rates of that year (Preston, *et al.* 2001). In the absence of migration and in low mortality settings, for a generation to replace itself, each woman would need to have on average 2.1 children: one child to replace herself, one child to replace her partner, and 0.1 to account for infant and child mortality and sex ratio. Since the TFR is the sum of the age-specific fertility rates of all women of reproductive age in a given year, it does not measure the fertility experience of any specific cohort of women.

Figure 1 shows the pattern of the TFR in Australia between 1960 and 2020 and highlights lows and highs. After experiencing a long baby boom which culminated in a TFR of 3.56 children per woman in 1961, the TFR fell sharply during the early 1960s, as safe and reliable methods of contraception became available (Carmichael & McDonald, 2003). Approved in Australia in 1961, the oral contraceptives (the contraceptive pill) rapidly became the most common method used by Australian women to prevent unwanted pregnancies (Santow, 1991). The TFR levelled off at around 2.9 children per woman during 1966-71. After 1971, the TFR fell again, reaching a low point of 1.9 in 1980 and then experienced small fluctuations throughout the 1990s. In the last 30 years, the TFR has fluctuated substantially. It fell from 1.9 in 1990 to 1.74 in 2001. From the mid-2000s it started to increase, reaching a peak of 2.02 in 2008 before declining once again. In 2020 it reached its lowest level of 1.58 (Australian Bureau of Statistics, 2021a). In the long run, it is estimated to fall to 1.62 by 2030-31 (McDonald, 2020).

Figure 1 Total fertility rate in Australia, 1960-2020.
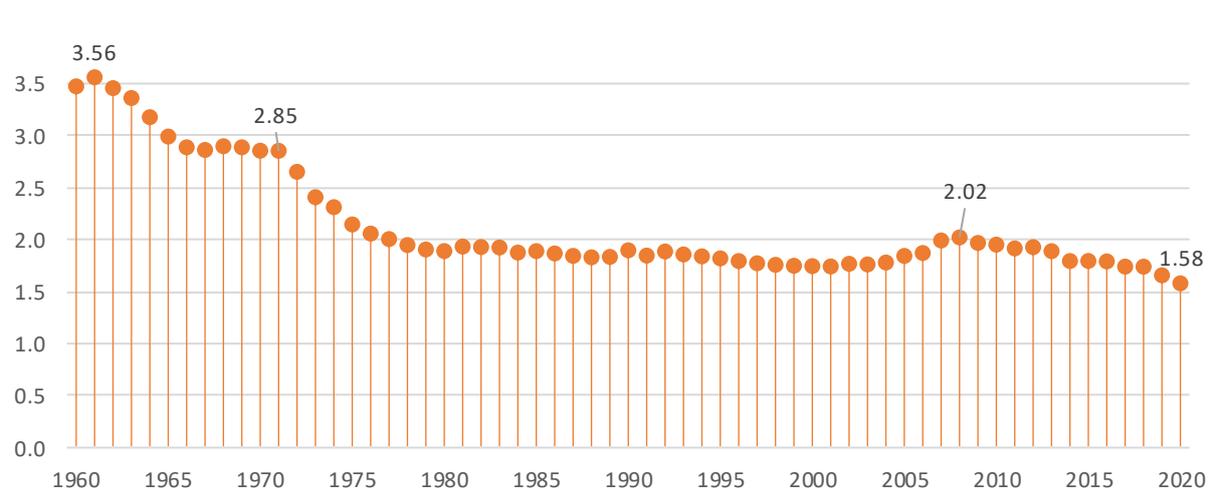
Source: Australian Bureau of Statistics (2021a).

Since the 1970s, fertility levels in some countries have dropped far below the replacement fertility level, closer to an average of only one birth per woman. While below replacement fertility levels can be observed in almost all OECD countries, contemporary extremely low fertility rates are characteristic of only a cluster of nations, mainly concentrated in the South of Europe and East Asia. A new term was proposed by demographers in the early 2000s, 'lowest-low fertility', to denote a fertility rate that is at or below 1.3 (Kohler, *et al.,* 2002; Billari & Kohler, 2004). Such a level is arbitrarily chosen to distinguish between the 'extremely low TFR reached in many countries of Central, Eastern, and Southern Europe in the 1990s and the somewhat higher TFR in Western and Northern Europe' (Sobotka, 2005). A lowest-low fertility level represents serious challenges for economic sustainability, as it may lead to an accelerated rate of population ageing and of population decline. As shown in Figure 2, when compared to the rest of OECD countries, in 2019 the TFR in Australia was relatively high (1.66). In particular, it appears to be above both the OECD average (1.50) and the EU average (1.60) and far above the lowest-low level of 1.3. The TFR in Australia is comparable to other English speaking countries, particularly to that of the United Kingdom (1.63).

Figure 2 Total fertility rate in 2019, OECD countries
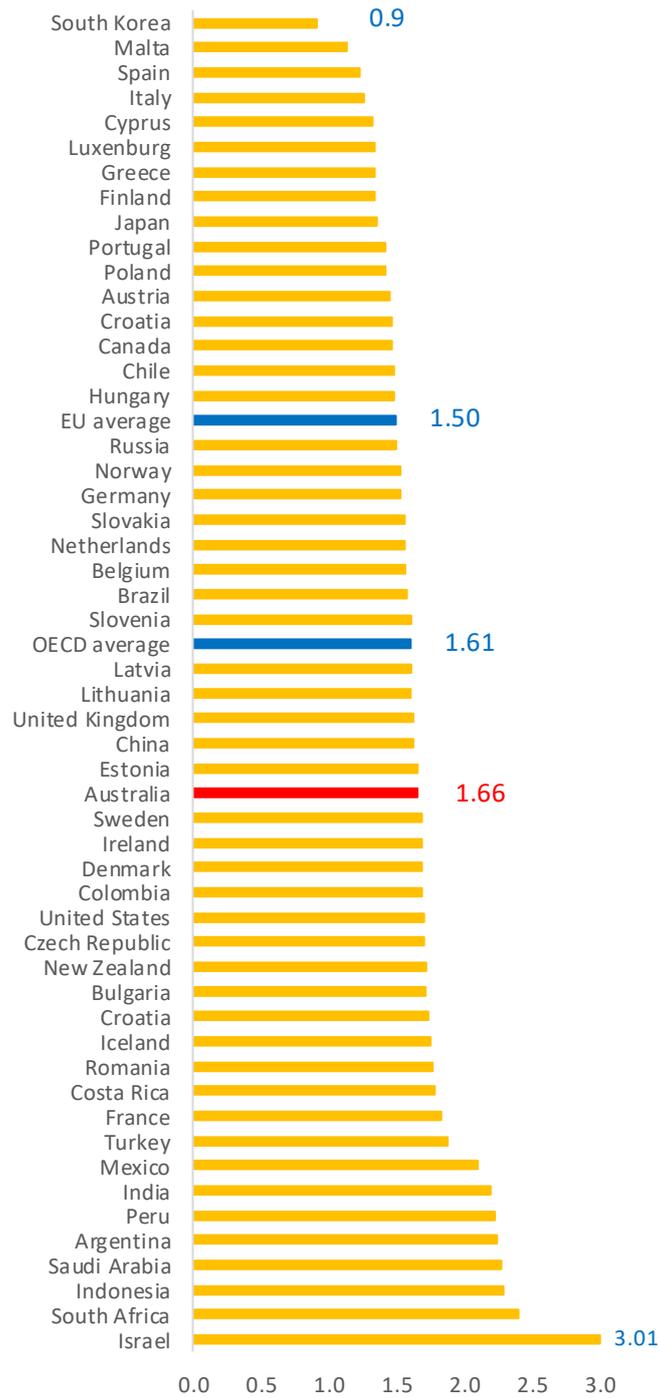
Source: OECD (2020a).

Age-specific fertility rates

The age-specific fertility rate measures the number of births born to women of a specified age group per 1,000 women in that age group in a given year. The sum of age-specific fertility across all ages in one year equals the TFR in that year. Figure 3 features the trend in age-specific fertility rates in Australia between 1960 and 2017 by five-year age groups. Since the mid-1970s, childbearing at age 30 and above has become increasingly more common while fertility rates at ages below 30 have continued to decline. The fertility rate of women aged 25-29 slightly increase in the mid-1980s, at a rate just below 150 births per 1,000 women, while the corresponding rate for 30-34 year-olds was around 100. However, since the early 2000s this pattern has reversed and fertility has become higher among the 30 to 34 age group. Fertility rates among women aged 25 to 29 have continued to decline, and by 2017 they had fallen to values similar to women aged between 35 and 39. Notably the fertility rates of women at older reproductive ages (30 and above) have been the only rates showing an upward trend.

Figure 3 Age-specific Fertility Rate in Australia, 1960-2020
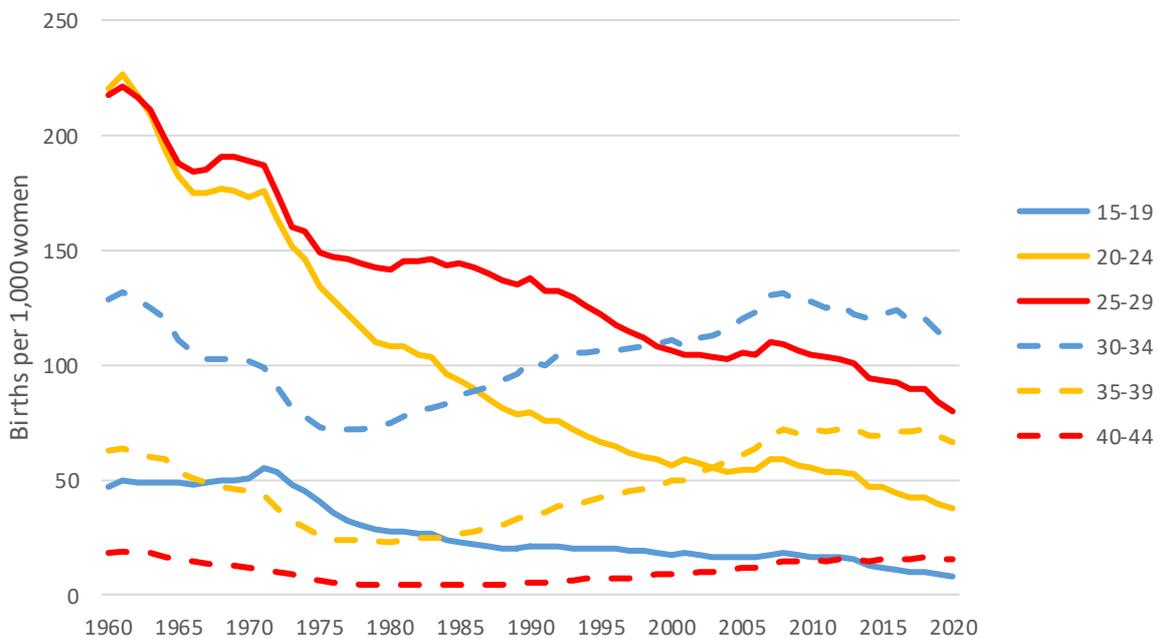
Source: Australian Bureau of Statistics (2021a)

1.1 Cohort fertility

To fully understand and quantify to what degree postponed births are recuperated later in the reproductive life, it is necessary to adopt a cohort perspective. The completed cohort fertility (CCF) is based on a real cohort of women born in the same year and provides a complete picture to answer the question of how many children on average are born to the cohort. In order to calculate this indicator, it is necessary that women complete their reproductive life and hence achieve at least their 45th birthday, and preferably their 50th. This means that today it is possible to compute the CCF only of women born up to the early 1970s, while no indicator of completed fertility is yet available for later cohorts. The advantage of using the CCF is that it reflects the actual experience of a real cohort of women. Its main shortcoming consists of its inability to provide current information on fertility trends as it takes women at the end of their reproductive life.

Figure 4 shows the completed fertility rate and the percentage distribution of the number of children ever born to Australian women born between 1945 and 1970. The CCF has been steadily declining from 2.46 in 1945 to 1.99 among women born in 1971, who have just completed their reproductive life. Trends in the completed family size reveal that the decline in the proportion of women having three or more children has been accompanied by an increase in the proportion of women having only one child or no children. The proportion of women having two children has remained relatively stable ranging between 37% and 39% for these cohorts. This is consistent with the existence of a two-child family social norm in Australia (Kippen, *et al.* 2007).

Couples in Australia as well as in other high-income countries have access to safe and reliable methods of contraception, which give them the flexibility to affect the timing of births. Hence, they can decide to start having children later (or earlier), and to space births closer, or further apart. Figure 5 displays the age-specific fertility rate for nine different groups of cohorts born between 1945-49 and 1985-89. In Australia there has been a clear tendency to delay childbearing and, on average, younger cohorts of women are having children later. Although women born in the 1980s have not yet completed their reproductive life, the data points available suggest a continuation of the trend towards childbearing delay for these recent cohorts of women.

Ní Bhrolcháin (2011) uses an analogy of a car to highlight the difference between TFR and CCF. The analogy asks us to consider a car travelling for a fixed duration of time, such as 35 minutes to represent the 35 years of an average woman's reproductive life. At times the car will speed up when the road is clear and straight, while at other times it will slow down as it goes around bends, up hill or comes across obstacles. The speed will also depend on factors such as the weather, the driver's personality and so on. The average speed, analogous to cohort fertility, will only be known at the end of the journey. If we measure the speed at certain moments in time this is equivalent to TFR. To understand shorter term TFR trends or changes we would need to look at the sequence of events leading it to slow down or speed up (Bassford & Fisher, 2020).

Figure 4 Completed family size and number of children, women born 1945-1971
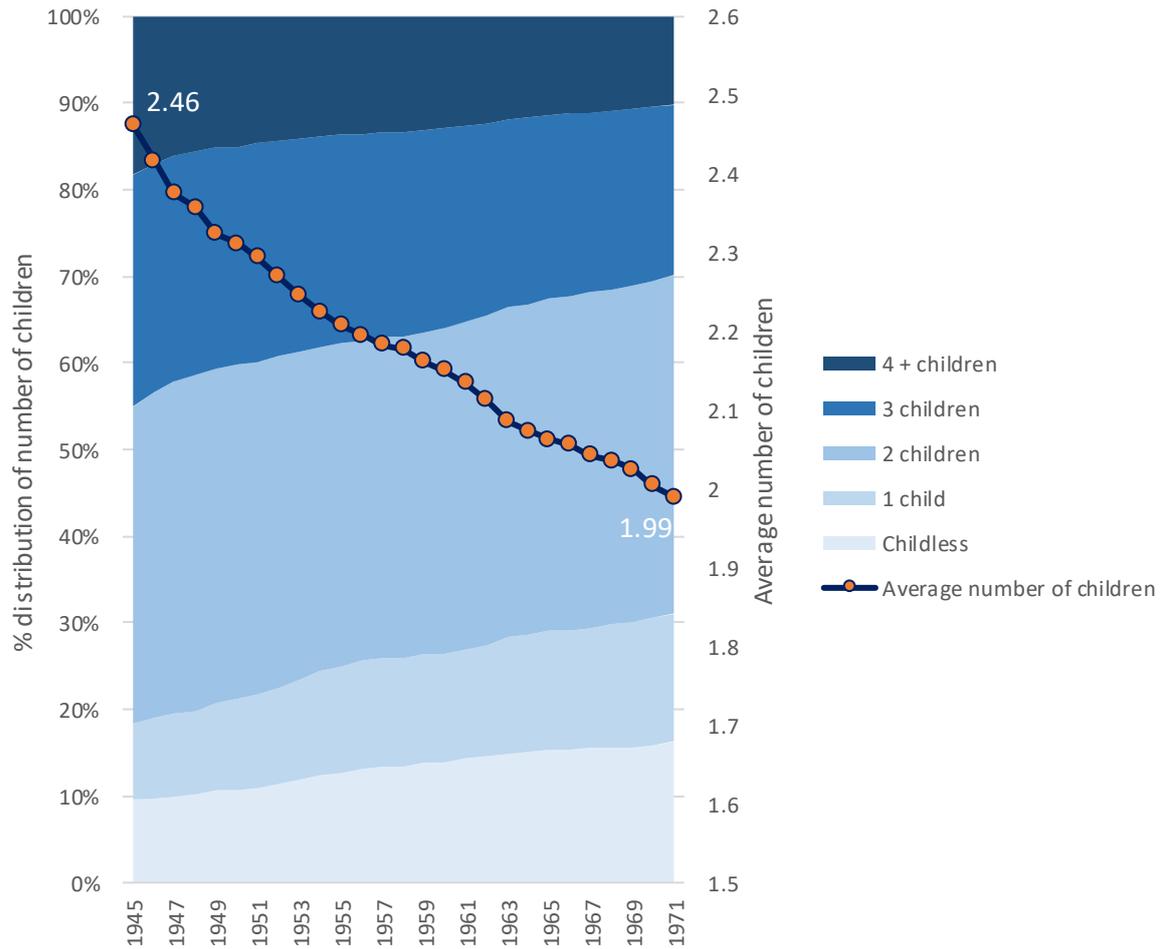
Source: Australian Bureau of Statistics. Census 2016, TableBuilder.

Note: The cohort of women born in 1971 represents the most recent cohort of women to have completed their reproductive life. These women were aged 49 in 2020, which is considered the last year of the reproductive life span.

Figure 5 Age-specific fertility rates for cohorts born 1945-49 to 1985-89
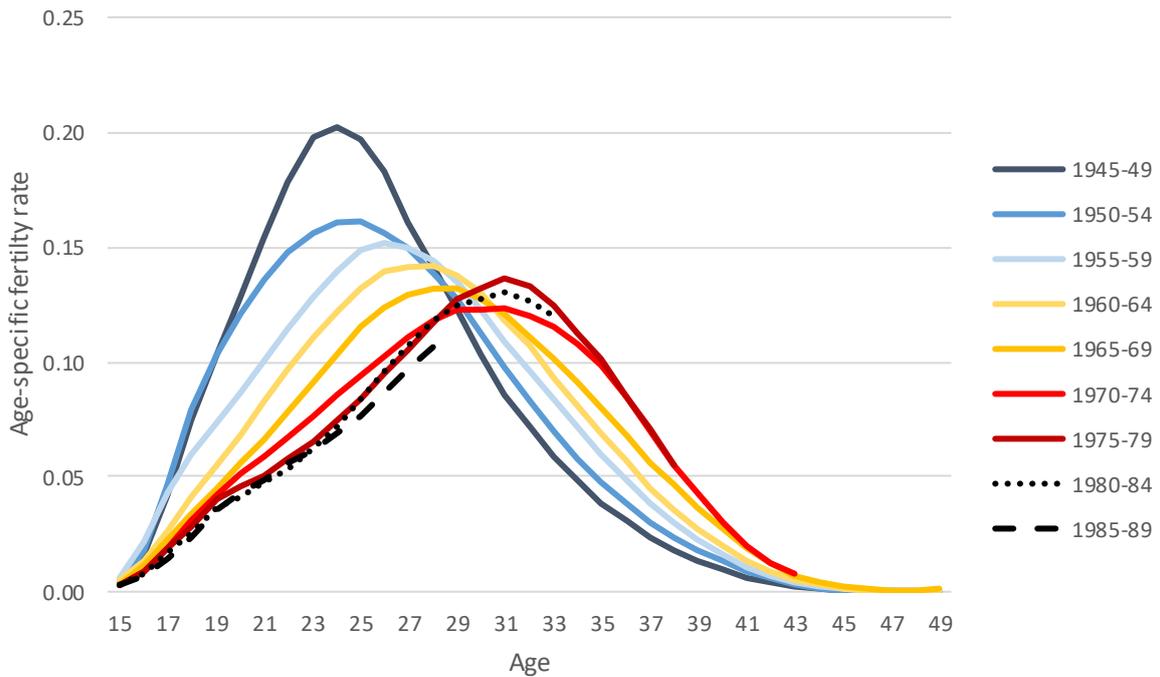
1.2   Problems with TFR

While the TFR is an intuitive and widely available statistic, it has several important shortcomings that should be taken into account when interpreting it (Bongaarts & Feeney, 1998). Fluctuations in period fertility may be the consequence of a change in the timing of childbirth, and they do not necessarily indicate a change in the actual final number of children that women will give birth to by the end of their reproductive life. For example, it is possible that all women of childbearing age in 2020 will have more children than 1.6 each on average, even though the TFR in 2019 is 1.6. This can be explained by the fact that the TFR does not measure the fertility experience of a real cohort of women, but the level of fertility in a given calendar year. The increasing trend of delaying births until older ages has a negative impact on the TFR, due to decreasing age-specific fertility rates at younger ages. Since the mid-1970s Australia and other high-income countries have witnessed a constant increase in the mean age at childbearing, which has led to a consistent 'underestimation' of the TFR. This decline in the TFR may not be a real decline in fertility, since the cohorts of women that have postponed childbearing may recuperate these births later on, leading to an increase in age-specific fertility rates as compared to those considered in the TFR. Hence, changes in the TFR are not simply driven by a change in the average number of children (i.e. quantum), but also by the shift of childbearing towards older ages (i.e. tempo). Usually, both factors are important in explaining changes in the fertility rate, so that when a decline in the TFR is observed, it is likely due to a combination of both.

1.2.1   Adjusted-TFR

A modified version of the traditional TFR has been proposed (Bongaarts & Feeney, 1998) with the aim to obtaining a level of fertility that is free from tempo effects and thus able to provide a better indicator of the actual average number of children women have during their reproductive life. The tempo-adjusted total fertility rate (adjusted-TFR) modifies the more conventional TFR by taking into account tempo effects, providing an estimate of what the TFR could have been in the absence of

tempo distortions. Just like for the TFR, the adjusted-TFR is given by the sum of age-specific fertility rates. However, these rates are modified using an adjustment factor that takes into account the temporal distribution of births. The adjustment factor corresponds to the rate of change in the mean age of childbearing and it is estimated as the half-difference between the mean age of childbearing values between two consecutive years. Overall the formula consists of summing all adjusted age-specific fertility rates, multiplying each one of them by the adjustment factor.

Adjusted-TFR

The adjusted-TFR is expresses as follows:

$$adjTFR(t) = \frac{TFR}{(1 - r(t))}$$

Where $r(t))$ is the change in the mean age at childbearing in year t which is estimated as follows:

$$r(t) = \frac{[MAC(t+1) - MAC(t-1)]}{2}$$

Where MAC is the mean age at childbearing. This formula provides a solution to eliminate the effects of the timing of fertility, hence it is "adjusted".

Numeric example:

$TFR(2013) = 1.89$
$MAC(2012) = 30.55$
$MAC(2014) = 30.76$

$r(2013) = \frac{(30.76 - 30.55)}{2} = 0.105$

$adjTFR(2013) = \frac{1.89}{(1 - 0.105)} = 2.11$

Figure 6 Observed and tempo-adjusted total fertility rates, mean age at childbearing and completed cohort fertility, Australia, 1960-2019
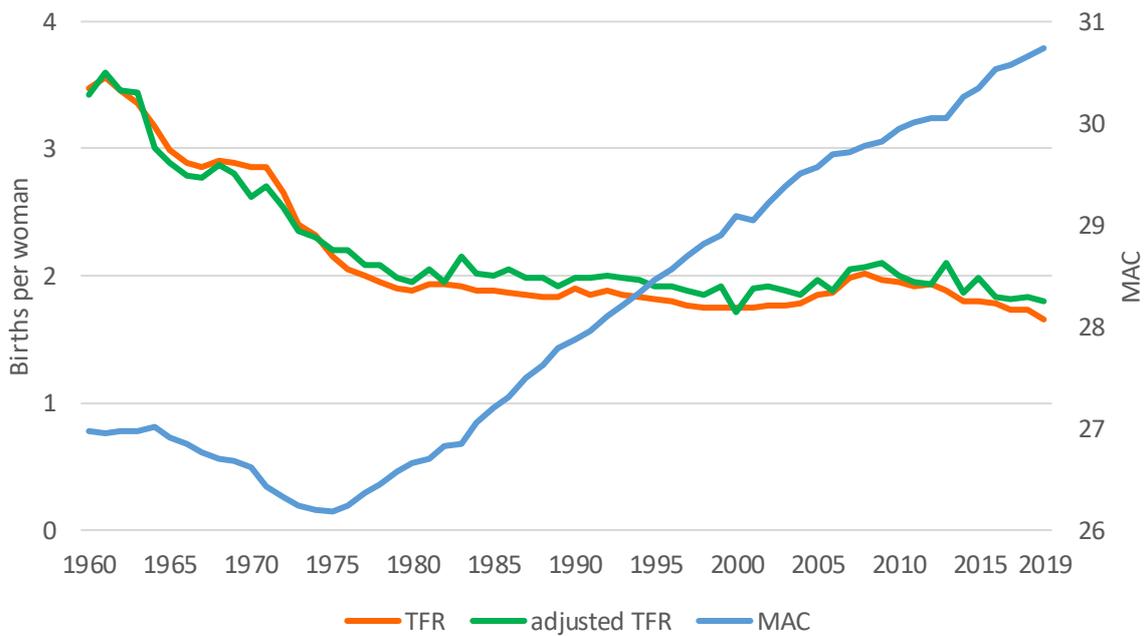
Source: Authors' calculations based on data from the birth registries, multiple years.

Figure 6 shows the observed and tempo-adjusted TFR and the mean age at childbearing (MAC) in Australia in the period 1960-2019. The MAC was almost 31 in 2019, which represents an increase of approximately 4 years compared to the MAC in 1975. The adjusted-TFR was lower than the TFR between 1960 and 1975, when the MAC was declining, while it has remained consistently above the TFR since 1976, due to the delay in childbearing. In 2018, the adjusted-TFR was 1.81 while the TFR was only 1.74, indicating that in the absence of childbearing postponement the TFR would be higher. In other words, since the mid-1970s, the increase in the MAC has led to a consistent 'underestimation' of the fertility rate. At the same time, a clear decline over time can also be observed in the adjusted-TFR, indicating that an actual decline in the average number of children has also taken place.

1.2.2   The association between later and fewer births

Since the mid-1970s, women in most high-income countries, have increasingly delayed the transition into parenthood (Sobotka, 2017). Australia is no exception to this general trend. Indeed, since the mid-1970s there has been a constant increase in the mean age at childbearing (MAC), from 26.8 in 1975 to 31.5 in 2019. When the 'demand' for children is shifted to older ages, there is a higher risk that conceiving will also be reduced. This has an important biological explanation in that the probability of conception declines with age (Schmidt, *et al.* 2012).

Figure 7 provides an empirical exploration of the link between fertility postponement and completed fertility. Overall, a negative relationship is observed between the mean age at which women enter motherhood and their completed family size, which supports the argument that a later entry into motherhood by women of reproductive age may lead to a reduction in the TFR. However, fertility trends after the age of 30 can vary substantially and lead to different fertility levels. For instance,

Australian and Japanese women show a similar age of entry into motherhood, but their fertility levels are substantially different, at 1.66 and 1.36 respectively.

Thus, low fertility rates are not just the result of biological constraints to reproduction, but rather of the different contexts that make it more or less possible to have children in later adulthood (Beaujouan & Toulemon, 2021).

Figure 7 Mean age at first birth and total fertility rate in 2017-2019, selected OECD countries
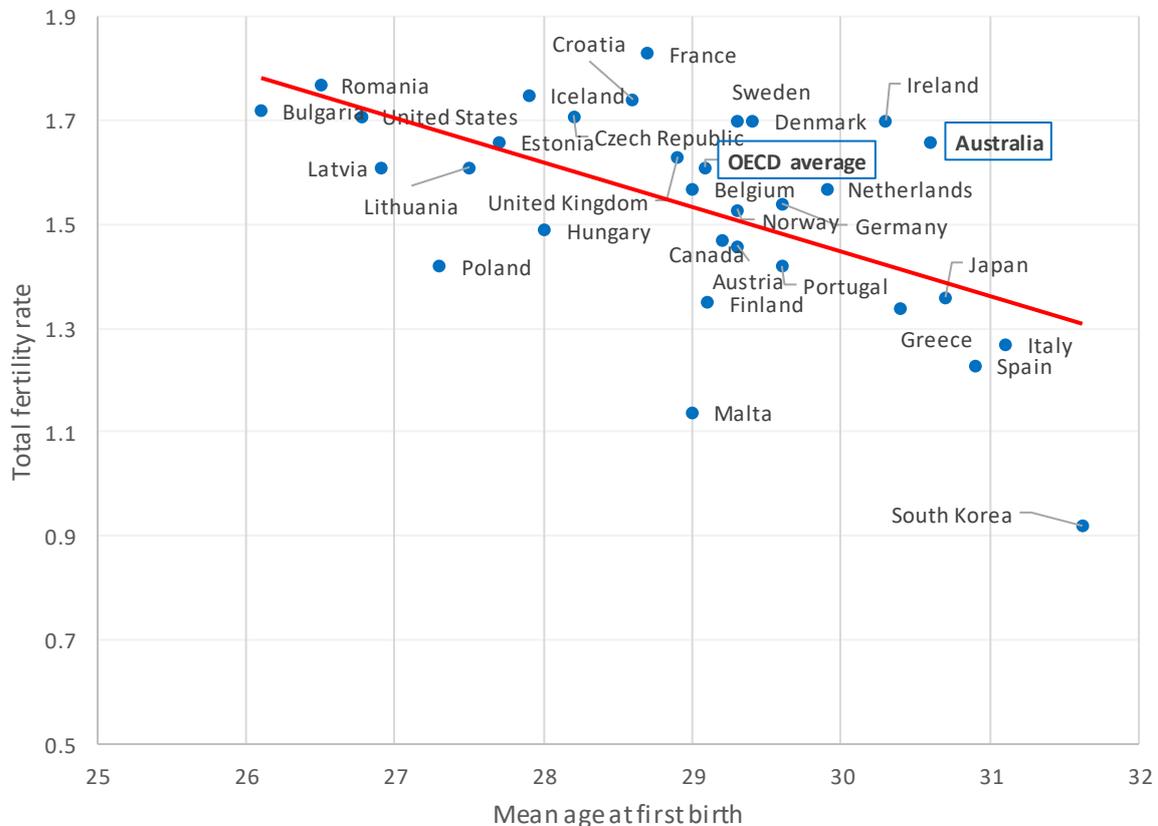
Source: OECD Family Database (2021) and AIHW (2020).

1.3   Fertility in sub-groups

While the national TFR is useful for looking at trends over time, it hides a wide variation in fertility levels across sub-groups of the population. Different socio-demographic characteristics such as the country of birth of parents, geographic location and education level are generally associated with different fertility behaviours. From a policy perspective, it is important to take into account the existence of such differences across populations for planning and forecasting purposes.

1.3.1   Country of birth

There is a wide variation in fertility according to the country of origin. Overall, over one third of the 305,000 births registered in 2019 were to overseas-born women. The TFR of Australian-born women in 2020 was 1.68, while the TFR for overseas-born women was 1.55 (Australian Bureau of Statistics, 2021a). More specifically, the TFR was found to be as low as 1.12 for women born in North-East Asia, and as high as 2.3 for women born in North Africa and Middle East (Australian Bureau of Statistics,

2021a), indicating the existence of large variations depending on the country of birth of parents. Since the mid-1980s, immigration to Australia has become increasingly more skilled because migration policy focused on attracting skilled migrants to meet the labour needs of the economy (Birrell, 2003). Such emphasis on higher levels of education has created a relatively homogeneous group of immigrants in terms of fertility behaviour despite their different educational backgrounds. As a result, Australian immigrant fertility has converged over time to represent similar fertility patterns as those observed by the Australia-born population (Baffour, *et al.* 2020). An exception are temporary migrants in their 20s, with a fertility rate close to zero and, hence, below the fertility rate of Australian women at that age (McDonald, 2019). This compositional effect may be partly driving the deep decline in fertility observed at younger ages.

1.3.2 Spatial variation

There is clear spatial variation in fertility rates in Australia (

Table 1). Although there is evidence that the TFRs across States and Territories have been converging over time (Evans & Gray, 2018), it is evident that the Northern Territory (NT) and Tasmania (TAS) still have a TFR that is substantially higher than the rest of the states and territories, corresponding to 1.86 and 1.77 in 2020, respectively. This is closely followed by Western Australia (WA), with a TFR of 1.70. The lowest TFRs are observed in Victoria (VIC) and in the Australian Capital Territory (ACT), with TFRs of 1.43 and 1.58, respectively. The ability of State boundaries to capture changes in fertility is limited, as this tends to be affected by the proportion of people living in rural areas, typically characterized by higher fertility rates. Substantial differences in TFR are evident across rural and urban areas, with a TFR of 1.57 in major cities, 1.96 in inner regional areas, 2.02 in outer regional areas and 2.22 in remote areas. Different states also have different proportions of Aboriginal and Torres Strait Islander people, who historically tend to have higher fertility rates (Carmichael 2019; Gray 1983). For instance, in 2020, the TFR of Aboriginal and Torres Strait Islander women was 2.25, considerably higher than the TFR for all Australian women of 1.58. Aboriginal and Torres Strait Islander women also tend to give birth at younger ages: over 70% of Indigenous births are registered among women under the age of 30, compared to only 39% in the total population. The compositional effect of larger proportions of Aboriginal and Torres Strait Islander people on fertility is associated with the higher TFR in the Northern Territory, where over 30% of the total population is Indigenous (ABS 2018).

Geographic differences can partly be explained by the existence of notable socio-economic disparities across regions in Australia (Hugo, 2002). People living in urban and rural areas are characterised by different socio-economic characteristics, which are in turn associated with different fertility behaviours. For example, education is an important predictor of lower completed family size. At the same time, highly-educated people are concentrated in urban areas, where they can find more working opportunities that are suitable to their skills. Hence, it is not location *per se* that has an effect on fertility, but it is the different composition of the population in urban and regional areas that explain their different fertility behaviours. At the same time, regional areas may be considered as providing a more suitable context for raising children, for example, due to the existence of different living conditions (for example, less pollution and more open spaces). Hence, the fertility behaviour of couples living in rural areas may be different compared to the fertility behaviour of couples living in urban areas, despite sharing similar socio-economic characteristics.

Table 1 Total fertility rate by State and Territory, Indigenous status and remoteness area, Australia, 2020

State	TFR	
	Total population	Aboriginal and Torres Strait Islander
NSW	1.62	2.31
VIC	1.43	1.97
QLD	1.64	2.34
SA	1.59	1.84
WA	1.70	2.55
TAS	1.77	1.92
NT	1.86	2.06
ACT	1.58	N.A.
	Remoteness area	
Major Cities	1.57	
Inner Regional	1.96	
Outer Regional	2.02	
Remote and Very Remote	2.22	

Source: Australian Bureau of Statistics (2021a)

Australian research has found support for this second hypothesis and has shown that geographic variation in fertility levels remain even after taking into account differences in the composition of the population across different locations (Gray & Evans, 2017). After taking into account differences in age, country of birth, Indigenous status, relationship status, education levels, and economic activity, women living in smaller towns in regional Australia are more likely to have a first, second, and third birth. Further, there is lower propensity to have a first child in inner or middle city areas that are characterised by smaller and more expensive housing than suburban or regional areas (Gray & Evans, 2018). It is likely that there are selection factors that contribute to this pattern: people who plan to have children may move to places seen as more compatible with raising children.

Geographical awareness is important in the formulation of hypothesis regarding what will happen to future fertility trends and differences in sub-national fertility rates can have important implications for the planning of services (Khawaja, *et al.* 2006).

1.3.3 Education level

Education emerges as the single most powerful predictor of a wide range of fertility outcomes and behaviours (Cleland, 2009). Typically, higher education is associated with a later start to childbearing because highly-educated women spend a large part of their early adulthood enrolled in education and building their careers and financial security (Ni Bhrolchain & Beaujouan, 2012). This is also supported by the societal expectation to have children after the completion of education, as women enrolled in school have not yet entered the adulthood status required to become a mother (Blossfeld & Huinink, 1991). Since lower-educated women tend to have shorter enrolment periods and enter the labour market at a younger age than their higher educated counterparts, they are also less likely to postpone

family formation. The later entry into motherhood can in turn lead to a lower completed family size and to a higher probability of remaining permanently childless, as women have less time to achieve their desired number of children, and reproductive capacity rapidly declines with age (Schmidt, *et al.,* 2012). Studies examining the timing of childbearing in Australia have confirmed the existence of a later start to childbearing for highly-educated women (Miranti, *et al.*, 2009).

By adopting a cohort perspective, it is possible to observe a clear educational gradient in relation to completed family size and permanent childlessness in Australia. Figure 8 shows the CCF of women born between 1940 and 1970 by highest level of educational attainment. The completed family size of women born in 1940 ranges between 2.9 for the low educated and 2.4 for the highly educated. Since then, there has been a gradual decrease in CCF across all educational categories. Women born in 1970 have recently completed their reproductive life with an average of 2.3 children each among low-educated women and 1.8 among highly-educated women. Despite the general downward trend in fertility, there is a persistent gap of approximately 0.4 in the completed fertility of low- and highly-educated women. While in some countries fertility across educational categories has been converging over time, leading to a reduction in fertility differentials between educational groups (Andersson, *et al.*, 2009; Yoo, 2014), in Australia clear differences in fertility behaviour by education persist.

Similarly, a positive association exists between education and permanent childlessness, with highly-educated women most likely to have no children in all analysed cohorts (Figure 9). In particular, for women born between 1940 and 1970, childlessness has increased from 14% to 18% for those highly educated, from 9% to 14% for those with medium levels of education, and from 6% to 12% for those with less education. Despite the continuation of the negative educational gradient in childlessness, the difference between low and high levels of education has consistently decreased over time, from a high of 8% difference among women born in 1940 to less than 6% difference among women born 1970.

Figure 8 Completed cohort fertility of women born between 1940 and 1970 by highest level of educational attainment.
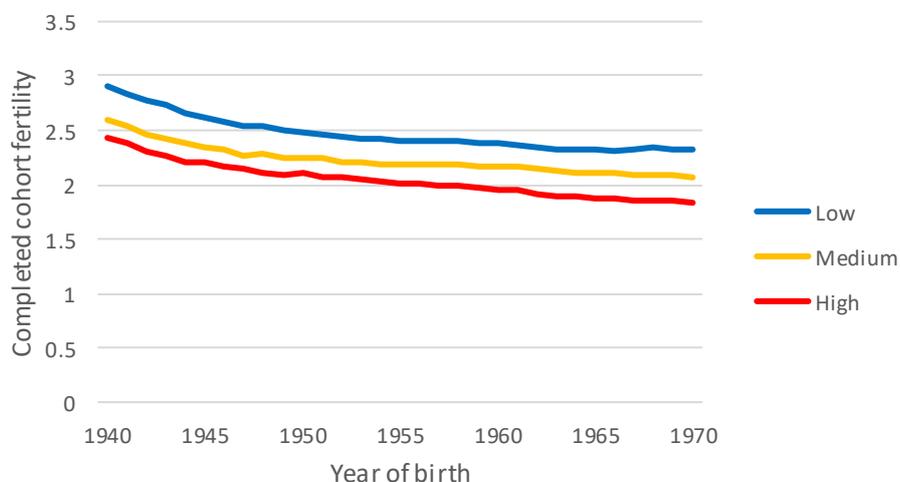
Source: Lazzari et al. (2021b)[1].

Figure 9 Share in permanent childlessness among women born between 1940 and 1970 by highest level of educational attainment.
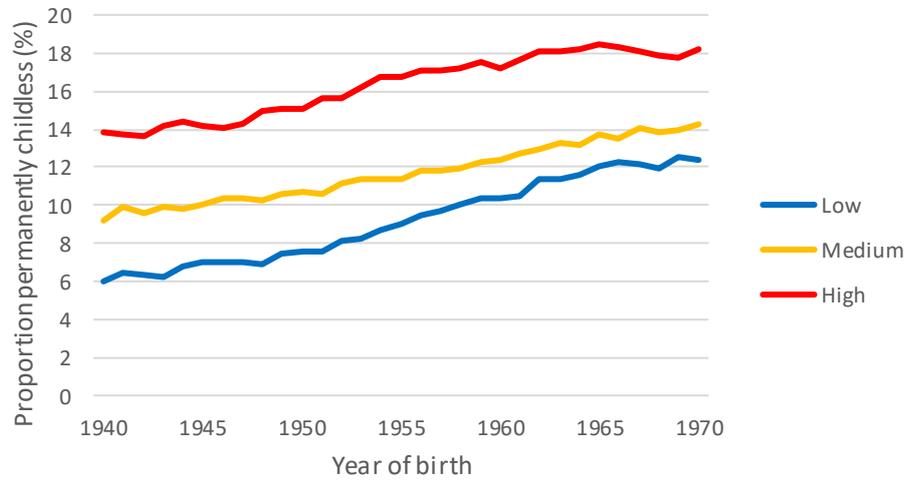
Source: Lazzari et al. (2021b)[2].

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[1] Low education corresponds to lower secondary qualifications and below; medium education corresponds to senior secondary and certificate qualifications; high education corresponds to diploma and university qualifications.

[2] Low education corresponds to lower secondary qualifications and below; medium education corresponds to senior secondary and certificate qualifications; high education corresponds to diploma and university qualifications.

2 Theories of fertility change

The first 'demographic' transition is characterized by a decline from high mortality and fertility rates to low mortality rates, and subsequently, fertility rates. Improvements in child mortality meant that children were more likely to survive childhood. Over time, fewer births were needed to secure a surviving child. The demographic transition is based on evidence from European countries, and commenced in the 18th Century. The fertility transition started in some Western countries such as France and the United States in the early 19th Century, with other European countries starting around the middle of the century. In frontier countries like France, depopulation became a concern, and writers such as Dumont (1890) wrote that industrialization had led to a new economic and social context which offered prospects for social promotion that did not previously exist (Leridon, 2015). As a result, people began to limit their family size to improve their situation or to focus their efforts on a smaller number of children to increase their potential. This theory is also evident in the work of Ariès (1980) who emphasized the focus on child quality demonstrated through substantial increases in investment in children. The value of children is also evident in the work of Caldwell (1982). His work, based on countries other than Europe, starts with the premise that in traditional societies children are an advantage, and can provide an important source of income to the family. In comparison, in modern societies, the costs of raising and educating children are considerable, providing one reason to limit the number parents have.

Dominant in most research on the demographic transition is the concept that the underlying driver of fertility transition is the process of industrialization and its effect on the economic and social structures of society. However, researchers have also emphasized reasons other than economic for the reduction in the number of children had during the fertility transition. These include diffusion theories which argue that the fertility decline is a result of the spread of ideas about attitudes to having children, and the behaviours to limit them. Some scholars of diffusion theory (Bongaarts and Watkins, 1996; Cleland and Wilson 1987) argue that the spread of these attitudes and behaviours is independent of societal change, while others argue that societal change and diffusion are complementary (Retherford, 1985; Montgomery and Casterline, 1993; Casterline, 2001).

The process of fertility transition in Western countries was complete by the early 20th Century (Hirschmann, 1994), and brought fertility down to around 2 children per woman (Livi Bacci, 1999). This remained fairly stable only dipping below replacement level fertility during recessions and wars, with small baby 'booms' in some countries following WWII. However, a noticeable trend downward followed, with baby 'busts' occurring in the 1970s.

The second demographic transition (SDT) theory provides an explanation to this decline in fertility observed during the last half a century (see Lesthaeghe 2014). The second demographic transition was not only concerned with fertility change, but also changes in relationship types and living arrangements, driven largely by cultural and ideational change. With regard to Maslow's hierarchy of needs and Ingelhart's concept of post-materialism, it posits that 'as populations become wealthier and more educated, the attention shifts away from needs associated with survival, security, and solidarity. Instead greater weight is attached to individual self-realization, recognition, grassroots democracy, expressive work, and educational values' (Lesthaeghe, 2014: p.18113). The SDT therefore recognizes diversity in life courses, and predicts different forms of relationships such as cohabitation, more people living alone, later and lower fertility, and increases in relationship dissolution and subsequent repartnering.

There has also been a transformation in women's lives over this period, referred to as the 'gender revolution theory'. Increasing levels of education and involvement in the labour force are central components of women's lives. Goldscheider and Waite (1993) argued that with the change in women's roles societies faced two choices: new families, characterized by sharing of household labour and childrearing, or no families because the cost of doing a double shift of work in the public sphere of paid work and then private sphere would be borne by women (see also Hochschild 1989). More recent assessment finds that while the gender revolution in the home has been slow, 'the entry of women into the labor force might indeed have stressed family relationships, but as the second half of the gender revolution slowly emerges—with men joining women in the private sphere of the family—we argue that the revolution is actually strengthening families' (Goldscheider, *et al.*, 2015: p.208).

The role of the state in supporting families to work and raise a family is a dominant theoretical perspective in explaining low fertility. Policies may be explicitly designed to encourage childbearing, or may be designed to provide a policy setting which is supportive of work and childrearing (Thévenon and Gauthier 2011). Esping-Andersen (1990) provides a typology for considering how nations divide responsibilities between the market, the family, and the state. McDonald (2000) has drawn widely on how different welfare contexts support the combination of work and family, noting that different institutional models tended to provide support in different ways. Social democratic institutions tend to provide state services funded by the tax system while liberal institutions tended to be more market-oriented. However, reform to provide support for families to work and raise a family has been slow where there is a cultural expectation that women and men should provide specialized roles (complementarianism). This is striking in some East Asian countries that results in a low, and sometimes, extremely low fertility rate (McDonald 2013). This theory is known as 'gender-equity theory'.

Opportunities to form a partnership and have children are not equal across societies. There is a growing body of literature that points to a 'demography of disadvantage', meaning that structural disadvantage can lead to family instability (Perelli-Harris, *et al.*, 2010). More generalized economic uncertainty can also be associated with fertility outcomes. The general state of the economy and individuals' labour market situations can impact people's decisions regarding whether or not to have children (Kelly, 2021). For instance, in times of economic prosperity people's confidence to have children increases, while during times of economic uncertainty, people may delay childbearing (Adsera, 2004). An increasing body of research is showing that job insecurity and economic uncertainty are among the drivers of the low fertility rates recorded among current generations in high-income countries (McDonald, 2006; Mills & Blossfeld, 2013; Mitchell & Gray, 2007; Winter & Teitelbaum, 2013).

3   The main driving forces of low fertility

The conceptual framework in Figure 10 is used to understanding the drivers of fertility. The framework is based on a number of conceptual models which explain fertility outcomes, including those developed by Liefbroer, *et al.,* (2015), Sleebos (2003) and Lattimore & Pobke (2008), as well as the proximate determinants of fertility framework.

The framework has individuals at the micro-level, situated under the macro-level, highlighting that both levels are important to understanding fertility. Liefbroer, *et al.,* (2015, p. 6) provide two examples that help illustrate the importance of considering both the micro- and macro-level. The first is that of the positive relationship between GDP and fertility that is found in high-income countries. Looking exclusively at the macro-level gives no indication of the potential mechanisms behind this relationship. Whether it is because richer countries spend more money on family policies, or because the population has a greater feeling of security about future economic growth and therefore willing to expand their families, or perhaps because there's a higher proportion of higher-income people and it is this subgroup driving high fertility? A second example, which highlights the dangers of ecological fallacy, is a negative relationship between unemployment levels and fertility at the macro-level. At the macro-level there may be a negative relationship (as unemployment rates rise, fertility falls), however this might not hold at the micro- or individual-level. If unemployment is high, those who are unemployed may decide to have children while they are at home, whereas those who are employed may decide to reduce their fertility in order to avoid taking time away from work and jeopardizing their position in the labour market.

In countries such as Australia, where contraception is widely available, childbearing can be thought of as a function of deliberate decision making (Guzzo & Hayford, 2020). Individuals, based on their own socio-economic and demographic characteristics, as well as their own experiences, preferences and attitudes, make decisions about whether or not to have children. As most childbearing occurs within a couple context, it is also important to consider the dyadic nature of decision making as both partner's decisions are important. Testa and Bolano (2021), analysing data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey found that when a couple disagrees on having a first child, around half of couples end up having a child, with the woman's decision prevailing. However for second or higher-order children, disagreement between couples tends to result in no further childbearing. Having made a definite decision, and achieved partner agreement, there are certain proximate determinants including age-related sterility that will influence if they are able to achieve their desired childbearing outcome. On the right of the framework, we see how the national fertility, e.g. Australia's TFR, is the cumulative aggregation of the myriad of childbearing aspirations and outcomes made by all the individuals and couples in the population (Liefbroer, *et al.,* 2015).

Individuals do not make their childbearing decisions in a vacuum. They are influenced by the macro-level context in which they live. This includes the economic, cultural and institutional context. More specific macro-level components which are relevant to fertility include the cost and benefit of children, broad economic factors relating to education, employment, income as well as social norms and lifestyles. It is easy to imagine two women with the exact same age, education and income level, relationship status, number of siblings, religious beliefs and desire for children, but who live in

different countries with different economic, cultural and institutional contexts. In one country the costs and benefits of children, broad economic factors and social norms and lifestyles may mean that

Figure 10 Conceptual Framework

MACRO LEVEL

INSTITUTIONAL CONTEXT

ECONOMIC CONTEXT

CULTURAL CONTEXT

National fertility rates

DIRECT POLICIES

INDIRECT POLICIES

POLICIES

Financial incentives

· Cash transfers (baby bonus)

· Tax benefits to families with children

· Specific subsidies (e.g. housing)

· Eligibility rules for welfare

Child care

· Availability

· Cost

· Quality

Parental leave

· Duration

· Replacement wage

Other policies

Education policies

Old age policies

Housing policies

Costs and benefits of children

· Parental expectations of support and care by children (in family business or old age)

· Psychological benefits of children

Costs of rearing children

  · Direct costs

  Indirect costs

  · Housing costs

  · Opportunity costs

  · Time costs

Broad economic factors: Education, employment and income

· Educational participation

· Income and career prospects

· Length & difficulty of transitions from school to work

· Uncertainty about future

· Income relative to past generations

· Housing affordability

Social norms and lifestyles

· Social attitudes towards families and women's roles (male breadwinner or gender neutral)

· Post materialist values (individual autonomy and self-expression)

· Preferences for forms of relationships (marriage or cohabitation)

· Instability in relationship formation

· Contraceptive prevalence

MICRO LEVEL

Individual factors

· Age

· Relationship status

· Parity

· Education & Income

· Gender role attitudes

· Geographic location

· Ethnicity

· Religiosity

· Family size of origin

Decision to have children

Partner's decision to have children

Proximate determinants

• Contraceptive use

• Sterility

Individual fertility outcomes

27

Source: Adapted from Sleebos (2003); Lattimore and Poke (2008); Liefbroer, *et al* 2015

the woman decides that it is not feasible to have a child. In another country with a different context the woman makes an easy decision to have her first child and then progresses to expand her family.

Conceptualising fertility as a system, where individuals make their reproductive choices within a wider macro-context can help us understand the multiple influences on fertility, how these interact with each other, as well as what roles policies have in shaping factors that are important in fertility decision making. Within this conceptual approach, it is also important to recognise that neither the macro-, nor the micro-components of the framework are fixed, and may change as a result of the interactions between them. Next, we examine each of the components and their relationship with each other.

Individual childbearing desires and outcomes

Individual childbearing desires (and subsequent outcomes) vary according to personality traits, general attitudes, beliefs, life values, as well as demographic characteristics such as age, sex, education (Ajzen & Klobas, 2013). While childbearing desires have declined over time, in Australia, people want an average of two children (Arunachalam & Heard, 2015). When women aged 22-27 participating in the Australian Longitudinal Study on Women's Health were asked in 2000 how many children they would like to have by the time they are 35, only 8% stated that they wanted no children, 12% stated a preference for 1 child, while 57% wanted 2 children and 24% three or more children (Johnstone, *et al.,* 2020). The persistence of a two-child family ideal is also observed in most other developed countries (Sobotka & Beaujouan 2014).

However, childbearing desires are not always translated to actual childbearing. In Australia, as well as in other countries, people generally express a wish to have more children than they end up having. This can be observed in two ways. The first is from studies that have asked people how many children they would ideally want, and how many children they realistically expect to have (including any they already have). The Australian Institute of Family Studies asked people aged 20-39 about their family size aspirations and expectations. On average, women stated an ideal number of children of 2.5 and men of 2.4; this was significantly above the family size people *expected* to achieve which was 2.1 for women and 1.8 for men (Weston, *et al.,* 2005). Similarly, in a survey of women in their early 30s in Victoria, 8 out of 10 had fewer children than they desired, but when asked if they were likely to have more children in the future, more than half said this was unlikely (Holton, *et al.,* 2011).

The second way the gap between aspirations and outcomes can be observed is using longitudinal data which tracks people's lives over time. According to data from the Household, Income and Labour Dynamics in Australia (HILDA) survey, of young people aged 18-25 in 2001 who were childless and indicated a strong desire for at least one child, 1 in 5 (20%) were still childless in 2019 at ages 36-43 when they would be approaching the end of their reproductive lives[3]. Of course, over 18 years there can be many unexpected life course events such as relationship breakdowns which cause childbearing desires to be changed or plans to be abandoned, and young people are more likely to revise their intentions (Spéder & Kapitány, 2015). When looking at a shorter timeframe, another study using HILDA data and which focused on those people who indicated a definite plan to have a child in the next four years, two-thirds were able to achieve their plan and have a child within that timeframe (Beaujouan, *et al.,* 2019).

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[3] Authors' calculations from HILDA Wave 1-Wave 19

For individuals, there is a multitude of personal reasons why their goals may not be achieved, including health difficulties, relationship breakdowns or difficulties finding a partner, job losses or changes, as well as changes in childbearing desires. When people anticipate that they will not achieve their childbearing goals, they will adjust them. So, a person who previously expressed a desire for a child may later indicate that they do not want children because they realise that they are unlikely to have one (Gray, *et al.,* 2013). For those that maintain positive childbearing desires at advanced reproductive ages, there is a strong age-related decline in the realization of childbearing intentions (Beaujouan, *et al.,* 2019) due to certain proximate determinants such as declining fecundity.

At the aggregate level, the 'gap' between desired and achieved fertility can be found in most countries, but it is more prominent in some countries than others. Comparing intended and achieved fertility across European countries, Beaujouan & Berghammer (2019) found that the gap varied according to institutional contexts, and was largest in countries where work-family reconciliation was the most difficult, providing one of the most compelling rationales for family policies that aim to address obstacles women and men face in realising their family plans (Beaujouan & Berghammer, 2019). The 'gap' between desired and achieved is therefore of interest from a policy perspective because it signals a 'policy window of opportunity' (Gauthier, 2007). If childbearing desires are low, it is difficult to convince people to have children and raise fertility. It is the fact that people want more children than they are having that means there is scope to ease some of the institutional obstacles which they face in achieving their goals.

The components of completed fertility (probabilities of progressing to first, second and higher order births) are key to understand the underachievement of fertility goals. Indeed the reasons preventing individuals from having their first child may be very different to the reasons preventing them from having their second or third. The decline in completed fertility in Australia has been mainly driven by a decline in the probability to transition to third and higher-order births and, to a lesser extent, by an increased probability of remaining permanently childless (Zeman, *et al.,* 2018). Among women aged 40-44 who can be considered to have largely completed their fertility, Census data reveals that for women in 1986, 90% of women who had one child progressed to have a second one[4]. By 2016, the percentage with one child progressing to a second had decreased to 82%. Having had a second one, among the cohort aged 40-44 in 1986, 56% progressed to a third one. For the cohort aged 40-44 in this had declined to 43%.

As mentioned, individual childbearing decisions are influenced by the macro-social context in which they are made including the costs and benefits of children, broader economic factors and social norms and lifestyles.

3.1 Costs and benefits of children.

The costs and benefits of children represent all the direct and indirect costs of raising children, as well as the psychological benefits they are perceived to provide.

The benefits of children include economic-utilitarian benefits such as assumed parental expectations of support and care by children, including to work in the family business or to provide support in old

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[4] Authors' own calculations based on Australian Census data (1986 and 2016). Women who did not state the number of children are not included in the calculation of parity progression rates.

age as well as the psychological-emotional benefits people receive from the feeling of having a family, a future lineage, or having someone to love and care for (Sleebos, 2003).

Over time the perceived costs and benefits of children change along with societal changes such as the development of social-security systems. For example, the development of pensions and aged-care support has made the economic-utilitarian value of children less important. However, children are still seen as an important source of informal and practical support in old age, and elderly childless people are more likely to have to rely on formal support (Křenková, 2018). An example of how Australian's perceive the benefits of having children is provided in the 2019 HILDA data. Respondents were asked how important certain considerations were in their childbearing decisions. The percentage who indicated a consideration was 'very important' ranged from:

- 38% for '*having someone to love.*'
- 25% for '*providing more purpose to life.*'
- 13% for '*having someone to care for you when you are old.*'
- 10%[5] for '*giving one's own parents grandchildren*'

The benefits of children also vary by parity. For example, the first child's value is unique in conferring the status of being a parent, and continuing bloodlines while second children have an additional value for their role in providing the first child with a sibling and companionship (Parr, 2007; Carmichael 2013). As such, children continue to be valued for their emotional and social benefits, while utilitarian considerations have become less important. Against the benefits of children are the costs, which can be divided into direct and indirect costs.

Direct costs

The direct cost associated with raising children are at the forefront of the decision for both childless people considering having a first child as well as parents considering expanding their family size. The direct costs include expenditures needed to raise a child including food, clothing, transportation, education, recreation, and housing. These costs are generally thought to increase in line with the age of the child, i.e. children become more expensive as they age. In addition, due to the economies of scale that come with second or subsequent children, the first child is typically the most costly (D'Addio & d'Ercole, 2005). This can also be seen in the HILDA data where 39%[1] of childless people indicated that the general cost of raising children was a 'very important' consideration in their childbearing decision making, compared to 30% of parents who already had one child. Financial considerations may also be important for those considering increasing their family above the 'two-child' norm. In a qualitative study of parents of two children in Australia, financial constraints and the anticipated costs of another child was found to be a major reason for not having a third child (Evans, *et al.,* 2009).

For Australia, the weekly cost of children has been estimated as varying between $137 and $203 for families in low-paid work and between $106 and $174 for unemployed families (Bedford & Saunders, 2018). These estimates are considerably higher than the estimates of two decades before (Saunders, 1999), even after adjusting for the increase in consumer prices, as views regarding what constitutes a minimally adequate standard of living for Australian children have shifted upwards, consistent with the increase in general living standards.

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[1] Authors' own calculations based on HILDA Wave 19. Percentages restricted to those asked the question, and are weighted using responding person population weight.

Indirect costs

The indirect costs of children have two interrelated components which are the result of the parent(s), usually the mother, taking time out of the labour force to raise the child. The first is the opportunity costs, or lost wages, from not working or from working reduced hours. The second component is loss of human capital investment as a result of the reduced hours or absence from the workforce. For parents whose youngest dependent child was under six, three in five employed mothers worked part-time compared to less than one in ten employed fathers (Australian Bureau of Statistics, 2020a). As shown in Figure 11, the employment patterns of mothers are highly dependent on the age of their youngest child, and women increasingly re-enter the labour force as their children age, and work full-time rather than part-time. The number of children is also important in labour force participation. Parr (2012), in an analysis of HILDA data found that for mothers with children aged 0-4, 67% worked if they had one child, 64% if they had two children, but for those with 3 or more children maternal employment dropped to below 50%.

Figure 11 Labour force participation of women in couple relationship by age of youngest dependent child, Australia 2017
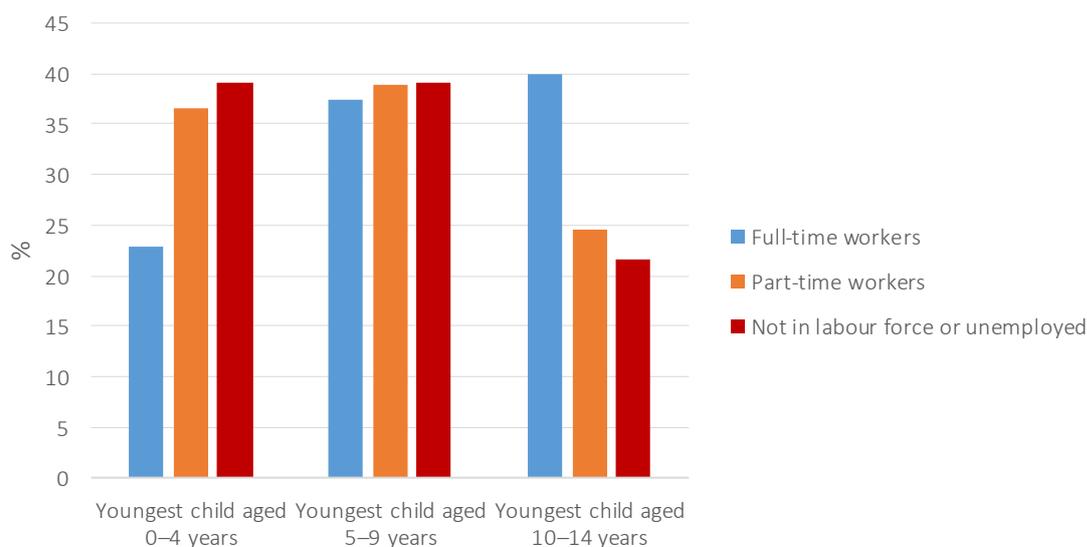
Source: (Australian Bureau of Statistics, 2017)

In Australia while higher-educated women forego a greater amount of lifetime earnings in absolute terms, the loss in income is proportionately smaller than it is for less educated women (Breusch & Gray, 2004). That is partly because higher-educated women are more likely to have the capacity to finance child care and return to work, and to do so faster and taking up longer hours compared to women with lower-education who are more likely to give up paid work. As such in the long run for lower educated mothers their opportunity cost may be higher than for those women with higher education.

The cumulative loss of earnings experienced by women due to unpaid caring responsibilities is usually irreversible and leads to a lifetime earnings gap between men and women (Workplace Gender Equality Agency, 2021). If current working patterns continue, a 25-year old woman today who has at least one child can expect to earn $2 million less over her lifetime than an average 25-year old man who becomes a father (Wood, *et al.,* 2020, p. 15). A survey by the ABS on the barriers and incentives to labour force participation found that among mothers whose youngest child was aged 0-2, of those

employed, 20% preferred to work more hours, and among those not in the labour force, 24% would like to have a paid job. For women whose youngest child was aged 3-4, the equivalent percentages were 19% and 22% (Australian Bureau of Statistics, 2020b).

Time costs

Time-use studies have highlighted that despite women's increased labour force participation, parents now spend more time with children than previously, as social norms about what it means to be a good parent have changed (Gauthier & de Jong, 2021). The pressure on parents to invest more effort in children's development, and the concept of 'intensive parenting' including a child-centred approach with a focus on stimulation activities, have led to an increase in time-related costs of having children (Kelly, 2021; Gauthier, *et al.*, 2021). Highly educated parents have been found to devote more time to child care, particularly engaging in interactive and educational activities, and this pattern is particularly pronounced for women (Craig, 2006).

3.2 Economic factors
Education, employment and income

Education, employment and income, and broader economic factors are important influences on fertility and are interrelated with the opportunity costs of children.

Increased education participation, especially by women, leads to longer time spent in education and greater future economic opportunities; both of which are generally associated with lower fertility. The link between education and fertility outcomes is complex and varies across social contexts (Merz & Liefbroer 2017). Higher-educated women face an increased opportunity-cost when having children as a consequence of their higher earnings capacity (Becker, 1981). Additionally, highly-educated women tend to have a higher labour force participation rate and therefore encounter more difficulties in balancing worker and mother roles. However, there are also some theoretical arguments in favour of a positive relationship between education and fertility. For instance, higher-educated women have better-paid jobs and, therefore, can more easily provide for children compared to women with lower education (Becker, 1981). Higher-educated women are also more likely to partner with someone with higher education, which can in turn increase their overall household income (Qian, 2016). While these theoretical arguments are in favour of a positive relationship between education and fertility, empirical evidence suggests that a clear negative educational gradient in fertility exists in most high-income countries, although the gradient varies across different countries (Sobotka, *et al.*, 2017).

Australian research confirms the salience of education for fertility and family formation processes, with the widespread increase in educational attainment strongly associated with a corresponding decrease in completed fertility (Gray & Evans, 2019). For women born between 1940 and 1965, the decline in their completed fertility was mainly driven by a general decline in fertility among women at all educational levels. For more recent cohorts however, further reductions in fertility were primarily driven by the increasing share of highly-educated women, who tend to have fewer children (Lazzari, et al. 2021b). While tertiary-educated women born in the late 1960s and early 1970s are still appreciably more likely to remain childless and to have a lower completed family size than women with lower education, the gap between the two groups has significantly narrowed. Indeed, childlessness has stabilised among tertiary-educated women, while it has kept rising at a faster pace among women with very low levels of education. This is partly due to the changing composition of women within education groups. In the past having Year 11 or below education was more common,

whereas now the women with Year 11 or below education have become a more select, and smaller, part of the population. Similarly while university educated women may have been a select group of women in the past, they have become increasingly common (Gray & Evans, 2019).

Educational attainment alone does not cover the full range of education-related effects. Indeed, the field of education may also serve as an important indicator of completed family size among tertiary educated women (Hoem, *et al.*, 2006). Research conducted in Europe and in the United States has shown how women educated in teaching and health are less likely to remain childless than women educated in other fields of study, suggesting that specific professions may be more or less conducive to childbearing, regardless of educational attainment (Bagavos, 2010; Begall & Mills, 2013; Michelmore & Musick, 2014). While it is true that women with a stronger preference for having children may choose specific career paths that are more suitable for having a family, the work environment itself may also have a direct influence on the decision to have children, depending on how it affects the work-family reconciliation.

Economic and labour market uncertainty and unaffordable housing

The general state of the economy and labour market has a significant impact on people's decisions around childbearing, with a well-established pro-cyclical relationship (Kelly, 2021). During periods of steady economic growth people's confidence about the future increases and they feel more certain about having children, and conversely during periods of economic downturn and high unemployment, fertility may be depressed as people delay or postpone childbearing due to feelings of insecurity about future prospects (Adsera, 2004). The role of uncertainty in fertility decisions is becoming increasingly prominent in demographic research. It is now widely agreed that uncertain times have a dampening effect on fertility, with increases in job insecurity and economic uncertainty thought to be major factors behind the fall in fertility in developed countries in recent times (Kreyenfeld, *et al.,* 2012; McDonald, 2006; Mills & Blossfeld, 2013; Mitchell & Gray, 2007; Winter & Teitelbaum, 2013).

Childbearing is a 'step into an unknown future' (Vignoli, *et al.,* 2020) – it is an irreversible action with long-term consequences for the parent's resources and well-being; it is the irreversible nature of having a child and the potential impact that it has on resources, which is considered when there is uncertainty about future prospects. In an uncertain environment couples may postpone, or possibly forego childbearing altogether (Aasve, *et al.* 2021, p.19). Bernardi, *et al.* (2019) has described future uncertainties as the 'shadow of the future', and the shadow of the future can interact with current conditions. For example, if strong economic growth is expected in the future, current uncertain labour conditions may not be seen as an obstacle to having a child. However if economic decline is expected then poor current conditions may inhibit fertility (Vignoli, *et al.* 2020).

Economic uncertainty is thought to have a large impact on the probability of having a first child. For many people, stable employment is considered a necessary precondition to start a family and therefore job insecurity has a dampening effect on birth plans (Fahlén & Oláh, 2018). In Australia, between 2008 and 2018, the average incomes of 18-34 year olds declined in real terms, while those aged over 35 have improved wages and occupational status (Productivity Commission, 2020). Since the Global Financial Crisis, many young people have experienced difficulties in finding secure employment leading to the uptake of jobs that do not fully use their qualifications, or to part-time and casual occupations (Kelly, 2021). Harknett, et al. (2014) highlight that perceptions of job security as well as satisfaction with the economy overall is significantly positively related to fertility

intentions as well as actualized births across 20 European countries. In Australia, one study found that the likelihood of childbirth by around age 35 was reduced for every year spent in casual employment, irrespective of socioeconomic status, partner's education and parents' birthplace. The likelihood was reduced by 8, 23 and 35% for 1, 3 and 5 years spent in casual employment, respectively (Steele, *et al.,* 2014).

The housing market is another example of a broad economic factor that can impact on childbearing decision making at the individual level. The relationship between housing and childbearing is complex, and different aspects of housing can affect fertility in a variety of ways.

The first link between housing and fertility is that if owning a home is seen as an important pre-condition or milestone to be achieved before starting a family, then difficulty in achieving home ownership can delay family formation. For many young people, the growth in house prices in recent decades has made how ownership more difficult to attain and has contributed to the trend in leaving home at a later age (Kelly, 2021; Productivity Commission, 2020), and indirectly to later family formation in high-income countries (Mulder 2006a, Mulder 2006b). While living at home is expected to delay other life events such as forming relationships and starting families, further work still needs to be done to fully understand how declines in fertility rates are related to the increasing propensity of young adults to continue living at home (Cobb-Clark, 2008).

A comparison of home ownership rates at ages 30-34 for different cohorts illustrates this trend for Australia. For those born between 1947-1951, 68% were home owners by the time they were aged 30-34. For those born between 1972-1976, 57% were home owners by this age, and for those born in 1987-1991 just 50% were home-owners according to the 2016 Census (Australian Institute of Health and Welfare, 2021). At the same time there has been an increasing trend towards leaving home at a later age. In Australia, the percentage of men in their late 20s (25-29) living with their parents has increased from 13 % in 1981 to 21% in 2016, and for women it has risen from 6% to 14% (Australian Institute of Family Studies, 2021). These proportions of young people still living in their parental home is relatively high compared to that of Denmark, where 6% of men, and 4% of women live at home, but is considerably lower than other countries such as Croatia where 87% of men and 53% of women aged in their late 20s live with their parents (Eurostat, 2021).

There are, however, cultural differences in the importance attached to home ownership also depends on the rental market, including the quality of rental homes, the rights of renters and the difference in costs between rents and mortgages. The importance of home ownership before starting a family is particularly strong in Anglo-Saxon countries such as the United Kingdom and Australia (Mulder & Billari, 2010). In Italy housing security, rather than home ownership *per se*, was found to be important. A clear positive gradient was found between the fertility intentions of couples and plans to have a first child and the degree to which they felt secure about their housing situation - whether renters or home owners (Vignoli, *et al.* 2012).

At the same time, housing is an important source of wealth and investment for home-owners, and an increase in the price of housing could lead to higher fertility. In Australia, a recent study by Atalay, *et al.* (2021) highlighted the opposite effects of increase in house prices among home-owners and renters. Using data from HILDA, they found that a $100,000 increase in housing wealth among home owners was associated with an 18% increase in the probability of having a child. At the same time for those who were renting, this was associated with a decreased probability of having a child among renters.

In addition to housing tenure, other aspects of housing may also influence fertility dynamics. For instance, the *type and size* of the house where couples live is also associated with how many children they have. Children require more living space and additional bedrooms, compared to what is required for a childless couple (Flynn, 2017). Fertility tends to be higher among couples in single-family houses or in larger dwellings and lower among those living in apartments or multi-family units (Kulu & Vikat, 2007; Curry & Scriven, 1978; Paydarfar, 1995). Most of these fertility differentials across housing types may be due to selective moves, i.e. couples move to a different type of house because they aspire to have children and it is not the house *per se* that affects their childbearing plans. However, the trend sheds light on the link between living arrangements and fertility behaviours. It has also been shown that couples living in spacious and family-friendly environments for a relatively long time are more likely to have a third child (Kulu & Vikat, 2007), while couples living in crowded apartments with little option of moving elsewhere tend to reduce fertility (Felson and Solaun, 1975).

The outbreak of the COVID-19 pandemic in January 2020 has triggered an unprecedented increase in uncertainty that will likely affect the fertility behaviour of couples in the coming years (Aassve, *et al.* 2020). A number of studies has shown that COVID-19 is reshaping individuals' views regarding having a first or additional child and that the pandemic is likely to lead to further fertility postponement, as couples are reluctant to plan to have children in uncertain times (Lindberg, *et al.* 2020; Malicka, *et al.* 2021). In Australia, almost one-fifth of women under 40 reported that COVID-19 had an impact on their childbearing intentions, with the majority of them indicating that their plans have been either delayed or, to a lower degree, abandoned (Qu, 2021). McDonald (2021) estimated that 70-80% of the births that have been deferred due to COVID will eventually be achieved by 2032.

3.3 Social norms and lifestyles

Social norms and lifestyles are another vital dimension which influence reproductive choices. While economists stress the importance of costs and benefits of children and broader economic factors, the sociocultural incompatibility between mother and worker roles, is seen as equally important. In many countries, the increase in women's participation in education and employment has not been accompanied by an equivalent shift away from social norms prescribing mothers as primary carers (Wood & Neels, 2019). Despite the increase in dual-earner families, household labour is still largely divided along traditional lines, with women bearing the majority of it (Geist, 2005; Ruppaner & Huffman, 2013). This 'second' or 'double shift' phenomenon (Hochschild 1989; Esping-Andersen, 2017) has also been observed in the Australian context, where women continue to be more involved in domestic activities than men (Baxter, 2002), especially after the birth of a first child (Baxter, *et al.,* 2008). An analysis of ABS time use data from 1997 found that combining hours spent on unpaid work (housework and child care) as well as paid employed work, for men and women with no children the average hours spent on all work was 60 hours a week (Wright, 2007). For those with 1 child, men's hours increased to 74 hours per week, and women's to 86 per week. For those with 2 children, men's hours were on average 82 and women's 98.

Several studies have found a positive relationship between male contributions to housework and fertility intentions as well as realised fertility (Harknett, Billari, & Medalia, 2014; Yan & Hertog, 2017), although there are differences by social context (Osiewalska, 2018). In Australia, among couples with one child a higher domestic workload of mothers was found to be negatively associated with further childbearing, although father's share of housework was not associated with fertility (Craig & Siminski, 2010).

Social attitudes towards families, and women's gender roles vary greatly across countries. In Nordic countries, attitudes towards women are more gender neutral, whereas in Southern Europe and East Asia there is a stronger adherence to the male breadwinner model (Sobokta, e al. 2020). Comparing Australia and Sweden, we can see the differences in attitudes towards the male breadwinner model. According to the International Social Survey Programme, in Australia 62% of the population disagree or strongly disagree that '*a woman's job is to look after the home and family*'. In Sweden, the equivalent percentage is significantly higher at 80%. Table 2 also shows how gender role attitudes vary by sex and education level. In both countries, women are significantly more likely to disagree or strongly disagree with the statement and to have more egalitarian attitudes. Education level is also an important influence. In both countries, those with tertiary education tend to be less supportive of the male breadwinner model.

Table 2 Percentage of respondents in Australia and Sweden who disagree or strongly disagree with the statement that 'A man's job is to earn money, a woman's job is to look after the home and family'

Variables	Australia	Sweden
Sex		
Men	55%	74%
Women	67%	84%
Education level		
Low (lower secondary or below)	68%	69%
Medium (upper secondary or non-tertiary)	64%	81%
High (tertiary)	69%	91%
Total	62%	80%

Source: International Social Survey Programme (ISSP) 2012, Family and Changing Gender Roles (weighted data)

One response to perceived or actual difficulties in managing work-family balance is to minimise family obligations, by postponing or foregoing childbearing (Baxter & Renda, 2015). As McDonald (2002, p. 429) notes '*if women are provided with opportunities nearly equivalent to those of men in education and market employment, but these opportunities are severely curtailed by having children, then, on average, women will restrict the number of children that they have* …' Although individual preferences regarding work and family are themselves influenced by sociocultural and economic constraints, when asked explicitly, young Australian women indicate the majority want place high priority on having children but also on work children but also to work (Johnstone & Lee, 2016). However, these priorities change across the life course and are also influenced by women's personal characteristics including their education level (Johnstone & Lee, 2009; Johnstone and Lucke, 2021).

In addition to social norms regarding women's roles, preferences for children may decrease with the emergence of post-materialist values for individual self-realisation and quality of life (Sleebos, 2003). The fall in fertility rates from the 1960s onwards has been attributed to a change in values and orientations, fuelled by the rapid increase in female education. This change involves the departure from traditional ideas, values and norms towards a more individualistic lifestyle and the development of higher-order, non-material needs and expressive values, including self-fulfilment and autonomy (Lesthaeghe, 2010). These ideational changes mean individuals make childbearing decisions with increased autonomy and to satisfy their own personal fulfilment needs (Mills, *et al.,* 2011).

A related trend in social norms has been the increase in secularisation. In Australia, this is reflected by the percentage of people who indicated they had no religion which increased from 0.8% in 1966 to 30% in 2016 (Australian Bureau of Statistics, 2017). Studies at both the individual and macro-level (Herzer, 2019; Buber-Ennser & Berghammer, 2021) consistently find that religiosity tends to be positively associated with fertility, although there are differences in the strength of this association between denominations. The influence of religiosity on childbearing behaviour is directly through regulation of sexual activity, contraception and abortion, but also indirectly through the shaping of norms about gender roles, marriage and family (Herzer, 2019).

Individual preferences may also affect relationship formation, thereby affecting fertility — for example, increases in the proportion of individuals who are single, whether that is because there is an increase in people who prefer to stay single, or for other reasons such as having difficulties finding a suitable partner. Over time marriage rates have fallen, and while unmarried cohabitation has become increasingly popular the increased fragility of relationships through divorce and other relationship breakdown, means that the proportion of the population who is single at any one point in time has increased (Weston & Qu, 2013). These factors may lead to births being postponed, or abandoned altogether (Sleebos, 2003).

Of course, norms and societal attitudes change, and it can be hard to predict how changing values might affect fertility. A contemporary example is that of climate change, where there is considerable speculation on whether fertility intentions are changing as a response to concerns about climate change, particularly in countries that are more directly affected by the impacts of climate change.

3.4 Policies

Public policies shape the context in which individual's reproductive decisions take place (Sleebos, 2003). Policies can encourage fertility by lowering either the direct cost of children through cash transfers, or the indirect costs of children through policies such as parental leave which compensate for lost income, or child care provision that supports working parents (D'Addio & d'Ercole, 2005). Direct policies aim to influence fertility directly, for example by offering financial incentives or subsidised housing to families and individuals to have children (Sleebos, 2003). Examples of direct pro-natalist policies include Singapore's baby bonus which offers $8,000 SGDP for 1st and 2nd births, and $10,000 for each 3rd or subsequent child. This policy is directly aimed at increasing Singapore's fertility rate.

Indirect policies on the other hand are ones that shape the environment in which childbearing decisions are made without having an explicit pronatalist objective. Indirect policies such as those relating to child care provision and parental leave can affect the costs and benefits of children, broader economic factors as well as social norms and lifestyles. The aim of these policies is often related to objectives around increasing women's labour force participation and raising productivity. For example in Australia, the purpose of the Child Care Subsidy is to '*enable parents and carers to participate in the workforce by making early childhood education and care affordable and accessible*' (Department of Education, Skills and Employment, 2021).

Policies that aim to improve child care availability, affordability and quality can affect the direct and indirect costs of rearing children. When there is a lack of child care, combining paid employment with childrearing can be impossible and forces a parent to make a choice about either working or having children. Women are primarily affected because socially they are seen as the primary caregiver. As most women value both labour force participation and parental roles, they face a dilemma if they

perceive them as mutually incompatible (Baizán, 2009). Similarly, the cost of child care adds to the direct cost of raising children. Child care can also affect social norms, as the de-familialization of caregiving can have a beneficial impact on gender equity within couples (Baizán, 2009).

Similar to child care, parental leave can help parents maintain their employment after childbirth, and if coupled with a high replacement wage it can help reduce the opportunity cost of taking time out of work. The expectation that policies which increase work-family compatibility such as child care provision and paid parental leave influence fertility, is based on the assumption that having a single-income household is increasingly less feasible and less desirable from a financial perspective and that therefore difficulties experienced by women in achieving their labour force goals would supress childbearing (Billingsley & Ferrarini, 2014).

Policies themselves are influenced by and reflect the prevailing norms of society, but they also help to shape them further (Sobokta, et al. 2020). The cases of Australia and Sweden can provide an example of contrasting views about who should provide child care, and who should cover the costs of child care as seen Table 3. In Sweden, where there is a high provision of public child care which is subsidised by the governement, 75% of respondents in the ISSP (2012) survey believed the government should be the main provider of child care[6], and 68% believed the child care costs should also primarily be covered by the government. In contrast, in Australia the corresponding percentages were just 12 and 25%.

Table 3 Views on child care provision and funding

Question	Australia	Sweden
Percentage who believe the government should be the main *provider* of child care for children under school age	12%	75%
Percentage who believe the government should primarily cover child care *costs* for children under school age	25%	68%

Source: International Social Survey Programme (ISSP) 2012, Family and Changing Gender Roles (weighted data)

In addition to 'family' policies (financial transfers, parental leave and child care) other social policies also impact on fertility in an indirect way. For example, in countries where education policies have extended the compulsory years of schooling, have seen an increase the age at first birth, although the impact on overall completed fertility is mixed (see Cygan-Rehm & Maeder, 2013). For example in Norway, Monstad, *et al.* (2008) found that extending the compulsory school leaving age to 16 led to fewer women having births in their 20s but no evidence of a permanent impact on childlessness or completed fertility. In contrast, in West Germany (2013) found that the extension of compulsory schooling years was associated not only with a postponement of first births from early ages but also no catch-up later in life leading to an overall negative effect on fertility. The authors suggest this could be due to the particularly high opportunity costs of having children in Germany. To this end, Lutz and Skirbekk (2005) note that policies that lower the age of leaving school, either by compressing the duration of schooling or lowering the age of entering school could lead to a lower age at first birth, and also higher cohort fertility.

In Australia, when the Higher Education Contribution Scheme (HECS) was introduced in 1989 there were fears that women would delay childbearing due to the debt incurred. However, Yu, *et al.* (2007) found that the introduction of HECS had no impact on fertility rates, or fertility intentions. In a more indirect way, in many East Asian countries, low fertility is linked to 'education fever' or a highly competitive environment focused on high academic achievement of children. This

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[6] As opposed to families, private companies, or not-for-profits.

necessitates high parental investment in education and increased costs including to attend private after-school education centres, and contributes to a trend towards parents having small family sizes of one or two children (Anderson & Kohler, 2013; Jones, 2019).

Policies regarding the care and financing for elderly people including residential and community aged care, pensions, and superannuation can also be linked indirectly to fertility by changing the utilitarian value of children. As the elderly have become more economically independent of their children and supported by social security systems, children are no longer the sole providers of care to the elderly.

In addition to the main policies described above, housing policies have also been identified as a potential tool to help reduce the gap between desired and achieved fertility, and thus increase fertility rates. Housing policies which favour young people being able to access independent housing could allow earlier transitions out of the parental home and the start of family formation. Singapore and South Korea are two examples of countries that use housing to incentivise fertility through various grants and incentives. In Singapore, various grants are available to assist young people to buy their own home. The Parenthood Provisional Housing Scheme[7] (PPHS) provides subsidised rent to married couples who have bought an uncompleted flat through the Housing and Development Board (HDB) and are waiting for it to be completed before they can move in. The aim is to discourage delays in starting families as much as possible as in Singapore, home ownership is viewed as a necessary precondition for starting a family (Saguin, 2021). Similarly, in South Korea home ownership is also seen as an important milestone that needs to be achieved before family formation, and the increasing housing costs are a major consideration in preventing young people from planning marriage and starting a family (Park, 2017).   As such, there is now a pronatalist housing policy focused around providing opportunities for affordable home ownership by increasing the housing supply to newlyweds, including the construction of specialised units for newly married couples, and providing support for mortgage loans, deposits and rental fees (Presidential Committee on Ageing Society and Population Policy, 2021).

However, Saguin (2021) suggests that such housing policies may have the effect of further reinforcing the idea that before starting to have children, couples must first own their own home. Hence, in order to influence the tempo of family formation, he argues that policies should be transformed to 'decouple' housing and marriage/parenthood. Bernardi (2005) similarly suggests that housing policies for young people should focus on housing affordability and stability and that this could be achieved by promoting not only private renting, but also social renting sectors, which are especially targeted at young people. Direct and indirect financial support for young people who are renting privately and more favourable taxation of rents are other policy tools that could increase the proportion of young people able to afford a home.

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[7] Parenthood Provisional Housing Scheme, https://www.hdb.gov.sg/residential/renting-a-flat/renting-from-hdb/parenthood-provisional-housing-schemepphs

4 Welfare contexts

In order to have a clear understanding of the policy responses to low fertility employed by different governments, it is necessary to understand the different approaches that countries adopt regarding social welfare. The three main types of welfare state regimes outlined by Esping-Andersen in his 1990 publication (liberal, social democratic and conservative) represent a useful way to outline how different nations choose to divide welfare responsibilities between the market, the family and the state. For a long time, Eastern European countries and Asian countries have been excluded from the comparative social policy literature. However, more recently, inspired by the Esping-Andersen (1990) welfare contexts, new typologies have emerged such as the Post-communist European state (Fenger, 2007) and the East Asian Welfare state (Aspalter, 2006).

The main difference across these welfare contexts depends on their level of *decommodification,* which refers to the degree to which individuals can maintain a socially acceptable standard of living from sources connected to social policy, rather than by relying on the market or the family (Esping-Andersen, 1990). High levels of decommodification require universalist policies, that are directed to the entire population on the basis of citizenship rather than performance.

The main characteristics of each welfare contexts are summarised below:

- **Liberal welfare states** are characterised by a relatively low level of state-provided social transfers and by a greater reliance on the market and families. The state's role is largely limited to provide a minimal safety net and mainly concerned to provide assistance to those least well-off and most disadvantaged in society. Countries like: Australia, the United States, the United Kingdom, and Canada typically belong to this cluster.
- **Conservative welfare states** assign key roles to families, while the state's role is mainly to reinforce the family as the principal provider of care, resulting in a preservation of status differentials and the redistributive impact of the state is negligible. Countries like: Austria, France, Germany, and Italy typically belong to this cluster. Post-communist European countries such as Czech Republic, Hungary and Poland, also highly resemble this welfare state type, although levels of social trust are typically lower.
- In **social democratic welfare states** a key role is played by the public sector, which provides and finances services through taxation. There is a principle of universality with services and benefits provided to everyone and a high degree of assistance to families and a strong emphasis of promotion of gender equity, resulting in relatively low levels of economic inequality. Countries like: Denmark, Finland, Norway, and Sweden typically belong to this cluster.
- The **East Asian welfare state** is characterized by a moderate commitment of the state to social transfers and by a clear focus on productive investment in social and human capital development. The state facilitates the role of the market and family as main providers of care, while also maintaining its very high regulative role. Countries like: Japan, Singapore, South Korea, and Taiwan typically belong to this cluster.

Although this classification is useful to interpret the different policy approaches adopted by high-income countries, it is also important to recognize that governments are usually not totally committed to only one of these typologies, and it is not rare to find elements that are typical of one welfare context in a different one. For example, Australia is typically classified as a liberal welfare state.

However, it has also been noted that Australia should be separated from the liberal cluster (Castles & Mitchell, 1993), because it has a "more inclusive approach to social protection than the standard liberal form" (Arts & Gelissen, 2002, p. 146). In terms of family policies the country has been historically characterised by relatively low levels of social spending, but it has moved over time toward a more mixed regime, in which care has been increasingly shared between the state and the private sector. The Australian regime has incorporated elements of social investments that are closer to the Nordic countries than to other liberal countries (Mahon, *et al.* 2012), which has placed it between the liberal and social democratic systems.

Table 4 provides a summary of the main characteristics of each welfare state, their degree of decommodification, and the countries associated with each one of them.

Table 4. The four types of welfare state regimes.

Countries	Welfare context	Resolution of the work-family conflict	Degree of decommodification
AUSTRALIA, US, UK, CANADA	Liberal	Work-family balance is viewed a private matter. Very little state intervention, leaving service provision to the market.	Low
AUSTRIA, FRANCE, GERMANY, ITALY	Conservative	Work-family balance falls within the sphere of the family. The work-family conflict is resolved by ceasing or at least reducing participation in the labour market.	Medium
DENMARK, FINLAND, NORWAY, SWEDEN	Social democratic	Work-family balance falls within the sphere of the state. Female participation in the labour force is supported through the provision of generous parental leave policies.	High
JAPAN, SINGAPORE, SOUTH KOREA, TAIWAN	East Asian	Work-family balance falls within the sphere of the family. At the same time, the job market is very inflexible and re-entry in the labour force is difficult.	Medium-Low

Gendered welfare states

In Esping-Andersen's model, gender is largely absent and the central players are the family (thought of as one unit), the state and the market. Other researchers (Korpi, 2000; Korpi, *et al.,* 2013) have expanded on this initial model by bringing in a gender dimension. Korpi (2000) classified policies as either providing general family support (cash child allowances, family tax benefits, and public child care for older children), or supporting dual-earners (paid maternity leave, paid paternity leave, public child care for young children, and public home help for the elderly). Countries were then ranked on their support for each dimension as shown in Table 5 below. In this gendered welfare state model, Australia was ranked as having low support for dual-earners and also low general family support.

Table 5 Family policy models

General family support		Dual-earner support	
		Low	High
	Low	Market-oriented family policy model e.g. Australia	Dual-earner family policy model e.g. Sweden
	High	Single breadwinner family policy model e.g. Germany	Pluralistic family policy model e.g. Finland

Source: Krapf's (2014) adaptation from Korpi (2000) and Ferranini (2006)

Fertility rates by welfare contexts

Despite being geographically distant, English-speaking countries show relatively similar and higher fertility rates than most European countries (Figure 12). Additionally, within the English-speaking cluster, the fertility rate of countries in Oceania and the United States tend to be higher than that of Canada and the United Kingdom. Canada is particularly noticeable for its relatively low fertility rate, which has oscillated between 1.5 and 1.7 since the 1980s, and it is today very close to the European Union average. Overall, this relatively higher fertility rate is to some extent surprising, since English-speaking countries belong to the liberal welfare context, characterised by low provision of services that can facilitate the combination of work and family. This apparent contradiction may be partly explained by the fact that they share a 'fundamental value orientation in favour of a balanced combination of work and family' (McDonald & Moyle, 2011).

There is a strong similarity in the fertility rates of some East-Asian and South-European countries, which belong to the least two favorable welfare contexts for the resolution of the work-family conflict. As seen in Figure 12, the TFRs in Italy, Spain, Greece, Japan and South Korea has substantially declined between the 1970 and the early 1990s and are currently among the lowest in the world, below 1.5. North-European countries exhibit relatively high TFRs at around two children per woman. These trends can be partly attributed to the welfare contexts of these countries, which strongly promote the work-family reconciliation.

Figure 12 TFR in a selected group of countries: English-speaking," very-low" fertility, and "high" fertility
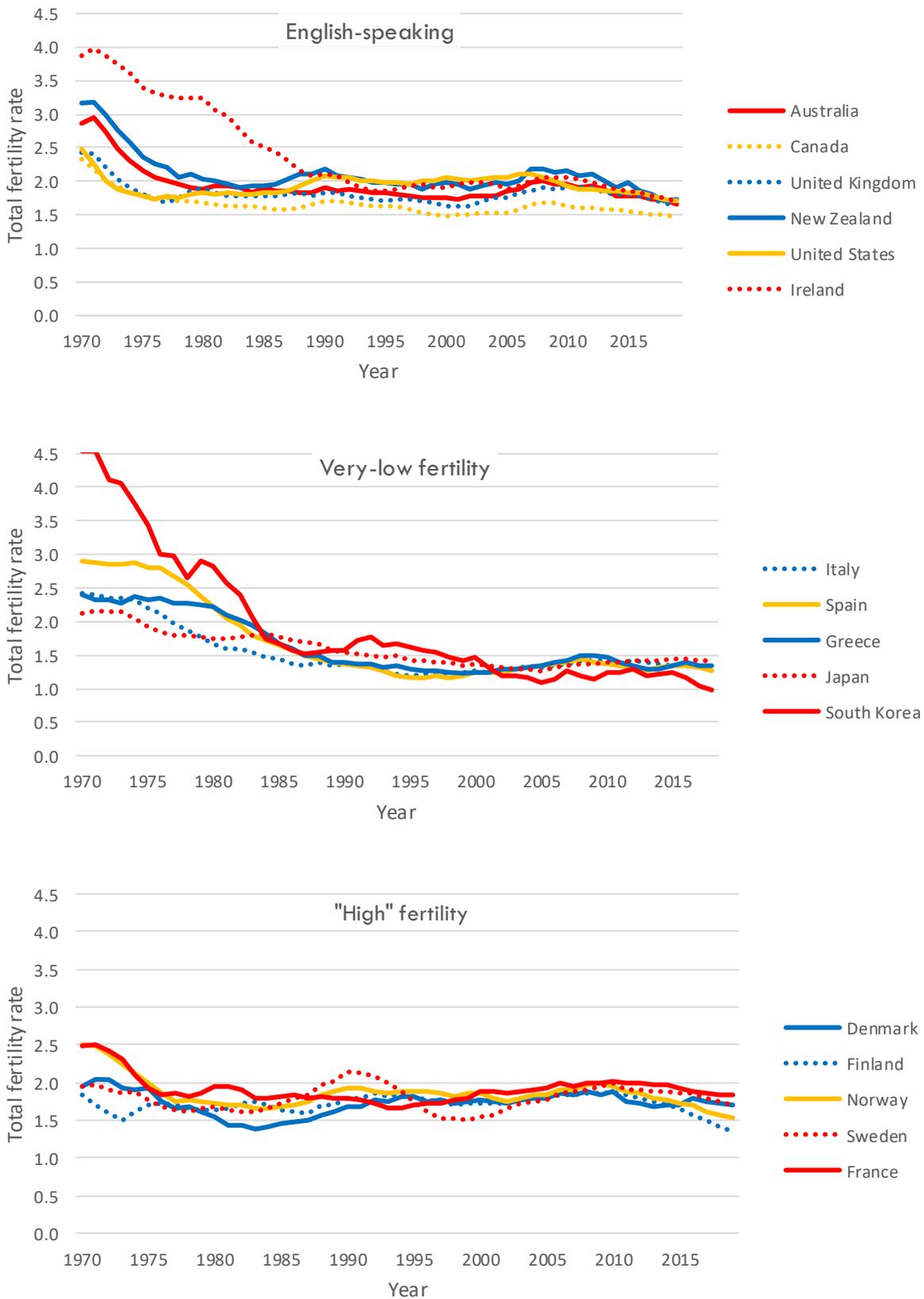
Source: OECD (2020a)

5 Measuring the effect of policies

Key points

- The two methods to measure the effect of policies on fertility are to examine a specific policy introduced in one country, or cross-national comparative analysis of fertility and family policies across countries.
- Measuring the effect of a policy on fertility in one country is difficult as it is not usually possible to have a counter-factual of what would have happened to fertility had the policy not been introduced.
- Endogeneity issues makes it hard to identify causal relationship between policies and fertility outcomes.
- Quasi-experimental methods such as difference-in-difference and regression discontinuity are commonly used to mitigate these issues.
- Most studies on the effect of policies are only able to focus on short-term effects on fertility

There are two methods available for drawing inferences about the relationship between policy and fertility: the first is to examine a specific policy intervention in one country or region, with some before and after assessment of their impact; the second is a comparative analysis of fertility and social policy between countries or regions (Bradshaw and Attar-Schwartz, 2010). Both methods have their own advantages and disadvantages but in both cases measuring the effect of policies on fertility is extremely difficult. As an example, Wood & Neels (2019) and Rindfuss, *et al.* (2010) illustrate the methodological issues that can arise when looking at the relationship between child care availability and fertility. These include endogeneity, reverse causation, and selective migration.

Endogeneity and spurious associations occur when there is an unobserved factor which could influence both fertility and child care availability. For example, the demand for child care services, and their emergence, would likely be greatest where work/family conflict was most strongly felt. This same conflict would likely produce low levels of fertility. Thus, simple comparisons can show the counterintuitive finding that greater child care availability is associated with *lower* fertility, in a similar way that family planning clinics in developed countries might be found in locations where fertility is highest (Rindfuss, *et al.* 2010). Similarly, if childbearing levels in one region are high, this could lead to higher child care supply levels due to demand-driven child care allocation. This could be mistaken as increased child care provision causing an increase in fertility[8] (Wood & Neels, 2019). Finally, for single country studies selective migration may also impact the relationship between local child care availability and fertility (Rindfuss, *et al.* 2007). If areas have better provision of child care, families or potential parents might purposefully move to those areas.

Ideally, to understand what effect a particular policy has on childbearing a counterfactual is needed (Hoem, 2008; Bergsvik, *et al.* 2020). That is, asking 'how would fertility have looked had a particular policy not been introduced or formulated differently?' Without a counterfactual, a policy that halts declining fertility may be judged as ineffective when in its absence fertility would have continued to decline and therefore should be counted as a success (Hoem, 2008). If policies were introduced

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[8] Hoem (2008) gives another example to illustrate endogeneity. In 1998, the German government started allowing unmarried parents to have joint custody of their children. Subsequently non-marital childbearing increased subsequently but it is unclear, if the changed regulations caused non-marital fertility to increase, or whether the government was simply responding to the general trend in non-marital childbearing.

randomly to certain populations, we could compare the effect on fertility of the 'treatment' population with those who did not experience the policy, who would then act as the control group. Then these groups could be compared to evaluate how their fertility changed as a result of the policy introduction. For social and ethical reasons, pure randomised trials of social policies are not possible. Instead, studies have used a variety of quasi-experimental methods to try and ascertain if a policy has influenced fertility including difference-in-difference, and regression discontinuity models.

Differences-in-differences model (DiD) rely on having a 'treatment' group and a 'control' group and comparing the fertility outcomes before and after a policy is introduced. A DiD model is particularly useful when there is spatial variation in policy changes that affect the population in a specific geographic region. The population living in the location where the policy is implemented is the 'treatment' group, and the population elsewhere can be thought of as the control group. Within group fertility changes over time are compared between the groups to see if the trends developed substantially differently among those affected by the policy (Lopoo & Raissian, 2018). An example is the study by Ang (2015) on a baby bonus payment introduced in the province of Quebec in 1988. This payment was only available in Quebec and not in Canada, so women living in Quebec served as the 'treatment' group and women in the rest of Canada served as the 'control' group. Their fertility was then examined before and after the introduction of the baby bonus payment. Similarly, Baschenuster, et al., (2016) examined the effect of several reforms in the 2000s which led to a large scale expansion of child care in West Germany. The expansion happened in a staggered manner across the 325 counties. Exploiting the spatial variation, the authors divided the counties with an above-median increase in child care (treatment group) and a below-median increase in child care (control group) and compared the fertility of women before and after the child care expansion. The also conducted a generalised form of DiD which is a two-way fixed effects model, where they exploited the full variation in local child care coverage across all counties and used fixed effects for time and county.

Regression discontinuity designs (RD) use naturally occurring random variation in treatment eligibility. They are suitable when arbitrary cut-offs, such as "all children born after October 2021" define who is affected by a policy change. If the cut off is arbitrary and it is not possible for parents to select into treatment status (e.g. to time delivery or conception) those being just ineligible should be similar to those being just eligible and therefore constitute a good comparison group (Bergsvik, et al. 2020). For example Farré and Gonzales (2019) used an RD model to examine the effect of a reform introducing 13 weeks of fully compenstated paternity leave in Spain. The paternity leave reform came into effect on March 24, 2007. Families who had a child born on this date or later were eligible, whereas families who had a child born before this date were not eligible. The authors compared the subsequent fertiltiy of families with children born just before and just after the reform. This type of modelling can work well when there is a sharp cut-off date, however even then if a policy took a long time to implement and received media coverage before it was introduced then public awareness regarding the upcoming introduction could also lead people to alter their fertiltiy behaviour in anticipation (Kreyenfeld, 2021).

An additional complicating factor is that policies do not exist in a social vacuum, their effect will depend on the social context in which they are implemented (Hoem, 2008, p. 255). For example, a policy to introduce parental leave for fathers is likely to have a very different effect in a country with high levels of gender equality and social norms supporting fathers taking leave and having more involvement in child care, compared to a country with more traditional gender role norms and more support for the male breadwinner model.

While many of the issues above are difficulties encountered in any policy analysis, there are also some unique features of fertility which add additional complications for measuring the impact of policies on fertility. The first is that long time taken for the outcome to be observed. The aim of pronatalist policies is to increase the total number of children, and not just to move the timing of childbearing forward. However it takes roughly 35 years from the age of 15 to 50 for a woman to complete her reproductive life and for the total number of children to be observed. Thus, while policies aim to increase overall fertility, to measure the effect of a pronatalist policy on the total demand for children would mean waiting a long period of time. Even if completed fertility can be observed it would be nearly impossible to link changes in completed fertility to a particular factor, or policy, because it covers such a long interval during which many other social and economic changes are likely to have occurred (Lopoo & Raissian, 2018).

Due to the difficulty of observing completed fertility, most studies tend to focus on whether a policy change might effect the timing, or "tempo", of fertility. In addition, there may be a delay of several years between when a policy is introduced and any observed effect on fertility. This delay is because it takes at least nine months from conception for the birth to be observed, and in addition a certain amount of time is needed to form the definite decision to have a child and for both partners to agree (Thévenon & Gauthier, 2011).

Besides these methodological and data issues, quantitative policy research also suffers from the problem that studies that find that policies have no effect are seldom published, even if the data and the modelling are outstanding. This 'publication bias' greatly limits our understanding of how welfare states, family policies, and family behaviour are interlinked from both a research and policy-making perspective (Neyer, 2021).

To get a clearer idea of the effect of policies on fertility, the review of policies in the next sections focuses primarily on studies that have employed quasi-experimental methods and are better able to deal with the issues of endogeneity and reverse causality. These studies cover specific reforms in individual countries. In addition, studies which take a cross-national comparative approach are also examined.

6 Financial transfers

Key points

- Financial transfers to parents can help reduce the direct costs of children
- Financial transfers can take the form of long-term transfers for the duration that the child is considered dependent on its parents (e.g. age 18), or be short-term in the form of baby bonus or birth grants
- Transfers can be universal or means-tested, and be targeted at all children or specifically at higher parities
- Australia has relatively generous, means-tested financial transfers in the form of Family Tax Benefit A and B
- Evidence from other countries suggests that financial transfers overall have a positive effect on fertility
- However, the effect on fertility is usually small because the transfers only represent a minor amount compared to the large direct costs of children

6.1 Theoretical link between financial transfers and fertility

Most developed countries, including Australia, have at least one type of child benefit available for parents. With the exception of specific 'baby bonus' or 'birth grants', their objective is not usually explicitly related to fertility. Instead, they may have various social welfare goals, including reducing child poverty or improving the standard of living of families with children. However, by supporting families with the direct cost of raising children they can potentially influence fertility (Thévenon & Gauthier, 2011; Sobokta, *et al.* 2020). If children are thought of as a normal good (Black, *et al.* 2013), a given financial transfer that increases the income for families with children should increase 'demand' for children through the positive income effect. The same positive fertility effect would be obtained if a benefit reduces the 'price' of a child (Riphahn & Wiynck, 2017).

6.2 Financial transfers across OECD countries

Benefits are usually dependent on the number of children in the family and their ages. In some countries such as Canada and Korea, family benefits are more generous for younger children, whereas in other countries including Australia, Belgium, and France their value is higher for older children (OECD, 2021).

Ferrarini, *et al.* (2013) distinguish between six different types of child benefits, based on their policy branch and main eligibility criteria.

Table 6 Types of child benefits

Child benefit	Policy branch	Main eligibility criteria
Universal child benefit (UCB)	Social policy	Citizenship or residence
Employment-based child benefit	Social policy	Gainful employment
Income-tested child benefit	Social policy	Income-or-means testing
Child tax allowance	Fiscal policy	Taxable income
Child tax credit	Fiscal policy	Tax liability (in case of wasteable tax credits)
Child tax rebate	Fiscal policy	Social security contributions liability

Source: (Ferrarini, *et al.*, 2013)

Universal child benefits (UCB) are made on a regular basis to assist parents with raising children, independently of the socioeconomic or other characteristics of the parents. While UCB eligibility requirements may vary depending on precise age restrictions and residence or citizenship restrictions, the basic common properties of a UCB is that it is a cash transfer, universal to the population of parents, unconditional and paid regularly (UNICEF, 2020). Countries with UCBs include Sweden, Finland, Estonia, and Ireland. Other countries such as Denmark, Canada and the United Kingdom have quasi-UCBs with some income thresholds above which payment tapers off or ceases. Some examples are shown in Table 7.

Over time across OECD countries there has been a general trend away from universal cash transfers in favour of tax-based child-income support (Daly & Ferragina, 2018), as has been the case in Australia. However, there have been some recent notable exceptions, with some countries recently introducing universal child benefits in an effort raise fertility. An example is Poland, which introduced the Family 500 Plus Programme in 2016 in an aim to increase fertility (*Program Rodzina 500 Plus, świadczenie wychowawcze*). The program provides a non-means tested benefit of 176 AUD (PLN 500) per child, per month (OECD, 2020c).

Table 7 Examples of universal child benefits and quasi-universal child benefits

Country	Maximum monthly amount for 2 children aged 3 and 7 in AUD	Details	Age of children	Income tested?
SWEDEN *barnbidrag*	411 AUD	195 AUD (SEK 1,250) per month per child. Families with 2+ children, automatically receive a large-family supplement (*Flerbarnstillägg*). Tax free and paid directly into account.	0-16	No
FINLAND *lapsilisä*	314 AUD	- 149 AUD (€ 94.88) for the 1st child - 165 AUD (€104.84) for the 2nd child - 210 AUD (€ 133.79) for the 3rd child - 241 AUD (€153.24) for the 4th child - 271 AUD (€172.69) for the 5th + child	0-16	No
LUXEMBOURG *Allocation pour l'avenir des enfant*	448 AUD	416 AUD (€ 265) per child - Children aged 6 years+ additional supplement of 31 AUD (€20) - Children aged 12+ additional supplement of 79 AUD (€50)	0-18 (or 25 if still studying)	No
UK *Child Benefit*	257 AUD	- 155 AUD (£84.60) for the eldest or only child - 102 AUD (£56) for any additional children	0-16 (or up to 20 if the child is undergoing education or training)	Yes. A tax charge, known as the 'High Income Child Benefit Charge', applies for individuals with an annual income over 91,478 AUD (£50,000).
CANADA *Child Benefit*	1,132 AUD	- 609 AUD (569 CAD) for each child under the age of 6 - 523 AUD (480 CAD) for each child aged 6–17 years	0-17	Yes. The benefit is reduced for families with a combined income above $34,287.

Source: Luxembourg Government, 2021; UK Government, 2021; Government of Canada, 2021; Social Insurance Institution of Finland (Kela), 2019; Swedish Social Insurance Agency (Försäkringskassan), 2021

The large variations in types of benefits across countries can make it difficult to compare their generosity. Comparisons are therefore usually made on the basis of a hypothetical model family. The Social Policy Indicator (SPIN) database (Nelson, *et al*, 2020), calculates benefit levels for a two-parent model family with two children aged 2 and 7. One parent is assumed to work full time, and to be earning an average production worker's wage. The other parent is defined as being out of the labour force. The benefit level is expressed as a percentage of the net income of the model family. Figure 13 shows the level of benefits as well as their types across selected countries in 2015[9].

Figure 13 Benefit type and level as a percentage of average income, 2015
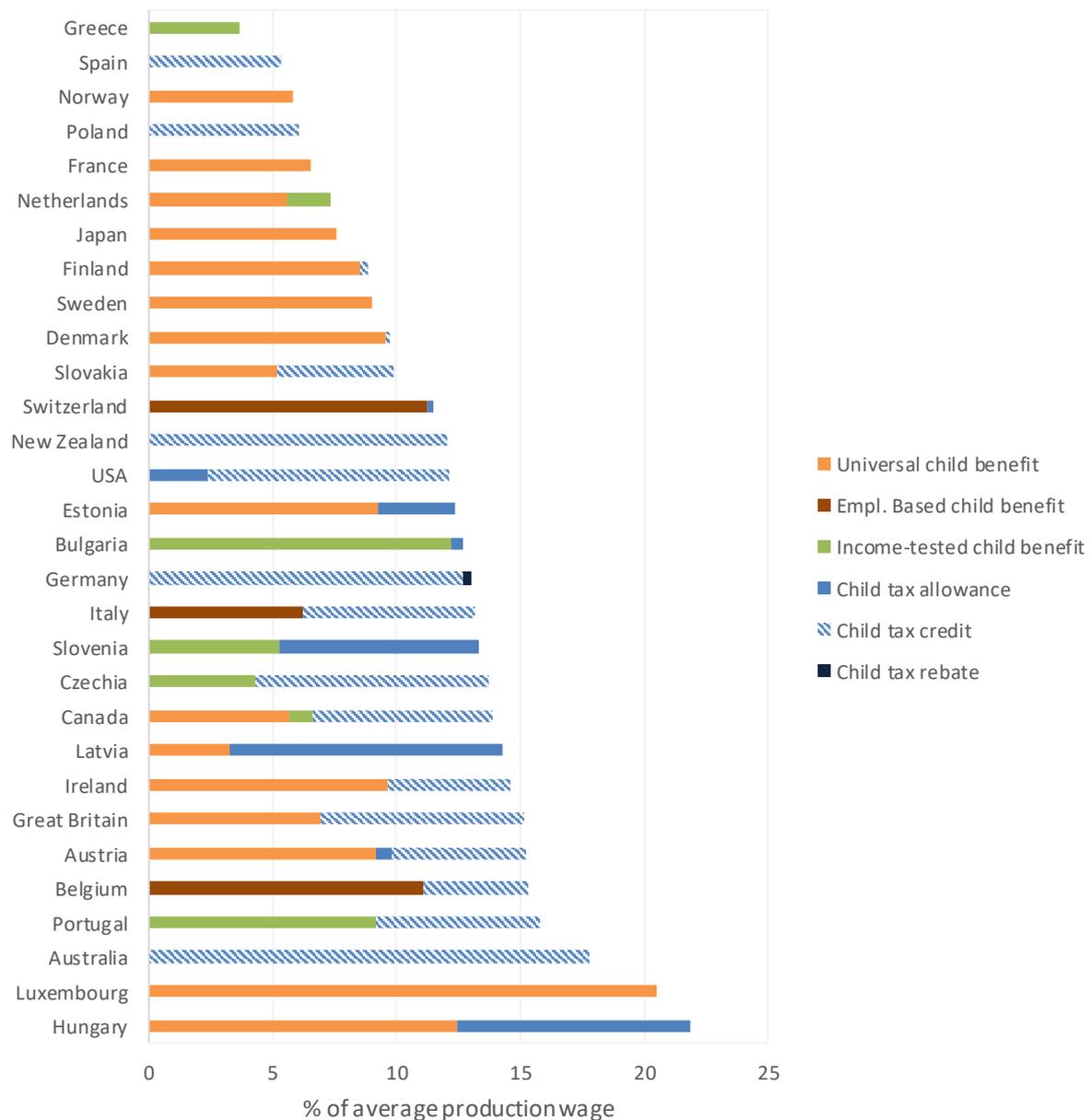
Source: SPIN database (Nelson, *et al*, 2020)

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[9] Latest available data

Along with the other liberal welfare states, such as the United Kingdom and the United States, Australia has relatively generous child benefits. In contrast, the Nordic countries have lower levels of child benefits, with most provided as universal child benefits.

6.3   Financial transfers in Australia

In Australia, the move away from universalism in the family payment system began in the 1980s with the means-testing of Family Allowance – the forerunner to FTB Part A (Taylor, 2021). The principle of horizontal equity, or of recognising that people with children require a higher income than those without children, was 'delegitimised as being in conflict with the principle of vertical equity' (Cass & Brennan, 2003) and there was a general move towards increased targeting and redistribution towards low income families (McDonald, 2003).

Since 2000, when several separate payments were simplified into two, the two main child benefits to parents are Family Tax Benefit Part A, and Family Tax Benefit Part B.

Figure 14 Simplification of payments to families, July 2000
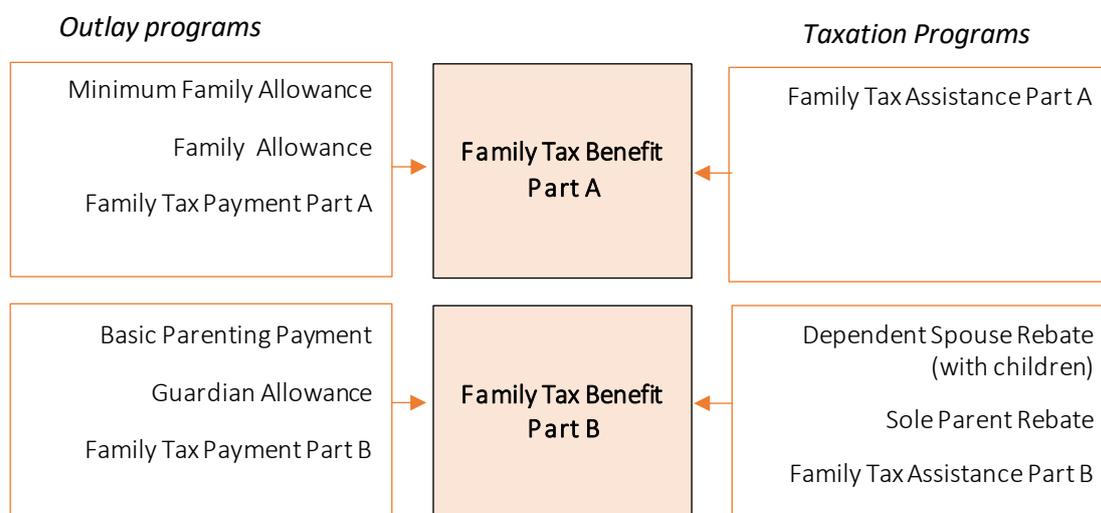
Source: (Whiteford & Angenent, 2001)

Family Tax Benefit Part A is a payment made per eligible *child*, depending on the combined income of the family. Family Tax Benefit Part B is a payment made per *family* for single parent families or couple families with one main income earner. Part A and B have been established as 'tax benefits', in the form of becoming a credit against any tax liability incurred, with any excess credit paid as a refund (Commonwealth Ombudsman, 2003, p. 5). The credit may be accessed during the tax year in the form of instalments paid by Centrelink, with Centrelink calculating the rate at which instalments are paid based on a forecast of taxable income provided by the person.

Part A

Families with a combined annual adjustable tax income of less than $55,626 receive the maximum payment amount which is, per fortnight[10]:

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[10] Payment amount correct as of June 2021

- $189.56 for a child 0 to 12 years old
- $246.54 for a child 13 to 15 years old
- $246.54 for a child 16 to 19 years old who meets the study requirements

When the family income is above $55,626 the payment is reduced by 20 cents for each dollar of income over $55,626. At family incomes above $98,988 the FTB Part A is reduced by 30 cents for each dollar of income over $98,988. In addition, there are income thresholds above which only the base rate (currently $60.90 per fortnight) is received, and income thresholds above which no payment is received. These thresholds depend on the number of children in the family and their combination of ages. FTB Part A is also influenced by any child support received. For low-income families with an adjustable tax income of $80,000 or less there is an additional FTB Part A supplement available at the end of the year paid as a lump sum. The maximum is $781.10 for each eligible child, with the amount depending on the number of children in care and income.

Part B

FTB Part B provides extra assistance to families with one main income earner who earns $100,000 per year or less. The maximum payment rate depends on the age of the youngest child. FTB Part B supplement is an additional lump sum payment available to families who receive Family Tax Benefit Part B with the amount depending on the family's income. In 2020-21 the maximum payment per family is $379.60

6.4   Do financial transfers affect fertility?

There has been no research on the effect of financial transfers on fertility in Australia, apart from those studies that have focused on the Baby Bonus (discussed later). From the perspective of incorporating Family Tax Benefit A & B into economic decision making regarding further childbearing, the complexity of the payment calculations, and their variable nature, mean that it is not simple for parents (or potential parents) to predict or understand how much FTB will assist with their childrearing costs (McDonald, 2003; Lattimore & Pobke, 2008). As such they are unlikely to be a major consideration for parents estimating the financial cost of children in their fertility decision making.

Several studies have taken advantage of large-scale reforms in other countries to conduct quasi-experimental analysis of the effect financial transfers have on fertility. These are summarized in Table 8. The policies studied range widely from universal child benefits targeted to large families with four or more children in Israel, to the introduction of a universal basic income in Alaska. Overall, reforms which increased benefits to families, appear to have had small but significant effects on fertility. In most studies it is unclear if the effect is only on the tempo of fertility, or also the quantum (Thévenon & Gauthier, 2011), because in most cases the policies have been only recently introduced.

Cyprus and Israel both introduced generous payments to families with multiple children. In Cyprus, a small monthly payment was introduced for families with four or more dependent children. The payment underwent several steep increases in generosity and by 2002, the annual payment per child for families with four or more children was equivalent to 376.2 CYP (~ 1,130 AUD). Lyssiotou (2021) finds robust evidence that the reform increased the probability of having a fourth child by about 5% but there were no significant increases in having five or more children. Similarly, Cohen, *et al*. (2013) find a positive relationship between child subsidy aimed at large families and the probability of having a third or higher order child in Israel, with the mean benefit leading to a 7.8% increase in fertility for women, with the effect being largest for lower income families.

In Germany, a 1996 reform significantly increased the generosity of child benefits. The reform was quite complex as it had slightly different effects by parity and household income. First births were better subsidised for lower earning couples, while second births were better subsidised for higher earning couples (Bergsvik, *et al.* 2020). Riphahn & Wiynck (2017) find no general fertility incentive provided by child benefit payments for low-income households, although there was a positive effect for higher-income couples with an increased second birth probability of between 10% to 23%. They conclude that this particular reform was not effective in incentivising first births and was particularly ineffective for low-income couples, although it did have a small positive effect for second births among higher-income couples.

In contrast to the German study, for Norway a 1989-1990 reform which increased the universal child allowance in the northern regions of the country was found to increase the probability of a first birth, and particularly among young unmarried women in their 20s (Galloway & Hart, 2015). The reform also increased the third birth probability among women in their early 30s.

Parent & Wang (2005) examined the impact of the new Family Allowance Act introduced in Canada in 1974, with Quebec setting its own payment structure. For families with two children, the benefit was similar in Quebec as in other provinces of Canada. However, for families with three children the benefit for the third child was almost double in Quebec compared to other places (CAD $460.32 annually for a third child, compared to $240 elsewhere in Canada). Exploiting this difference in the benefits for third or higher order children, Parent & Wang (2005) examined the fertility trends in Quebec compared to the rest of Canada both for the short and long-term. They found clear evidence of an increase in fertility as a result of the child benefit but this reflected a 'tempo' effect and there was no evidence of a long term impact on completed family size.

Spéder, *et al.* (2020) investigated two Hungarian policies that were intended to support large families and encourage third births. In 1993, a generous monthly child benefit allowance was introduced to families with three or more children, and in 1999 a tax relief system came into effect which was most advantageous to families with three or more children and a taxable income. The first policy was primarily aimed at reducing poverty among low-income families, whereas the tax-relief package had an explicitly pro-natalist aim. The two policies both increased third birth probabilities, but for different sections of society. The child benefit allowance increased third births for families with lower education and income, whereas the tax relief increased births for women with higher education and a higher taxable income.

The Working-Families-Tax-Credit (WFTC) introduced in the UK in 1999 and a Spanish tax credit introduced in 2003 for women who were working and had a child aged under 3 highlight the potential counterbalancing effects of child benefits or tax credits which are conditional on labour market participation. Generous benefits that are conditional on both employment and on having children could potentially increase fertility if individuals purposefully have children to be eligible for the benefits. On the other hand, the condition of labour force participation could reduce fertility if it increases women's labour force participation and if women face work-family incompatibility.

The WFTC was specifically introduced for families with children. To be eligible, recipients had to have children and at least one parent had to be working for a minimum of 16 hours a week. This was tapered by household earnings (plus some other forms of income) above a threshold (Brewer, *et al.*, 2012). The WFTC could potentially increase the demand for children to fulfil the eligibility condition for WFTC

by having a first child or to claim a higher amount by having subsequent births. On the other hand, for women previously working less than 16 hours a week, it may have induced them to increase their work hours which would increase the opportunity cost of childbearing. For women who are the secondary earner, WFTC may actually reduce their labour force participation as her family will continue to be eligible for WFTC on the basis of her partner's participation although higher wage rates after WFTC are likely to have induced individuals to work longer hours through the substitution effect (Ohinata, 2011; Brewer, *et al.* 2012). The overall effect on fertility appeared stronger for couples. Brewer, *et al.* (2012) found an increase in births among all women of about 15% following the reform, with a stronger effect for women in couples. Ohinata (2011) found that women who already had children and a working partner were more likely to have shortened the timing to the next child. In contrast for lone mothers, Francesconi and Van der Klaauw (2007) found evidence that lone mothers increased their labour force participation, and were less likely to form cohabiting or married relationships and also had reduced fertility following the reform.

The Spanish reform in 2003, was introduced to tackle the twin goals of increasing fertility and increasing female labour force participation. The reform substantially raised tax deductions for households with children (and deductions increased with the number of children) and it increased yearly child allowances for children aged under 3 from 300 to 1,200 euros as well as introducing a tax credit of 1,200 euros per year for mothers with children under aged 3 conditional on the mothers being in employment (Azmat & González, 2010). As the authors note the simultaneity of the two reform objectives and components (increasing labour force participation and fertility) would have ambiguous on both fertility and labour force participation. They found that the reform increased fertility significantly, by 7.5 births per 1,000 women or by approximately 11%. The increase was larger for women who were initially childless and those with lower levels of education. For women who were already mothers, there was no significant effect which the authors suggest signals that it could have had a dampening effect by having increased their labour force attachment although the extent of the dampening effect on fertility was not as great as it would have been had it not been counterbalanced by the increased child deductions.

The Alaskan Permanent Fund Dividend (APFD) provides an unusual example of the how the income and price effect can potentially impact on fertility. The APFD is a dividend paid out annually to all residents (including children) of Alaska from earnings generated from oil production, with the amount changing yearly. Since it is not means-tested it can be considered a form of Universal Basic Income. Although it is not specifically a child benefit, in addition to an income effect (increasing the household income) it decreases the cost of a marginal child as children are also eligible for the payment. Gray Collins (2016) and Yonzan, *et al* (2020) found a positive effect between financial transfers through the Alaskan Permanent Fund Dividend and fertility, particularly for younger women.

Table 8 Single country studies on fertility effect of financial transfers

Country	Payment	Year of policy change	Policy change	Target	Impact on fertility	Author
CYPRUS	Universal child benefit	1988-1997	Introduction in 1988, and subsequent increases in generosity throughout 1990s of a universal monthly child benefit to families with at least four children	4+ parity	Probability of having a 4th child increased by 5%. No change in probability of having a 5th or higher order child.	(Lyssiotou, 2021)
ISRAEL	Universal child benefit	1999-2005	Several changes to child subsidies for 3+ children, both increases and decreases	3+ parity	Positive effect on fertility of child subsidies, except for at highest income level. Mean level of marginal child subsidy produces a 7.8 percent increase in fertility	(Cohen, *et al.,* 2013)
SWITZERLAND	Universal child benefit	2009	Swiss Family Allowance Law (Familienzulagengesetz) entitled all families, regardless of the canton, a legal minimum of child benefits per month	All parities	A 10% increase in the family transfers increases the likelihood of having another child by 0.1%. Introduction of the minimum amount increased likelihood of having another child by 4.3% in effected cantons.	(Milonavska-Farrington, 2019)
GERMANY	Universal child benefit	1996	Significant increase in child benefits, and households forced to choose whether they received child benefits or tax allowances.	All parities	No effect for first or second birth among low-income couples. A positive fertility effect for higher-income couples deciding on a second child of between 10% and 23%.	(Riphahn & Wiynck, 2017)
NORWAY	Universal child benefit	1998-1999	Regional reform in Northern Norway that increased UCB generosity	All parities	Fertility increased among unmarried women in their early 20s. Strongest effect are found for transition to parenthood.	(Galloway & Hart, 2015)
CANADA	Child allowance	1974	Increase in generosity of Family Allowance Program with Quebec setting its own payment levels.	All parities	Increased fertility shortly after introduction. No long term impact.	(Parent & Wang, 2007)
HUNGARY	Child allowance	1993	Introduction of a generous child-rearing support allowance (known as GYET), paid from child's 3rd to 8th birthday.	3+ parity	Increased third birth risks among those with lower levels of education.	(Spéder, *et al.,* 2020)
	Tax relief	1999	Introduction and subsequent increase in tax relief for families with three or more children	All parities (but higher benefit for those with more children)	Increased third birth risks among those with higher levels of education.	(Spéder, *et al.,* 2020)

Table 9 Single country studies on fertility effect of financial transfers (continued)

Country	Payment	Year of policy change	Policy change	Target	Impact on fertility	Author
UNITED KINGDOM	Tax credit	1999	Introduction of Working Families Tax Credit (WFTC)	All parities-lower incomes	Increase in probability of all birth parities by 15%. A significantly positive impact on the probability of first and third birth.	(Brewer, *et al.* 2012)
					For lone mothers, a small reduction in fertility	(Francesconi & Van der Klaauw, 2007).
					Only effected timing of first birth significantly.	(Ohinata, 2011)
SPAIN	Tax credit	2003	Introduction of a tax credit for working mothers with children under the age of three, and an increase in deductions for all households with children.	All parities	Increased fertility by 5%. Effect more pronounced for women with lower education.	(Azmat & González 2010)
ALASKA	Universal Basic Income	1982	Introduction of Alaskan Permanent Fund Dividend (a form of universal basic income)	All parities	Fertility increased by 11.3 births per 1,000 females.	(Yonzan, *et al.* 2020)
					Increased the total fertility rate by 0.59 children on average between 1982 and 1995, representing a 25 % increase in total fertility. The effects are concentrated among second and higher-order births and young adult mothers, aged 20 to 29. The APFD could plausibly have increased completed fertility over that period, but data constraints limit the conclusions around completed childbearing.	(Gray Collins, 2016)

6.5 Baby bonus or birth grants

In contrast to general financial transfers to families discussed above, a 'baby bonus' or 'birth grant' is a special type of financial transfer that is usually used by countries explicitly in an attempt to boost fertility rates.

Several countries including Lithuania, Luxembourg, and Singapore have such Baby Bonuses which are universal and not means-tested. In Singapore, the amount is $8,000 for a first or second child, $10,000 for a 3rd+ child (Ministry of Social and Family Development, 2021). The Baby Bonus is paid in five installments over 18 months. It is not means-tested and all married couples are eligible.

Australia's Baby Bonus

Australia introduced a Baby Bonus in 2004 which went through a number of changes as shown in Table 10. It was abolished ten years later in 2014.

Table 10 Timeline of Australia's Baby Bonus

Date	Changes
2004	First Child Tax refund replaced by introduction of a $3,000 tax-free payment following the birth or adoption of a child. Originally titled Maternity Payment and renamed Baby Bonus in 2007. Lump-sum payment, not means tested
2006	Baby Bonus increased to $4,000
2007	Mothers aged under 18 began receiving payments in 13 fortnightly payments.
2008	Baby Bonus increased to $5,000
2009	Baby Bonus became means tested ($75,000 income limit) and paid in 13 fortnightly payments to all parents.
2011	Paid Parental Leave was introduced, and eligible women could choose to receive either Paid Parental Leave or the Baby Bonus. Payment increased through annual indexation to $5,437 per child.
2012	Rate reset to $5,000 per child.
2013	Rate stayed at $5,000 for first children and all children in multiple births, but for second and subsequent children born or adopted on or after 1 July, Baby Bonus was reduced to $3,000
2014	Baby Bonus abolished

Source: (Department of Social Services, 2014)

Did Australia's Baby Bonus increase fertility?

Numerous studies have attempted to answer the question of what impact, if any, the Baby Bonus had on fertility in Australia. These studies, which have used different measures of fertility, and different sources of data, are summarised in Table 11.

Some studies conclude that the program had a positive effect on fertility intentions (Drago, et al. 2011) and subsequent fertility, with one estimate suggesting that about 108,000 births could be attributed

to the Baby Bonus (Sinclair, *et al.* 2012). In Western Australia, (Einarsdóttir, *et al.*, 2012) found that birth rates increased by 13% as a result of the Baby Bonus with the greatest increase observed among women in their early 20s and those having a third or fourth child. Lain, *et al.* (2009) found a similar result of third and higher parity births being affected, but no impact on first births, in New South Wales.

While fertility in Australia did increase during the time of the Baby Bonus, as most of the authors of these studies concede, it is not possible to directly measure to what extent this was due to the payment, or to other factors. Since the Baby Bonus was a universal payment available to everyone having a child, there was no comparison or 'control' group which were not eligible for the payment.

Other factors can also explain the increase of fertility during this time. Prior to the introduction of the payment, there had been substantial declines in period fertility (TFR). This decline was largely a result of delay in the timing of births, that is, having children at later ages. During the postponement of births, there was an increasing proportion of women who were childless and in their later childbearing years, and therefore one component of the increase in fertility was the tempo effect of increased births which followed previous delays and postponement (Parr & Guest, 2011). In addition, the period was one of general economic boom with high growth, and low unemployment rates, prior to the Global Financial Crisis of 2008-09. While several papers such as (Parr & Guest, 2011); Sinclair, *et al.* 2012) did include controls for economic indicators, as the period was one of relatively stable growth it would not be possible to capture this effect fully in any study.

Other countries, which did not have a Baby Bonus, including New Zealand, experienced a similar fertility trend during this time as seen in Figure 15. This was the case even for fertility at ages 15-19 which several authors indicate increased during the period of the Baby Bonus.

While the effects of the Baby Bonus can never be directly measured, it is likely that at least in large part the observed increase in fertility was likely a general reflection of socio-economic and demographic trends similar to those experienced by other countries (Parr & Guest, 2011).

Figure 15 Total Fertility Rate, New Zealand and Australia (2001-2018).
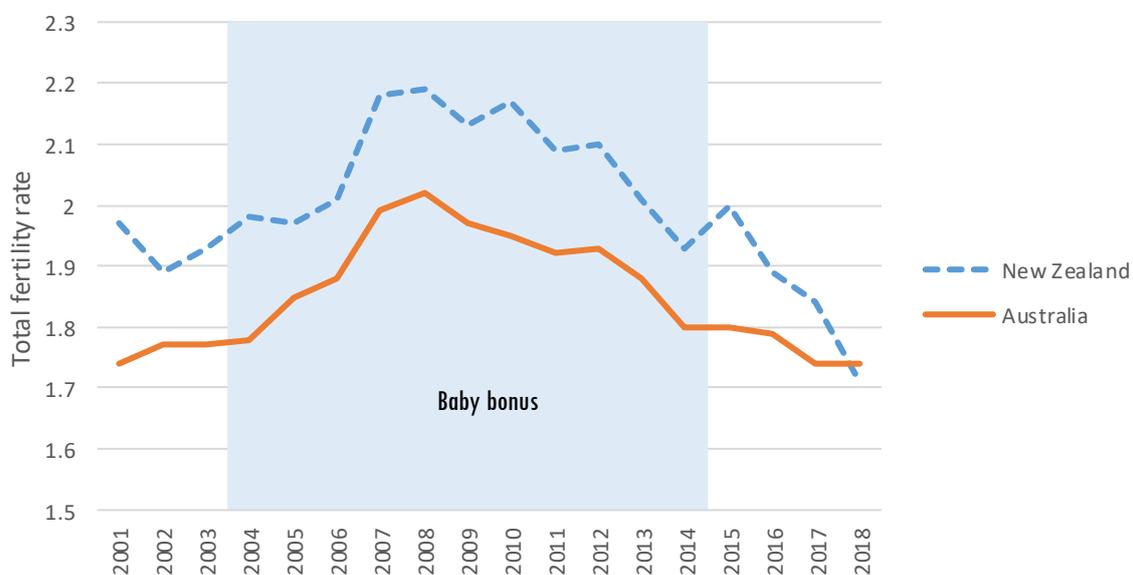
Source: Australian Bureau of Statistics (2021a) & Stats NZ (2019)

Table 11 Summary of studies looking at the impact of the Baby Bonus in Australia

Geographic coverage	Fertility measure	Impact on fertility measure	Difference by age	Difference by parity	Difference by socio-economic group	Authors
National	General fertility rate	Increase	n.a	n.a	n.a	(Sinclair, *et al.* 2012)
National	Age-specific fertility rates	Increase	n.a	n.a	Age-specific fertility under age 30 was most responsive in lowest socio-economic groups.	(Rawlings, *et al.* 2016)
National	Probability of birth	No significant impact	n.a	n.a	n.a	(Parr & Guest, 2011)
National	Fertility intentions and probability of birth	Increase	n.a	Highest effect for second births	Lower-income households more responsive.	(Drago, *et al.,* 2011)
National	Probability of birth	Increase for certain subgroups	Higher impact for younger women	n.a	Increase in fertility for women with low levels of education (particularly among immigrant women)	(Bonner & Sarkar, 2020)
Western Australia	Quarterly birth rates	Increase	Highest increase in 20-24 age group	Highest effect for 3+ parity	n.a	(Einarsdóttir, *et al.,* 2012)
Western Australia	General fertility rate & age specific fertility rates	Increase	No	n.a	No	(Langridge, *et al.,* 2012)
National	Fertility intentions	Increase	Highest increase at age 25-34	No	Lower-income households more responsive.	(Risse, 2010)
New South Wales	Age-specific fertility rates and age-parity-specific fertility rates	Increase	Highest increase among women aged 15-19	Highest effect for second and 3+ parity	Variable across age and parity.	(Lain, *et al.* 2009)

Evidence from other countries

While there have been a handful of studies that have looked at the fertility effect of the introduction of Baby Bonus type payments in other countries (e.g. for Spain see González & Trommlerová, 2021) the best evidence for the potential impact of Baby Bonus style payments comes from a scheme that operated in the Quebec province of Canada between May 1988 and September 1997.

The Allowance for Newborn Children (ANC) was a generous, non-taxable, universal and non-means-tested payment. Over its years of operation, the payment increased, and between 1992-1997 the payment was C$500 at birth for the first child, C$1,000 for the second ($500 at birth and $500 on the child's 1st birthday), and C$8,000 for the third child or higher birth (paid in 20 quarterly payments of C$400). The 'cost' to the government of each child born as a result of the ANC program[11] has been calculated as $15,472 CAD (Milligan, 2002) to $19,298 CAD (Kim, 2008).

The key feature of the ANC which makes it a good subject for study is that it was only implemented in Quebec, and therefore Quebec's fertility rates can be compared to the rest of Canada (Milligan, 2005), or other provinces such as Ontario, for the same period using difference-in-difference estimators. In addition, given the time since the policy ended it is possible to some degree, to compare completed fertility levels of women in Quebec and the rest of Canada to see whether the policy had a permanent effect rather than a transitory one. Unfortunately, one complicating factor is that there were many region-specific policy changes in Quebec during this time and this makes the identification of a precise effect of the ANC more difficult (Bergsvik, *et al.*, 2020).

Overall, there is clear evidence that Quebec's 'baby bonus' increased fertility. Malak, *et al.,* (2019) suggests that the introduction increased the probability of having a child by 10% for first children, 3% for second children and 23% for third children. Milligan (2005) finds a similar effect for third children. This pattern can be explained by the fact that most parents with one child will go on to have a second child regardless whereas the cash incentive was more of an encouragement for first-time parents or parents of two children to try for a third (Malak, *et al.,* 2019).

Kim (2014) and Malak, *et al.,* (2019) both tried to answer the question of whether the policy had a permanent effect on completed fertility rather than just a tempo effect, with varying results. Kim (2014) compared the fertility of Quebec with the rest of Canada using a public-use census file. Comparing the completed fertility of cohorts of women up to the 1962 birth cohort they conclude that the ANC led to a shift in the timing of childbearing, but it had no lasting effect on completed fertility. In contrast using a richer dataset with vital statistics data and comparing the completed fertility in Quebec and Ontario at age 39 for cohorts born 1935-1973 (Malak, *et al.* 2019) find that for the cohorts most affected by the ANC, i.e. for the women that were exposed to the program for the longest time during their key reproductive years, the completed fertility rate started climbing and suggests there was a permanent effect on fertility. They also find a hump-shaped pattern with income and fertility suggesting that those with middle-incomes were the most responsive.

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[11] This is calculated by dividing the programs's total cost by the number of additional children born that would not have been born in the absence of the program.

6.6   Conclusion

Most OECD countries have at least one type of financial transfer for parents, although these transfers vary widely in terms of their generosity and eligibility. Along with other liberal welfare states, Australia has relatively generous mean-tested transfers to parents in the form of the Family Tax Benefit A and B. Plausibly, by assisting with the direct costs of raising children, financial transfers may support individuals in their childbearing decisions and have a positive impact on fertility. However, children are expensive and financial transfers only cover a small proportion of the costs of children (Kim, 2014). As such, most studies based on reforms in other countries find only modest positive results on fertility. More generous benefits, including universal transfers and baby bonus style payments such as the one implemented in Quebec, appear to have a greater impact on fertility (Sobokta, *et al,* 2020; Thévenon & Gauthier, 2011).

It is also possible that financial transfers have an indirect effect by changing social norms concerning childbearing. If a transparent payment, such as a Baby Bonus, is introduced and accompanied by an explicit and repeated message from both government and the media that emphasises the importance of having children, this may foster a more favourable community attitude to family formation (Lattimore & Pobke, 2008). In their review of the effects of birth grants and child allowances in South Korea, Son (2018)   also suggest that part of the effect is a symbolic one, in which the policy 'makes parents feel that they are supported by the government in their decision to have a child'. This was also highlighted in a qualitative study of young female recipients of the Baby Bonus in Australia who felt the payment had a social symbolic value that reflected the value that the government attributed to them as mothers (Garret, *et al.* 2017).

For any payment to influence fertility it likely needs to be simple so that parents, and potential parents, understand the value of payments received to enable them to incorporate this into their childbearing decision making. In Australia, although the family tax benefit system was simplified in 2000, many families still find the system complex and confusing making it difficult for them to make informed decisions about workforce participation and financial planning, and the decision to have a child or additional children (Human Rights and Equal Opportunity Commission, 2007; Jha, 2014).

7   Parental leave

Key points

- Paid parental leave policies decrease the opportunity cost of childbearing for women by allowing for career continuity, and compensating for lost income due to time taken away from the workforce
- Across OECD countries there is substantial diversity in the design and format of maternity and paternity leave, in terms of duration, replacement rate, and eligibility
- Australia has had paid parental leave since 2011, and paid paternity leave since 2013, but uptake by fathers has been low
- Evidence from reforms introduced in other countries suggests that well-paid maternity leave has a positive effect on fertility, at least in the short term
- Evidence from the introduction of father quotas is more mixed and dependent on the social context

7.1   Theoretical link between parental leave and fertility

Most parents work before and after the birth of a child. In Australia, of women aged 15 and over who had a child under aged 2, 73% had a job at some stage during their pregnancy (Australian Bureau of Statistics, 2018). For mothers, employment before and after the birth of the child is higher if it is their first child and declines as the number of children in the family increases. Mothers with higher education levels are more likely to be employed pre-birth and post-birth, and to return to the labour market faster after having a birth (Baxter, 2013; Ulker & Guven, 2011).

The aim of parental leave policies is not to increase fertility but to improve family wellbeing and promote career continuity by helping employees balance competing job and family responsibilities (Rossin-Slater, 2018). This can be seen in the stated objectives of Australia's Paid Parental Leave scheme are to (Department of Social Services , 2021):

- Signal that taking time out of the paid workforce to care for a child is part of the usual course of life and work for both parents, and
- Promote equality between men and women and balance between work and family life.

Potentially, parental leave entitlements should also be positively related to fertility as they allow parents time to care for their young children without losing their jobs, reducing future uncertainty (Sobokta, *et al.,* 2020). When parental leave is paid, this financial transfer also compensates for the income lost during the time out of work, reducing the opportunity cost of childbearing. However, Thévenon and Gauthier (2011) emphasise caution: when policies are related to employment, as is the case for parental leave, this makes fertility behaviour more dependent on employment. The possible consequence is that finding a stable job increasingly becomes a prerequisite to start childbearing. Further, as childbearing is linked to job stability, this results in fertility being sensitive to economic cycles and labour market conditions.

When fathers take parental leave, the impact on fertility is theoretically ambiguous. Paternity leave has the potential to increase fertility by promoting a more equitable division of paid and unpaid work. If father's domestic skills and child care involvement are influenced in a long-lasting way after the paternity leave has ended, this could reduce the mother's 'double burden' in dual-income families, and support intentions to have additional children. Father's parental leave also implies more child care responsibility by fathers in the child's infancy and may stimulate men's interest in or orientation towards children (Duvander, *et al.* 2020). However, increased father involvement can also lower fertility, if his increased opportunity cost reduces demand for children or if caring for children is negative experience (Hart, *et al.,* 2019; Duvander, *et al.* 2020).

7.2   Parental leave across OECD countries

There are three main types of leave found in OECD countries.

1. **Maternity leave** (for mothers)
2. **Paternity leave** (for fathers)
3. **Parental leave** (offered to both parents) available equally to mothers and fathers, either as:
- a non-transferable individual right (i.e. both parents have an entitlement to an equal amount of leave); or
- an individual right that can be transferred to the other parent; or
- a family right that parents can divide between themselves as they choose.

In some countries such as Sweden there is only a single period of parental leave, however, one part of this generic postnatal leave can only be taken by mothers and another part only by fathers. In Australia, while there is no specific Maternity Leave, the Parental Leave is for the primary carer of the child which in the vast majority of cases is the mother, so in international comparisons it is often counted as 'maternity leave'.

Across OECD countries there is substantial variation in policies relating to parental leave. These variations include differences in eligibility requirements, duration of leave, remuneration level as well as flexibility (Baxter and Renda 2015). The ILO standard for maternity leave is 14 weeks, with the recommendation that the cash benefits to women during maternity leave should amount to at least two-thirds of their previous earnings (Rossin-Slater, 2018). Unlike most OECD countries, Australia's publicly funded parental leave pay is a flat rate based on National Minimum Wage rather than a percentage replacement wage. As shown in Figure 16 & Figure 17 for both parental and paternity leave Australia's average public payment rate[12] is approximately 43%, making it one of the one of the lowest among the OECD countries (OECD 2020a). Further, the duration of Australia's parental and paternity leave are short in comparison to other OECD countries.

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[12] The 'average payment rate' refers the proportion of previous earnings replaced by the benefit over the length of the paid leave entitlement for a person earning 100% of average national full-time earnings.

Figure 16 Total public paid leave available to mothers: duration and average payment rate, selected OECD countries 2018
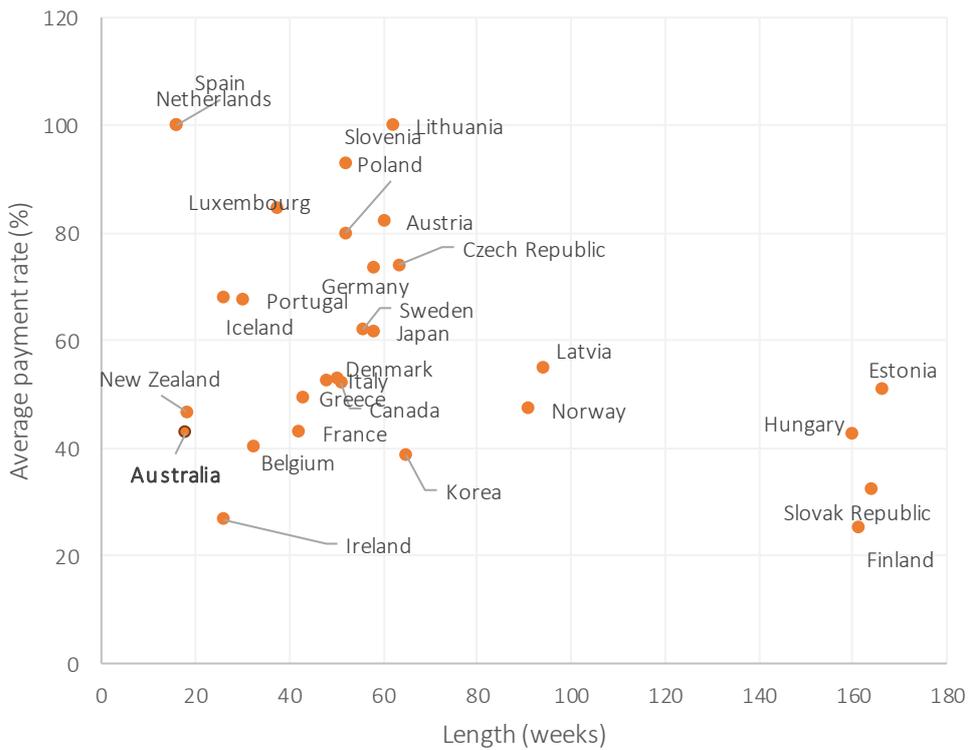
Figure 17 Total public paid leave available to fathers: duration and average payment rate, selected OECD countries 2018
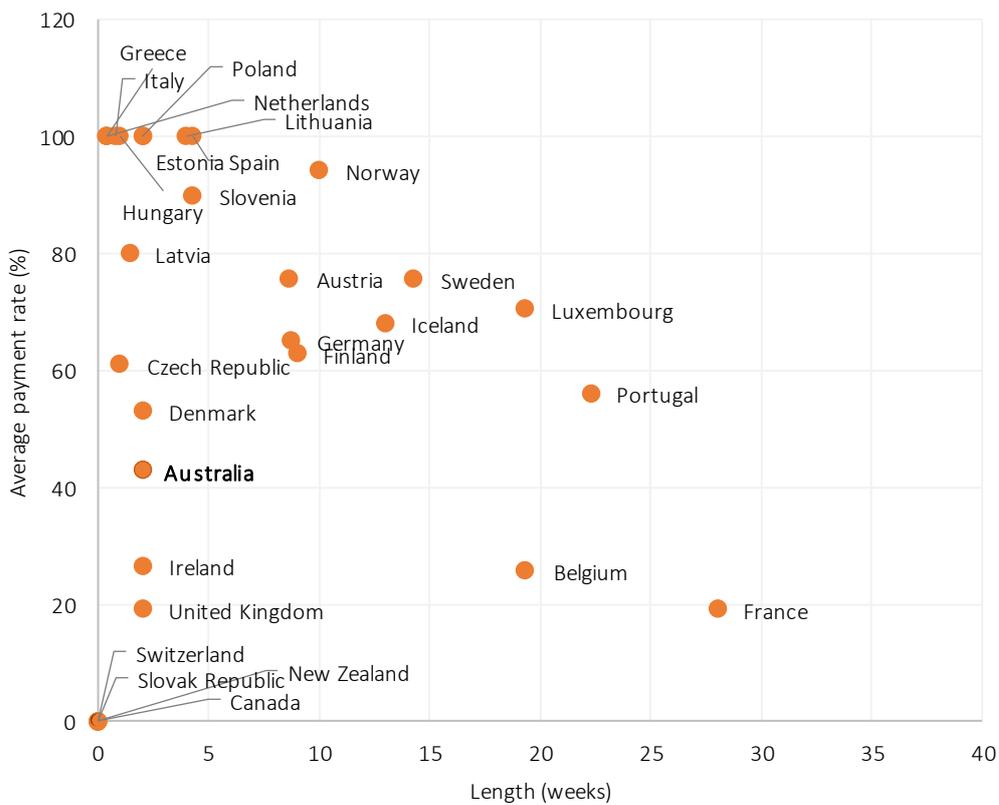
Source: OECD (2020) Table PF2.1A

Parental leave schemes across OECD countries increasingly aim to encourage fathers/carers to take time out of the workforce and fully care for their children. Several countries have introduced specific incentives to increase the use of parental leave by fathers. This includes making paternity leave mandatory, or on a use-it-or-lose it basis.

In Portugal, parental leave is for 120 days at 100% of earnings, or 150 days at 80% earnings. Mothers must take leave in the first six weeks following birth. Since 2019 fathers must take at least 20 working days of leave. The remaining period may be divided by the parents, but since 2009 there is an extra 30 days 'sharing bonus' if both parents take some of the leave. The sharing bonus comes into effect if each parent takes at least 30 consecutive days of leave or two periods of 15 consecutive days once the other parent returns to work (Wall, *et al.* 2020).

In Sweden, parents with joint custody are eligible for 240 days paid leave each. 195 days of the 240 leave days are income based, paid at 77.6% of earnings up to an earnings ceiling of SEK 348,750 (AUD 54,335) per year, and the remaining days are paid at a low flat rate. Of the income-based days, 90 of these days are ring-fenced or reserved for each parent and cannot be transferred. These are known as the 'mother's quota' and the 'father's quota'. The remaining 105 income-based days for each parent can be transferred to the other (Duvander & Löfgren, 2020).

These policies have led to high uptake rates of leave by fathers in these countries as seen in Figure 18.

Figure 18 Gender distribution of recipient/users of publicly administered leave benefits[a], selected countries 2016
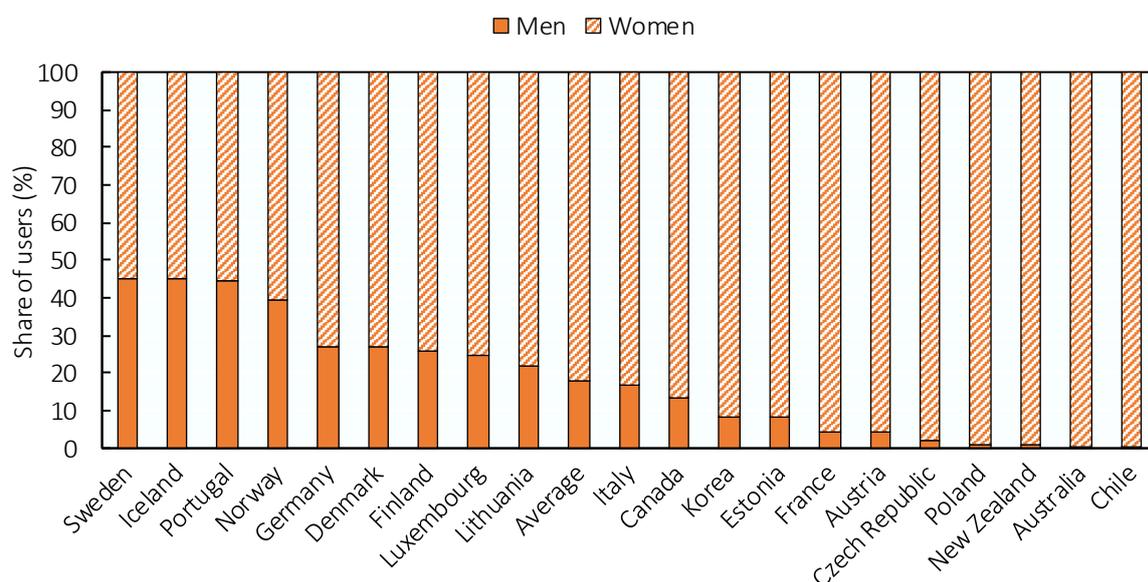
Source: OECD (2021), PF2.2

[a] Data refer to recipients/users of publicly administered parental leave benefits or publicly administered paid parental leave, and do not include users of maternity or paternity leave unless the country in question does not make a distinction between the different leaves (e.g. Iceland, Portugal). For Australia, data refer to recipients of 'Parental Leave Pay' only. For Austria, data refer to recipients of 'Kinderbetreuungsgeld' (child care allowance). For Canada, data refer to new employment insurance parental benefit claims established in the given year. Data do not cover parents in Québec, which since 2006 has administered its own parental benefits under the Québec Parental Insurance Plan. For Denmark, data refer to recipients of benefits for the 32-week 'common leave' period only. For Finland, data refer to recipients of the sharable parental allowance plus the paternity allowance after the parental allowance period. For France, data refer to recipients of CLCA or PreParE. For Germany, data refer to recipients of 'Elterngeld' (parental allowance) with children born in the given year. For Iceland, data refer to recipients of any benefits in relation to maternity/paternity (i.e. benefits paid during either the

mother- or father-quota or during the sharable period of parental leave). For Lithuania, data refer to recipients of both the parental benefit for children under one year of age and the parental allowance for children aged between one and two. For Korea, data refer to recipients of employment insurance parental leave benefits and cover private sector employees only. For New Zealand, data refer to recipients of 'Primary Carer Leave' benefits. For Portugal, data refer to recipients of benefits for 'Initial Parental Leave' only. In all cases, data refer only to those using statutory schemes and do not include individual's using only employer-provided parental leave or parental leave pay. Data for Germany refer to 2015.

7.3 Parental leave in Australia

Australia's parental leave policy has undergone several significant reforms as shown in Table 12. Starting in 1973, 12 weeks paid maternity leave for federal public servants (Brennan, 2009). Following this, in 1979 unpaid maternity leave for eligible permanent workers was introduced. More recently, in 2010, the main labour law (The Fair Work Act, 2009) was changed to allow both men and women to each have access to 52 weeks of unpaid parental leave. For eligible employed couples this would total 104 weeks. If one partner does not use their allocation, the other has the right to request an extension to their unpaid leave by the amount not used by the other partner.

Table 12 Timeline of parental leave policies in Australia

Year	Policy
1973	*Australian Public Service Maternity Leave (Australian Government Employees) Act, 1973* 12 weeks paid maternity leave, and 40 weeks unpaid maternity leave for federal public servants
1979	Unpaid maternity leave – 52 weeks
1990	Unpaid maternity leave could be shared with fathers
2006	Unpaid parental leave extended to casual employees
2010	Unpaid parental leave for both men and women – each parent entitled to 52 weeks
2011	18 weeks Parental Leave Pay (PLP)
2013	2 week Dad and Partner Pay (DaPP) introduced

Source: (OECD, 2021), PF 2.5 Annex

The Commonwealth Government first introduced a Parental Leave Pay (PLP) scheme in 2011, providing parental leave pay for 18 weeks (90 payable days) to a newborn's primary carer paid at the minimum wage. As the payment is not pro-rated, for women who worked less than full-time prior to birth, their wage replacement can be higher than their pre-birth wage income (Baird & O'Brien, 2015). In 2013, two weeks of Dad and Partner Pay (DaPP) was introduced with the same work requirements and maximum income test as PLP. More details about PLP and DaPP are shown in Table 13.

Many employers also provide paid parental leave, often regulated through industrial agreements. The proportion of employers who offer paid parental leave varies according to industry, for example in 2015-16, around 20% of retail trade employers provided paid parental leave, compared to 84% of employers in Education and Training (Workplace Gender Equality Agency, 2017). Some employers top up the PLP to employee's full wage, whereas others pay the full wage on top of the PLP. Australia therefore has a hybrid system of unpaid leave available through labour law, a government-funded scheme, plus employer provided paid parental leave achieved either through bargaining or company policy (Baird, *et al.* 2021).

Table 13 Summary of Australia's current Parental Leave policies

Unpaid leave - 52 weeks
All employees are eligible if they have completed at least 12 months of continuous service with their employer.   Casual employees are eligible if employed by the employer on a regular and systematic basis for a sequence of periods over at least 12 months and would reasonably have expected to continue working for their employer on a regular and systematic basis, had it not been for the birth or adoption of a child.   If only the primary caregiver decides to take leave, they may request additional leave (up to 12 months) from their employer.

Parental Leave Pay (PLP) - 18 weeks (90 payment days) at National Minimum Wage
Objectives: To provide financial support to primary carers (mainly birth mothers) of children, in order to: • allow those carers to take time off work to care for the child in the 2 years following the child's birth or adoption   • enhance the health and development of birth mothers and children   • encourage women to continue to participate in the workforce   • promote equality between men and women, and the balance between work and family life, and   • provide those carers with greater flexibility to balance work and family life (Department of Social Services, 2021).   **Eligibility**   • Worked for 10 out of 13 months before the birth or adoption of the child.   • Worked a minimum of 330 hours, around 1 day a week, in that 10 month period without a gap of more than 12 weeks between each working day of that 10 month period.   • An individual adjusted taxable income of $150,000 or less.   • Self-employed workers can access PLP if they meet residential and work-test requirements   PLP can be received during unpaid or paid leave, and be transferred from one parent to the other where the primary carer for the child changes. PLP must be completed by 12 months after the birth.   From 1 July 2020, the PLP can be split into one fixed period of 12 weeks and one flexible period of 4 weeks. The fixed 12 weeks are taken continuously and within the first 12 months of the birth, but the flexible part can be taken in blocks after the 12 months, but within 24 months of the birth or adoption of the child and can be taken as negotiated by the employee with their employer.   Taxable payment.

Dad and Partner Pay (DaPP) - 2 weeks (10 payable days) at National Minimum Wage
Objectives   To provide financial support to fathers and partners caring for newborn or newly adopted children, in order to: • increase the time that fathers and partners take off work around the time of birth or adoption, and   • create further opportunities for fathers and partners to bond with the child, and   • allow fathers and partners to take a greater share of caring responsibilities and to support mothers and partners from the beginning (Department of Social Services, 2021).   **Eligibility**   Same work requirements and maximum income test as PLP.   Must be taken while on unpaid leave. Can be accessed at any time in the first 12 months after the child's birth or adoption.   Taxable payment.

Although officially called 'Parental Leave Pay', it is designed to be claimed by the primary carer who must be the mother[13]. If the primary and secondary carer are both eligible, the primary carer (mother) can transfer some or all of her PLP to the secondary carer. The transfer must occur consecutively so that the PLP is taken in a continuous block. Such transfers to fathers or partners are rare. For example, in 2016-17 a total of 170,925 mothers claimed PLP, and just 738 (0.4%) transferred some or all the benefits to fathers/partners (Widiss, 2021). As a result of the low transfer rate since it started in 2011, 99.5% of PLP recipients have been mothers (Wood, *et al.* 2020).

Fathers are more likely to use the Dad and Partner Pay, although uptake is relatively low. Despite being designed on a use-it-or-lose-it basis, it has been estimated to be used by approximately 25% of eligible fathers (Baird, *et al.* 2021). A higher uptake figure was suggested by a survey conducted by the University of Queensland of fathers whose partners gave birth in April 2013. This survey found that 36% of eligible fathers chose to take DaPP, with higher rates among those who were casually employed or self-employed (Institute for Social Science Research, 2014). As a guide, Table 14 shows the number of individuals assisted with PLP and DaPP in recent financial years, as well as the number of births by financial year. If all fathers were eligible for DaPP, then uptake would have been around 30% in the 2019-20 financial year. Given not all fathers would meet the income and work hours test, or be a carer for the child, then uptake of eligible fathers is likely slightly higher.

Table 14 Number of individuals assisted with PLP and DaPP, and estimated number of births, by financial year

	2019-20	2018-19	2017-18
Number of individuals assisted with Parental Leave Pay[a]	171,712	178,758	159,372
Number of individuals assisted with Dad and Partner Pay[b]	92,343	91,762	81,882
Number of births	304,100.0	304,700	304,600
% of all mothers	56	59	52
% of all fathers	30	30	27

Source: (Department of Social Services , 2020; Australian Bureau of Statistics, 2021b)

[a] For Parental Leave Pay this is the number of individuals and families who started receiving payment in the financial year.
[b] For Dad and Partner Pay this is the number of individuals and families who received payment in the financial year

Social and economic considerations have been put forward to explain the low uptake by fathers of DaPP as well as PLP. The low level of payment means that taking leave would in many cases represent a substantial loss of income for the family (KPMG, 2020; Wood, *et al.* 2021). For PLP, it has also been suggested that fathers may be unaware of their parental leave entitlements and the application process is complex making it difficult to access leave (Strazdins & Townsend, 2019). For DaPP some fathers may also view the administrative burden too high given the reasonably small payment (Baird, *et al.*, 2021). In addition, entrenched social views regarding gender roles and the stereotype of the male-breadwinner mean that many men feel a stigma around taking leave and this is reinforced by a lack of organisational and colleague support (Walsh, 2018; KPMG, 2021). These social barriers which

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[13] The primary carer, can also be the initial primary carer of an adopted child placed in care by an authorised party for the purpose of adoption, or another person caring for a child under exceptional circumstances such as severe illness or serious accident (Services Australia, 2021b).

make men ashamed to take leave or worry about the impacts on their careers pose a barrier for greater uptake of PLP and DaPP (Strazdins & Townsend, 2019).

The low update of PLP and DaPP by Australian fathers is similar to what has been found in the United Kingdom. In the UK, qualitative studies suggest that barriers to uptake include poor policy communication and perceived policy complexity, low payment making it not financially feasible, and perceptions of low support by workplaces, as well as societal expectations around gender roles (Birkett & Forbes, 2019; Kaufman, 2018). However, an evaluation of PLP and DaPP a year after DaPP was introduced found evidence that DaPP is starting to create some cultural and attitudinal change. Interviews with fathers highlighted that for some fathers, the very introduction of DaPP represented a clear message that they should be supported and promoted to prioritise spending time with their newborn, and taking time away from work to do so. The existence of DaPP increased their confidence to insist on their right to take leave after a birth, even in the face of resistance from managers, workmates or employers (Institute for Social Science Research, 2014).

7.4   Does parental leave increase fertility?

Evidence from Australia

Only one study has examined the effect of the PLP introduction on fertility (intentions) in Australia. Using HILDA data, and exploiting the fact that the PLP has comparatively little effect on public sector workers, and a larger impact on private sector workers, Bassford & Fisher (2020) found that conditional on expecting to have at least one more child, access to paid leave increased the number of intended children by 0.34 (16% increase) particularly among those with higher education. They conclude that despite it not being intended as a pro-natalist policy that it may lead to a positive impact on fertility (Bassford & Fisher, 2020).

Evidence from other countries

Studies of major reforms in other countries are summarised in Table 15. Similar to Bassford & Fisher's (2020) study of fertility intentions in Australia, the introduction in 2005 of 14 weeks paid maternity leave in Switzerland also increased fertility intentions (Barbos & Milovanska-Farrington, 2019).

Several studies have looked at the effect of changes in generosity of parental leave pay. In Quebec, a substantial increase in generosity of maternity pay in 2006 from a replacement of 55% to 70%, for 30 out of 55 weeks of the parental leave period, lead to an increase in birth rates by 23.5% in Quebec compared to other provinces who did not have this reform (Ang, 2015). In Germany, a 2007 reform moving from a flat rate to replacement wage of 67% for maternity pay had heterogeneous effects: for some women this reform was advantageous whereas for lower income women the replacement rate was less generous compared to the flat rate. Raute (2019) suggest that tertiary-educated women experienced an increase in fertility because of this reform, whereas Cygan-Rehm (2016) suggests that higher income women were only weakly incentivised, and the overall effect was to lead to fertility postponement and possible overall fertility reduction as lower income women were negatively affected by the reform and adjusted their childbearing downwards accordingly.

Changes in the duration of parental payment can also introduce a 'speed effect' where couples shorten the timing between the 2nd and 3rd birth. This speed effect has been observed in reforms introduced in Czechia, Austria, and Sweden. In Czechia a reform was introduced to make parental leave more generous, but also more flexible, with families able to choose to have a higher replacement

rate if the leave is taken for a shorter period of time (e.g. two years) compared to three years. This introduced a 'speed bonus' that encouraged families to continue childbearing while on parental leave and chose the shorter and better paid parental leave period. The result was not only families shortening the interval between first and second children, but also being more likely to have a second birth at all. In Austria the introduction of a similar 'speed bonus' in 1990 when parental payment was extended from 1 to 2 years lead to increased fertility. In one study, short-term fertility (within 3 years) increased by about 36% relative to the baseline (Lalive & Zweimüller, 2009). However there is mixed evidence if long term fertility also increased, with one study finding a possible positive long term impact (Lalive & Zweimüller, 2009), while others find no lasting increase in the progression rate to second and third children (Prskawetz, *et al.,* 2008; Šťastná & Sobotka, 2009).

In Sweden, in 1980 a reform was introduced which meant that if parents spaced their births within 24 months, they would be guaranteed the replacement rate of their pre-birth salary which applied to the preceding birth if the earlier benefit level was above what the parents would otherwise gain a right to during the inter-birth interval. This was an incentive for women who might otherwise have had a lower income due to going part-time after the birth of a first child. In 1986, it was extended to thirty months. The effect was to shorten the time interval between 1st and 2nd children, and 2nd to 3rd children (Andersson, 2002), and this behaviour has been evident across all education levels (Andersson, *et al.* 2006)

While the studies above looked at paid parental leave, evidence from the United States suggests that even the introduction of unpaid maternity leave had a positive effect on fertility. In 1993, the United States introduced 12 weeks of unpaid job-protected leave (Family and Medical Leave Act). Cannonier (2014) found an increase in the probability of both first and second births for eligible women by 5 percentage points for a first birth and 3 percentage points for a second birth.

Table 15 Studies on parental leave reforms and fertility

Country	Policy change	Fertility outcome	Impact on fertility	Study
AUSTRALIA	2011 introduction of paid parental leave for 18 weeks - flat rate	Intended number of children	Increase, particularly for women with higher education	(Bassford & Fisher, 2020)
SWITZERLAND	2005 expansion of maternity leave from 8 weeks unpaid to 14 weeks paid.	Fertility intentions (plan to have a child in next 3 years)	Increase in fertility intentions	(Barbos & Milovanska-Farrington, 2019)
CANADA (QUEBEC)	2006 increase in wage replacement from 55 to 70%, for 30 out of 55 weeks of the parental leave period	Probability of having a child	Increase in birth rates by 23.5% compared to other Canadian provinces. Possible positive effect on quantum, not just tempo.	(Ang, 2015)
GERMANY	2007 reform from flat rate to replacement wage of 67%	Birth probability	23% increase in fertility of tertiary-educated women (within 5 years).	(Raute, 2019)
		Birth probability	Lower-income women who were negatively affected by the reform lowered their higher-order fertility. Higher income women were only weakly incentivised. Overall effect was fertility postponement and possible overall reduction.	(Cygan-Rehm, 2016)
CZECHIA	Several policy changes including introduction of a speed premium in 2008 and added flexibility in 2012. 2008: Three "speeds" of parental leave pay—amounts set at fixed monthly rates according to the duration of drawing: 1. up to the second birthday (50% of the average wage) 2. up to the third birthday (33% of the average wage) or 3. up to the fourth birthday (33% of the average wage up to the 21st month and 17% from the 22nd month) 2012: Free choice on the monthly amount up to a fixed total sum of CZK 220,000 (~AUD 11,000) with a maximum benefit of CZK 11,500 (~AUD 575) per month (45% of the average wage) up to the second birthday.	Timing to second birth Progression rate to second birth up to 10 year after first birth.	Shortening of duration between first and second birth Evidence of long term effect on positive progression rate to second birth	(Šťastná, et al. 2020)

Table 15 Studies on parental leave reforms and fertility (continued)

Country	Policy change	Fertility outcome	Impact on fertility	Study
AUSTRIA	1990 extension of a flat-rate parental payment (40 per cent of women's net income) from one to two years.	Higher order births, 3 years and 10 years after a first birth	Short term fertility (within 3 years) increased by about 36% relative to the baseline, while longer term fertility also increased	(Lalive & Zweimüller, 2009)
		Duration-specific second and third birth probabilities and progression rates	Increase in second and third-birth rates at intervals 21-26 months after the previous birth. No lasting effect on overall progression rates.	(Šťastná & Sobotka, 2009)
		Second and third birth probabilities and progression rates	No lasting increase in progression rate to second and third child.	(Prskawetz, *et al.* 2008)
SWEDEN	1980 reform allowing parents to keep an earlier (and often higher) level of income compensation during leave if a next child arrives within 24 months. In 1986 the period was extended to 30 months	Second and third birth probabilities	Increase in tempo of second and third births	(Andersson 2002)
UNITED STATES	1993 introduction of 12 week unpaid job-protected leave (Family and Medical Leave Act)	Probability of first and second birth	Increase in probability of first and second birth- larger effect for first birth. Positive effect on completed fertility, particularly for college-educated women.	(Cannonier, 2014)

Paternity leave

Numerous studies from Sweden and Norway and Iceland show couples where the father took parental leave with the first child are more likely to have a second child (Olah, 2003; Duvander & Andersson, 2006; Lappegård, 2010; Duvander, *et al.*, 2019). These studies provide support for the idea that father's leave taking encourages fertility. However, they do not take into account selection effects and therefore are not able to establish a causal relationship. It is possible that fathers who are more family-oriented and more likely to be inclined to have more children are also those more likely to take parental leave (Duvander & Andersson, 2006).

Only a few studies have dealt with these endogeneity issues by looking at the effect of specific reforms, as outlined in Table 16. The study by Duvander, *et al.* (2020) examined what, if any, effect the introduction of 4 week 'father quotas' had on the probability of couples having a second child and third child in Norway and Sweden. Crucially while both Sweden and Norway introduced these quotas in the early 1990s, the authors note that at the time of their introduction in Sweden almost half of fathers had already been using some parental leave and therefore the reform was not radical. Instead, it seemed to have the effect of inducing fathers with lower education and lower income who had previously not been using parental leave to take it up. In contrast, in Norway the reform was more radical from a social perspective as Norwegian fathers at the time had low uptake of parental leave. Thus, in Norway, after the reform, it was the 'forerunners' who started using the leave. This points to the importance of understanding the social setting at the introduction of a reform, as a similar reform can have different effects in different social settings. They found that the reform did not influence fertility in Norway, which is substantiated by another study of the same reform in Norway by Cools, *et al.,* (2015). However, in Sweden the introduction of a father quota led to a temporary rise in third birth risks among lower income couples in Sweden.

In Norway, a further extension of the father quota in 2009 from 6 to 10 weeks also had no effect on subsequent fertility in the next 5 years (Hart, *et al.* 2019). In contrast, in Spain the 2007 introduction of paid paternity leave led to a delay in subsequent fertility with eligible couples less likely to have a child within the next six years. The authors suggest that possible reasons could be that fathers' increasing involvement in child care led to higher labour force attachment among mothers which may have raised the opportunity cost of an additional child. In addition, men reported lower desired fertility after the reform, possibly due to their increased awareness of the costs of childrearing, or to a shift in preferences to invest more in each existing child (Farré & González, 2019).

Table 16 Studies on paternity leave reforms and fertility

Country	Policy change	Fertility outcome	Impact on fertility	Study
SPAIN	2007 introduction of paid paternity leave	Timing to next child	Delay in subsequent fertility	(Farré & González, 2019)
NORWAY	1993 introduction of 4 week 'father quota' in the parental leave scheme	Probability of subsequent children and completed fertility	No effect	(Cools, *et al.*, 2015)
		Probability of second and third births	No effect	(Duvander, *et al.* 2020)
	2009 extension of 'father quota' from 6 to 10 weeks	Probability of subsequent children	No effect within 5 years	(Hart, *et al.* 2019)
SWEDEN	1995 introduction of 4 week 'father quota' in the parental leave scheme	Probability of second and third births	Temporary increase in probability of third-births among lower income couples.	(Duvander, *et al.* 2020)

7.5   Conclusion

The high care needs of infants necessitate one or both parents taking some time out of work to care for the newborn. In countries, such as Australia, where the majority of couples work before the birth of the child having paid parental leave allows parents to have the security of keeping their job while they care for their newborn, and also partially compensates for lost income. For mothers, paid maternity leave is expected to have a positive effect on fertility as it allows women to have a child while mitigating lost income. For paternity leave, the effect on fertility is more theoretically ambiguous. If fathers become more involved in child care, this could relieve some pressure on women and may also make fathers themselves more child-oriented and more likely to want children if they find it is a positive experience. On the other hand, the increased opportunity cost to fathers may instead reduce their fertility intentions. Australia introduced paid parental leave in 2011, and paid paternity leave in 2013 which is relatively late compared to other OECD countries. Uptake of paid paternity leave has been low, in part due to cultural barriers including stereotypes regarding men's role as breadwinners. In line with the diversity and complexity of parental leave policies, the corresponding fertility effects found in the studies of reforms are highly dependent on the population under scrutiny (Bergsvik, *et al.* 2020). Overall reforms which have increased the generosity of parental leave have been accompanied by increased birth probabilities. Reforms which have increased the duration of leave, including with stipulations that the leave would continue at the birth of next child, appear to induce a 'speed bonus' leading to a shortening of intervals between births.

Relatively few studies have specifically looked at paternity leave reforms, and the results from these are inconclusive and appear largely dependent on the social context in which they are introduced and the existing gender roles.

8   Child care

Key points

- Child care can theoretically have a positive effect on childbearing by increasing work-family compatibility.
- OECD countries vary widely in the provision of child care, including whether child care is publicly provided or market-based, net costs to parents, enrolment rates, and whether it is designed as a separate or unitary model.
- In Australia, child care is primarily market based, and subsidized by the government through the Child Care Subsidy.
- However child care costs remain high for many parents, and are a disincentive to female labour force participation and possibly to childbearing.
- Evidence from overseas suggests that increased child care provision has a positive effect on fertility, particularly for first births but also for higher order births.

8.1   Theoretical link between child care and fertility

Child care provision increases the compatibility of paid work and parenthood by reducing the high opportunity cost of parenting, including foregone wages from being out of the labour force, as well as loss of skill development that could reduce wages upon re-entry (Rindfuss, *et al.,* 2010). While it is possible that child care availability may induce some women to enter (or remain) in the labour market; and being in the labour market could lead to a reduction of their fertility; in countries where most women are already in the labour market, and where two incomes are seen as necessary for a good standard of living the overall effect on fertility should be to positive (Baizán, 2009).

8.2   Child care across OECD countries

One of the main differences in child care provision across OECD countries is whether they rely primarily on public or market operation. Consistent with the social-democratic welfare state approach, most Nordic countries provide Early Childhood Education and Care (ECEC) through large-scale publicly operated and/or publicly subsidised ECEC systems. Direct public provision of ECEC services provides authorities with discretion over the fees charged, but it can be expensive and the supply of places is dependent on the level and efficiency of public funding. France, for example, provides children with either free or low-cost public services, depending on age; however, in practice, there are frequently shortages in the supply of public places, especially in public crèche facilities for children under age three (OECD, 2020a).

Other OECD countries, including Australia, Ireland, the United Kingdom and United States, consistent with the liberal welfare state approach, rely much more on market based ECEC systems, with services provided mostly by a mix of for-profit and not-for-profit private facilities. Public child care support in these countries mostly consists of cash benefits or tax concessions for parents with children in non-parental care, often on an income-tested basis. Public provision or government subsidies to ECEC providers may coexist with a market-based provision but are typically restricted to services aimed at the most disadvantaged families only. Market-based ECEC systems are advantageous in that they can generally react to increased demand faster. However, the lack of government control of fees means that costs to parents tend to be higher. Without fee regulation by government and/or well-designed public benefits for child care users, net costs to parents can be very high and there may be insufficient coverage in poorer, less profitable areas. (OECD, 2020a).

As seen in Figure 19, countries which rely on publicly operated/funded ECEC spend a large percentage of their GDP on ECEC compared to other countries. In 2015, the average public expenditure across OECD countries for child-care and pre-primary as a percentage of their GDP was 0.74%. The Nordic countries such as Iceland, Sweden, Norway, Denmark and Finland spend over 1% of their GDP on ECEC. Spending is also relatively high in New Zealand, with most of it focused on pre-primary education or 'early childhood education' from ages 3 and above. In Australia, spending is slightly below the OECD average at 0.66% of GDP[14], with a greater focus on child care.

Figure 19 Public spending on child care and pre-primary education, as percentage of GDP spent, selected OECD countries 2015
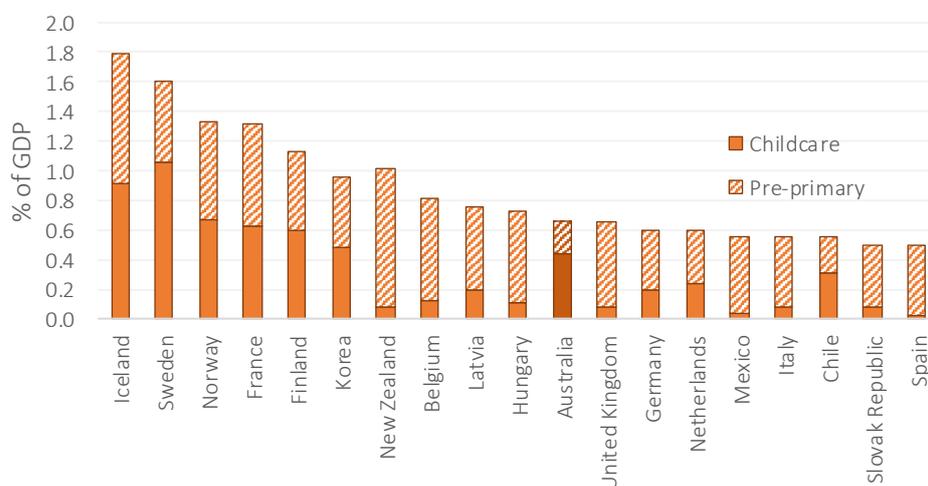
Source: OECD Family Database, 2021, PF3.1.A

Separate or unitary model

Another dimension on which countries vary is whether they have a unitary or split system for care and early childhood education. Prior to primary education, ECEC has two aspects with different objectives:

Care: Mainly intended to enable parents to work while the child's safety and care are ensured.

Early childhood education: services with an intentional educational component to support child development and prepare for primary education.

In split systems, the services for 0–3-year-old (day care) and 3–6-year-old (pre-school) children are delivered and managed in a different way, by different authorities. On the other hand, unitary systems harmonise the services and resources for both age groups and are managed by a single authority. (European Commission, 2019). Historically, child care was the focus for younger children whereas early childhood education was the approach for older children in the years preceding primary education. Currently, a unitary or integrated 'early childhood education and care' approach is

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[14] The latest available data is used, from the OECD Family Database. Spending for all countries may have changed since 2015.

becoming more prominent with countries increasingly integrating their ECEC policies and regulations (European Commission, 2019).

Figure 20 Illustration of separate and unitary ECEC systems
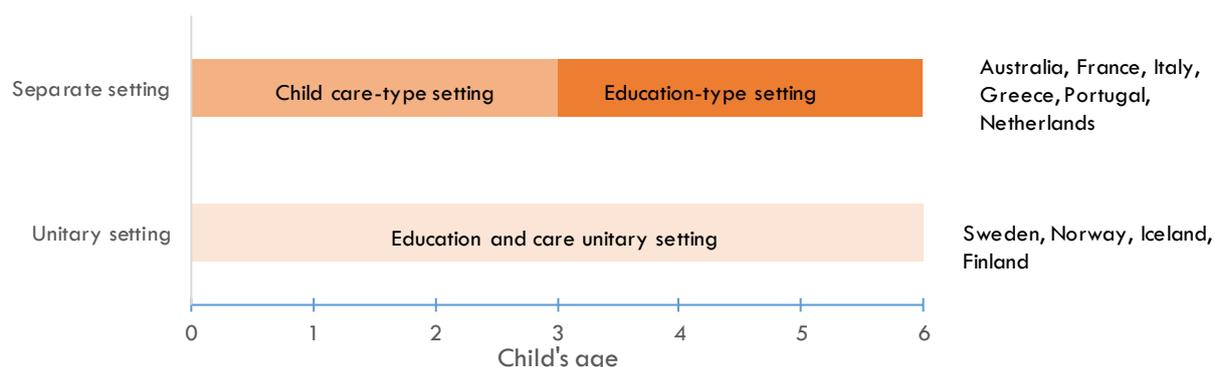
In Australia, education and care is increasingly becoming integrated in practise, but funding mechanisms remain largely divided in line with historic classifications with preschool funding and delivery involving all levels of government (including local government), while child care subsidies have largely been the purview of the Australian Government (Hurley, *et al.,* 2020).

Child care Cost

Countries also differ in how affordable child care is for parents. In many countries, including Australia, the cost of child care can be a significant deterrent preventing increased use as increased working hours result in little or no immediate financial gain (Baxter & Renda, 2015). Figure 21 shows the net child care costs[15] across a range of OECD countries for full-time care in a typical child care centre for a two-child family, where both parents are in full-time employment and the children are aged 2 and 3. The children are assumed to attend for at least 40 hours per week, and the parents earn the median earnings of the full-time gender specific earnings distribution. It is important to note that the figure provides a broad overview of costs for one scenario, but in different countries for parents in other situations, for example with very low-income the net costs would be different.

Generally, the Anglo-Saxon countries including the United Kingdom, New Zealand, Ireland, United States, Canada and Australia, which rely more heavily on market provision and where providers have autonomy in setting the price, the costs to parents are relatively high even after accounting for government funded subsidies. For example in New Zealand, although the government provides a Child Care Subsidy for fees (similar to Australia), the net costs to parents in this scenario is nearly 40% of the average earnings. Countries which rely more on public provision such as Iceland and Sweden and which also have various fee caps or free hours of child care tend to translate to a lower net cost for parents.

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[15] Net child care costs are gross fees less child care benefits/rebates and tax deductions, plus any resulting changes in other taxes and benefits following the use of child care.

Figure 21 Net child care costs for a two-earner two-child (aged 2 and 3) couple family with full-time earnings at 100+67% of average earnings, as a % of average earnings (AW), 2015
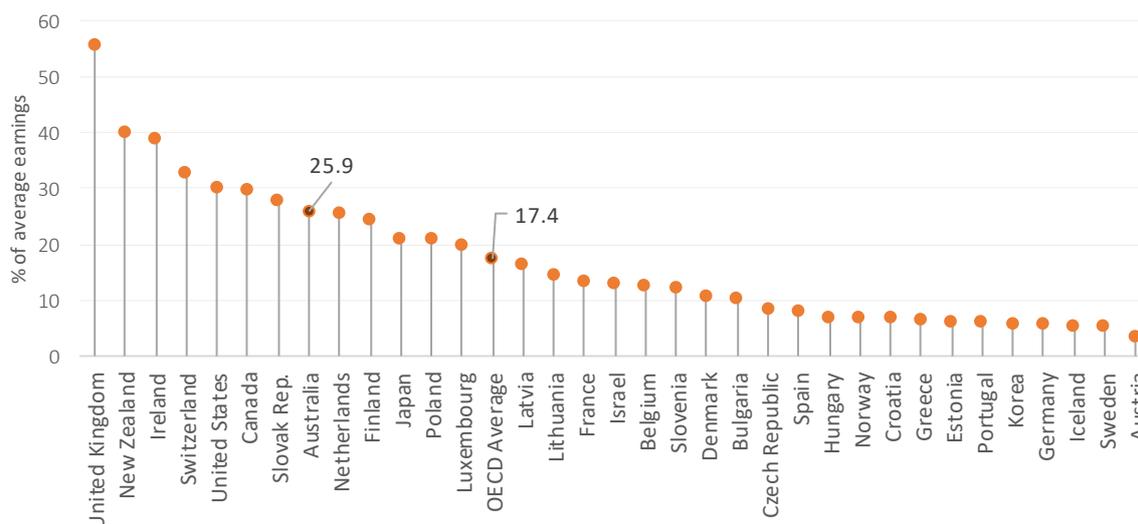
Source: (OECD, OECD Family Database, 2021), Part PF3.4B

Note: Data for the following countries is based on the cost in a specific region or city (detailed in brackets), rather than for the country as a whole: United Kingdom (England), Switzerland (Zurich), United States (Michigan), Canada (Ontario), Finland (Helsinki), Japan (Tokyo), Poland (Warsaw), Belgium (Wallonie), Bulgaria (Sofia), Germany (Hamburg), Iceland (Reykjavik), Austria (Vienna).

One measure to increase affordability to parents is to provide a number of free hours of publicly funded child care (Table 17). In European countries, from around age 3 almost half offer publicly funded ECEC for at least a few hours per week. In many countries, this is a period of transition when children change from a child care-type to an education-type setting (European Commission, 2019). For example, the New Zealand government offers 20 hours of publicly funded ECEC from ages 3-5 at any ECE service that is registered to administer the Ministry of Education 20 Hour ECE scheme. This is universal and not dependent on the income of the parents.

Table 17 Free hours by country, age coverage and eligibility

Country	Number of hours free	Ages of children	Eligibility
NEW ZEALAND	20 hours	3,4,5	Universal- not dependent on income, work status or immigration status
SWEDEN	15 hours	3,4,5	Universal- not dependent on income, work status or immigration status
ENGLAND	15 -30 hours	3,4	All children get 15 hours, if parents work it increases to 30 hours free. Disadvantaged 2-year-olds also get 15 hours free ECEC.
NORWAY	20 hours	3,4,5	If low income

Many countries also set a fee ceiling for child care costs. Usually, countries set the fee ceiling as a specific figure, but sometimes the limit is expressed as a proportion of family income or ECEC costs (or a combination of the two). For example in Finland, the maximum fee for the first child is EUR 288

(AUD 456) per month and the minimum EUR 27. If there is more than one child in a family, the fee for the family's second child is at most 50% of the fee for the family's youngest child, i.e. a maximum of (AUD 228) EUR 144 per month. The fee for the family's next child is 20% of the fee charged for the youngest child[16]. In Sweden, child care fees are capped at a proportion of family income, but also further capped at specific amounts, as seen in Box 1. In addition, countries may offer other policy measures such as tax relief to help families with ECEC costs. In Austria, AUD 3,649 (EUR 2,300) per year for child care (up to the age of 10) is tax deductible, and further deductions are possible for single parents. Some countries also provide partial compensation for fees paid by families for private provision. For example, in some municipalities in Lithuania, parents whose child is not given a place in a public ECEC setting receive financial support of EUR 100 per month to partly cover the cost of an ECEC place in a private ECEC setting and in Finland, families can opt for private ECEC with the help of a private care allowance provided by the state, or vouchers many municipalities (European Commission, 2019).

Enrolment

Across OECD countries there are vast differences in enrolment rates in ECEC. The percent of children aged 0-2 enrolled in early childhood education and care across selected OECD countries is shown in Figure 22. The Netherlands, Korea and Luxembourg have enrolment rates above 60%, and the Nordic countries also have high enrolment rates. However, enrolment rates hide a wide variation in hours of usage. For example, while the Netherlands and Norway both have high enrolment rates, in the Netherlands the average weekly hours of use is 17.1 whereas in Norway it is considerably higher at 34.6 hours (OECD, 2021).

Figure 22 Percent of children enrolled in early childhood education and care services (ISCED 0 and other registered ECEC services), 0- to 2-year-olds, 2019 or latest available. Selected OECD countries
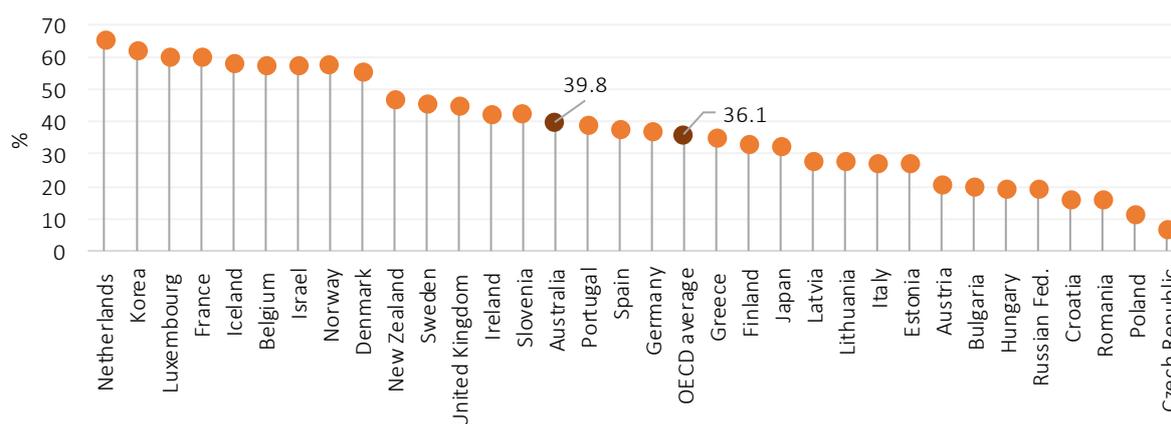
Source: (OECD Family Database, 2021), PF3.2.A

Data generally include children enrolled in early childhood education services (ISCED 2011 level 0) and other registered ECEC services (ECEC services outside the scope of ISCED 0, because they are not in adherence with all ISCED-2011 criteria). Data for Denmark, Finland, Spain, and the Russian Federation refers to 2018 and includes only early childhood education and care (ISCED 0). Potential mismatches between the enrolment data and the coverage of the population data (in terms of geographic coverage and/or the reference dates used) may affect enrolment rates. Data for Belgium, Czech Republic, France, Greece, Hungary, Ireland, Italy, Latvia, Luxembourg, Netherlands, Poland, UK, Bulgaria, Croatia, and Romania are OECD estimates for 2019 based on information from EU-SILC. Data refer to children using centre-based services (e.g. nurseries or daycare centres and pre-schools, both public and private), organised family daycare, and care services provided by (paid) professional childminders, regardless of whether or not the service is registered or ISCED-recognised.

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[16] https://minedu.fi/en/client-fees-ecec

Box 1 Sweden's Early Childhood Education and Care

Sweden's Early Childhood Education and Care

Sweden's ECEC consists of centres aimed at children aged between 1 and 6 years, and pre-primary class from age 6 to 7.

- Between 1 and 6 children can attend unitary centres (förskola) or pedagogical care. Many local authorities also offer ECEC services in open pre-schools (öppen förskola) for stay-at-home parents, where parents (or childminders) come along with their children whenever they wish.
    - Children are entitled to a spot in child care from age 1
    - From age 3 they are entitled to 525 hours per year of free care (approximately 15 hours a week)
- Children whose parents are working or studying have the right to a publicly subsided place in an after-school recreation centre.
- Between 6 and 7 children attend pre-primary classes (förskoleclass) which is usually closely associated with the school the pupil will attend. This pre-primary class is compulsory and free of charge.
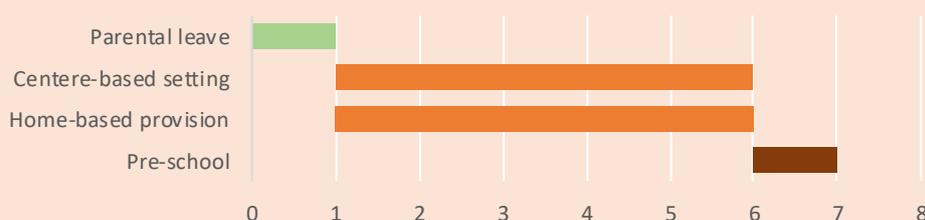
The fee for centre-based or pedagogical care is based on a percentage of the household's combined income and the number of children attending ECEC. Higher income households pay higher fees but there is an income cap at which point fees are capped. The upper income limit cap for preschools is 50,340 SEK (approximately 7,841 AUD)/month in 2021 with any families with an income above this being measured as 50,340 as well. Low income families pay nothing.

Families pay different fees for each child, the highest fee is paid for the oldest child in steps until the fourth child. From the fourth child and further no fee needs to be paid for the care of additional children.

For children aged 3–5, the fee is reduced by 25%. If the child attends the establishment for 15 hours a week or less, the universal preschool is free of charge .

Fees for ECEC 2021

Child	% of monthly income	Maximum monthly cost in SEK	Maximum monthly cost in AUD
Child 1	3%	1,510 SEK	235
Child 2	2%	1,007 SEK	157
Child 3	1%	503 SEK	78
Child 4+	no fee	-	

In 2019, participation rates were 51% for children aged 1, 91% for children aged 2, 94% for children aged 3 and 95% for children aged 4 (National Agency for Education (Skolverket), 2021)

Source: European Commission, 2019

Public opinion regarding child care

Another important difference between countries is public opinion regarding who should be the provider of child care. As seen earlier, in Table 3, views on who should provide child care for children under-school age differs by social context. In the Nordic countries, a high percentage of the public believe that government agencies should be the main provider of child care, whereas in other countries, notably eastern-European ones such as Latvia and Poland the majority believe it should be family members who are the main providers of care.

Figure 23 Public opinion regarding who should be the main provider of child care for children under school-age
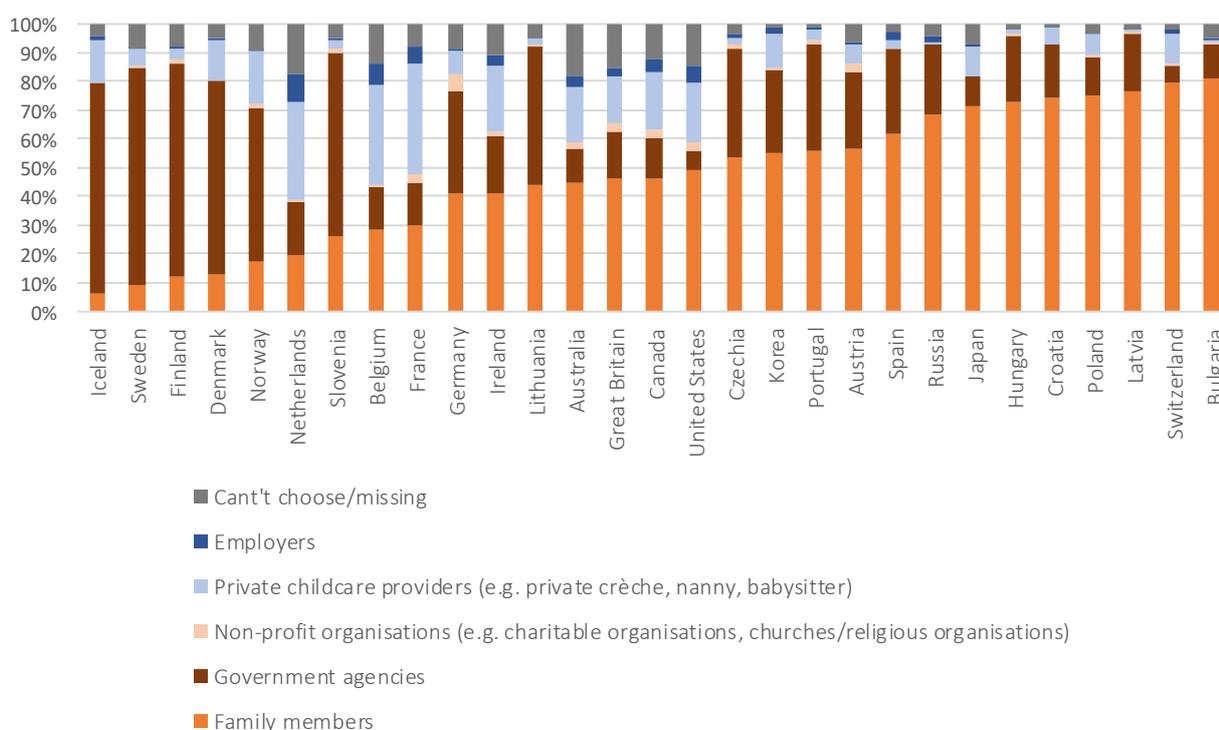
Source: International Social Survey Programme, 2012 (weighted data)

These opinions tend to reflect the current provision structure of the countries (Chung & Meuleman, 2017) and highlight the importance of policy-attitude feedback. As (Ellingsæter, et al. 2017) have highlighted with regards to Norway, child care reform not only changes parents' access to care resources, it may also bring about changes in the way parents think about care. In Norway there were some large-scale reforms of child care in the 2000s, leading to an expansion of universal child care for young children. Attitude surveys from 2002 and 2010 highlight that maternal support of 'child care services only' (as opposed to parent only care, a combination of child care service and parent care, or other arrangement) as the best form of care increased significantly over this time. Between 2002 and 2010, the percentage of mothers believed that child care services were the best for children aged 2–5 increased by 30 percentage points and by 2010 the majority of mothers stated this as the preferred option.

8.3   Australia's ECEC

In Australia, the use of formal care for children has increased significantly in line with women's increased labour force participation. Between 1996 and 2017, according to the Childhood Education and Care Survey, the percentage of children aged 0-4 who attended some type of formal care in the last week increased from 24% to 42%. For children aged 5-11 years, the equivalent increase was from 8 to 18% (Australian Bureau of Statistics, 2018).

The main types of formal care in Australia are:

- *Long-day care*: Centre-based form child care service providing all-day or part-time care
- *Family day care*: Formal care provided in the home of a registered carer
- *Outside school hours care:* care provided for school-aged children before school, after school, or during school holidays.

The type of care used varies according to the age of the child, as shown in Figure 24. Percentages add up to more than 100 as children can use multiple forms of care. For children aged 3 and under, long day care is the most common type of formal care used. At all ages, a significant proportion of children also use informal care, which is defined by the ABS as non-regulated care in the child's home or elsewhere, including relatives, friends, neighbours, nannies, babysitters or other organisations such as crèche at gyms.

Figure 24 Care usually attended by age of child, 2017
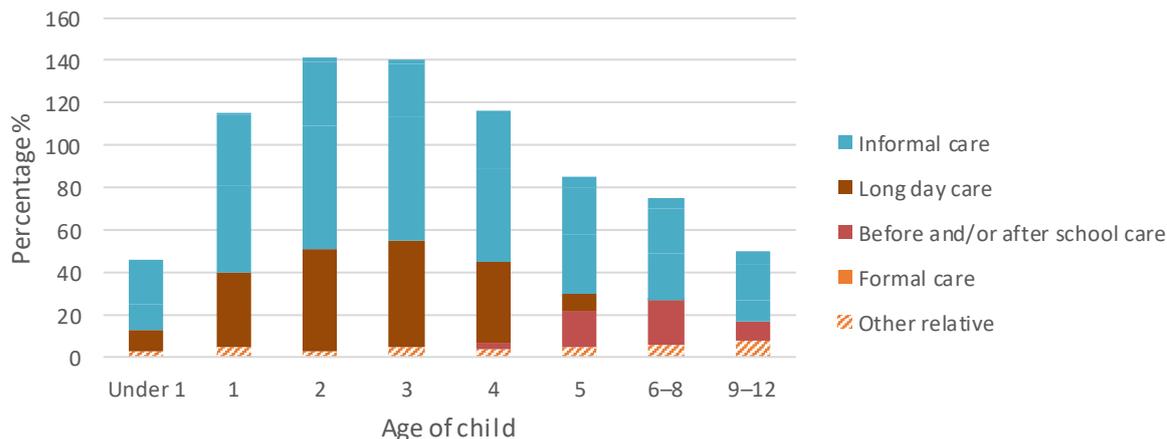
Source: Australian Bureau of Statistics, 2018

In addition, preschool[17] is generally available from around 4 years, although the age of entry and the range of service types offered varies across states and territories and between service providers. Preschool is not compulsory, but the Australian Government and state and territory governments have, since 2008, committed to increasing participation in high-quality education and care. This is being done through a series of agreements on National Partnership on Universal Access to Early Childhood Education and Care in the year before full-time school (Clark, 2021). The proportion of

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[17] In the Australian Capital Territory, New South Wales and the Northern Territory, ECE programs are called preschool . In Tasmania, Victoria and Western Australia, they are known as kindergarten, in Queensland, they are known as kindergarten and Pre-Preparatory (Pre-Prep) and in South Australia they are known as preschool and kindergarten.

children enrolled in a preschool program for 600 hours a year has steadily grown from 12% in 2008 to over 95% in 2018 (Nous Group, 2020).

Child Care Subsidy

To assist with the cost of child care, the government provides a means-tested Child Care Subsidy (CCS). As shown in Figure 25, an eligible family with a combined income below $70,015 receives a subsidy of 85% of their child care[18] fees up to an hourly rate cap. Above $70,015 the percentage goes down by 1% for every $3,000 of income until $175,015. Between $175,015 to below $254,305, the Child Care Subsidy is 50%[19]. At an income of $254,305 and above, the percentage goes down by 1% for every $3,000 of income until $344,305. Between $344,305 to $354,305, the Child Care Subsidy is 20%. From $354,305 and above the subsidy ceases. These income thresholds are indexed annually.

Figure 25 Child Care Subsidy percentage (2021-22)
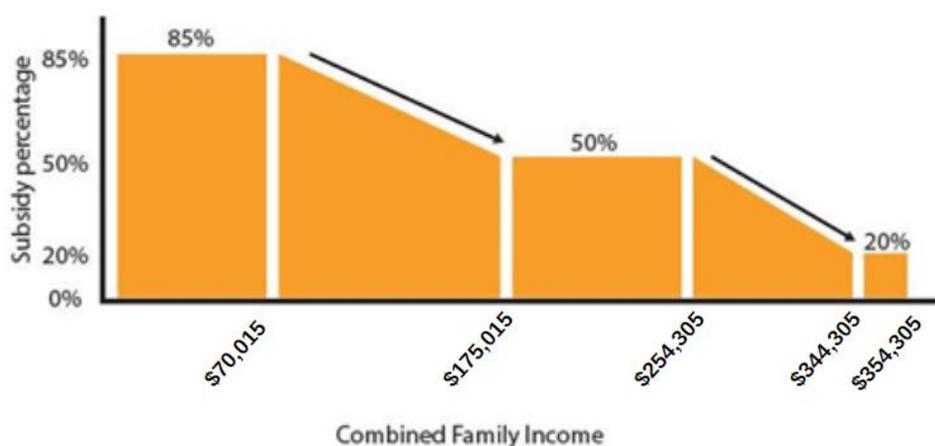
There is an hourly rate cap that varies according to the type of child care used, as shown in Table 18. The number of hours of child care for which the subsidy can be claimed depends on the number of hours activities are undertaken. For couples, the number of hours is calculated according to the parent with the lowest hours of activity each fortnight. If work hours change each fortnight, parents are required to update Centrelink with the highest number of hours they expect to work in a fortnight over the following 3 months.

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[18] The 2021-22 Budget includes a change to the Child Care Subsidy (CCS) rate, increasing it by 30 percentage points for the second child and subsequent children aged five years and under in care, up to a maximum CCS rate of 95 per cent for these children, commencing on 7 March 2022.

[19] At incomes between $189,390 and $353,680 the subsidy was capped to $10,560 per child each financial year. This cap has been removed in the 2021-22 Budget, commencing on 10 December 2021 and applying retrospectively to the whole of the 2021-22 financial year.

Table 18 Child Care Subsidy- Hourly rate cap and hours of activity

Type of child care	Hourly rate cap
Centre Based Day Care – long daycare and occasional care	$12.31 ($10.77 for school-age children)
Outside School Hours Care – before, after and vacation care	$12.31 ($10.77 for school-age children)
Family Day Care	$11.40
In Home Care	$33.47, per family
Hours of activity per fortnight	**Maximum number of hours of subsidy per fortnight**
Less than 8 hours	0 hours if you earn above $70,015, 24 hours if you earn $70,015 or below (There is an exemption for families earnings less than $70,015 a year and who do not meet the activity test where they are able to access 24 hours of subsided care per child per fortnight, as part of the Child Care Safety Net)
More than 8 to 16 hours	36 hours
More than 16 to 48 hours	72 hours
More than 48 hours	100 hours

Despite the CCS, cost remains a significant issue for many Australian families and the average per-hour expenditure on child care increased by 51% in real terms between 2002-03 and 2016-17 (Wood, *et al.* 2020). Analysis of data from the Household, Income and Labour Dynamics in Australia (HILDA) survey found that for families with a youngest child aged 0-4 who have used or thought about using child care in the last 12 months, two-thirds had experienced one or more difficulties regarding child care with the most common difficultly stated by 49% of parents being the cost of child care (Laß, 2019). Similarly, a survey of mothers with children aged 15 to 29 months old which asked the mothers what policy options would have helped them the most after birth, affordable child care stood out as the policy perceived as most useful to mothers, regardless of their paid work status (Renda, *et al.* 2009, p. 65).

Child care cost is also the reason most nominated by mothers for not doing more hours of paid work. A report by the Grattan Institute highlighted how the high workforce disincentive rates mean that for many women working an additional fourth or fifth day does not make economic sense. For example, in a household where both parents have the potential to earn $60,000 per year if working full time, the second earner (usually mother) would be working for about $2 per hour on her fourth day, and for free on her fifth day (Wood, et al. 2020). This is also corroborated by a 2021 survey, commissioned by the Front Project (2021), of parents aged 0-5. Among parents who used child care, 52% agreed that once the cost of care was factored in, it was 'hardly worth working, 47% agreed that they have had to make financial sacrifices to afford care, and 43 % agreed that they've had to change work arrangements to fit in with the service they could find/afford. The same survey found that nearly three-quarters (73%) of all parents agreed that high ECEC costs were a barrier to some families having (more) children.

8.4 Does child care availability increase fertility?

There have been no specific studies looking at child care and childbearing behaviour in Australia; however, several key studies from other countries have taken advantage of regional variation in child care coverage within the countries to examine the link between child care provision and fertility. It should be noted however that these studies usually look at child care in terms of supply and cost, disregarding other dimensions such as quality and flexibility which potentially have different effects on fertility (Matysiak & Węziak-Białowolska, 2016).

Focusing on Spain, between 1993-2000, Baizán (2009) took advantage of the fact that enrolment for children under 3 was heterogeneous at the regional level and while enrolment increased rapidly in some regions in connection with regional policies the pace of this increase was uneven. By 2000, some regions such as Cataluña had an enrolment rate for 0-2 year olds of 26%, whereas in other regions such as Extremadura it was still below 1% at that time. They found a strong positive effect of the percentage of children aged 0-2 enrolled in child care on the propensity to have a first birth as well as second and higher order births.

For Japan, Fukai (2017) looked at the change in child care coverage over the 2000-2010 period. As with Spain, while coverage increased substantially this did not occur evenly across the country with substantial municipal variation. This study found a robust positive effect on overall fertility which was significant in regions where women had a higher propensity to work. It also found a strong effect on the transition to parenthood, or the birth of the first child. Similarly for Belgium, the difference in coverage of child care for children under 3 over the time period of study (2002-2005) as well as across municipalities was used to examine the relationship with birth probabilities among dual-earner couples. The authors find a positive association between local child care availability and overall fertility among dual-earner couples, with the strongest effect for first births (Wood & Neels, 2019).

Rindfuss, et al. examined the effect of child care availability on first birth timing (2007) and completed fertility (2010) for the cohorts of mothers born in Norway in 1957-1962. They also rely on variation in the percentage of pre-school aged children enrolled, across both time (between 1973-1998) and across municipalities. For first birth timing they find a positive association with increased child care availability leading to a higher transition to first birth. For completed fertility by age 35 they also find a positive relationship with each 10% increase in child care availability being associated with a 0.1 increase in average number of children born. The increase is significant for all parities, although simulated parity progressions suggest that the strength is largest for second children.

Bauernschuster, et al. (2016) examined the link between birth rates and the considerable temporal and spatial variation in public child care coverage in West German counties between 1998 to 2010. During this time, several large-scale public child care reforms led to a rapid increase in child care availability, although the expansion occurred at a different rate across counties. They found that the provision of public child care had positive effects on fertility with a 10% increase in child care availability leading to an increase of birth rates of 2.8 %. The effects are negligible for first births but stronger for second and third births. Hence, the fertility effects are more pronounced at the intensive than at the extensive margin, with increased birth rates more likely to be at higher parities. Krapf (2014) also focused on spatial variation in child care availability by district in Germany, and examined if there was any association with first births. She found no significant overall effect, although there was an indication of an interaction effect with education levels. Women with high education living in areas with low child care provision were less likely to have a first birth compared to women with high

education living in areas with high child care provision. For Italy, Del Boca (2002) found that increasing child care availability by 10% increases the relative odds of having a child by 0.198.

Table 19 Studies on sub-regional variation in child care and fertility

Country	Child care dimension	Fertility outcome	Child care-fertility relationship	Study
SPAIN 1993-2000	Availability/ Use of child care (% of children 0-2 enrolled in formal day care)	Probability of birth- all parities	Positive for first births and higher order births. Each 1% increase in proportion of children in child care associated with at least 5% increase in relative risk of fertility.	(Baizán, 2009)
JAPAN 2000-2010	*Capacity ratio*, ratio of child care center capacity to the number of children aged 0–5	Birth rates- all parities	Positive- higher for first births. Small but significant increase in the fertility rate of women aged 25–39 living in regions where the propensity for women to work is high, but had no significant effect in other regions. A 10% point growth in child care availability increases the number of births for women aged by roughly 4% of the mean birth-rate in 2000.	(Fukai, 2017)
BELGIUM 2001-2004	*Availability* Amount of places divided by the population aged 0–3	Probability of birth- all parities	Positive- most strongly for first birth.	(Wood & Neels, 2019)
NORWAY 1973-1998	*Availability and use* % of preschool age children in child care centres by municipality and year.	First birth	Positive- greater availability of high quality, affordable child care leads to higher rates of transition into motherhood	(Rindfuss, *et al.* 2007)
		Completed fertility by age 35	Positive - depending on the speed with which the availability of child-care places moved to 0-60% children ever born age 35 increased by 0.5 to 0.7 children.	(Rindfuss, *et al.,* 2010)
GERMANY 1998-2008	*Child care coverage* Public child care slots divided by the population aged 0-3	Birth rates	A 10-% point increase in public child care coverage increases the number of births by roughly 2.8% of the baseline birth rate. Assuming linearity, an increase in public child care coverage by 30 % points leads to an increase of 0.12 children for the average woman. Stronger effect at higher parities.	(Bauernschuster, *et al.* 2016)
GERMANY 2008-2011	*Availability and use* % of children aged 0-2 enroled in child care by district	First birth	Not overall significant effect of child care availability. The exception was for highly educated women living in regions with low child care provision the probability of a first birth was significantly lower.	(Krapf, 2014)
ITALY 1991-1995	*Availability* Ratio of the number of child care places available (at ages 0-2) to the number of children 3 years of age or less by area of residence	Having a child in the last 2 years	Increased child care availability positively associated with having a child.	(Del Boca, 2002)

Studies based on reform

In addition to the above studies which relied on temporal and spatial variation, several studies have examined the impact of major child care reforms on fertility, shown in Table 20.

Mörk, Sjögren, and Svalderyd (2013) focus on the fertility effect of a 2002 Swedish child care reform which implemented a user fee cap and therefore changed the cost of child care. The reform standardized child care fees across municipalities and imposed a maximum fee cap, which had the overall effect that for most families child care costs were reduced, with some variation in the overall effect based on household income and the age and number of children. They compared fertility before and after the reform between the years and found an overall small positive impact although there was variation by number of children and household income. First births appeared to increase, driven by low-income households, second births were postponed while third- and higher-order births increased as a response to the reform or in anticipation of the reform.

In Norway, in 1998 a cash benefit was introduced for parents with young children aged 12-36 who to look after their children at home rather than using public child care. The aim of the reform was threefold: (i) to give families more flexibility with respect to own child care, (ii) to provide a cash benefit to parents who preferred to care for their children at home and (iii) to compensate those who were not offered external child care provision (Aassve & Lappegård 2009). Parents could use a combination of home care and public child care, but as the rate of child care use increased the value of the cash benefit was reduced. For example, parents who did not use any child care would receive the full amount, whereas parents who used 17-24 hours a week would receive 40%. More traditional oreiented families who also tended to have lower income and education level were more likely to make use of the cash benefit and families who used the benefit has a faster progression to second births (and third births to a lesser extent).

A similar effect was observed by Gathmann and Sass (2018) who analysed the effect of a 2006 'home care subsidy' (*Betreuungsgeld*) reform in the East German state of Thuringia. Similar to the Norwegian reform, parents of a 2-year old child received a subsidy if their child did not attend public daycare. Firstborn 2-year old children received 150 Euros a month, whereas second or higher order 2-year old received more. If the child did attend daycare, the daycare provider would instead receive an amount proportional to the hours attended. For families who were not planning to send their child to public daycare this was windfall income. For families who were planning to send their child to daycare, their child care fees effectively increased. The result was a decline in public daycare use, home care subsidy seems to discourage the first birth but has a small but positive effect on families with one or more children who may be more prone to choosing home care.

In Israel, in 1999 the government introduced free public preschool for children aged 3 and 4. Schlosser (2005) examined the effect of this reform on Arab mother's fertility; specifically the probability that a mother who has a child aged 2-4 has an additional child aged 0-1. They found no impact, at least in the short run, on further childbearing among women with a pre-school aged child.

Table 20 Studies based on child care reforms

Country	Reform	Fertility outcome	Impact on fertility	Study
SWEDEN	2002 reform (announced in 1998) implementing a user fee cap, and standardizing child care fees across municipalities	Birth probability	First and higher order births increased. Second births. Fertility increased by 9.8 % mainly driven in low-income households	(Mörk, *et al.* 2013)
NORWAY	1998 introduction of a cash benefit for parents with young children (12-36) to look after them at home rather than use child care	Second and third birth probabilities	Faster progression to second and third births	(Aassve & Lappegård 2009)
GERMANY	2006 reform raised cost of public child care compared to home care	Probability of having a(nother) child	Decline in first birth transition. Positive, but negligible effect on higher order births	(Gathmann & Sass, 2018)
ISRAEL	Free public pre-school for children aged 3-4	Probability of a mother of a child aged 2-4 having an additional child aged 0-1	No impact	(Schlosser, 2005)

8.5   Conclusion

Affordable, good quality, and accessible, child care is seen as an important tool to increase work-family compatibility in countries where female labour force participation is high. By reducing the tensions between work and childbearing it thus is also expected to have a positive effect on fertility.

In Australia, child care is provided primarily through the market with the government assisting by subsiding the cost through the Child Care Subsidy. However, the costs to parents remain high which leads to negative effects on women's workforce participation, and possibly to fertility.

Studies from reforms overseas suggest that despite some mixed findings, on the whole the studies reviewed suggest that child care has a positive effect on childbearing. The studies looked primarily at the availability of child care, although some focused on changes in the price (Mörk, *et al.* 2013; Gathmann & Sass, 2018).   Although there was some variation across the studies, both price and availability appear to affect the transition to parenthood and further childbearing in a positive direction.

9 Cross-national, cross-policy studies

Key points

- In comparison to studies looking at particular policies in individual countries, cross-national and cross-policy studies examine the effect of macro-level policies across a range of countries on fertility at the individual level or at the macro level (TFR)
- Such studies necessarily have to use simpler measures of policies and are unable to capture the details of particular policy designs.
- Due to the variability in measures used, the findings regarding policy effects on fertility are mixed, but overall they point to a positive effect on financial transfers, parental leave and child care on fertility.

In additional to the single-country studies highlighted in previous sections, there are also cross-national studies which have used either cross-sectional or longitudinal data from multiple countries to examine the effect of family policies on fertility. The studies, outlined in Table 21, do not look at specific reforms but rather on how macro-level policy variables are associated with fertility, at the individual or at the macro level. For those studies which use macro-level indicators of fertility, such as TFR the estimated relationships they measure of policies are the average for all parities (Harknett, *et al.* 2014). This may lead to findings of small or weakly positive influences, due to the fact that policies may have differential effects on different parities. As Harknett, *et al.* (2014) note if policies have no effect on first births, and have a positive effect on higher-order births, the overall effect may be muted away by averaging in weaker or null effects for first births.

Cross-national studies also use simpler measures of family policies, in order to create comparable measures, and therefore are not able to include the nuances of specific policies (Del Boca, et al. 2009). For example, they might have an indicator of duration of maternity leave compared across countries, but this obscures that two countries could have the same duration of leave, e.g. 6 months, but one may be paid at 80% replacement wage level, while in the other country it might be 50%. Due to the different indicators used, and different outcomes studies, these studies tend to results in more mixed results.

However, one advantage of cross-national, cross-policy studies is that they take a holistic view by including multiple different family policies. This is advantageous because countries with supportive policy environments in one area, such as child care, also tend to have supportive policies in other areas. Thus compared to cross-policy studies, those which only include one type of family policy (such as only child care) may overestimate the effect of that policy, due to its high correlation with other policies (Baizan, *et al.* 2016).

Child benefits

Regarding child benefits or family allowances the studies outlined in Table 21 find mixed results regarding the association with fertility. For 16 OECD countries studied between 1980-1999, (D'Addio & d'Ercole (2005) find a small but positive association with a 25% increase in financial transfers to families with children was calculated as translating to a long-run increase in TFR of 0.05 children per women. Similarly, across 18 OECD countries studied between 1982-2007 the average amount of cash benefits for children had a positive impact on TFR, however this was only significant in the Nordic

countries (Luci-Greulich & Thévenon, 2013). Adema, *et al.* (2014) also found a positive relationship between spending in family cash benefits (as a % of GDP) and TFR across 30 OECD countries.

However, other studies find no effect of family allowances. Looking at 16 European countries between 1992-2009, Baizan, *et al.* (2016) found that the level of family allowance was not significant for fertility for those with low- and medium-levels of education, but there was a positive association for highly-educated women. They suggest that a possible reason for this is that for higher-educated women with a strong labour force participation, the increase of family transfers has a fertility producing effect through an 'income effect', however for lower-educated women the 'income' effect of family transfers may be offset by a negative effect on their labour force participation.

Looking at the impact on fertility due to changes in national expenditure for family allowances across 16 European countries, Kalwij (2010) found that an increase in child subsidy through a family allowance program's increased generosity had no significant impact on the timing of births or on completed fertility. They suggest that the lack of association could be because family allowances only counteract a small proportion of the direct costs of children. However as (Thévenon & Gauthier, 2011) point out this analysis did not consider the net transfers received by families through the tax and benefit system.

Parental leave

The evidence for parental leave is also ambiguous in the cross-national, cross-policy studies. Looking at 20 countries, Harknett, *et al.,* (2014) found no significant effect of paid parental leave (measured as weeks of fully paid leave) on birth intentions, however they did find a weak but positive significant association with the probability of having a first birth (but not a higher-order birth). Similarly, Kalwij (2010) found that maternity leave was significant for first births but not higher-order births. A 10% increase in maternity- and parental-leave benefits was associated with a 3.2% reduction in childlessness at ages 36–40.

Hilgmenan and Butts (2009), looking across 20 countries also found no significant relationship between parental leave (paid and unpaid combined) and achieved fertility, or TFR. They suggest the lack of observed effect could be due to the fact that leave is usually only for a short duration and not of sufficient length to cover the whole period of time young children need care before attending child-care or preschool, and thus, still necessitates exiting the labour force for an extended period of time. Baizán, *et al.* (2016) also found no overall association between parental leave and completed fertility, but they found a significant positive effect for women with higher levels of education. An increase in the weighted number of paid weeks of leave from 10 to 75 was associated with an increase predicted completed fertility from 1.83 to 1.92 children for the low educated and an increase from 1.56 to 1.80 children for the highly educated (Baizán, *et al.,* 2016).

D'Addio and D'Ercole (2005) examined two different dimensions of parental leave separately: duration and replacement wage level. They found that a longer duration was association with lower fertility, whereas a higher wage-replacement level was associated with higher fertility.

Bártová's (2016) research into the effect of parental leave and first- and second-birth transitions in 27 countries is one of the most comprehensive and points to a possible explanation why the studies above which used varying macro-level indicators of parental leave found mixed results. The study included detailed indicators including looking at the interaction between duration and the

compensation rate. The results point to shorter duration of parental leave, but compensated at a high rate as being the most conducive to having a first birth as well as a second birth. This highlights the importance of taking into account different design measures of parental leave policies rather than simple indicators. The finding that longer duration was negatively associated with fertility and higher replacement rate associated with higher fertility is similar to the result from D'Addio and D'Ercole (2005).

Child care

Turning to child care, the results are more clearly pointed towards a positive relationship with fertility.

Kalwij (2010) identifies a strong relationship between expenditure on child care subsidies and the higher-order births (but not first births). While there was no effect of child care subsidies on the percentage of women who remain childless (transition to first birth), child care subsidies are associated with higher overall fertility with a 10% increase in child care resulting in about a 0.4% increase in completed fertility. For child care, measured as the percentage of children aged 0-3 enrolled in child care, this was found to be positively related to individual fertility, as well as macro-level fertility in the study by Hilgeman and Butts (2009) looking across 20 countries. The authors conclude that for countries with very low child care enrolment, increasing enrolment rates would have a significant impact on fertility rates. For Italy, they conclude that increasing enrolment from 6% to 30% to a level similar to Belgium would increase fertility by 0.27 children per woman, while increasing it to 64% to a level similar to Denmark would be predicted to increase fertility by 0.97 children (Hilgeman & Butts, 2009).

Baizan, *et al.* (2016) in their study of 16 European countries also find a positive relationship between child care enrolment and completed fertility, a relationship which is strongest for those with higher education. Similarly, Bártová (2016) across 27 European countries found that child care availability was associated with a higher transition to parenthood (having a first child), as well as the transition from one to two children. For second births, a 1% increase in enrolment of children under 3 in child care was estimated as corresponding to 2.9% increase in the propensity to have a second birth. Therefore, women who live in a country with 72% enrolment have a higher propensity for a second birth of about 161% than women who live in a country with 2% enrolment. Adema, *et al.* (2014) found that child care enrolment rates for children aged 0-2 were positively associated with TFR across 30 OECD countries. Preschool enrolment rates for children aged 3-5 were also positively associated with TFR but their effect was only significant at the 10% level.

However, even with child care there are some studies, such as that of Del Boca, *et al.* (2009) who find no relationship with fertility.

General family expenditure

Rather than looking at indicators of child care or parental leave separately, Harknett, *et al.* (2014) used an indicator of overall expenditures on families as a percentage of GDP. This includes expenditure on family allowances, parental leave benefits and child care services and subsidies. General family expenditure was not related to first births but was significantly positively related at the 10% level for higher birth intentions, as well as for higher-order births (5% level). A 1% increase in expenditure on families was associated with a 23% increase in the odds of a higher order birth. One issue with studies that look at expenditure is that expenditure is itself influenced by fertility in a given country, as a

higher number of births will by default increase expenditure on policies such as child care and parental leave, as well as child benefits (Bártová, 2016).

Earner-carer vs traditional family policies

In addition to the studies outlined above there has also been cross-national research which has classified policies as being either supportive of 'earner-carer' models (e.g. parental leave) or 'traditional family' (e.g. financial benefits, or home care allowances). This 'regime approach' to examine the influence of policies on fertility provides a valuable insight into the importance of the welfare context across countries and to what degree they support traditional family roles and how that interacts with fertility. However, the policy clustering does not give insight into the effect of particular policies, and is unable to highlight if some polices are more influential than others (Bártová 2016).

Billingsley and Ferrarini (2014) compared traditional family policies (family benefits) and earner-carer policies (parental leave generosity and share of children under age 3 in public child care) across 21 European countries. They then investigated how earner-carer, and traditional family policies were related to fertility intentions to have a child in the next 3 years as found in the 2004 European Social Survey. For childless people they find that both earner-carer and traditional family support were associated with higher fertility intentions for men and women, but for those with one child only earner-carer support was positively related for women. For those with two children neither earner-carer or traditional family policies had a significant association. Wesolowski & Ferranini (2018) conducted a similar study for 33 industrialised countries but looking at TFR as the outcome of interest. They found that earner-career support was positively associated with TFR, but traditional-family support was not associated with fertility.

Table 21 Cross-national, cross-policy studies

Data	Fertility outcome	Family allowance	Parental leave	Child care	Result	Study
European Community Household Panel , 1999 7 countries[20]	Had a child in 1999	Average family allowance	Length in months, of the parental leave to which the mother is entitled	% of children aged 0-2 using child care facilities	Family allowance: Positive effect, but only marginally. Parental leave: no significant effect Child care: no significant effect	(Del Boca, Pasqua, & Pronzato, 2009)
European Union Survey on Income and Living Conditions, 2004-2009 16 countries[21]	Total number of children living in household (for women aged 36-44)	Monthly family allowances for the second child, years 1992–1998.	Total weeks of maternity, paternity and child care leave weighted by the level of cash benefits paid during each type of leave	Places in public (or publicly subsidized) child care facilities as % of children aged 0–2 years (child care coverage) Children aged 0–2 years in formal child care as a % of all children aged 0-2 (child care usage)	Family allowance: No significant relationship overall, but significant for those with higher education Parental leave: No significant effect overall, but significant for those with higher education. Child care: Significant positive association with fertility. Positive relationship for all age groups, but stronger for the highly educated.	(Baizan, *et al.* 2016)
OECD data 1982-2007 18 countries	TFR and tempo-adjusted TFR	Spending on cash benefits per child under age 20 (% of GDP per capita)	Spending per birth (% of GDP per capita), including maternity, paternity and parental leave benefits as well as birth grants Number of paid leave weeks	Spending on child care services per child aged 0-3 (% GDP per capita) % of children aged 0-3 enrolled in child care	All policies positively related to TFR. Some differences by type of welfare state.	(Luci-Greulich & Thévenon, 2013)
European Union Survey on Income and Living Conditions 2004-2009 27 countries	Transition to first birth Transition to second birth	-	Eligibility Duration Compensation rate Flexibility	Use of child care services amongst children under 3	No significant relationship between eligibility to parental leave and first or second birth transitions. Shorter but well-paid parental leave was associated with a higher transition to first and second births Child care availability significantly positively associated with first and second births	(Bártová, 2016)

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[20] Belgium, Denmark, France, Italy, the Netherlands, Spain, UK
[21] Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, UK

Table 20 Cross-national, cross-policy studies (continued)

Data	Fertility outcome	Family allowance	Parental leave	Child care	Result	Study
European Social Survey 2004/05 and 2008/09 20 countries	· Intention to have a child (separated into intention for first birth, and intention to higher order birth) · Had a child (separated into first birth and higher order birth)	No specific measure of family allowances. Included instead is 'expenditures on families as % of GDP'. (family allowances, parental leave benefits and child care services and subsidies).	Weeks of fully paid parental leave (weeks of fully paid leave is calculated as the number of weeks of leave multiplied by the wage replacement rate)	No specific measure of child care. Included instead is 'expenditures on families as % of GDP'. (family allowances, parental leave benefits and child care services and subsidies).	Expenditure on families as % GDP: significant predictor of higher order birth intentions, and having a higher order birth. No effect on intentions for a first child, or having a first child. Paid parental leave: not significant for first or higher order birth intentions, but significant predictor of having a first birth.	(Harknett, *et al*, 2014)
European & World Values Survey 1995-2000 20 countries	· Individual level: Achieved fertility at age 18-45 · Macro level: TFR	n/a	Number of weeks parents are entitled to take off from work at the birth or adoption of a child and/or to care for young children (paid and unpaid)	% children aged 0-3 enrolled in child care	Child care enrolment: positive association with achieved fertility (individual level), as well as TFR (macro-level). Parental leave: not significant for either individual or macro-level fertility.	(Hilgeman & Butts, 2009)
OECD data 1980-1999 16 countries[22]	TFR	Net transfers to family with children	Maternity leave benefits per birth as a % of the earnings of an average production worker Length of parental leave in weeks	n/a	Net financial transfers: positive effect on fertility Longer duration of parental leave had negative effect, but a higher replacement rate had a positive effect.	D'Addio and D'Ercole (2005)
European Social Survey, 2004 and OECD data 1980-2003 16 countries [23]	· Probability of first, and higher order births · Completed family size	Family allowance per child	Maternity & parental leave benefits per infant for employed woman	Child care subsidy per young child for an employed woman	Family allowance: No effect Maternity/Parental leave: Positive and significant for first birth but not higher order births Child care: Positive and significant for higher order births but not first births	(Kalwij, 2010)
OECD data 1980-2007 30 OECD and EU countries	· TFR	Public spending per child under 18 in family cash benefits, as % of GDP	Public spending on maternity leave per birth, as % of GDP Total length of paid leave available for mothers Total length of paid leave for fathers	Public spending on child care services per child aged under 3, as % of GDP Child care enrolment rate for children aged 0-2 Pre-school enrolment for children aged 3-5	All policies were positively associated with TFR	(Adema, *et al.,* 2014)

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[22] Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Netherlands, Portugal, Spain, Sweden, UK, and US

[23] Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain, Sweden, Switzerland UK

10 Assisted Reproductive Technology (ART)

Key points

- Because of childbearing delay, the proportion of women experiencing difficulty in achieving a pregnancy has increased, leading to an increasing number of couples turning to assisted reproductive technology (ART) treatments to counteract this decline.
- Australia is characterized by a relatively supportive public environment for ART and has one of the highest proportion of children born as a result of ART (5%).
- ART can broaden the range of possible responses to low fertility rates, although its contribution to the TFR so far has been modest.

Australia, in common with most other OECD countries, has gone through a long period of increasing mean age at birth. The shift in births at older ages has been accompanied by a concomitant decline in completed family size (the average number of live-borne children per woman over the course of her reproductive life). In part, this is because fecundity, which is the ability to reproduce, declines with age, especially for women (Sartorius & Nieschlag, 2010). Leridon (2010) notes that the main cause of increasing sterility with age is an increase in intra-uterine mortality. He estimates that at age 30 of women 2% of women will no longer be able to conceive, and 10% will no longer be able to have a live birth. By age 40 these percentages increase to 17% and 33% respectively. This relationship between age and the increase in permanent sterility is shown in Figure 26.

Figure 26 Estimated probability of no longer being able to achieve conception, and no longer being able to achieve a live birth by woman's age
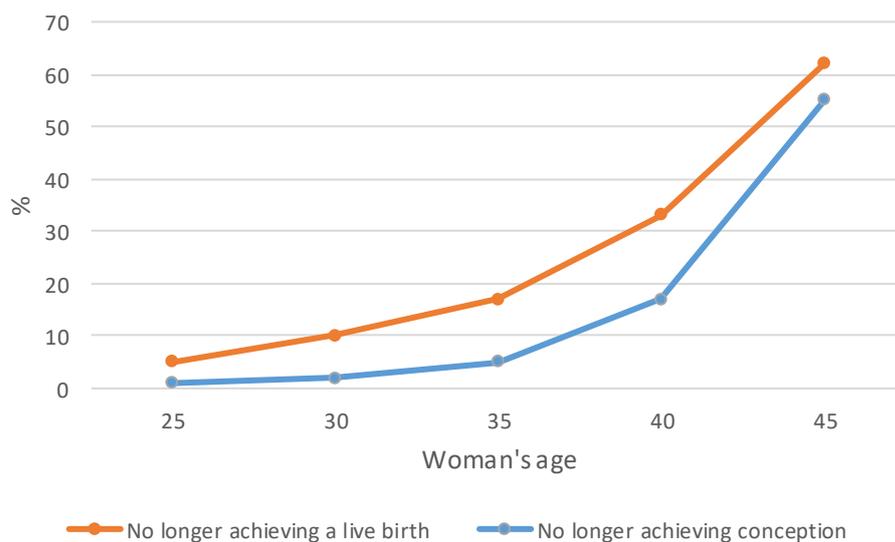
source: Leridon (2010)

Because of childbearing delay, the proportion of couples experiencing difficulties in achieving pregnancy and live births has increased, leading to an increasing number of couples turning to assisted reproductive technology (ART) treatments. ART are a group of medical interventions in which gametes or embryos are fertilised outside of the human body, and subsequently inserted with the purpose of establishing a viable pregnancy (Zegers-Hochschild, *et al.*, 2017). ART treatments have become a well-

established and accepted treatment for infertility in most countries. Since ART success rates also rapidly decline with age (Tan, *et al.*, 2014), they cannot fully compensate for the decline in fecundity with age but only alleviate the problems associated with childbearing delay.

ART across OECD countries

Across countries, there are substantial differences in the proportion of babies born as a result of ART. The most recent report from the European Society of Human Reproduction and Embryology showed that in Europe between 0.2% and 6% of children were conceived through ART in 2015 (Wyns, et al., 2020), while in the United States ART in 2018 accounted for slightly less than 2% of babies (CDC, 2020). In South Korea, ART accounted for 6% of live births in 2017 (Kim, 2019). Cross-country variations are partly due to the existence of different regulatory frameworks and insurance schemes, which can affect the accessibility and affordability of services. These are also the main ways policies can affect the utilisation of ART.

Governments may place regulatory barriers on ART treatments by limiting access only to women in specific types of relationships, or only to women under a certain age limit. For example, being in a heterosexual relationship and married (or in a similarly committed form of union) is a requirement in most OECD countries (Allan, *et al.* 2019). Another example is based on strict legal age limits, such as being between 40 and 50 years of age, which is applied in Estonia, Greece, The Netherlands, Belgium, Bulgaria, Denmark, Ireland, Luxemburg, Slovenia, and Finland (Kocourkova, *et al.* 2015). Additionally, governments can affect the affordability of treatment for patients through their funding arrangements. After government subsidisation has been taken into account, the cost of an IVF cycle has been estimated to range between 6% of total disposable income (Australia) up to 50% of total disposable income (United States) (Chambers, *et al.* 2009). Age can also be a major requirement for reimbursement, with the age limit to receive public coverage for treatment often considerably lower than the age limit to access services. Latvia and Lithuania are among the countries with the lowest age limit (set at 38 years old) for public reimbursement for ART (Allan, et al., 2019). Limits on age typically apply to the age of women, although two OECD countries (Austria and Germany) also impose an age limit for men (Allan, *et al.* 2019).

Despite the marked increase in the use of ART among high-income countries, there is still relatively little knowledge about its contribution to the TFR. It has been estimated that in 2002 ART contributed to 0.02 of the TFR in the United Kingdom (from 1.62 to 1.64) and to 0.07 in Denmark (from 1.65 to 1.72) (Hoorens, et al. 2007). Another Danish study taking a cohort approach has shown a similar impact of ART on the completed fertility rate of women born in 1970 of around 4% (Sobotka, *et al.*, 2008). Using a computer simulation, Leridon and Slama (2008) estimated an increase in the completed fertility of French women born in 1968 between 0.2 if only half of the couples with infertility resorted to ART and 0.4 if all couples with infertility resorted to ART.

Today, 22 countries around the world provide full or partial public funding for ART (Keane, et al. 2017). While several rationales may justify the reimbursement of ART, from a government perspective (Mladovsky & Sorenson, 2010), its potential positive impact on the TFR has been identified as being one of them and some governments have already started to provide public funding for ART with the specific aim of increasing the TFR. Since 2008, the Singapore government has subsidised ART as part of its "Marriage and Parenthood" package, which is a set of pro-family incentives and benefits implemented to encourage more people to marry and have children (Blyth 2013). In 2006, the South

Korean government launched the Infertile Couple Support Policy, which makes up over 50% of the total budget for the government's fertility-related policies (Kim, 2019). In Israel, ART treatments have been funded by the government since their establishment in the early 1980s and acknowledged as a pro-natalist tool (Birenbaum-Carmeli, 2016).

ART in Australia

Community approval of the use of ART to treat infertility has risen substantially in Australia over the past 30 years, with the support for ART to help infertile married couples increasing from 77% in 1981 to 91% in 2011 (Kovacs, *et al.* 2012). ART procedures were first established in Australia in the early 1980s (Trounson 2018). Currently, there are over 80 fertility clinics carrying out approximately 76,000 ART treatment cycles a year (Newman, *et al*. 2020). There is no limit on the number of ART treatment cycles a patient can have and all women are eligible to receive publicly-funded treatment, regardless of their age. Reimbursement is limited to treatments diagnosed clinically necessary provided to couples that have been diagnosed as clinically infertile. Clinical infertility is diagnosed after a couple has unsuccessfully and regularly trying to achieve a pregnancy for at least one year. Hence, single women and same-sex couples may not qualify to receive the government rebate, since for these categories infertility is not clinically diagnosed. In Australia, ART treatment is primarily offered through private clinics, while Australia's universal health care system, Medicare, rebates approximately half the cost of an ART cycle. Comparative studies have shown that Australia is one of the countries with the most affordable ART services, and, in turn, with one of the highest ART utilisation rates in the world (Adamson, et al., 2018). In 2017, in Australia, 0.09 of the TFR was attributed to ART (i.e. 1.65 without ART to 1.74 with ART), which corresponds to an impact of the order of 5%, or approximately to one in 20 babies born (Lazzari, *et al.,* 2021a).

Impact of ART

Table 22 describes the demographic impact of ART and funding arrangements for treatment in a selected group of countries. Overall, ART only had a minor role in increasing the TFR, comprised between 2% and 6% of the TFR. Funding arrangements in the five selected countries are substantially different. Denmark and Spain can be considered as having two of the most generous public systems for ART, offering complete coverage for up to three ART cycle, although a limit on age and also on BMI in Spain apply. Australia and South Korea are also relatively supportive of ART, providing partial financial support to all women regardless of their age and for an unlimited number of cycles. The UK provides much less support for ART, which can partly explain why the contribution to the TFR is substantially lower compared to the other countries analysed.

Table 22 . Demographic impact of and public support for ART in a selected group of countries

Country	Demographic impact	Public funding
AUSTRALIA	In 2017, 4.9% of children were born as a result of ART and ART contributed to 0.09 of the TFR.	Up to 60% of costs covered for all cycles.
DENMARK	In 2014, 6.4% of children were born as a result of ART and ART contributed to 0.08 of the TFR.	Complete coverage up to three ART cycles when the woman is up to 40 years of age.
UK	In 2014, 2.6% of children were born as a result of ART and ART contributed to 0.05 of the TFR.	The national fertility guidelines recommend to fund up to three cycles for women under 40. However, Provision of ART treatment varies across the country and often depends on local clinical commissioning groups (CCGs) policies. CCGs may also have additional criteria, such as parity and lower age limits.
SPAIN	In 2014, 6.4% of children were born as a result of ART and ART contributed to 0.08 of the TFR.	Complete coverage up to three ART cycles when the woman has a BMI not above 35 and up to 40 years of age and the man up to 45 years of age.
SOUTH KOREA	In 2017, 6% of children were born as a result of ART	Up to 70% of costs covered

ART has been mentioned as a potential policy tool to increase fertility, comparable to other more traditional pro-natalist policies, such as those previously mentioned in this report. While they can broaden the range of possible responses to low fertility rates, there are a number of important unintended consequences that need to be taken into account when trying to estimate their effectiveness as a policy tool to increase fertility. First, the simple comparison of the TFR with and without ART might lead to an overestimation of the impact of ART on the fertility rate because it implicitly assumes that births that happened with the treatment would not have happened without it. However, the chance of conception for sub-fertile couples that have used ART is still positive (Osmanagaoglu, *et al.*, 2002) and some of them might have been able to eventually conceive either way. Second, the availability and affordability of treatment may incentivize couples to further delay childbearing, increasing their chance of experiencing infertility and of underachieving their reproductive goals. The existence of this risk is supported by studies showing evidence of the typically poor knowledge of reproductive age people regarding biological limits to reproduction and ART success rates, both internationally (Pedro, *et al.* 2018) and in Australia (Hammarberg, *et al.* 2015; Hampton, *et al.* 2012). While new opportunities have emerged for women to have children at advanced reproductive ages, such as egg-freezing or the possibility of using donor eggs, success is not guaranteed. Community knowledge about these options often comes from the news media, which seldom provide an accurate description of the actual chances of conceiving using ART. Hence, it is key that couples are well informed about their chances to conceive at all ages, with and without ART, and that they are able to make informed decisions regarding when to have children.

Conclusion

Assisted reproduction is having a small but rapidly increasing contribution to the fertility rate of high-income countries, characterized by low fertility rates and by a trend towards childbearing delay. The demographic impact of ART widely varies across countries. These differences can be explained by the existence of different regulatory and funding arrangement for ART. Australia is among the countries with the most supportive public system for ART, which has led to a relatively high proportion of babies born as a result of these treatments. While the evidence suggests that so far ART had a positive and modest effect on the Australian fertility rate, more research needs to be done to understand whether ART treatment should be funded with the specific aim of increasing the fertility rate. It is key that the availability of ART does not incentivize couples to further delay childbearing plans.

11 Conclusion

Australia's fertility rate has been below replacement level since the late 1970s, and is predicted to decrease further to 1.62 in the next 10 years as highlighted in the latest Intergenerational Report (Commonwealth of Australia, 2021). This decline is a reflection of more people remaining childless, as well as those who do go on to become parents stopping at one or two children. The reasons behind the decline in fertility are multi-dimensional but include the changing costs (direct and indirect) of children, broad socio-economic trends such as increased education levels and labour force participation among women, as well as changing social norms.

Crucially, in Australia, as in many other developed countries, people want to have children. While a small proportion of people are childfree by choice, the majority of the population want to have children as they are valued for the psychological and emotional benefits that they provide including having someone to love, continuing the bloodline, and giving purpose and meaning to life. The gap between the number of children people state they would like, and the number they are achieving, points to the existence of barriers preventing them from achieving their childbearing desires to the full extent. These barriers mean some people who want children end up being childless, and others who desire two or three children may stop at one child. At the individual level, people might experience barriers such as relationship breakdowns, inability to find a partner[24] or health issues which are not easily amenable to policy intervention (Sobotka & Lutz 2010). However, the fact that the gap between desired and achieved fertility varies across countries indicates that there are systematic barriers at play. Effective policy interventions to support people's reproductive desires need a sound understanding of how systematic barriers at the macro-level lead to individual childbearing intentions being formed, altered, realised or abandoned, and how these vary by parity (Gauthier & Philipov, 2008; Togman 2019).

The decision to become a parent and have a first child, has been described as one of the most complex and profound lifetime judgments that an individual or couple will make (Hobcraft & Kiernan, 1995). It involves couples weighing the benefits and costs of children and assessing their current and likely future circumstances over a series of domains including partnership, employment, income, housing and time commitements (Hobcraft & Kiernan 1995). For many young couples steady employment and secure housing is seen as a pre-condition to start a family. Sobotka, *et al.* (2020) warn that where young men and women experience considerable economic uncertainty then even substantial expansion of family policies is unlikely to lead to a large increase in fertilty. Many highly educated also want to establish themselves in their careers before embarking on childbearing due to the difficulties of combining full-time work and the increased unpaid caring and domestic labour that come with children. As a result childbearing is increasingly being postponed, sometimes to the extent that it is too late to start a family due to age-related declines in fecundity. This can be seen in the rising age at first birth in Australia, as well as the increasing proportion of women who are childless.

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[24] In Singapore, the government does actively try to support young people to find partners as this has been identified as one reason for low fertility. https://www.msf.gov.sg/policies/Marriages/Pages/Finding-a-Partner.aspx

In Australia, as in other countries, there is a strong two-child norm and having had a first child, most families therefore desire a second one. The 'obligatory' second child is often seen as necessary to provide the first child a sibling and playmate (Carmichael, 2013). While the progression rates from first to second births have remained high in recent decades, they have seen a decline among recent cohorts. This can be traced to a number of reasons including a higher age at first birth which leaves less time to have a second child (Parr, 2007). The progression from families having two children to continuing to have three has also declined. In 1986, of women aged 40-44, 56% of those who had two children had gone on to have at least a third birth. By 2016, of women aged 40-44, 43% of those who had two children ended up having a third one. The decision to have a 'discretionary' third child often involves more reflection (Carmichael, 2013) and weighing up of multiple factors including age, work, finances and housing (Evans, *et al*. 2009).

In Australia we have identified some general broad trends which are related to decisions regarding when to have a child, and how many to have. These include increasing levels of education, economic and work insecurity among young people, housing affordability, high child care costs and social norms which continue to favour women having the primary caregiving role and take up the largest share of domestic duties. In common with many other countries, work-family incompatibility is also central underlying factor. Australia has some of the highest education levels for women amongst OECD countries, and yet also an above average proportion of mothers working part-time or not working at all[25]. For many families not only are two incomes considered necessary to maintain an adequate standard of living but many women also want to be able to have a career. When work and family are incompatible and women's employment opportunities are curtailed by having children then on average they will restrict the number they have (McDonald, 2002, p. 429). This incompatibility may take different forms for different sections of society and policies need to recognize and respond to the diversity of people's experiences and choices. However, more research is needed to fully understand what obstacles, or perceived barriers, are specific to having a first, second and third or higher order children and how these obstacles differ for different parts of the population.

While policies play an important role in supporting people's reproductive choices by creating an environment that is more or less conducive to childbearing, finding clear-cut evidence of policy effects on fertility is very difficult. The difficulty involved in assessing whether a particular policy had an effect on a fertility outcome comes from the methodological problem that policies are not introduced in a way that there is a 'treatment' and 'control' group as in a randomized trial. As such, even when quasi-experimental methods are used it can be difficult to indentify the counterfactual of what would have occurred had a particular policy not been introduced, or introduced in a different way. The effect of a policy is also likely to vary significantly across different contexts based on the interaction with other cultural and economic factors. For example, the introduction of highly paid parental leave in a country with a well-established affordable child care system for young children, will be different from the same policy if introduced in a country with little child care provision in and families are faced with a significant gap between when parental leave ends and affordable child care for children is provided. The effect of a policy might be overestimated when studied in isolation as countries with one policy supportive of parents also tend to have other policies which also create a supportive environment for

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[25] The OECD average for women aged 15-64, with at least one child aged 0-14 is 53% working full-time, whereas in Australia the percentage is 32% (OECD Family Database, Part LMF1.2).

childbearing. Conversely, the effect of policies might also be underestimated if they have differential impacts across parities (for example no effect on first births but positive for second births) and these effects are averaged out by studies looking at aggregate fertilty outcomes such as completed number of children, or TFR.

Most of the studies were only able to identify if there was a tempo effect on fertility due to the long time that is needed for women to complete their reproductive years and have their completed family size measured. As such although our understanding of how policies affect fertility in the long term is very limited. It is likely however that policies work over different time horizons. Some policies, such as baby bonuses may only have short-term effects as people bring forward the timing of births they were intending. However, even a policy that increases the tempo effect of fertility and leads people to bring forward births and have children earlier may have a subsequent positive effect on cohort fertility (Lutz & Skirkbekk, 2005). Other policies, particularly earner-carer policies such as parental leave and child care which support gender equality and work-family reconciliation may not make any immediate difference on fertility rates but may be paramount for supporting reproductive plans and larger family size in the long term (Sobokta, *et al*, 2020). One way to indirectly assess the long term impact of policies is to look at countries which implemented their policies a long time ago. In this way the Nordic countries that have generous paid parental leave and extensive provision of affordable high quality child care can serve as a useful benchmark when making forecasts about the fertility that is likely to occur when a country orients itself towards the reconciliation of active labour force participation of women, and men to activities and responsibilities of childbearing (Andersson 2010, p. 214.)

Despite the methodological difficulties and caveats, in line with previous review studies (Thévenon & Gauthier, 2011; Sobokta, *et al.,* 2020; Lopoo & Raissian, 2018) we find that policies which support work-family reconciliation including parental leave and in particular increased child care availability and affordability appeared most consistently linked to fertility gains in other countries. This matches what we know about work-family incompatibility being a major obstacle for further childbearing. While the primary aim of these policies may be to increase productivity and increased labour force participation, as well as in the case of early childhood education to provide developmental benefits to children, these policies can increase fertility by enhancing work-family balance and lowering the opportunity cost of childbearing, especially for women. Financial transfers can also assist with the direct costs of raising children and are an important part of the vertical equity to assist low-income families. However, compared to the lifetime costs of children, financial transfers generally only play a minor role, unless they are very generous.

Helping the childless become parents, or parents to have more children?

As mentioned, the decision and motivation to have a first birth, and the motivation for people who are parents to have more children are different and are also likely to react differently to policies. Unfortunately, few studies explicitly examined differences in whether fertility changes as a result of specific policies occurred at the intensive margin, i.e. parents having more children, or the extensive margin, i.e. childless people becoming parents (Lopoo & Raissian, 2018). Therefore, knowledge of how parents versus childless people react to general policies including parental leave, child care and financial transfers is somewhat limited.

Harknett, *et al.* (2014) suggest that parents may put more weight on practical considerations and, therefore higher-order births may be more responsive to policy influences. A recent study that aimed to identify specific target groups that would be the most cost-effective for pronatalist policy targets in Australia (Chen, *et al.* 2019) suggested that targeting parents who already had two children, would be more cost-effective than lower parities because the marginal cost of an additional child declines as the number of children increases. Wood and Neels (2019) suggest that, higher-order births may be *less* responsive from a tempo-perspective because for parents their timing is less-flexible if they want to provide a first born a sibling they are likely to want to do this within a particular time frame, to avoid approaching an advanced age.

In contrast to parents, childless people (potential parents) have incomplete information. Parents on the other hand have already lived throught the experience of having a child and the complicated choices regarding negotiating household division of labour and paid employment (Billingsley & Ferrarini, 2014). Childless people's understanding of the direct and indirect costs of children are likely to be coming from their friends, colleagues and relatives, so experiences of child care and parental leave are likely to flow on to potential parents through those peer networks. A recent study in Australia highlighted that for many young women, observing the difficulties faced by their female peers who were mothers in combining work and family life, or experiencing stalled careers, was an influence in their own uncertainty about having children in the future (Hill, *et al.* 2019). These potential parents may be more likely to be influenced by 'announcement effects' of major policies and hence respond to new policy initiatives or packaging (Bergsvik, *et al.* 2020).

If the aim of a particular policy is to increase fertility in general, then targeting higher-order births may be most cost-effective. However, if low fertility is seen as an individual citizen welfare issue, i.e. that people are not able to achieve the number of children they desire, or feel they need to postpone childbearing, then priority should be placed on those trying to become parents or who may have just one child. As Bernardi (2005, p.127) states '*for someone who wishes to have children, being able to have the first child implies a welfare increase that is reasonably higher than that for someone who moves from the second to third child, or third child to the fourth one'*. From this perspective, the importance of policies around ART is also clear.

While policies themselves confirm existing norms, they also have the capacity to shape them further (Sobokta, *et al.*, 2020). Policies such as Dad and Partner Pay signal what kind of behaviour is supported by the government and therefore also have an important impact on the level of perception (Neyer & Andersson, 2008). However, as evidenced by the low uptake of the Dad and Partner Pay, policies are unlikely to succeed unless they are accompanied by a shift in social attitudes and expectations. Developing a culture of a family-friendly society and gender equitable social norms takes time and is a long-term commitment (Hoem, 2008). When Sweden first introduced shared leave for fathers in the 1970s the uptake was very low but in the last five decades, along with further reforms and incentives for fathers this has increased substantially with fathers now taking one quarter of all parental leave days (Duvander and Ferrarini 2013). Developing a family-friendly society also requires deliberate nurturing by the state (Hoem, 2008). This is evident in South Korea's new policy paradigm to tackle its falling birth rate. Despite implementing various policies in the recent past, including generous child paternity leave, there was little uptake. The government's focus has now shifted to creating a 'child-friendly' society with a focus on improving quality of life overall and establishing gender equality

(Presidential Committee on Ageing Society and Population Policy, 2021), and it is actively trying to tackle social norms such as long work hours by implementing a new shorter work week (Chan, 2018).

Policies designed to support reproductive choices also need to be supported across the political spectrum to ensure their stability and continuity (OECD, 2019). Children are a life-long commitment and generally require support for at least 18 years. Hesitations about having children can be alleviated if people have confidence and trust that policies to support them will remain in force and not constantly change over time (Thévenon & Gauthier, 2011; Toulemon, 2011; Sobotka, *et al.* 2020). Simple and clear family policies which can be easily understood, can also have an important role in signalling to the population that governments care about families and their wellbeing (Sobotka, *et al.* 2020) and that children are valued. This was evident with the Baby Bonus which many parents, and potential parents, perceived as signalling the importance they have to society. By creating a child-friendly society with policies oriented towards gender equality (Toulemon, 2011) and supporting women to reconcile work and family including by investing in paid parental leave for mothers and fathers, and making high quality child care more affordable, there is scope to increase fertility by reducing the gap between the number of children men and women want, and the number they have.

PART 2: HILDA ANALYSIS

12 Analysis of HILDA data: policy analysis and fertility

Key points

- Analysis is based on the Household, Income and Labour Dynamics in Australia (HILDA) panel study
- Four policy changes are considered: the baby bonus program, paid parental leave, dad and partner pay, and family tax benefit reform
- Due to the eligibility rules of the policies, the analytical methods used are quasi-experimental, mainly using a difference-in-difference implementation strategy
- Internal and external validity are both questionable in these results so caution should be exercised in interpreting them as causal impacts and the quantitative estimates should not be viewed as being directly comparable.
- It is estimated that there was an increase of around 3% in first births following the implementation of the baby bonus
- The introduction of paid parental leave led to an estimated 5% increase in the difference between births in the treatment group compared to the control group, but this is due to a decline in births in the control group rather than an increase in births for the treatment group.
- The introduction of Dad and Partner Pay led to an estimated 3% increase in the difference between births of the treatment group compared to the control group, but as seen for paid parental leave, this is due to a decline in births in the control group rather than any increase in births for the treatment group.
- The family tax benefit reform led to an increase in childbearing desires, expectations and intentions
- Placebo tests show that there are significant differences in fertility movements between treatment and control groups even in non-policy change years. This suggests that the results should not be interpreted as a causal effect of the policies on childbearing behaviour.

The statistical analysis in this report examines the effect of different policies on fertility outcomes, fertility intentions and fertility expectations. The literature review showed that the policies that have been most consistently associated with increases in fertility include financial transfers, parental leave, and child care. In this report, we consider the following policies which were implemented, or had a major change during the period of HILDA data collection (described below). The policies are:

1. Baby bonus program (financial transfer)
2. Paid parental leave (parental leave)
3. Dad and partner pay (parental leave)
4. Family tax benefit reform (financial transfer)

In this report the analysis was not able to consider changes to child care policy. This is because the modelling of child care policy and fertility did not meet the conditions for analysis, for two main reasons. The first is that the earlier changes to child care (Child Care Benefit and Rebate) in 2004 and 2006 are impossible to separately identify from other changes to the transfer system. The second is

that new changes like Child Care Subsidy are too recent to evaluate. Therefore in this report, we consider the relative importance of child care based on the literature review and information available from the ANUPoll survey.

The report is structured as follows. We first describe the data and methodology used. Then we present the results of the policy analysis, followed by an analysis of how fertility outcomes are associated with various socio-demographic variables. The appendix contains a number of robustness checks and alternative identification strategies.

12.1 Data and Methodology

Nineteen years of the Household Income and Labour Dynamics (HILDA) data are used to analyse fertility intentions and outcomes. The currently available 19 waves of panel data capture household survey responses on demographic, social and economic factors from 2001 to 2019. Most of the empirical estimation and the descriptive statistics below are conducted with a sample that is restricted to women aged 18-49. For paid parental leave, we restrict the sample to women aged 21-44. This is consistent with the previous literature to make direct comparison possible (Bassford and Fisher, 2020)[26]. For the analysis of FTB we restrict the analysis to those women aged 18 to 44. A discussion of the age restrictions associated with measuring fertility intentions is provided in the Appendix.

Methodology

We use a variety of different methodologies to investigate the various fertility outcomes and fertility measures. The baseline model is:

$$Y_{ict} = \alpha + X'_{it}\beta + \gamma_c + \delta_t + \varepsilon_i + \epsilon_{ict} \tag{1}$$

where Y_{ict} is an outcome of interest for woman i in cohort c at time t. Cohort refers to either the birth year or age and is measured in 5 year groupings. We also allow the effect of different socio-economic variables to vary by cohort (that is we will allow β to vary by c.) δ_t captures time fixed effects while ε_i makes used of the panel structure of the data and captures individual fixed effects. X'_{it} captures the socio-economic and demographic background of woman i in cohort c at time t. ϵ_{ict} captures all other unobserved factors that might impact on fertility outcomes and intentions for woman i in cohort c at time t.

Outcome measures

The different outcome measures Y_{ict} of fertility are actual births, preferences for children, expectations to have children, number of intended children and the expected timing of next child.[27] Equation (1), for these different outcomes, is generally estimated using linear, ordinary least squares regression. We conduct robustness checks using probit models for binary outcomes. We use poisson models for the count variable of stated number of intended children.

Policy Changes

We examine four policy changes which may have affected fertility or fertility intentions and occur during our sample period. We investigate: (a) the baby bonus program which was introduced in

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[26] Bassford and Fisher (2020). "The impact of paid parental leave on fertility intentions." *Economic Record*, *96*(315), 402-430.

[27] These measures are described in more detail below.

2004; (b) paid parental leave, announced in 2009 and implemented in 2009; (c) the extension of paid partner leave, was added in 2013; and (d) the family tax benefit reform of 2004.

We expect that when a policy reduces the cost of raising a child that it may lower the economic barriers of fertility. This may be observed in fertility outcomes and intentions. We identify who is affected by each policy (and who is not) to use a difference-in-difference identification strategy for causal inference. In some cases, we exploit the variation in the scheme for women working in public and private sectors. Or we exploit changes for individuals in response to the policy to see if we obtain similar impacts. We use the within person variation to see whether the results would change. The detailed identification strategies we propose for each policy are described in each relevant section.

To attempt to identify the causal impact of these policy changes, we use a Difference-in-Difference identification strategy (DiD). The key feature of these strategies is our identification of a treatment group, affected by the policy, and a control group of individuals or households who are not affected by the policy. For each policy, we briefly describe the timing of the policy and the rationale behind the identification of the treatment and control groups.

For each policy, we present multiple possible identification strategies. All of the presented identification strategies are potentially valid approaches to identify treatment and control groups and use the DiD methodology. For clarity, we pick a preferred identification strategy for which we present results in the main section of the report. Results using (most of) the other identification strategies are reported in the Appendix.

Identification through DiD requires two core things to hold in the data. The first is that there are no other policy changes happening at the same time which could confound our treatment estimates. The second thing that could go wrong is if the treatment and control groups have different underlying trends in the data. DiD works by 'imputing' the trend from the treatment group to the control group to create a counter-factual of what would have happened to the treatment group in the absence of treatment. If the treatment and control groups are evolving similarly over time (often referred to in the literature as 'parallel trends'), then DiD will work well. If parallel trends is violated, then DiD may not provide a valid methodology for estimating the impact of policy.

One way to informally test both of these assumptions is to estimate what are called 'placebo tests'—that is tests of a 'policy impact' in years where there is no policy change. Finding no policy effect in non-policy change years and a policy effect in the policy change year can provide evidence that DiD is working as intended. If we find policy effects in years where there are no policy changes, then it could be that one or both of the assumptions are violated. We present such placebo tests below for paid parental leave and the extension to partners. (Placebo tests for the two other policies provide a similar result—we have not included them for brevity.). In both cases, the placebo tests suggest that we may not be picking up a causal effect of these policies. Lack of common trends and confounding effects from other policies or environmental factors threaten the internal validity of our estimates.

Variable selection, description and treatment

This section describes the variables used in the analysis of the HILDA data. We first look at the different fertility measures used as outcome variables in the various analyses and then at the control

variables which are possible correlates of fertility. We finish by describing the measures used for the policy evaluation analysis.

Table 23 describes the different outcome variables used. We use new birth (observed birth), preferences for children (how strong is the desires to have (more) children), expectations (how likely they think they will have (more) children), how many (more) children they want (intentions) and when they expect to have their first (or next) child.

Table 23 Fertility outcome variables

Fertility measures	Description
Childbearing desires (iclike)	Measured with the question: *I now want you to pick a number between 0 and 10 to show how you feel about having (more) children / a child in the future. [The more definite you are that you would like to have (more) children / a child, the higher the number you should pick].* *We also refer to this measure as "Preference for more children"*
Childbearing expectations (icexpt)	Measured with the question: *How likely are you to have [a child / more children] in the future? Pick a number between 0 and 10. [The more likely it is that you will have a child/ more children in the future, the higher the number you should pick].* *We also refer to this measure as "Likelihood of having more children"*
Number of intended children (icn_v3)	Measured with the questions: *How many (more) children do you intend to have?* *We also refer to this measure as "Number of intended children"*
Years until intended birth (delataicnV4)	Provide information on a change in the number of years the respondent wishes to wait before having an intended child.
New birth (birthFY, newbirthR)	Identified by an increase in the total number of children born, either in the financial or calendar year.
Childless*	Provide information on whether the respondent has never had children.
Conditional preference* (likelwexpct)	Provide information on whether the respondent has a low expectation to have children (5 or less), but a strong preference for children (6 or more).

*Outcomes for general correlation analysis only.

Table 24 describes the variables from the HILDA data set that we use as explanatory variables for the analyses. These variables are associated factors which correlated with fertility outcomes and stated fertility measures. When looking at policy analysis these variables will be controls to account for individual factors that contribute to fertility outcomes and preferences. The socio-demographic variables are arranged by time-varying and time-invariant nature. This is important for the inclusion of individual fixed effects, as only the time-varying socio-demographic variables can be used as covariates in the fixed-effects regressions. The non-time-varying variables are captured by the individual fixed effect and are thus omitted from the model. In the results reported for the policy analysis below, it states which variables are included in each specification.

Table 24 Control variables

Type	Variable name	Description
Individual fixed effects	Year (i.year)	Year of data collection

	State (i.state)	State of residency
Time-varying demographics	Age (hgage)	Age of respondent, in years.
	Age- squared (hgage2)	
	Age band (ageband)	Whether the respondent belongs to one of the following age groups: 18-24, 25-29, 30-34, 35-39, 40-44, 45-49.
	Education (eduredef)	Respondent's highest educational attainment, classified in four categories: Bachelor Degree or Higher, Diploma or Certificate III/IV, Year 12, Year 11 or below.
	Marital status (marstat)	Whether the respondent was single, married or in a cohabiting relationship.
	Employment (work)	Whether the respondent is permanent full-time, permanent part-time, casual full-time, casual part-time, self-employed, or not working.
	SEIFA index (seifa2cats)	Summary measure of socio-economic status by geographic are of residence of the respondent, based on the ABS Socio-economic Index for Areas (SEIFA).
	Household disposable income (loghhinc)	Log of household disposable income
Time-invariant demographics	Born in Australia (bornaus)	Whether the respondent was born in Australia or overseas
	Aboriginal or Torres Strait Islander (atsi)	Whether the respondent was of Aboriginal or Torres Strait Islander origin
	Remoteness area (remote)	Whether the respondent live in a: major, regional or remote area and it is based on the 2011 Australian Statistical Geography Standard (ASGS) remoteness structure.
Controls for other covariates	Number of children ever had (tchad)	Measured with the question: *How many children in total have you ever had? That is, ever [fathered / given birth to] or adopted?*
	Children ever had (childever0, childever1)*	Total number of children ever born to the respondent, excluding the very year of new birth. Children ever had 1 indicates that the respondent has had 1 child, and children ever had 0 indicates that the respondent has never had a child.
	Parity (parity0, parity1)*	Total number of children ever born to the respondent, including the very year of new birth. Parity 1 indicates that the respondent has had 1 child, and parity 0 indicates that the respondent has never had a child.

*Control for general correlation analysis only.

Table 25 describes the HILDA variables used in the policy analyses to identify affected vs. not affected groups of individuals (treated vs. control groups). The table also states the year of the reform and for which years the policy was analyzed for.

Table 25 Policy measures for the policy evaluation analysis

Measurement	Variable name	Description
Baby bonus National	Program effective years	Years during which the Baby Bonus Program was effective (2003-2013)
	Cohort comparison	Old and young cohorts of respondents are compared according to the following combinations: 18-24 vs 40-44, 25-29 vs 40-44, 18-29 vs 40-44, 18-22 vs 35-39.
Paid parental leave	Announcement year	Year when the paid parental leave was first announced (2009)
	Enactment year	Year when the paid parental leave was implemented (2011)
	Eligibility	Provides information on whether the respondent is eligible to receive the paid parental leave.
	Leave	"leave access including current access to paid maternal leave and anticipated access to the public scheme from the time of announcement in 2009 where women is eligible" (Bassford and Fisher, 2020)
	Employer as private sector	Provides information on whether the respondent is employed in the private sector.
FTB reform	Post 2005	Equal to one if in post-reform period (after 2005)
	A reform	Provides information on whether the family taxable income fell into the taper rate affected change.
	Lone mother	Provides information on whether the respondent is a single mother, as opposed to a single woman.
DaPP Leave	Post 2013	Post reform period (after 2013)
	Eligibility	Provides information on whether the male partner is eligible to receive the paid parental leave.

12.2 Policy 1: Baby Bonus Program

Key points

- Overall, it is estimated that the introduction of the baby bonus increased births by less than 2%
- The effect of the baby bonus is most evident for first births
- It is estimated that there was an increase of around 3% in first births following the implementation of the baby bonus
- There was no significant increase for women who already had children
- There was also evidence of an increase in childbearing desires and expectations following the implementation of the policy

The 'Baby Bonus' was a cash grant of $3,000 payable on the birth of a child announced in the Commonwealth Budget on 11 May 2004. Payments began from 1 July 2004. The Baby Bonus was the largest increase in unconditional maternity payments in Australia since WWII. The program replaced the Maternity Allowance which was, on average, much less generous. Throughout its years of operation the Baby Bonus payment and payment restrictions changed a number of times. From 1st January 2009 onwards it switched from being universal to being means tested with a $75,000 income limit and changed from being paid as a lump sum to fortnightly instalments.

Because the policy was announced only a few months prior to its introduction, any children conceived in anticipation of the Bonus would have had a due date well into the following year.

The identification of the effect of the baby bonus on fertility draws on HILDA data from 2001 to 2013. Exclude data after 2013 when the program was abolished.

Identification strategies

Identification Strategy I: (preferred – included in the main report)
We use a DiD design. Our approach uses the fact that young women who fall into the more active childbearing ages are more likely to be affected by the small monetary incentive of the baby bonus program compared to women in their later childbearing age who are generally more financially secure[28]. We set women who were 18-24[29] years old at any time during the 13-year survey period as the treatment group and women who were 40-44 years old at any time during the period as the control. This strategy exploits the cross-sectional variation within a short panel.

Identification Strategy II (considered but not included)
The second identification strategy also uses a DiD design. It focuses on two specific cohorts and follows them over the entire 13 years. This strategy sets women aged 18-22 in 2001 as the treatment group and women aged 35-39 in 2001 as the control group. Unlike identification I, where each individual appears at most five times in the data, this strategy makes the most use of the panel structure of HILDA. However, the use of the long-term panel does not come without cost. The main drawback of this strategy is that most women assigned to the control group may leave their

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[28] The latter group will be, on average, in a better financial position and therefor arguably less responsive to the policy. We test this in a separate identification strategy, results can be found in the Appendix.
[29] We also run these regressions with alternative treatment age groups of 25-29 and 18-29, results are not reported but do not qualitatively vary from what we report when we use 18-24 year olds as the treatment group.

childbearing ages five to six years after the policy becomes effective. This implies that the average outcome for the control group tends towards zero over time. More importantly, the strong, inverted U-shaped birth outcomes trend over the lifetime of a woman dwarfs any policy response and dominates the analysis. Controlling for this strong trend, which peaks in the early thirties for new births, is only partially feasible, such that this strategy is not viable.

Identification Strategy III (considered – included in the appendix)

The third identification strategy also uses a DiD design. Within age groups, women who are more disadvantaged are presumably more likely to react more to the small monetary incentive (relative to the cost of the upbringing of a child) compared to women who are more well-off. We set women who were in the lowest three SEIFA category in 2011 as the treatment group and all women in the top three SEIFA categories as the control group. This strategy again exploits the cross-sectional variation.

Figure 27 shows the average birth rate for different age groups by year over the sample period. As expected, we do not observe much change for the older age groups, while the younger age groups show more variability across time. Looking at the birth rate changes around the introduction of the baby bonus policy in 2004 we see varying patterns for the different age groups. Some age groups have a slight dip, some increase and others stay fairly constant around the introduction of the policy. Overall, looking at this unconditional representation of the data, we could make out an upwards trend for some of the age groups over the period following the introduction of the baby bonus. We now turn to regression analysis to control for potential confounding effects.

Figure 27 Probability of birth, by age group
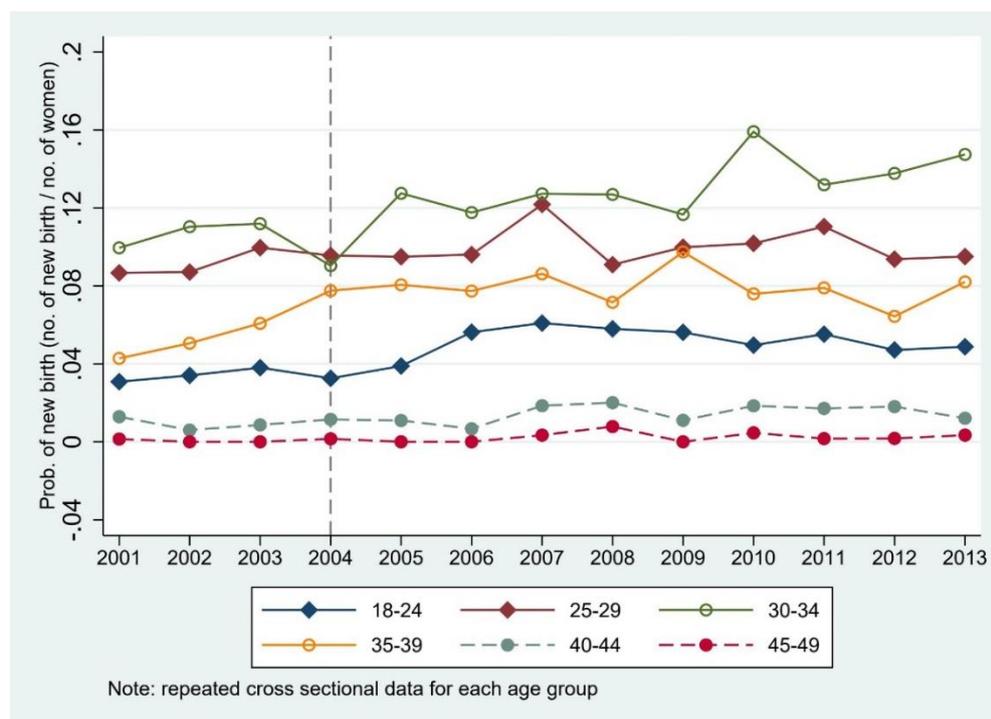
Results

For this analysis we include 18,461 observations relating to 5,828 women. Of those 3,646 women are in the treatment group (18-24 years old at any time between 2001-2013) and 2,182 women are in the control group (40-44 at any time between 2001-2013). For some analysis, including the fixed effects or intended number of children cases are dropped so the total sample size for those models is lower.

Table 26 Descriptive statistics for treatment and control groups

	Aged 18-24 (treatment)	Aged 40-44 (control)
	Column %	Column %
Number of children		
0	85	18
1	10	15
2	4	37
3+	1	29
Mean age	20.1	42
Relationship status		
Married	8	59
Cohabiting	26	13
Single	66	28
Education level		
Bachelor degree or higher	13	31
Diploma or Certificate III/IV	21	26
Year 12	45	14
Year 11 or below	21	29
Mean household income	$84,674	$91,414
Country of birth		
Born overseas	10	26
Born in Australia	90	74
Employment status		
Permanent ft	30	32
Permanent pt	9	20
Casual ft	6	3
Casual pt	27	12
Self-employed	1	7
Not working	28	25
Aboriginal or Torres Strait Islander		
Yes	3	5
No	97	95
Remoteness		
Major city	68	68
Inner regional	20	19
Outer regional or remote	13	12
Number of observations	11,787	6,674
Number of women	3,646	2,182

Figures 28-31 plot the fertility outcomes of interest within the control and treatment groups over time. For the probability of having a child (Figure 1) we see a significant difference between the two age groups. The younger age group has a much higher birth rate which is also more variable over time. Both groups appear to have a higher average rate for the years after the reform compared to the years before the reform. Prior to 2004, the probability of a 18-24 year old having a child was 3.7 %, increasing to 5.3% from 2004 onwards. For women in the control group the equivalent increase was 0.9% to 1.6%.

For childbearing desires (measured on a 0-10 scale), again we see a large difference between the two groups. As seen in Figure 2, the treatment group has a much higher percentage of women who are childless and therefore the childbearing desires are also higher. Again both groups appear to have experienced an increase over the time period. For women aged 18-24 the average childbearing desire increased from 7.7 pre 2004, to 7.9 from 2004 onwards. For women aged 40-44, the equivalent increase was 1.1 to 1.8.

For childbearing expectations (Figure 3) the pattern is very similar to childbearing desires, and on average both groups experienced an increase over the time period. Finally for additionally intended number of children (Figure 4) again there is a large difference between the two groups and an small increase on average for younger and older women. For women aged 18-24 from 2.26 to 2.31 additional children and for women aged 40-44 from 0.04 to 0.09 additional children.

These figures are unconditional in the sense that they do not control for any differences between women in their socio-demographic characteristics which could have an effect on fertility outcomes. To control for differences we turn to the results of the regression analysis.

Figure 28 Baby Bonus- Probability of new birth, by treatment and control groups
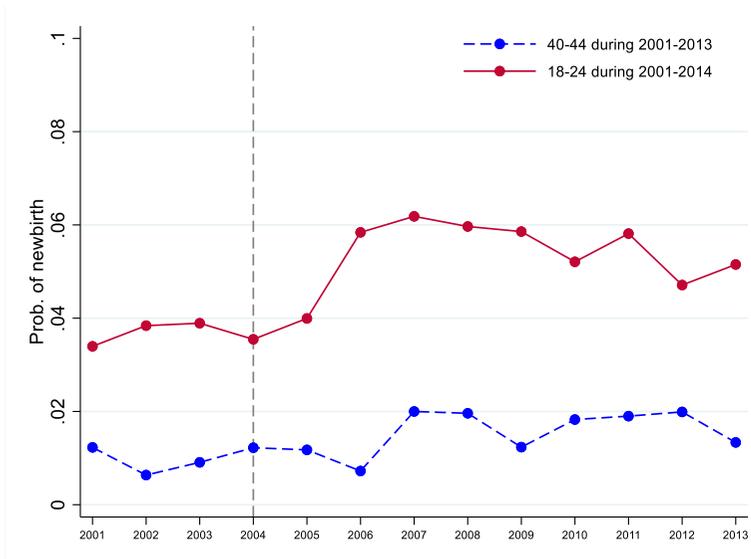
Figure 29 - Baby Bonus Childbearing desires by treatment and control
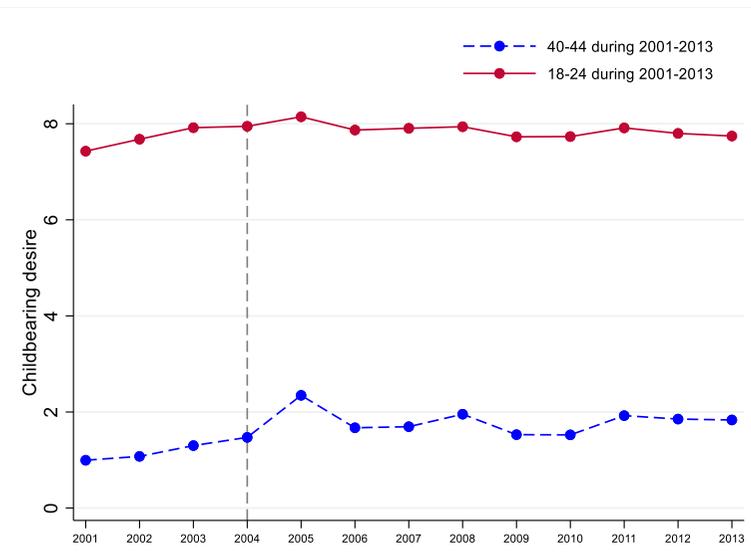
Figure 30 Baby Bonus Childbearing expectation - by treatment and control group
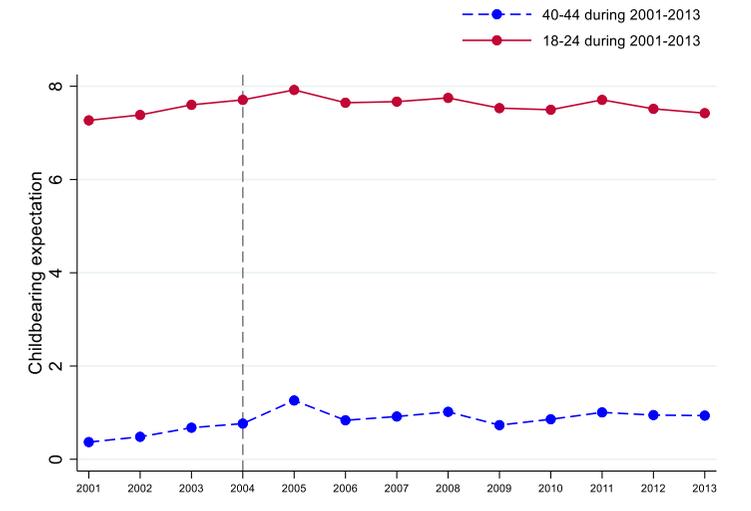
Figure 31 Baby Bonus Additionally intended children- by treatment and control group

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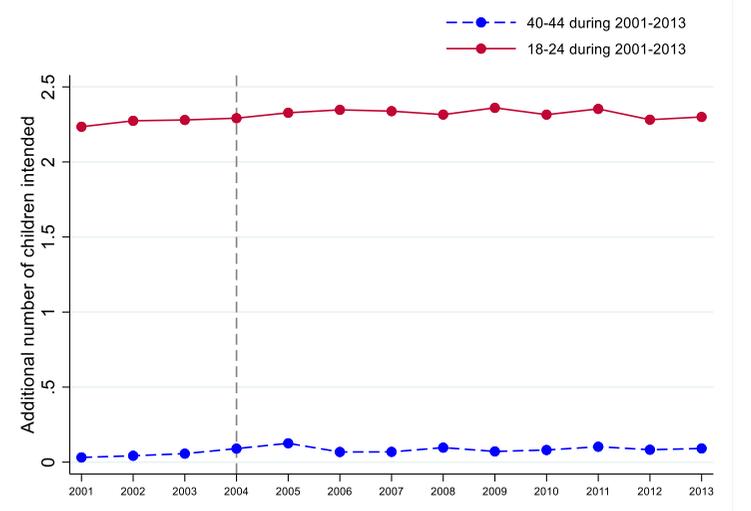
Regression results

The first outcome of interest is births. This outcome variable is measured as 1 if there is a new birth that year and zero otherwise. We examine women at all parities, as well as separately for women having a first birth and for women having a second birth. Due to the small number of women in the treatment group who have two children already we do not look at the progression to third or higher order births.

Table 27 Effect of Baby Bonus Program 2004-2013 on new births: DiD estimates

	(1) OLS	(2) OLS	(3) OLS-fixed effect	(4) OLS-fixed effect
All new births				
Coefficient	0.008	0.004	0.028***	0.017*
Standard error	(0.006)	(0.005)	(0.010)	(0.010)
Observations	18,461	18,085	18,461	18,086
First births				
Coefficient	<0.001	0.002	0.017	0.034**
Standard error	(0.008)	(0.009)	(0.016)	(0.015)
Observations	11,572	11,447	11,572	11,448
Second births				
Coefficient	0.009	0.004	-0.033	0.006
Standard error	(0.034)	(0.034)	(0.087)	(0.080)
Observations	2,055	2,011	2,055	2,011
Model specifications				
Year and State Fixed Effects	Yes	Yes	Yes	Yes
Time-varying Demographics	No	Yes	No	Yes
Time-invariant Demographics	No	Yes	No	No
Individual Fixed Effect	No	No	Yes	Yes

Treatment group is women aged 18-24 at any time during 2004-2013; women aged 40-44 years old any time during 2004-2013 served as a control;
* p<0.1, ** p<0.05, *** p<0.01

The results show a significant positive effect for new births when we control for individual fixed effects (Columns 3 and 4). However, once we control for time-varying demographics this effect, although remaining significant becomes weaker. Looking at the different parities we see a significant effect only for the full fixed effects model (Column 4) for first births. This could be due to bringing the birth forward, i.e. sooner than expected in comparison to the timing seen prior to the implementation of the policy. The results suggest a 3% increase in first births compared to pre-baby bonus.

Table 28 shows the results for three fertility preference outcomes: childbearing desires, expectations and additionally intended number of children. For childbearing desires in the OLS models for all parities we see a negative relationship. While we saw that childbearing desires for both the treatment and control group increased from 2004 onwards, the increase was larger for women aged 40-44 leading to a negative effect. However, this could in part be due to the change in the way the questions were asked and when we look at the fixed effects model which looks at only differences in childbearing desires within the same women over time we see an increase (Columns 3 and 4). This increase is also evident when looking only at women who are childless, but not when looking at women who have only one child. For childbearing expectations we see no significant effects, whereas for intended number of children we see a revision downward although the effect is significant but small.

Using Identification Strategy III (reported in Appendix) we do not find any statistically significant results. This suggests that the significant results found here are not robust to alternative ways of estimating the causal impact.

Table 28 Effect of Baby Bonus Program 2004-2013 on childbearing desires, expectations and additionally intended number of children: DiD estimates

	(1) OLS	(2) OLS	(3) OLS-fixed effect	(4) OLS-fixed effect
Childbearing desires				
All parities				
Coefficient	-0.319**	-0.259**	0.414***	0.310**
Standard error	(0.130)	(0.130)	(0.135)	(0.139)
Observations	16,800	16,461	16800	16462
Parity 0				
Coefficient	-0.474	-0.353	0.709***	0.664**
Standard error	(0.339)	(0.349)	(0.262)	(0.270)
Observations	10,755	10,643	10755	10644
Parity 1				
Coefficient	-0.666	-0.666	0.760	0.833
Standard error	(0.480)	(0.480)	(0.828)	(0.768)
Observations	1,677	1,638	1,677	1,638
Childbearing expectations				
All parities				
Coefficient	-0.125	-0.081	0.253**	0.180
Standard error	(0.107)	(0.106)	(0.111)	(0.115)
Observations	16,774	16,435	16,774	16,436
Parity 0				
Coefficient	-0.357	-0.238	0.314	0.282
Standard error	(0.249)	(0.257)	(0.218)	(0.218)
Observations	10,733	10,621	10,733	10,622
Parity 1				
Coefficient	-0.194	-0.314	0.226	0.487
Standard error	(0.409)	(0.402)	(0.491)	(0.452)
Observations	1675	1636	1,675	1,636
Additionally intended number of children				
All parities				
Coefficient	0.046	0.052	-0.050	-0.049
Standard error	(0.037)	(0.037)	(0.034)	(0.034)
Observations	13649	13375	13649	13375
Parity 0				
Coefficient	-0.027	0.003	-0.085*	-0.070*
Standard error	(0.076)	(0.077)	(0.049)	(0.041)
Observations	8764	8674	8764	8674
Parity 1				
Coefficient	-0.121	-0.142	-0.011	-0.034
Standard error	(0.125)	(0.124)	(0.187)	(0.191)
Observations	1221	1190	1221	1190
Model specifications				
Year and State Fixed Effects	Yes	Yes	Yes	Yes
Time-varying Demographics	No	Yes	No	Yes
Time-invariant Demographics	No	Yes	No	No
Individual Fixed Effect	No	No	Yes	Yes

Treatment group is women aged 18-24 at any time during 2004-2013; women aged 40-44 years old any time during 2004-2013 served as a control;
* p<0.1, ** p<0.05, *** p<0.01

12.3 Policy 2: Paid Parental Leave

Key points

- The introduction of paid parental leave led to an estimated 5% increase in births
- The implementation does not have a significant impact by the number of children already born, suggesting that it is a policy which equally applies to those starting or building their families
- There appears to be no effect of the introduction of paid parental leave on fertility desires, expectations or intentions

This policy was announced in 2009 and became effective from 2011. Paid parental leave provides a transfer to working women and the entitlement is subject to a complicated income and work test. [30] Given that paid paternity leave (DAPP) became effective in 2013, we restrict the years of analysis to 2001-2013.

Identification strategies

Identification Strategy I: (preferred – included in the main report)
In the first identification strategy, we exploit the variation of leave eligibility, and set the year of introduction of this policy as 2011. We restrict the years of analysis to 2001 to 2013. Treated women are those who pass the income and work tests and women in the control group are those who do not pass both criteria.

Treated women are those who pass the income and work test and women who do not pass them are assigned to the control group. Compared to the income test, for which 98% of women pass the test, the work test is a more binding condition of program eligibility. [31]

Identification Strategy II: (considered – included in the appendix)
The second identification strategy exploits the policy being announced in May 2009 but only implemented in January 2011. We set the starting year of the post-policy period to 2009 and use the same criteria to determine the treatment and control groups.

Identification Strategy III: (considered – included in the appendix)
Unlike the first two strategies which employ the DiD research design and exploit variation in policy eligibility, a third possible identification strategy uses a DiD-instrumental variable (IV) research design and exploits the fact that women from the public and private sectors are differentially affected by this scheme. Prior to the introduction of this scheme, the public sector already granted very generous leave compared to the private sector. This policy will presumably act on women who work in the private sector as they are the group for whom maternity leave becomes more generous. This identification is conducted mainly in the spirit of Bassford and Fisher (2020) and involves two stages of estimation. The first predicts women's leave access prior to the policy based upon the sector in which she works. Leave access is defined as the entitlement to paid parental leave and anticipated access under the PLP scheme from 2009. Then in the second stage the strategy estimates the effect of predicted leave access on fertility outcomes.

[30] See Taylor, M. (2021), "Horizontal equity in the design of Australian family payments for newborns", *Australian Journal of Social Issues*. Available online at https://doi.org/10.1002/ajs4.159.
[31] We thank Matthew Taylor for his assistance in identifying treatment and control groups in the HILDA data.

Results

For this analysis we include 35,881 observations relating to 9,678 women. Of those 5,804 women are in the treatment group (satisfy income and work requirement to be eligible) and 3,874 women are in the control group (do not satisfy income or work requirements).

The table below shows the descriptive statistics for the two groups. For some analysis, including the fixed effects or intended number of children cases are dropped so the total sample size is lower.

Table 29 Descriptive statistics of women included in parental leave pay analysis, column % or means

	Eligible for parental leave pay (treatment)	Not eligible for parental leave pay (control)
Number of children		
0	51	23
1	15	22
2	22	30
3+	12	25
Mean age	32.5	32.5
Education level		
Bachelor degree or higher	37	22
Diploma or Certificate III/IV	27	24
Year 12	19	21
Year 11 or below	16	33
Relationship status		
Married	33	32
Cohabiting	44	47
Single	23	20
Mean household income	$96,440	$68,425
Country of birth		
Born overseas	17	13
Born in Australia	83	87
Employment status		
Permanent ft	49	7
Permanent pt	19	3
Casual ft	5	2
Casual pt	16	7
Self-employed	6	2
Not working	5	80
Aboriginal or Torres Strait Islander		
Yes	2	6
No	98	94
Remoteness		
Major city	71	68
Inner regional	18	20
Outer regional or remote	11	13
Number of observations	25,254	10,627
Number of women	5,804	3,874

Figures 32-35 plot the fertility outcomes of interest within the control and treatment groups over time. For the probability of having a child (Figure 32) we see a significant difference between the two groups. Women in the treatment group (eligible) had an average probability of having a child of 4.2% in pre-2011, and 4.5% from 2011 onwards. This is driven by a gradual increase over the sample period rather than a discrete step up at 2011. For women in the control group, their probability of having a child increased slightly over this time period, but fluctuated quite a bit, particularly in the second part of the sample period.

For childbearing desires (measured on a 0-10 scale) again the treatment group had higher desires overall which is consistent with their lower number of children already had on average. For both groups, their childbearing desires increased over time although they both fell after 2011.

For childbearing expectations (Figure 34) and additionally intended children the pattern is very similar to childbearing desires.

As before, these figures are unconditional in the sense that they do not control for any differences between women in their socio-demographic characteristics which could have an effect on fertility outcomes. To control for differences we turn to the results of the regression analysis.

Figure 32 Paid Parental Leave- Probability of new birth, by treatment and control groups

Figure 33 - Paid Parental Leave Childbearing desires by treatment and

Figure 34 Paid Parental Leave Childbearing expectation - by treatment and control group
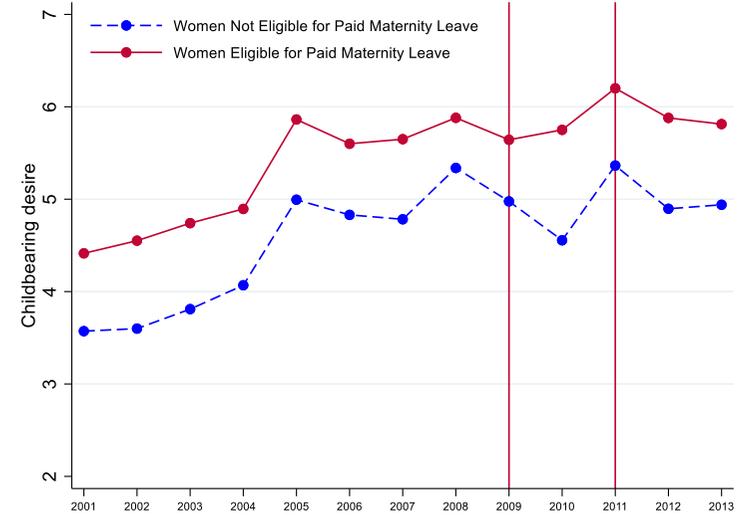
Figure 35 Paid Parental Leave Additionally intended children- by treatment and control group

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Table 30 presents the results for births.

Although the results for the OLS models are not significant, for the fixed effects we find a positive result on the probability of having a birth which persists after controlling for time-varying demographics (Column 4). This suggests that the introduction of this policy coincided with an estimated 4.5-5% increase in the difference between births in the treatment group compared to the control group. Inspection of the graph shows that this is due to a decline in births in the control group rather than an increase in births for the treatment group compared to pre-policy implementation.

When comparing the results by parity we see some significant effects for first births for the models when we do not control for time-varying demographics. However, there are no significant effects for second or third births. This suggests that paid parental leave is associated with a difference in the number for births for the treatment group compared to the control group , but there are no differences by the number of children women already have.

Table 30 Effect of Parental Leave Pay on new births: DiD estimates

	(1) OLS	(2) OLS	(3) OLS-fixed effect	(4) OLS-fixed effect
Births				
All new births				
Coefficient	<0.001	<0.001	0.050***	0.046***
Standard error	(0.008)	(0.008)	(0.010)	(0.010)
Observations	35,881	34,927	35,881	34,927
First births				
Coefficient	0.029**	0.019	0.038**	0.018
Standard error	(0.013)	(0.013)	(0.016)	(0.015)
Observations	16,297	16,038	16,297	16,038
Second births				
Coefficient	0.008	0.006	-0.031	-0.024
Standard error	(0.023)	(0.022)	(0.031)	(0.030)
Observations	6,201	6,044	6,201	6,044
Third births				
Coefficient	-0.022	-0.009	-0.011	-0.014
Standard error	(0.016)	(0.016)	(0.021)	(0.022)
Observations	8,079	7,781	8,079	7,781
Model specifications				
Year and State Fixed Effects	Yes	Yes	Yes	Yes
Time-varying Demographics	No	Yes	No	Yes
Time-invariant Demographics	No	Yes	No	No
Individual Fixed Effect	No	No	Yes	Yes

* p<0.1, ** p<0.05, *** p<0.01

Table 31 shows the results for the additional fertility outcomes: childbearing desires, expectations and additionally intended children. In line with what was seen in the Figures above, we find no significant difference between the control and treatment group in terms of their fertility preferences before and after the introduction of Paid Parental Leave.

For this reason, results by parity (also not significant) are not shown.

Table 31 Effect of Parental Leave Pay on childbearing desires, expectations and additionally intended children: DiD estimates

	(1) OLS	(2) OLS	(3) OLS-fixed effect	(4) OLS-fixed effect
Childbearing desires				
Coefficient	0.011	0.064	0.036	0.002
Standard error	(0.124)	(0.112)	(0.111)	(0.109)
Observations	30,482	29,695	30,482	29,695
Childbearing expectations				
Coefficient	0.042	0.096	-0.021	-0.054
Standard error	(0.119)	(0.103)	(0.103)	(0.102)
Observations	30,442	29,657	30,442	29,657
Additionally intended number of children				
Coefficient	0.031	0.042	-0.006	-0.006
Standard error	(0.036)	(0.032)	(0.027)	(0.027)
Observations	23,191	22,624	23,191	22,624
Model specifications				
Year and State Fixed Effects	Yes	Yes	Yes	Yes
Time-varying Demographics	No	Yes	No	Yes
Time-invariant Demographics	No	Yes	No	No
Individual Fixed Effect	No	No	Yes	Yes

* p<0.1, ** p<0.05, *** p<0.01

As an additional check on internal validity, we conducted placebo tests. In these tests we treat the policy change as happening in every year in the data set and define the treatment and control groups as above. If parallel trends hold and there are no other confounding factors, we should expect these tests to reveal a positive policy effect in the year of the policy and zero (or statistically insignificant) effects in non-policy change years. In Figure 58 in the appendix, we can see that we find statistically significant effects for every year. This casts serious doubt on the internal validity of our estimates.

Identification strategy II (described in the appendix) produces results that are quite similar to what is presented here. Identification strategy III (described in the appendix) fails to produce any statistically significant results. Again, results are not stable across different identification strategies.

12.4 Policy 3: Dad and Partner Pay

Key points

- This policy provides a short period of leave for the father or partner to spend time with the new baby and support the primary caregiver and other children
- The results are inconclusive as to whether the implementation of Dad and Partner Pay had a positive impact on births

Dad and Partner Pay (DaPP), was introduced in 2013 following paid parental leave (PPL).

This scheme came as a follow-up to paid maternal leave and was effective from 2013. To isolate the effect of this scheme separately from the previously enacted maternal leave, we restrict the years of analysis to 2011 to 2019 with 2013 and onwards as the post-policy period.

Identification strategies

Identification Strategy I: (preferred – included in the main report)

The DiD design sets the post-policy beginning year as 2013 and women with partners eligible for DaPP as the treatment group. Women with non-eligible partners are used to form the control group. Given that over the course of the effective years for DaPP, PLP was also in effect, we control for women's eligibility of PLP when examining the effect of DaPP.

Identification Strategy II (Treasury suggestion): (considered – included in the appendix)

The identification strategy is similar to the first one but we limit the analysis to women who were unemployed or out of labour force. This subsample of women should, in theory, be more affected by their partner's access to DaPP compared to working women. However, this sample restriction leads to a large sample reduction and less precise estimates. Further, women's labour force status might itself be a function of this scheme. If this is true, then this strategy may be subject to an issue of selecting on an endogenous condition, leading to biased estimates.

Results

For this analysis we include 19,881 observations relating to 5,247 women. Of those 3,613 women are in the treatment group (their partners satisfy income and work requirement to be eligible for DaPP) and 1,634 women are in the control group (their partners do not satisfy income or work requirements).

The table below shows the descriptive statistics for the two groups. For some analysis, including the fixed effects or intended number of children cases are dropped so the total sample size is lower.

Table 32 Descriptive statistics for treatment and control group, DaPP analysis. Column % or means

	Male partner eligible for paternity leave (treatment)	Male partner not eligible for paternity leave (control)
Number of children		
0	35	24
1	20	20
2	28	28
3+	17	17
Mean age	32.5	34.2
Education level		
Bachelor degree or higher	41	45
Diploma or Certificate III/IV	32	25
Year 12	17	15
Year 11 or below	10	15
Relationship status		
Married	33	32
Cohabiting	44	47
Mean household income	$120,597	$172,037
Country of birth		
Born overseas	20	23
Born in Australia	80	77
Employment status		
Permanent ft	49	7
Permanent pt	19	3
Casual ft	5	2
Casual pt	16	7
Self-employed	6	2
Not working	5	80
Aboriginal or Torres Strait Islander		
Yes	2	6
No	98	94
Remoteness		
Major city	71	69
Inner regional	18	20
Outer regional or remote	11	11
Number of observations	15,987	3,894
Number of women	3,613	1,634

Figure 36 Paid Paternity Leave- Probability of new birth, by treatment and control groups
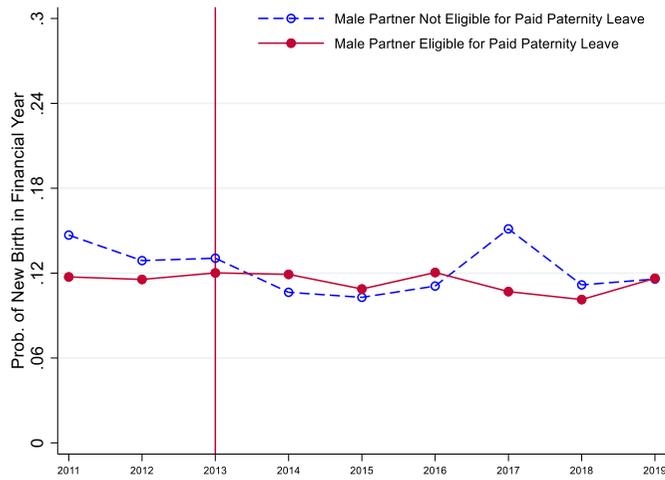
Figure 37 - Paid Paternity Leave -Childbearing desires by treatment and control group
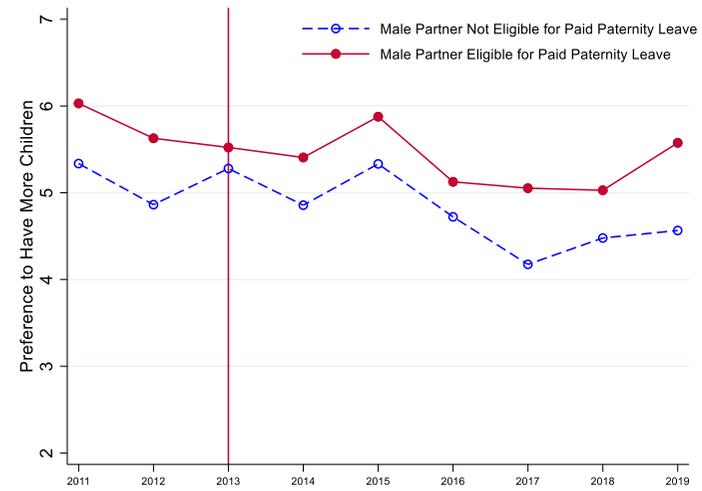
Figure 38 Paid Paternity Leave -Childbearing expectation, by treatment and control group
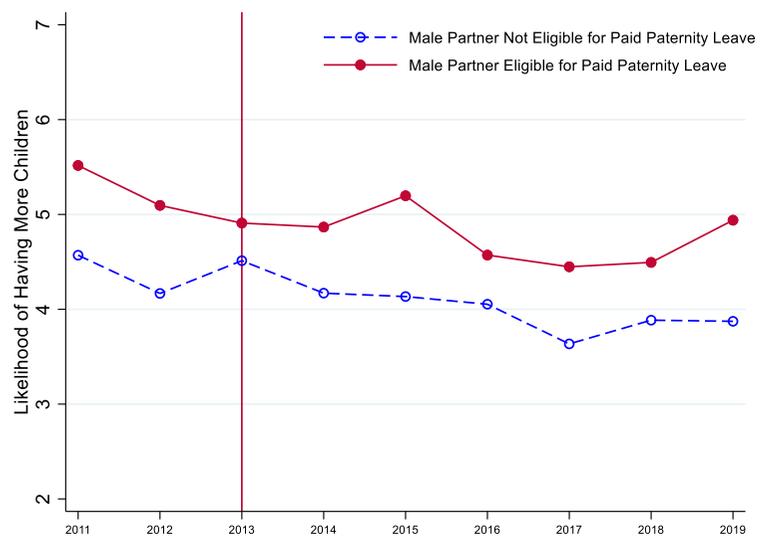
Figure 39 Paid Paternity Leave- Additionally intended children- by treatment and control group

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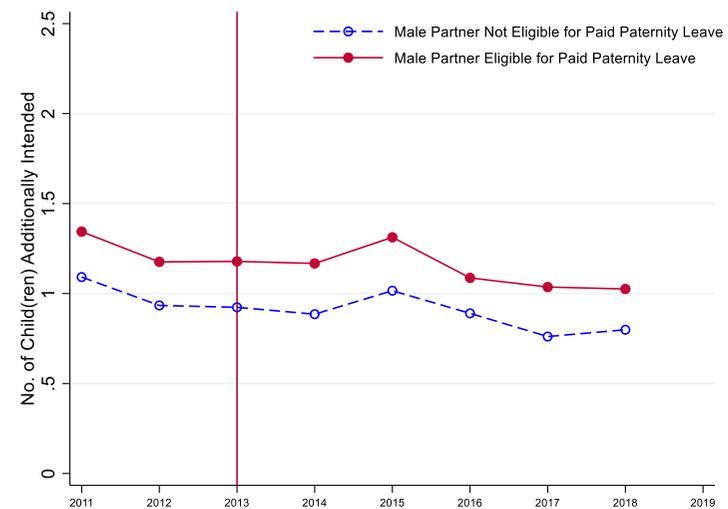
Table 33 presents the results for four fertility outcomes: births, childbearing desires, childbearing expectations and intended number of children. Column 1 presents unconditional OLS estimation including year and state fixed effects only. Column 2 adds time varying and non-time-varying demographic controls to the regression. Columns 3 and 4 are similar to Columns 1 and 2 but with individual fixed effects added. The results show an estimated 3% increase in the difference between births of the treatment group compared to the control group, but this is due to a decline in births in the control group rather than an increase in births for the treatment group following the introduction of DaPP (column 4).

Table 33 Effect of DaPP on selected fertility outcomes: DiD estimates

	(1) OLS	(2) OLS	(3) OLS-fixed effect	(4) OLS-fixed effect
Births				
Coefficient	-0.002	0.024*	0.006	0.033**
Standard error	(0.013)	(0.013)	(0.015)	(0.015)
Observations	19,881	19,363	19,881	19,364
Childbearing desire				
Coefficient	-0.187	-0.276*	-0.219	-0.256*
Standard error	(0.166)	(0.166)	(0.150)	(0.152)
Observations	18,484	18,020	18,484	18,021
Childbearing expectation				
Coefficient	-0.332*	-0.333**	-0.127	-0.156
Standard error	(0.185)	(0.160)	(0.143)	(0.145)
Observations	18,442	17,978	18,442	17,979
Intended number of children				
Coefficient	-0.045	-0.027	-0.040	-0.031
Standard error	(0.050)	(0.046)	(0.042)	(0.043)
Observations	12560	12250	12560	12250
Model specifications				
Year and State Fixed Effects	Yes	Yes	Yes	Yes
Time-varying Demographics	No	Yes	No	Yes
Time-invariant Demographics	No	Yes	No	No
Individual Fixed Effect	No	No	Yes	Yes

* $p<0.1$, ** $p<0.05$, *** $p<0.01$

As an additional check on internal validity, we conducted placebo tests. In these tests we treat the policy change as happening in every year in the data set and define the treatment and control groups as above. If parallel trends hold and there are no other confounding factors, we should expect these tests to reveal a positive policy effect in the year of the policy and zero (or statistically insignificant) effects in non-policy change years. In Figure 63 in the appendix, we can see that in the years just before and just after the policy change, we also find statistically significant policy effects. This means that the parallel trends assumption fails to hold in that other unobserved factors are differentially impacting the treatment and control groups. This casts serious doubt on the internal validity of our estimates. The results of this analysis are therefore inconclusive as to any impact of DaPP on births.

Identification strategy II (results in appendix) uses a subsample of women who should, in theory, be more affected by their partner's access to DaPP compared to working women. However, this sample restriction leads to a large sample reduction and less precise estimates. It also leads to estimates that are not different than zero. This would seem to cast some doubts on the reliability of the fairly large estimates that we find in this section.

12.5 Policy 4: Family Tax Benefit Reform

Key points

- It is estimated that the change to family tax benefit had an effect of increasing childbearing desires, expectations and intentions
- Due to the eligibility of FTB, it is not possible to measure whether it would have an impact on having a birth

From 2004, the taper rate (the rate at which benefits are reduced as income increases) for the income test for Family Tax Benefit-A reduced from 30 per cent to 20 per cent. As such, there is an income implication (albeit small) for families whose taxable income fell into the affected range.

Identification strategies

Identification Strategy I: (considered – included in the appendix)

In the first identification strategy, we restrict the sample to FTB-A recipients, set as the treated women those with family taxable income fell into the taper rate affected range and as control women those family taxable fell out of the affected range.

Identification Strategy II: (preferred – included in the main report)

The second identification strategy is conducted in the spirit of Gong and Breunig (2014).[32] The sample is restricted to single childless women and lone mothers, with lone mothers set as the treatment group and single women as control. Since the FTB scheme only applies to families with children, this DiD design draws on the fact that single childless women's fertility intentions and preferences should not be affected by this change of taper rate. In this strategy, we do not examine the outcome of new births.   Instead, we examine stated fertility preferences, specifically childbearing desires, childbearing expectations and number of additional intended children.

Results

For this analysis we include 10,087 observations relating to 3,135 women. Of those 2,357 women are in the control group (single childless) and 778 women are in the treatment group (lone mothers).

For some analysis, including the fixed effects or intended number of children cases are dropped so the total sample size is lower.

The table below shows the descriptive statistics for the treatment and control group.

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[32] Gong and Breunig (2014), "Channels of labour supply responses of lone parents to changed work incentives" *Oxford Economic Papers* 66 (4) pp. 891-915.

Table 34 Descriptive statistics for treatment and control group, FTB analysis. Column % or means

	Lone mothers (treatment)	Single childless women (control)
Number of children		
0	-	100
1	37	-
2	36	-
3+	28	-
Mean age	25	35
Education level		
Bachelor degree or higher	14	24
Diploma or Certificate III/IV	29	21
Year 12	16	40
Year 11 or below	41	15
Mean household income	$23,679	$80,520
Country of birth		
Born overseas	17	13
Born in Australia	83	87
Employment status		
Permanent ft	22	40
Permanent pt	13	9
Casual ft	3	6
Casual pt	16	25
Self-employed	3	2
Not working	43	18
Aboriginal or Torres Strait Islander		
Yes	8	2
No	92	98
Remoteness		
Major city	62	75
Inner regional	25	15
Outer regional or remote	14	9
Number of observations	2,387	7,770
Number of women	778	2,357

Note: column percentages may not add up to 100% due to rounding

The figures below show, for the treatment and control group, the distribution of fertility desires, expectations and number of additional intended children for the time period in consideration with 2004 signalling the start of the reform to FTB Part A and B. As expected, single childless women have significantly higher childbearing desires, expectations and number of additionally intended children compared to lone mothers. In terms of the patterns before and after the reform, both groups appear to follow a similar trajectory for each of the outcomes.

For lone mothers the childbearing desires appear to increase in 2005 and 2008. It is important to note that in 2005 and 2008 the questions on future fertility preferences were asked to a slightly different subsample of women, and also in a different order. In particular, women who had believed they had a physical problem which would make it difficult or impossible to have a child, or who had had an operation (e.g. hysterectomy) were specifically not asked about their future childbearing intentions in 2005 and 2008. This difference would particularly affect the treatment group (lone

mothers) as they are on average older than the control group. In part due to these differences we can observe a peak in childbearing expectations and preferences in 2008.

To mitigate some of the issues regarding the change in the sample asked in 2005 and 2008 we exclude observations for women from the year that they stated they had an operation making it impossible to have a child onwards. We also excluded women aged over 45, as prior to 2005 women aged 45-49 where asked about future fertility preferences however after 2005 they were not asked.

However we do not exclude women who believed they had a health problem which would make it difficult or impossible to have a child (these women were not asked about fertility preferences in 2005 and 2008) and this may also be contributing to the observed increase in 2005 and 2008.

Figure 40 Childbearing desires before and after FTB reform, by treatment and control groups
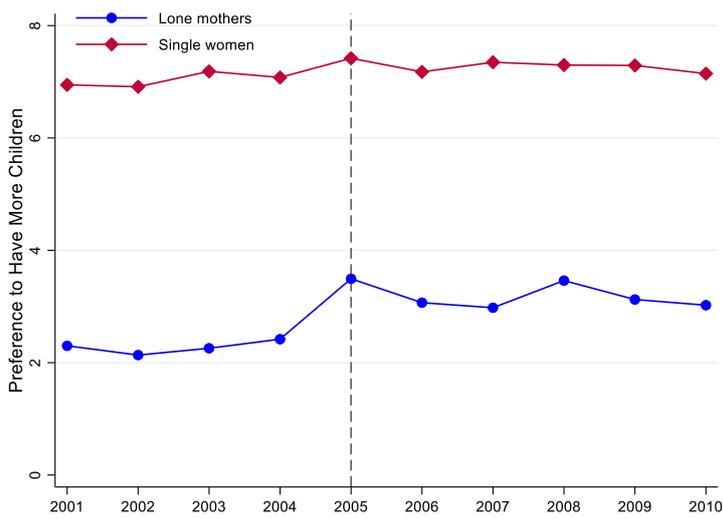
Figure 41 Childbearing expectations before and after FTB reform, by treatment and control groups
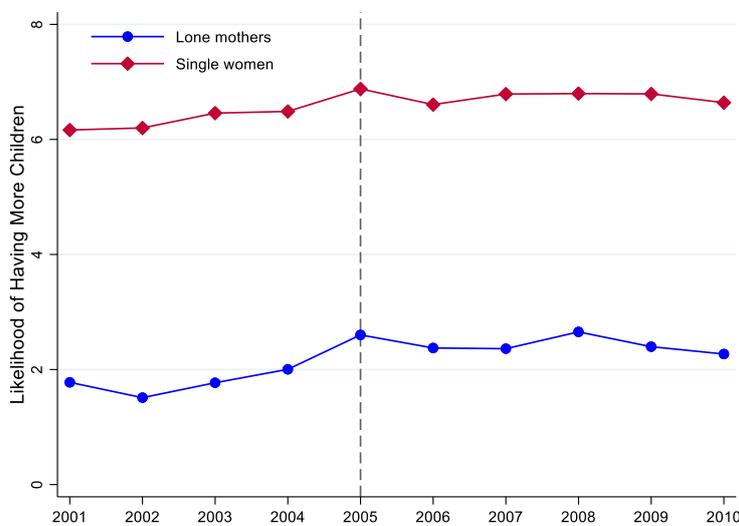
Figure 42 Additionally intended children before and after FTB reform, by treatment and control groups
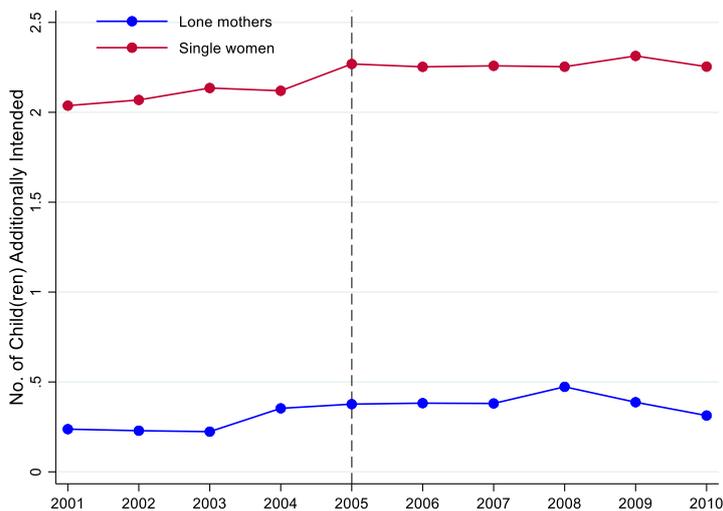
Table 35 presents the results for childbearing desires, childbearing expectations, and intended number of children. As expected from the pattern seen in Figure 41, for childbearing desire and expectation, we see a treatment effect of the FTB reform. Childbearing desires and expectations increase by approximately 0.4.

For additional intended number of children the results from the fixed effects (Column 4), there is an increase of 0.13 children on average after the implementation of the policy.

Table 35 Effect of FTB reform on selected fertility preferences

	(1) OLS	(2) OLS	(3) Fixed effects	(4) Fixed effects
Childbearing desire				
Coefficient	0.097	0.471**	-0.328	0.440*
Standard error	(0.183)	(0.195)	(0.202)	(0.262)
Observations	10,087	9,105	10,087	9,106
Childbearing expectation				
Coefficient	0.057	0.229	-0.193	0.383*
Standard error	(0.156)	(0.153)	(0.170)	(0.198)
Observations	10,078	9,095	10,078	9,096
Additional intended number of children				
Coefficient	0.039	0.080*	0.013	0.132**
Standard error	(0.047)	(0.042)	(0.055)	(0.053)
Observations	7,495	6,803	7,495	6,803
Model specifications				
Year and State Fixed Effects	Yes	Yes	Yes	Yes
Time-varying Demographics	No	Yes	No	Yes
Time-invariant Demographics	No	Yes	No	No
Individual Fixed Effect	No	No	Yes	Yes

Identification strategy I (results in appendix) produces estimates that are not statistically significant. Again, this indicates that the findings in this section are not robust to alternative identification strategies.

12.6 Analysis of fertility measures

In this section we look at a broad range of correlations between different fertility measures available in HILDA and a wide variety of variables which are thought to have an effect on fertility. The structure of this part of the report is as follows:

1) childbearing desire or preference to have more children;
2) childbearing expectation or assessment of the probability of having more children;
3) the perception of barriers for those women who think that it is unlikely that they will have more children despite expressing a preference for more children
4) the number of additionally intended children
5) the intended timing to next child, and
6) who doesn't have children?

12.6.1 Determinants of childbearing desires and expectations

We start by looking at the determinants of childbearing desires (Table 36) and childbearing expectations or the perceived likelihood of having (additional) children (Table 37). Childbearing desires is measured on a 0-10 scale where 0 indicates 'definitely doesn't want children' and 10 indicates 'very much wants to have children'. Similarly for expectations this is the perceived likelihood of having children in the future, on a 0-10 scale with 0 meaning 'very unlikely' and 10 meaning 'very likely'. The analysis is run using random effects, taking into account that there are multiple observations per woman. We also conducted fixed effects modelling for childbearing desires and expectations, with the results presented in the Appendix Table 56 and Table 57 respectively. The results are presented for the full sample of women, as well as by parity.

For both childbearing desires and expectations we see a strong two child norm. Childless women, and those with one child already show a strong desire for (additional) children, and a strong expectation of achieving this. However, for women with two or three children already there is large decline in their childbearing desires and expectations, as shown in Figure 43 which shows the predicted values for these two outcomes, controlling for the other variables in the model.

Figure 43 Predicted childbearing desires and expectations, by parity
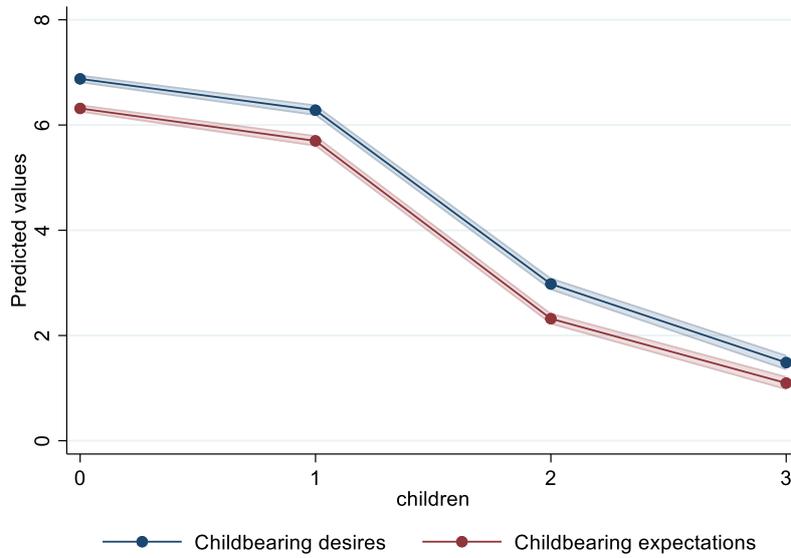
For the full sample, as well as at each parity, age is one of the most important determinants of each of the future childbearing measures. This can also be seen visually in Figure 44 and Figure 45, for desires and expectations respectively.

For childbearing desires the predicted desire for children falls declines with age. At all parities we see a decline at each increasing age group, however the decline is more rapid from after the mid-30s.
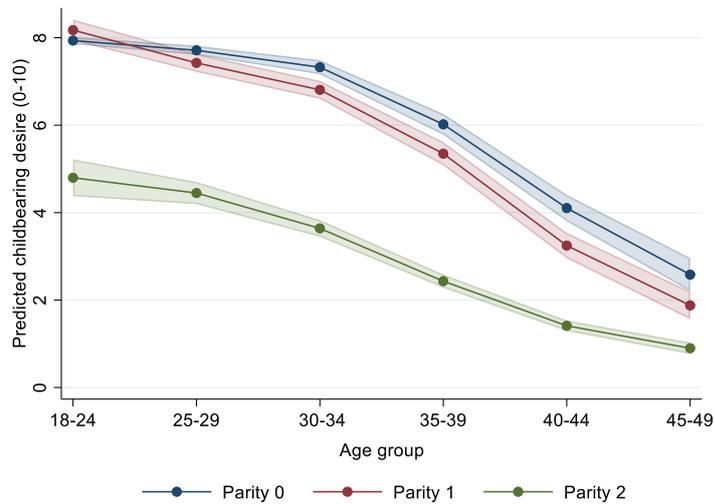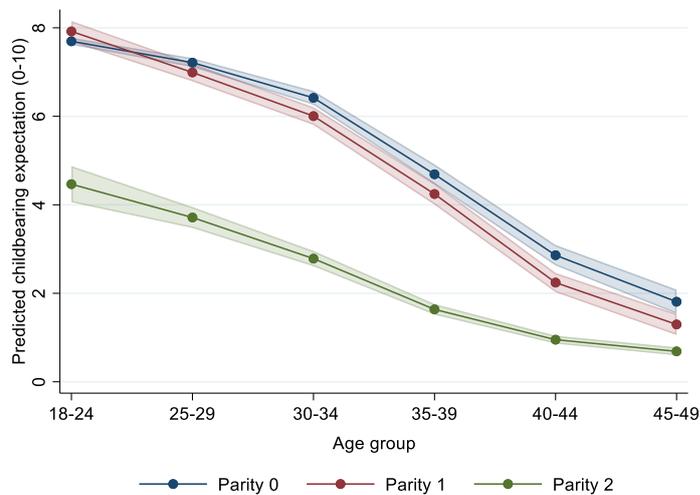
In terms of education we observe a strong positive relationship between education level and childbearing desires and expectations. Compared to women with Year 11 or below education, for both childbearing desires and expectations, after controlling for other variables, women with a university degree or a diploma or higher certificate are more likely to have a stronger preference for and higher perceived probability of having children. This relationship is true at all parities but is stronger at parities 1 and 2. For example, for childless women those with a university degree have an average predicted childbearing desire of 7.35, compared to 7.12 for those with Year 11 education or below only. This difference is statistically significant, but small in terms of overall size. However, for women with one child already, the educational differentials in desires (and expectations) are larger in magnitude. A university educated woman with one child is predicted to have childbearing desire of 6.7 compared to 5.23 for women with Year 11 education or below.

Relationship status is also an important correlate for fertility. Not surprisingly, being in a relationship (whether married or cohabiting) is associated with higher childbearing desires and expectations.

A woman's employment status is also an important factor related to her childbearing desires and expectations; however the influence of employment varies by parity. For childless women,

compared to women in permanent full-time employment, those not working at all have lower childbearing desires and lower childbearing expectations. However, for women with one child already this relationship switches and it is those not working that have a higher childbearing desire and expectation. In fact, at parity 1, women working in a full-time role have the lowest childbearing desire.

The relationship between childbearing desires and employment status is shown in Figure 46 . Although the differences discussed above are significant, compared to age and relationship status the effect is much smaller. For example, a woman with one child working in a permanent full-time role is predicted to have a childbearing desire of 5.63 [5.44 to 5.83[33]] compared to 6.1 [5.9 to 6.23] for a women with one child who is not working.

Figure 46 Predicted childbearing desires by parity and employment status, with 95% confidence intervals
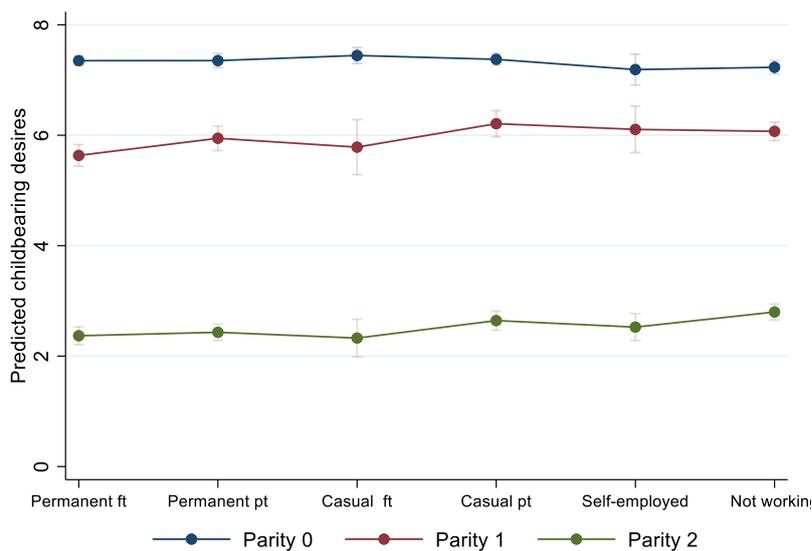
Household income shows a minimal relationship with childbearing desires, with no significant association except at Parity 1 where there is a positive relationship with higher income associated with a higher childbearing desire. In contrast, income is related to childbearing expectations particularly among childless women who have not yet started a family. This could be related to the importance attached to feelings of economic security before entering a parenthood. Being in a remote area has a negative effect on fertility desires and expectations, particularly for those women with two children already, while compared to women born overseas, women born in Australia show a higher childbearing desire and expectation at all parities. Having an Aboriginal or Torres Strait Islander background is associated with a lower childbearing desire and expectation among childless women.

While the results discussed above look at differences between women in their characteristics, the equivalent fixed effects results in the Appendix, Table 55- Table 57 show the effect of changes in characteristics within women. The results are largely consistent, and we see that for individual women movements into or out of marriage and cohabitation are particularly strongly related to their childbearing desires and expectations. The effect of the employment status variable which in this case captures the childbearing desires and expectations for women as they change employment status and hours worked is generally less significant.

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[33] Upper and lower confidence intervals

Table 36 Determinants of childbearing desires, OLS

	Full sample Coef.	Se	Parity 0 Coef.	Se	Parity 1 Coef.	Se	Parity 2 Coef.	Se
Number of children (ref: childless)								
1 child	-0.596***	(0.063)						
2 children	-3.898***	(0.080)						
3 children	-5.391***	(0.095)						
Age group (ref: 25-29)								
18-24	0.207***	(0.046)	0.222***	(0.054)	0.750***	(0.150)	0.350	(0.046)
30-34	-0.546***	(0.052)	-0.387***	(0.074)	-0.616***	(0.124)	-0.809***	(0.052)
35-39	-1.795***	(0.069)	-1.693***	(0.130)	-2.076***	(0.171)	-2.015***	(0.069)
40-44	-3.146***	(0.075)	-3.608***	(0.168)	-4.178***	(0.187)	-3.036***	(0.075)
45-49	-3.831***	(0.080)	-5.130***	(0.206)	-5.546***	(0.198)	-3.549***	(0.080)
Education level (ref: Year 11 or below)								
Bachelor Degree or higher	0.405***	(0.073)	0.223**	(0.107)	1.444***	(0.198)	0.977***	(0.073)
Diploma/ Cert III/IV	0.295***	(0.069)	0.310***	(0.107)	0.546***	(0.183)	0.491***	(0.069)
Year 12	0.244***	(0.069)	0.198**	(0.096)	0.559***	(0.200)	0.606***	(0.069)
Relationship status (ref: Single)								
Married	0.850***	(0.054)	0.810***	(0.088)	1.639***	(0.159)	0.351**	(0.054)
Cohabiting	0.860***	(0.045)	0.591***	(0.056)	1.518***	(0.152)	0.744***	(0.045)
Employment (ref: Permanent full-time)								
Permanent part-time	-0.070	(0.044)	0.001	(0.063)	0.310**	(0.124)	0.062	(0.044)
Casual full-time	0.051	(0.057)	0.094	(0.072)	0.150	(0.256)	-0.042	(0.057)
Casual part-time	0.057	(0.041)	0.024	(0.052)	0.575***	(0.148)	0.275**	(0.041)
Self-employed	0.065	(0.079)	-0.161	(0.142)	0.471**	(0.230)	0.157	(0.079)
Not working	0.090**	(0.044)	-0.119*	(0.064)	0.436***	(0.125)	0.430***	(0.044)
Household income (log)	0.032	(0.024)	0.038	(0.028)	0.149*	(0.086)	0.037	(0.024)
Remote area	-0.127**	(0.050)	-0.126*	(0.076)	-0.169	(0.131)	-0.353***	(0.050)
Born in Australia	0.336***	(0.066)	0.361***	(0.108)	0.734***	(0.160)	0.643***	(0.066)
Aboriginal or Torres Strait Islander	0.289**	(0.133)	-0.381*	(0.221)	-0.145	(0.284)	0.157	(0.133)
Observations	65520		24528		7422		11426	

Note: robust standard errors, year and state fixed effects not reported; * p<0.1, ** p<0.05, *** p<0.01

Table 37 Determinants of childbearing expectations, OLS

	Full sample Coef.	Se	Parity 0 Coef.	Se	Parity 1 Coef.	Se	Parity 2 Coef.	Se
Number of children (ref: childless)								
1 child	-0.616***	(0.063)						
2 children	-3.996***	(0.075)						
3 children	-5.219***	(0.088)						
Age group (ref: 25-29)								
18-24	0.454***	(0.045)	0.483***	(0.052)	0.928***	(0.142)	0.753***	(0.045)
30-34	-0.847***	(0.051)	-0.796***	(0.075)	-0.986***	(0.127)	-0.929***	(0.051)
35-39	-2.320***	(0.067)	-2.523***	(0.125)	-2.747***	(0.165)	-2.076***	(0.067)
40-44	-3.502***	(0.068)	-4.353***	(0.133)	-4.749***	(0.158)	-2.762***	(0.068)
45-49	-3.875***	(0.072)	-5.404***	(0.154)	-5.695***	(0.165)	-3.025***	(0.072)
Education level (ref: Year 11 or below)								
Bachelor Degree or higher	0.320***	(0.068)	0.194*	(0.103)	1.437***	(0.183)	0.817***	(0.068)
Diploma/ Cert III/IV	0.237***	(0.064)	0.316***	(0.105)	0.532***	(0.172)	0.436***	(0.064)
Year 12	0.247***	(0.065)	0.270***	(0.093)	0.676***	(0.190)	0.461***	(0.065)
Relationship status (ref: Single)								
Married	0.990***	(0.051)	0.984***	(0.082)	1.996***	(0.149)	0.204	(0.051)
Cohabiting	1.063***	(0.043)	0.813***	(0.054)	1.841***	(0.143)	0.550***	(0.043)
Employment (ref: Permanent full-time)								
Permanent part-time	-0.098**	(0.040)	-0.084	(0.063)	0.110	(0.117)	0.168***	(0.040)
Casual full-time	0.005	(0.054)	0.043	(0.070)	-0.197	(0.228)	0.168	(0.054)
Casual part-time	0.027	(0.039)	-0.008	(0.052)	0.375***	(0.136)	0.296***	(0.039)
Self-employed	-0.020	(0.070)	-0.144	(0.120)	0.219	(0.214)	0.145	(0.070)
Not working	0.099**	(0.041)	-0.109*	(0.061)	0.475***	(0.111)	0.484***	(0.041)
Household income (log)	0.060***	(0.023)	0.085***	(0.027)	0.149*	(0.083)	0.046	(0.023)
Remote area	-0.050	(0.048)	-0.086	(0.072)	0.014	(0.128)	-0.285***	(0.048)
Born in Australia	0.104*	(0.061)	0.166*	(0.101)	0.445***	(0.147)	0.365***	(0.061)
Aboriginal or Torres Strait Islander	0.196	(0.129)	-0.610***	(0.215)	-0.358	(0.299)	0.221	(0.129)
Observations	65352		24452		7404		11414	

Note: robust standard errors, year and state fixed effects not reported; * p<0.1, ** p<0.05, *** p<0.01

12.6.2 Determinants of perceived barriers, high desire but low expectation

In this section we examine the determinants of stating a wish to have children but who also believe that it is unlikely to happen. That is having a high desire for childbearing, but a low expectation. We construct an outcome variable equal to one when a woman expresses a desire for children (a statement of 6 or higher out of 10) *and* simultaneously expresses a low expectation of having children in the future (a perceived likelihood of 5 or less out of 10). Factors that correlated with this outcome can be interpreted as potential barriers to fertility. Women in this category are ones who may perceive barriers for their child-bearing preferences. Given that this is a binary variable we conducted a logit regression, as presented in Table 38. The fixed effects equivalent is shown in Appendix Table 58. As before the results are presented for the overall sample, as well as separately by parity.

Compared to childless women, those who already have children are more likely to experience a high childbearing desire but a low expectation.

The importance of age is evident. Women are more likely to see barriers as they get older which can be seen in the increasing positive coefficients for older age groups, as seen also in Figure 47. This is consistent with people who have not been able to achieve their preferred fertility outcome before reaching an age where they believe that child-bearing is either unlikely or undesirable.

Figure 47 Predicted probability of high desire but low expectation for children, by parity
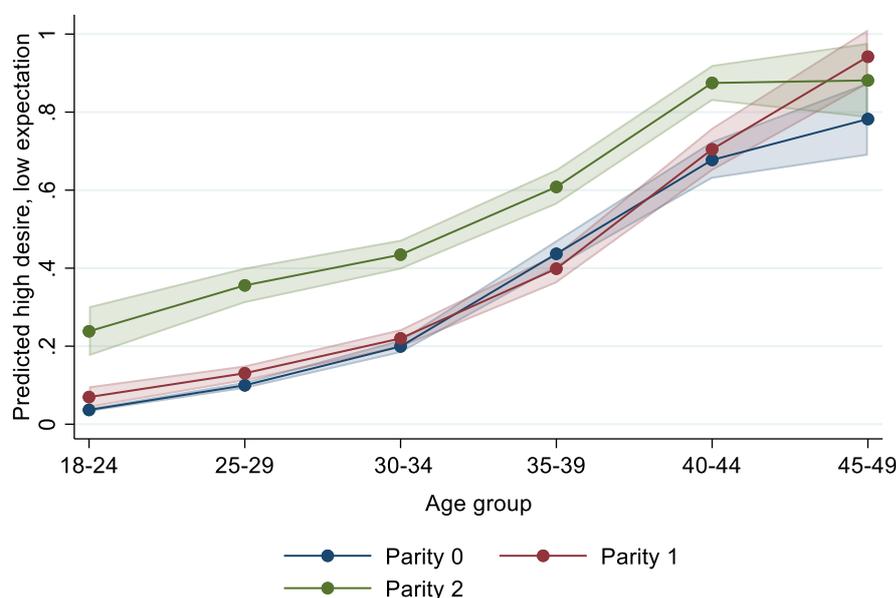
Among childless women, those with higher levels of education are less likely to experience a high childbearing desire but a low expectation. In other words, among those women who desire children, those with higher levels of education also feel more confident that they will achieve their childbearing goals. For women who have already achieved parenthood and have one or two children, education is less clearly related to having a high desire but low expectation.

Not surprisingly women with a partner, whether married or cohabiting are significantly less likely than their single peers to express perceived barriers to achieving their childbearing desires.

Employment hours and type of contract has a mixed effect. Childless women not working are more likely to express a feeling of barriers compared to women who are in a permanent full-time role. In contrast at parity 2, women who are not working express a lower likelihood of feeling they will not

achieve their childbearing desires compared to their peers working in a permanent full-time role. At Parity 2, women who work in a permanent full-time role are the most likely to experience a high desire for another child coupled with a low expectation of this occurring.

A lower household income is associated with higher perceived barriers to achieving childbearing goals at all parities, except for women with 2 children already.

Living in a remote area is associated with higher barriers as is being born in Australia (but only for parity 2). Finally being of Aboriginal or Torres Strait Islander descent is also associated with higher perceived barriers, at all parities except parity 2.

Table 38 Determinants of high childbearing desire but low childbearing expectation, logit regression by parity

	Full sample		Parity 0		Parity 1		Parity 2	
	Coef.	Se	Coef.	Se	Coef.	Se	Coef.	Se
Number of children (ref: childless)								
1 child	0.515***	(0.088)						
2 children	2.135***	(0.115)						
3 children	2.269***	(0.171)						
Age group (ref: 25-29)								
18-24	-0.873***	(0.084)	-1.138***	(0.124)	-0.543**	(0.232)	-1.005***	(0.084)
30-34	1.036***	(0.077)	1.347***	(0.128)	1.019***	(0.184)	0.912***	(0.077)
35-39	2.267***	(0.097)	3.036***	(0.177)	2.432***	(0.227)	2.150***	(0.097)
40-44	4.061***	(0.148)	4.713***	(0.238)	4.605***	(0.338)	4.931***	(0.148)
45-49	5.562***	(0.321)	5.927***	(0.511)	6.944***	(1.105)	6.313***	(0.321)
Education level (ref: Year 11 or below)								
Bachelor Degree or higher	-0.675***	(0.114)	-0.890***	(0.179)	-1.167***	(0.285)	-0.812**	(0.114)
Diploma/ Cert III/IV	-0.312***	(0.107)	-0.645***	(0.177)	-0.340	(0.251)	-0.326	(0.107)
Year 12	-0.481***	(0.108)	-0.719***	(0.164)	-0.329	(0.266)	-0.296	(0.108)
Relationship status (ref: Single)								
Married	-1.365***	(0.092)	-1.180***	(0.146)	-2.406***	(0.243)	-1.084***	(0.092)
Cohabiting	-1.362***	(0.083)	-1.345***	(0.122)	-2.056***	(0.234)	-1.361***	(0.083)
Employment (ref: Permanent full-time)								
Permanent part-time	0.081	(0.083)	0.174	(0.139)	0.117	(0.212)	-0.784**	(0.083)
Casual full-time	0.036	(0.113)	0.195	(0.152)	0.558	(0.454)	-2.572***	(0.113)
Casual part-time	-0.157*	(0.084)	0.015	(0.124)	0.137	(0.246)	-1.336***	(0.084)
Self-employed	0.091	(0.130)	-0.074	(0.219)	0.281	(0.365)	-0.307	(0.130)
Not working	-0.020	(0.081)	0.454***	(0.129)	-0.246	(0.204)	-1.378***	(0.081)
Household income (log)	-0.137***	(0.041)	-0.173***	(0.056)	-0.148	(0.137)	0.061	(0.041)
Remote area	0.074	(0.076)	0.099	(0.118)	0.000	(0.183)	0.578**	(0.076)
Born in Australia	0.220**	(0.097)	0.079	(0.155)	-0.065	(0.217)	0.757**	(0.097)
Aboriginal or Torres Strait Islander	0.407**	(0.184)	1.346***	(0.276)	0.926**	(0.380)	-1.128**	(0.184)
Observations	33,682		17,982		3,957		2,045	

Note: robust standard errors, year and state fixed effects not reported; * p<0.1, ** p<0.05, *** p<0.01

12.6.3 Number of Intended Children

Table 39 looks at correlations between the number of children that women intend to have and individual socio-demographic factors.

The number of children a woman already has a negative effect on wanting more children.

Compared to women with Year 11 or below education, women with a higher education desire more children.

Being in a relationship is correlated with wanting more children. Similarly having casual work is positively correlated with the number of intended children.

Household income is also positively correlated with wanting more children.

Table 39 Number of additional children intend to have in the future, Poisson

	Full sample Coef.	Se	Parity 0 Coef.	Se	Parity 1 Coef.	Se	Parity 2 Coef.	Se
Number of children (ref: childless)								
1 child	-0.446***	(0.018)						
2 children	-1.376***	(0.041)						
3 children	-1.891***	(0.073)						
Age group (ref: 25-29)								
18-24	0.108***	(0.011)	0.103***	(0.012)	0.201***	(0.040)	0.090	(0.011)
30-34	-0.221***	(0.014)	-0.206***	(0.018)	-0.304***	(0.035)	-0.453***	(0.014)
35-39	-0.890***	(0.036)	-0.849***	(0.060)	-0.830***	(0.063)	-1.633***	(0.036)
40-44	-2.513***	(0.087)	-2.295***	(0.139)	-2.366***	(0.164)	-4.064***	(0.087)
45-49	-4.270***	(0.248)	-3.517***	(0.342)	-4.304***	(0.554)	-6.120***	(0.248)
Education level (ref: Year 11 or below)								
Bachelor Degree or higher	0.139***	(0.023)	0.121***	(0.028)	0.263***	(0.066)	0.422***	(0.023)
Diploma/ Cert III/IV	0.075***	(0.022)	0.097***	(0.029)	0.034	(0.059)	0.096	(0.022)
Year 12	0.111***	(0.021)	0.107***	(0.026)	0.117**	(0.059)	0.261**	(0.021)
Relationship status (ref: Single)								
Married	0.101***	(0.017)	0.018	(0.021)	0.378***	(0.066)	0.400***	(0.017)
Cohabiting	0.032***	(0.011)	-0.032**	(0.013)	0.330***	(0.060)	0.640***	(0.011)
Employment (ref: Permanent full-time)								
Permanent part-time	0.015	(0.015)	0.003	(0.017)	0.091*	(0.049)	0.322**	(0.015)
Casual full-time	0.004	(0.016)	-0.008	(0.018)	-0.027	(0.111)	0.297	(0.016)
Casual part-time	0.046***	(0.012)	0.023*	(0.014)	0.203***	(0.064)	0.732***	(0.012)
Self-employed	-0.039	(0.031)	-0.070*	(0.042)	0.037	(0.095)	0.274	(0.031)
Not working	0.060***	(0.014)	-0.038**	(0.019)	0.188***	(0.047)	0.926***	(0.014)
Household income (log)	0.026***	(0.007)	0.026***	(0.008)	0.022	(0.035)	0.010	(0.007)
Remote area	-0.011	(0.014)	0.005	(0.016)	-0.015	(0.042)	-0.315***	(0.014)
Born in Australia	0.013	(0.018)	0.009	(0.022)	0.036	(0.051)	0.082	(0.018)
Aboriginal or Torres Strait Islander	0.043	(0.043)	-0.029	(0.055)	0.065	(0.089)	0.411**	(0.043)
Observations	48426		18949		5265		8176	

Note: robust standard errors, year and state fixed effects not reported; * p<0.1, ** p<0.05, *** p<0.01

12.6.4 Dynamic Fertility Measures

Next, for women who do indicate that they intend to have a child we look at the year when they planned to have a birth. A positive coefficient indicates that compared to the reference category, a longer number of years is planned until the next child.

Compared to childless women we find that those with children already, conditional on intending to have another child they are more likely to say that this will happen in the near future. Older women plan to wait a shorter period of time than younger women before having their next child.

Compared to women with Year 11 or less education, women with a higher education plan a longer gap before having their next child. This is consistent with our finding that this group has children later in life. Being in a relationship is strongly negatively correlated with the intended time until the next child. Compared to women working in a permanent full-time role, those working in a casual position, or permanent but part-time are also more likely to give a shorter time frame in terms of the year they intend to have the next child.

Household income is only positively correlated with the time until the next birth in one of the specifications and never correlated with changes in intentions. We do not see much role for household income.

Birth country has no effect whereas being Aboriginal or Torres Strait Islander background correlates with a shorter time horizon until the next birth.

Table 40 Number of Years to have a (next) Child

	Coef.	Se
Number of children (ref: childless)		
1 child	-0.58***	(0.063)
2 children	-0.20**	(0.091)
3 children	-0.23**	(0.134)
Age group (ref: 25-29)		
18-24	1.51***	(0.071)
30-34	-0.58***	(0.052)
35-39	-0.90***	(0.066)
40-44	-1.23***	(0.137)
45-49	-1.48***	(0.209)
Education level (ref: Year 11 or below)		
Bachelor Degree or higher	0.63***	(0.092)
Diploma/Cert III/IV	0.21***	(0.093)
Year 12	0.78***	(0.097)
Relationship status (ref: Single)		
Married	-2.33***	(0.073)
Cohabiting	-1.73***	(0.073)
Employment (ref: Permanent full-time)		
Permanent part-time	0.20**	(0.077)
Casual full-time	0.24*	(0.140)
Casual part-time	0.60***	(0.083)
Self-employed	0.14	(0.129)
Not working	0.10	(0.078)
Household income (log)	0.12***	(0.045)
Remote area	-0.32**	(0.050)
Born in Australia	-0.07	(0.066)
Aboriginal or Torres Strait Islander	-0.65*	(0.156)
Observations	5,697	

Note: * p<0.1, ** p<0.05, *** p<0.01

12.6.5 Who doesn't have children?

In this section we analyse the socio-economic factors associated with not having a child. The outcome variable is whether the woman is childless (1= childless, 0= has a child) and is modelled using probit regression

We examine factors associated with the outcome of not having any children given a woman's age. Column 1 shows results for the full sample when controlling for age in a non-parametric way by including dummy variables for each age group (25-29 year olds is the excluded category). Columns 2-7 look at the subsamples by age of women and the demographic factors which are potentially correlated with being childless.

The results in Table 41 show that age is significantly related to childlessness. We will focus in particular on women in their late 40s to observe factors that are associated with never having children (Column 7). But we do gain some insights looking at the correlates across the different age groups. These results show the progression of different factors which change in relevance over the reproductive lives of women.

Compared to women with Year 11 or less education, women with higher education are more likely to never have a child. The effect of education becomes weaker over the age groups indicating that more educated women have children later in life.

Relationship status is confirmed as an important correlate with childlessness. Being married or cohabiting is negatively associated with being childless. At the end of their childbearing life, women who are married are 10 per cent more likely to have had children compared to singles.

Working in a permanent full-time role is associated with a higher likelihood of being childless at all ages. This is likely due to the fact that women who have had children exit full-time roles in order to accommodate childcaring responsibilities.

Household income has a mixed effect across the ages. At the end of the reproductive life of a woman a higher income correlates with having children but through a woman's twenties and thirties, there is a positive correlation. This is consistent with higher income households have children later in life.

Women living in remote areas are less likely to be childless throughout their life while women born in Australia are more likely to be childless in their 40s but less likely when they are younger. Australian-born women have children earlier in life.

Women with an Aboriginal or Torres Strait Islander background are just as likely to have children as non-Indigenous women but have their first child at younger ages than non-Indigenous women.

Table 41 Socio-economic factors associated with not having a child, by age group, Probit models

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	All ages	18-24	25-29	30-34	35-39	40-44	45-49
Age group (ref: 25-29)							
18-24	0.333***						
	(0.007)						
30-34	-0.223***						
	(0.007)						
35-39	-0.411***						
	(0.008)						
40-44	-0.481***						
	(0.009)						
45-49	-0.520***						
	(0.009)						
Education level (ref: Year 11 or below)							
Bachelor Degree or higher	0.287***	0.150***	0.399***	0.226***	0.092***	0.113***	0.130***
	(0.008)	(0.008)	(0.017)	(0.017)	(0.012)	(0.010)	(0.010)
Diploma/ Cert III/IV	0.120***	0.035***	0.142***	0.101***	0.040***	0.047***	0.042***
	(0.008)	(0.005)	(0.016)	(0.017)	(0.012)	(0.011)	(0.010)
Year 12	0.201***	0.098***	0.204***	0.097***	0.022	0.052***	0.080***
	(0.008)	(0.005)	(0.017)	(0.019)	(0.014)	(0.013)	(0.012)
Relationship status (ref: Single)							
Married	-0.399***	-0.173***	-0.376***	-0.330***	-0.220***	-0.158***	-0.104***
	(0.006)	(0.006)	(0.013)	(0.014)	(0.010)	(0.009)	(0.009)
Cohabiting	-0.127***	-0.095***	-0.074***	-0.045***	-0.027**	-0.003	0.018*
	(0.006)	(0.004)	(0.013)	(0.015)	(0.011)	(0.011)	(0.011)
Employment (ref: Permanent full-time)							
Permanent part-time	-0.378***	-0.083***	-0.470***	-0.494***	-0.245***	-0.175***	-0.111***
	(0.007)	(0.007)	(0.015)	(0.015)	(0.011)	(0.010)	(0.010)
Casual full-time	-0.052***	-0.020*	-0.104***	-0.028	-0.015	-0.041**	-0.042**
	(0.012)	(0.011)	(0.025)	(0.027)	(0.021)	(0.019)	(0.018)
Casual part-time	-0.262***	-0.064***	-0.347***	-0.338***	-0.215***	-0.157***	-0.123***
	(0.007)	(0.006)	(0.016)	(0.016)	(0.014)	(0.013)	(0.013)
Self-employed	-0.197***	-0.041**	-0.266***	-0.265***	-0.137***	-0.075***	-0.055***
	(0.011)	(0.017)	(0.026)	(0.022)	(0.015)	(0.014)	(0.015)
Not working	-0.479***	-0.171***	-0.598***	-0.526***	-0.253***	-0.142***	-0.097***
	(0.007)	(0.006)	(0.013)	(0.014)	(0.010)	(0.010)	(0.010)
Household income (log)	-0.015***	0.010***	0.009	0.001	-0.046***	-0.062***	-0.070***
	(0.004)	(0.002)	(0.009)	(0.011)	(0.009)	(0.008)	(0.007)
Remote area	-0.101***	-0.016***	-0.080***	-0.109***	-0.060***	-0.067***	-0.067***
	(0.006)	(0.004)	(0.012)	(0.012)	(0.009)	(0.009)	(0.008)
Born in Australia	-0.003	-0.032***	-0.051***	-0.007	0.011	0.024***	0.038***
	(0.006)	(0.007)	(0.015)	(0.013)	(0.009)	(0.008)	(0.008)
Aboriginal or Torres Strait Islander	-0.154***	-0.043***	-0.184***	-0.051	-0.026	-0.083***	-0.070***
	(0.013)	(0.006)	(0.026)	(0.032)	(0.023)	(0.023)	(0.023)
Observations	73,761	18,289	12,879	11,862	10,482	10,098	10,151

Note: robust standard errors, year and state fixed effects not reported; * p<0.1, ** p<0.05, *** p<0.01

12.7 Conclusion

The analysis of policy implementation and its effect on fertility is challenging. As discussed in the literature, it is very difficult to measure whether a policy has an impact on increasing fertility overall, or whether it is having the effect of bringing births forward, that would have ultimately occurred anyway. In addition, policies do not usually have an experimental design: they apply to everyone, or everyone that fits a certain criteria. For that reason policy analysis is often based on a quasi-experimental approach, where judgement about the identification of comparison groups is required.

Here, the approach presents the analysis of four new or revised policies that were implemented during the period of the HILDA survey. The policies investigated included two financial transfers (Baby Bonus and Family Tax Benefit reform) and two parental leave policies (Paid Parental Leave and Dad and Partner Pay). Child care policies were not tested because it is impossible to separately identify them from other changes to the transfer system.

The results are inconclusive in terms of whether the policies had an effect on fertility. None of the analysis available to evaluate these policies are based upon gold standard evidence. Instead, the method is quasi-experimental and is being used to evaluate the program ex-poste. The use of alternative identification strategies and placebo tests to evaluate the results both suggest that the analysis fails to estimate causal effects of these policies. Childbearing desires, expectations and intentions were also considered, although the policies appear to have little effect on these outcomes.

The Baby Bonus was found to have a small, but significant effect on having a birth. The effect is around 3% for women who were having a first birth, but no effect of the policy implementation was found for women expanding their family. This suggests that the policy was beneficial for people starting a family, but did not impact people who already had commenced their family. The modelling of family tax benefit reform required the measurement of fertility desires, expectations and fertility. It found a small impact of the reform on women's childbearing plans.

The results highlight that it is difficult to measure the effect of policies on births. It is challenging to measure the effect of policies on births because of tempo effects. In the case of the policies under consideration, it is also difficult to identify treatment and control groups. Hence, the results here are inconclusive as to whether the policies, as previously implemented, were able to support childbearing plans.

We note that with the exception of the first iteration of the baby bonus, the policies that were introduced did not represent large policy shifts, suggesting that large effects would be unlikely. For example, the baby bonus was converted to a fortnightly payment in its later years, and when paid parental leave was introduced in 2011, parents could opt for either the fortnightly baby bonus, or paid parental leave. Hence, the policy shifts were incremental rather than large changes. This is similar for the introduction of paid partner leave, which was added to the paid parental leave policy, and the family tax benefit reform.

PART 3: SURVEY RESULTS

13 Survey of opinions on fertility preferences, considerations and policies

Key points

- Two ANUPoll surveys, conducted in April and August 2021 were used to garner people's views on personal fertility preferences and what factors are important in their childbearing decision making.
- The August 2021 survey also included questions on views regarding Australia's population size, and support for paid parental leave and subsidised child care.
- Economic considerations including the general cost of raising children and job security were the factors considered most important in future childbearing plans.
- Being able to buy a home, or a better home, was also a very important factor, especially for younger respondents and those with lower levels of education.
- Overall COVID-19 had not changed the childbearing plans of the majority of respondents, although 19% did indicate that the spread of the pandemic had made having children in the future a lot less likely, and 13% said a bit less likely.
- Support for paid parental leave was very high with more than 80% of respondents indicating there should be paid parental leave if one parent stops working to look after a newborn. Most respondents believed either just the Government, or a combination of Government and employers should pay for parental leave. Parental leave had higher support from people with a Bachelor's degree.
- Support for subsidised child care was also very high. Only 10-12% of respondents felt that there should be no subsidised child care at all. Three-quarters (75%) of respondents felt the Government should pay for subsidised child care. The provision of government support for child care had higher support from those without a university qualification.

The aim of this section of the paper is to summarise the findings from two ANUpoll surveys which contained a range of questions on future fertility preferences, factors important to people in their considerations about having (more) children as well as views on paid parental leave and subsidised child care. The surveys were conducted in April and August (2021) by the Social Research Centre located at the Australian National University. ANUPoll respondents are selected from the probability-based panel, Life in Australia™.

13.1. Data

The purpose of ANUPolls is to assess Australians' opinions on important and topical issues. These polls are typically conducted three times a year, or about every four months. Some questions appear in every poll in order to provide information about changes in opinion over time; the majority of questions appear in one poll only. In April and August 2021 specific questions were included to garner views on fertility preferences and considerations as well as on paid parental leave and child care.

Data collection for both surveys started with a pilot test of telephone respondents. The main characteristics of each survey are shown below in Table 42. Of those who had completed the August 2021 survey, 86.7 per cent (N=2,717) had completed the April 2021 survey. For both waves of data collection, the Social Research Centre collected data using two methods: online and via telephone interviews. The inclusion of Computer Assisted Telephone Interviewing (CATI) is needed to ensure representation from the offline Australian population. Around 5 per cent of interviews were collected via CATI in April, and 5 per cent in April.

Table 42 Details for ANUpoll April and August 2021

	ANUpoll April 2021	ANUpoll August 2021
Pilot test date	12th April	10th August
Main data collection dates	13th − 26th April	11th − 23rd August
Sample size	3,286 respondents	3,135 respondents
Average interview duration	13.9 minutes	15.4 minutes
Completion rate (% respondents who completed survey out of the number invited to participate)	82.1 %	90.1%
% of interviews conducted through CATI	5.1 %	4.1%

While the total sample size was over 3,000 for both surveys, for the questions on personal future fertility plans art we use a restricted sample of 1,024 respondents aged 18-44.

Unless otherwise stated, data in the paper is weighted to population benchmarks. For Life in Australia™, the approach for deriving weights generally consists of the following steps:

1.   Compute a base weight for each respondent as the product of two weights:

   a.   Their enrolment weight, accounting for the initial chances of selection and subsequent post-stratification to key demographic benchmarks

   b.   Their response propensity weight, estimated from enrolment information available   for both respondents and non-respondents to the present wave.

2.   Adjust the base weights so that they satisfy the latest population benchmarks for several demographic characteristics.

The sample came from the probability based panel known as Life in Australia™. The contact methodology adopted for the online Life in Australia™ members is an initial survey invitation via email and SMS (where available), followed by multiple email reminders and a reminder SMS. Telephone non-response of panel members who have not yet completed the survey commences in the second week of fieldwork and consists of reminder calls encouraging completion of the online survey.

The contact methodology for offline Life in Australia™ members was an initial SMS (where available), followed by an extended call-cycle over a two-week period. A reminder SMS was also sent in the second week of fieldwork.

The ethical aspects of this research have been approved by the ANU Human Research Ethics Committee (2021/430).

The main topic of interest in the April 2021 Survey was on aged care, with data available through the Australian Data Archive (doi:10.26193/BC2QEB). The main topic of interest in the August 2021 Survey was childhood mental health and wellbeing, with data also available through the Australian Data Archive (doi:10.80408/H6AQQE).

13.2. Fertility intentions

Respondents aged 18 to 44 years in the April 2021 survey were first asked: '*Now some questions about your family. How many children do you have? Please only include natural and adopted children; not step or foster children*.' There were 1,024 individuals in the sample who were in scope for this question, with 57 per cent answering that they did not have any children, 17 answering that they had 1 child, 18 per cent having two children, and the remaining 9 per cent having three or more children.

In April, a question on childbearing desires was asked both for respondents with and without children. The question asked: '*Now a question about any future children. Please select a number between 0 and 10 to show how you feel about having a child in the future[34].*' Respondents were given the following further instructions: '*The more definite you are that you would like to have a child, the higher the number you should pick. The more definite you are that you do not want to have a child, the lower the number.*'

In August 2021, those who had not completed the April 2021 survey were also asked about their fertility intentions. When the two periods are combined it gives information on fertility intentions for a total of 1,217 respondents.

The average value for this variable (across April and August 2021 for those who did and did not currently have children) was 4.4. However, as shown in Figure 48, the expected desire to have children was much greater for those currently childless compared to those with children. Specifically, only 15 per cent of childless respondents gave a value of 0 (they definitely don't want children) with the most common response being 10 (very much like to have children) given by 24 per cent of those without children. For those with children, on the other hand, 48 per cent said that they definitely don't want additional children, compared to only 13 per cent who said that they would very much like to have additional children.

It is the first time that this question has been asked on an ANUpoll, so there is no longitudinal data specifically for this sample, to enable a comparison to pre-COVID responses. However, the question asked in the April ANUpoll was taken directly from the Household, Income, and Labour Dynamics in Australia (HILDA) survey. Comparing the distribution of results from recent HILDA surveys to the April 2021 ANUpoll we find the distribution of responses in HILDA[35] and ANUpoll are very similar.

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[34] Respondents who already had children were asked the same question but the wording at the end was changed to "*Please select a number between 0 and 10 to show how you feel about having more children in the future*."

[35] The exception is HILDA Wave 15 and Wave 19 (conducted in 2015 and 2019) when fertility intentions were asked to a more restricted sample of respondents in HILDA.

Figure 48 Desire for additional children, by whether or not respondent already had children – April & August 2021
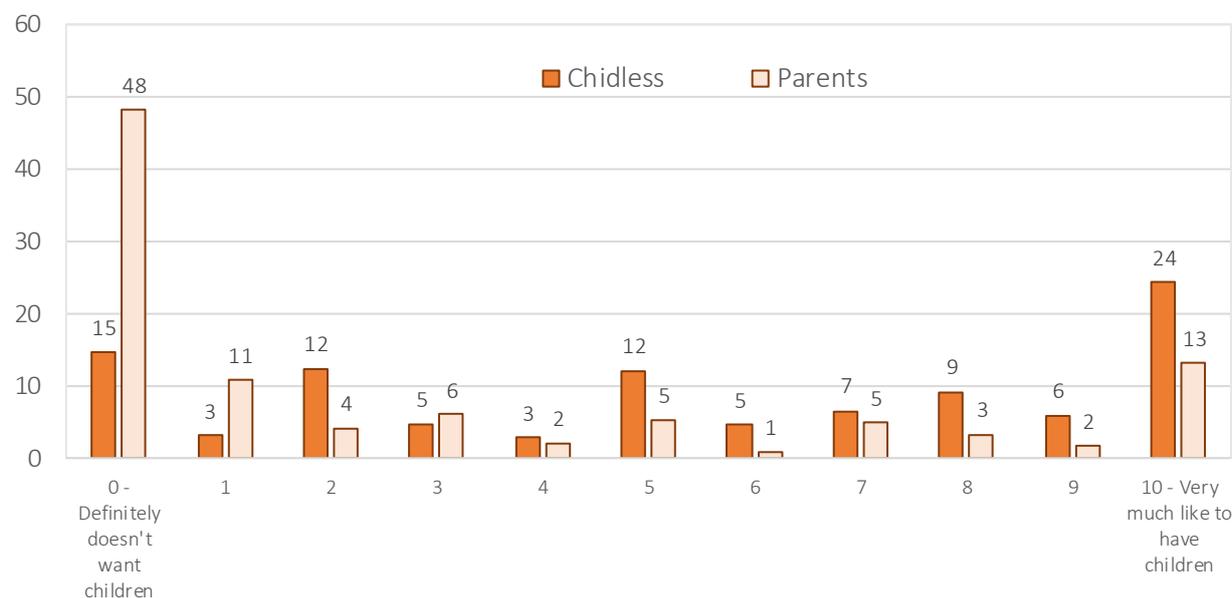
Source: ANUpoll, April and August 2021

13.3. Impact of COVID-19 on fertility intentions

In the August 2021 ANUpoll, participants were asked directly whether COVID-19 has had an effect on their childbearing plans. During this wave of data collection, respondents were asked '*Since the spread of COVID-19 in Australia, do you think you are more or less likely to want a child?*' (or '*... another child?*' if the respondent already had children).

The most common response is that their likelihood of having children is about the same since the spread of COVID-19. This was given by 54 per cent of parents, and 62 per cent of childless respondents (Figure 49). There were, however, substantially more respondents who said that they were less likely to have children compared to those who said that they were more likely to have children. This was particularly the case for parents, with 28 per cent saying that since the spread of COVID-19 they were a lot less likely, with a further 9 per cent saying they were a little less likely. Amongst those who did not have any children, there were 12 per cent of respondents who said that they were a lot less likely to have children and 15 per cent who said that they were a little less likely.

Source: ANUpoll, August 2021

13.4. Factors associated with COVID-19 related downwards revision of childbearing expectations

There are a number of potential reasons that impact on whether or not COVID-19 would have had a downwards revision on childbearing expectations. We explored some of the demographic, socioeconomic, and COVID-specific factors that are associated with whether or not someone said that they were a little less or a lot less likely to want children as a result of the pandemic. We model these associations using a multinomial model with three categories for the dependent variable: (1) more likely to have children, (2) no change, and (3) less likely to have children as a result of COVID-19.

In addition to the demographic variables, we include geographical location as well as the respondent's own self-perceived likelihood of getting COVID-19, and how their outlook on the future has changed as a result of the pandemic.

The likelihood of getting COVID-19 variable comes from a question that asks "*What do you think is the likelihood of you being infected by COVID-19 in the next 6 months?*". Response categories are "very likely", "somewhat likely", "not very likely", and "not at all likely". We recoded this to a binary variable reflecting if the person felt it was 1) likely, or 2) not likely that they would get COVID-19 in the next 6 months.

The outlook on future variable comes from a question that asks "*How has your outlook for your longer term future, i.e. 5-10 years from now, changed since the spread of COVID-19?*". Responses are "I feel a lot more positive", "I feel a little more positive", "no change", "I feel a little more negative" and "I feel a lot more negative". The original variable was recoded to have three categories: Positive, no change, and negative.

The results of the multinomial logistic regression are shown in Table 43. The first column contains the coefficients and standard errors for the respondent being more likely to want to have a child as a result of the pandemic, versus no change in their intentions. The second column contains the

coefficients and standard errors for the respondent being less likely to want to have a child as a result of the pandemic, again with no change in their intentions as the reference.

Respondents who were already parents were significantly more likely to indicate that the pandemic had changed their fertility intentions in a negative way. The other demographic variables including age, education, sex and employment status had no statistically significant effect with the exception that those in a relationship were less likely to indicate that the pandemic had led to a downwards revision of their childbearing plans.

In terms of geographic location compared to Sydney (the reference category) those in the rest of NSW as well as other capital cities were more likely to have a downwards revision of their childbearing plans. While self-perceived personal likelihood of contracting COVID-19 had no effect, people's outlooks on the future and how this has changed due to the pandemic is strongly related to their fertility plans.

People who felt that the pandemic had a positive effect on their outlook of the future were also more likely to indicate that their plans for children in the future had improved. Similarly, those who felt the future outlook in the next 5-10 years had worsened were more likely to have a downwards revision of their plans for children. This relationship between future outlook and revision of childbearing plans is shown in Figure 50.

Table 43 Multinomial logistic regression of change in likelihood of having children as a result of COVID-19 pandemic (reference: No change)

	More likely	Less likely
Number of children (ref: childless)		
At least 1 child	-0.031	0.431**
	(0.342)	(0.208)
Age (ref: 18-29)		
30-49	0.137	0.225
	(0.356)	(0.211)
Education (ref: Bachelors)		
Postgraduate	-0.495	-0.240
	(0.369)	(0.233)
Diploma or Cert III/IV	-0.394	0.112
	(0.365)	(0.216)
Year 12 or below	0.384	0.096
	(0.354)	(0.231)
Sex (ref: male)		
Female	-0.145	0.028
	(0.290)	(0.171)
Employed (ref: No)		
Yes	-0.220	0.001
	(0.336)	(0.219)
In a relationship (ref: No)		
Yes	-0.002	-0.384*
	(0.303)	(0.211)
Geographic location (ref: Greater Sydney)		
Rest of NSW	-0.193	-0.707**
	(0.651)	(0.346)
Melbourne	0.445	-0.403
	(0.436)	(0.252)
Rest of VIC	0.373	0.299
	(0.785)	(0.379)
Other capital cities	0.051	-0.647***
	(0.445)	(0.232)
Other	0.438	-0.475
	(0.548)	(0.316)
Likelihood of getting COVID-19 (ref: likely)		
Not likely	0.057	0.152
	(0.320)	(0.180)
Outlook on future (ref: no change)		
More positive	1.252***	0.575
	(0.390)	(0.294)
More negative	0.083	1.060***
	(0.337)	(0.217)
Contant	-2.175***	-1.148***
	(0.660)	(0.384)
N	986	

Note: * p<0.1, ** p<0.05, *** p<0.01
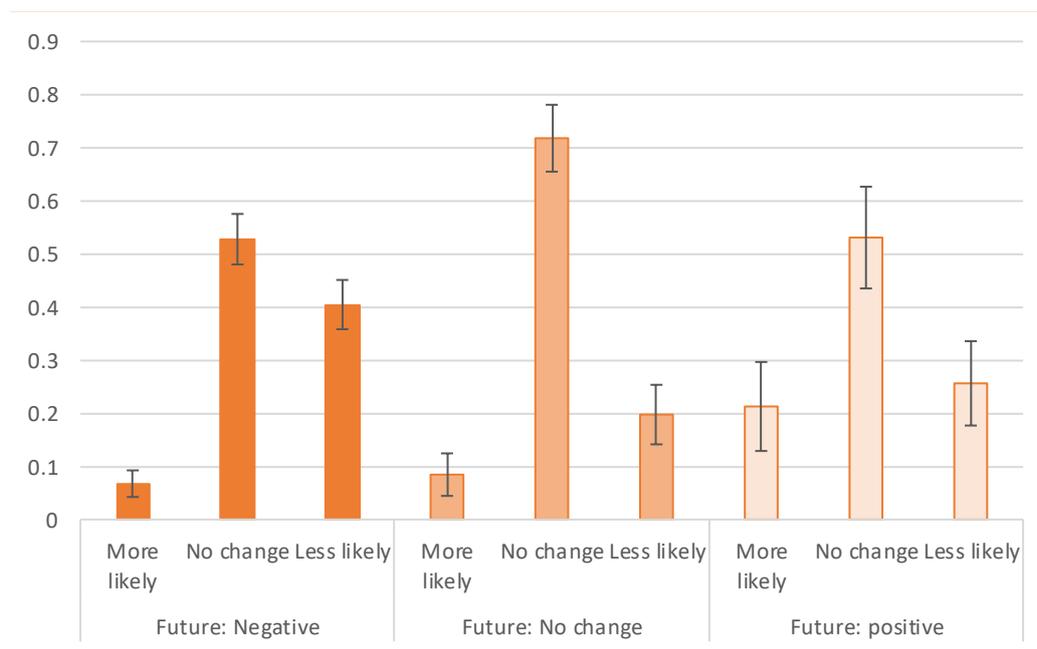
13.5. Self-reported factors associated with fertility decisions

When thinking about whether to have a child in the future there are many different considerations people take into account. In the August 2021 ANUpoll, respondents were provided with a list of factors and asked how important each factor was in their childbearing considerations. The questions asked: '*The following is a list of things that some people consider when thinking about whether or not to have a [another] child. Please indicate how important you feel each is to you at this present time…?*' The answer options were: not at all important, of limited importance, important, and very important.

After applying a value of 1 for those who say it is not important, 2 for those who say it is of limited importance, 3 for those who say it is important, and 4 for those who say it is very important, Figure 51 gives the average value for Australians under the age of 45 in August 2021.

The two most important factors in people's decisions about fertility are economic. The average value for '*the general cost of raising children*' and for '*the security of your, or your partners job*' is 3.15. The only other score above 3 was '*Having someone to love*', with an average value of 3.01.

The COVID-19 pandemic ranks relatively lowly (14th out of the 20 options with an average value of 2.49). Environmental issues were also not identified as being of great importance for respondents.

Figure 51 Factors associated with fertility decisions – August 2021

Factor	Value
The gender of your existing children*	1.50
Giving your parents grandchildren	2.04
The impact children would have on economic growth and the retirement system	2.14
Having someone to care for you when you are old	2.18
Other caring responsibilities (for example for those with a disability or elderly relatives)	2.26
The impact children would have on the environment	2.40
Uncertainty due to the COVID-19 pandemic	2.49
Being able to make major purchases	2.60
The benefits or costs of additional siblings for your existing children*	2.69
The availability and affordability of quality child care	2.76
The stress and worry of raising children	2.83
Providing more purpose to life	2.83
Having time and energy for your career	2.84
Your spouse or partner having time and energy for a career	2.85
Having time for leisure or social activities	2.86
How old you are	2.89
Being able to buy a home or a better home	2.89
Having someone to love	3.01
The security of your, or your partners job	3.15
The general cost of raising children	3.15

Source: ANUpoll, August 2021

Note: The 'whiskers' around the estimate represent the 95 per cent confidence intervals.

* refers to those questions only asked of those with existing children

13.6. Relationship between the factors associated with fertility considerations

Some of the factors presented in Figure 51 are likely to make people less likely to want children/another child, whereas some are likely to make people more likely to. Others could have different impacts depending on a person's circumstances. To explore these relationships, we ran a separate logit regression model for each of the factors. The dependent variable is binary, equal to 1 if the respondent indicated that the factor was 'very important' in their consideration to have (more) children, and zero otherwise. The distribution of answers is shown in Table 44.

Table 44 Percentage who felt each factor was 'very important'

Factor	%
How old you are	29
Being able to buy a home or a better home	30
Having someone to care for you when you are old	11
The availability and affordability of quality child care	24
The general cost of raising children	40
The security of your, or your partners job	40
Having someone to love	37
Having time for leisure or social activities	23
Having time and energy for your career	23
Giving your parents grandchildren	10
Your spouse or partner having time and energy for a career	22
Being able to make major purchases	17
Providing more purpose to life	25
The stress and worry of raising children	26
The impact children would have on the environment	17
Uncertainty due to the COVID-19 pandemic	19
The impact children would have on economic growth and the retirement system	11
Other caring responsibilities (for example for those with a disability or elderly	12
The benefits or costs of additional siblings for your existing children	22
The gender of your existing children	4

Six independent variables were included: sex, age, whether or not the respondent has children, highest education level, whether or not the respondent is working and whether or not they are in a relationship. The coefficients and standard errors are shown below in Table 45. For ease of interpretation, we also discuss predictive margins in the text (also provided in Appendix Table 60).

Parents and childless respondents differed in their views on what was an important consideration for their decision regarding future children. Childless respondents were more likely to indicate that being able to buy a home or a better home was a very important consideration. After controlling for the other variables in the model, 34% of childless respondents were predicted to mention that buying a home/better home was very important compared to 22% of those who were already parents. Childless respondents were also more likely to consider themselves and their partner having time and energy for their career as very important factors, as well as the stress and worry of raising children.

Women were more likely to say that age ('how old your are') was a very important consideration; this is not surprising given that age-restricted biological limits to reproduction are more apparent for women, even though they are also a factor for men. Women were also more likely to place high importance on the availability and affordability of quality child care and the general cost of raising children as well as other caring responsibilities. For quality and availability of child care, after controlling for the other variables in the model, the predicted probability of a man stating this was a very important consideration was 20%, compared to 28% for women.

Younger respondents aged 18-29 were more likely to consider buying a home or a better home a very important factor compared to respondents aged 30-49. Controlling for the other variables, 38% of respondents aged 18-29 were predicted to mention that buying a home/better home was very important compared to 24% of those aged 30-49. They were also more likely to say that making major purchases, and uncertainty due to COVID-19 were very important considerations.

Turning to highest education level we find that compared to those with a Bachelors degree, those whose education level was Year 12 or below were significantly more likely to place high importance on buying a home. Interestingly for 'the general cost of raising children' those with a Bachelor Degree were least likely to indicate this was very important (predicted probability of 33%) compared to all the other education levels including both higher and lower education.

Whether or not the person was working had no relationship with any of the factors after controlling for the other variables in the model. Finally, being in a relationship was, as expected, associated with factors which also mentioned a partner including *'the security of you or your partner's job'* and *'your spouse or partner having time and energy for a career'*. People in a relationship were also more likely to consider the stress and worry of raising children as very important.

Table 45 Logit regression of stating each factor was a 'very important' consideration for having (more) children.

	How old you are	Being able to buy a home or a better home	Having someone to care for you when you are old	The availability and affordability of quality child care	The general cost of raising children	The security of your, or your partners job	Having someone to love	Having time for leisure or social activities	Having time and energy for your career	Giving your parents grandchildren
Number of children (ref: childless)										
At least 1 child	0.188	-0.612***	0.236	0.046	0.066	-0.154	0.337*	-0.015	-0.463**	-0.216
	(0.193)	(0.210)	(0.303)	(0.219)	(0.187)	(0.185)	(0.190)	(0.230)	(0.234)	(0.317)
Sex (ref: male)										
Female	0.452***	0.137	0.087	0.493***	0.313**	0.304*	-0.092	0.012	0.216	-0.184
	(0.170)	(0.176)	(0.251)	(0.187)	(0.159)	(0.158)	(0.159)	(0.179)	(0.188)	(0.263)
Age (ref: 18-29)										
30-49	0.157	-0.693***	0.080	-0.424**	-0.557***	-0.619***	-0.501***	-0.077	-0.520**	-0.089
	(0.196)	(0.200)	(0.302)	(0.211)	(0.187)	(0.189)	(0.190)	(0.226)	(0.214)	(0.313)
Education (ref: Bachelors)										
Postgraduate	0.195	0.400*	0.265	0.349	0.410**	0.205	-0.094	-0.039	0.062	-0.039
	(0.210)	(0.234)	(0.318)	(0.236)	(0.207)	(0.208)	(0.202)	(0.230)	(0.243)	(0.348)
Diploma or Cert III/IV	-0.159	0.051	-0.338	-0.138	0.359*	0.242	-0.284	-0.198	-0.256	-0.077
	(0.208)	(0.237)	(0.341)	(0.237)	(0.202)	(0.202)	(0.199)	(0.227)	(0.245)	(0.336)
Year 12 or below	-0.017	0.688***	0.142	0.206	0.417**	0.332	-0.175	0.110	0.255	-0.162
	(0.220)	(0.227)	(0.316)	(0.230)	(0.205)	(0.204)	(0.205)	(0.230)	(0.231)	(0.340)
Employed (ref: no)										
Yes	0.304	0.131	-0.213	-0.098	-0.027	0.229	0.047	0.123	0.015	-0.298
	(0.214)	(0.216)	(0.286)	(0.219)	(0.193)	(0.196)	(0.194)	(0.223)	(0.226)	(0.298)
In a relationship (ref: no)										
Yes	-0.034	0.178	-0.243	0.028	0.049	0.505***	-0.014	-0.159	0.158	0.082
	(0.188)	(0.208)	(0.312)	(0.211)	(0.185)	(0.189)	(0.189)	(0.214)	(0.227)	(0.306)
Constant	-1.515***	-0.861***	-1.977***	-1.212***	-0.587**	-0.868***	-0.185	-1.088***	-0.987***	-1.687***
	(0.298)	(0.300)	(0.407)	(0.316)	(0.269)	(0.273)	(0.266)	(0.299)	(0.301)	(0.413)
N	994	994	994	994	994	994	991	994	993	990

Note: * p<0.1, ** p<0.05, *** p<0.01

	Your spouse or partner having time and energy for a career	Being able to make major purchases	Providing more purpose to life	The stress and worry of raising children	The impact children would have on the environment	Uncertainty due to the COVID-19 pandemic	Impact children would have on economic growth & the retirement system	Other caring responsibilities (for example for those with a disability or elderly relatives)	Benefits or costs of additional siblings for your existing children	The gender of your existing children
Number of children (ref: childless)										
At least 1 child	-0.574**	-0.296	0.160	-0.574***	-0.294	-0.149	-0.087	-0.181		
	(0.241)	(0.273)	(0.212)	(0.222)	(0.264)	(0.218)	(0.309)	(0.284)		
Sex (ref: male)										
Female	-0.010	-0.166	-0.113	0.077	0.026	-0.012	0.233	0.672***	0.238	-0.492
	(0.188)	(0.214)	(0.175)	(0.178)	(0.212)	(0.203)	(0.265)	(0.257)	(0.284)	(0.618)
Age (ref: 18-29)										
30-49	-0.377*	-0.594**	-0.271	-0.234	-0.300	-0.455**	-0.366	-0.037	-0.341	-1.207
	(0.221)	(0.255)	(0.213)	(0.212)	(0.253)	(0.221)	(0.311)	(0.306)	(0.427)	(0.843)
Education (ref: Bachelors)										
Postgraduate	0.137	0.144	-0.193	0.166	-0.069	0.061	-0.038	0.399	0.058	-0.115
	(0.242)	(0.298)	(0.230)	(0.238)	(0.287)	(0.267)	(0.361)	(0.345)	(0.368)	(0.772)
Diploma or Cert III/IV	-0.073	0.087	-0.179	0.529**	0.047	0.124	0.103	0.524	-0.216	-0.460
	(0.243)	(0.283)	(0.218)	(0.224)	(0.263)	(0.256)	(0.334)	(0.327)	(0.332)	(0.719)
Year 12 or below	0.152	0.397	-0.232	0.581**	0.176	-0.049	0.147	0.382	0.158	-0.056
	(0.234)	(0.262)	(0.223)	(0.229)	(0.270)	(0.265)	(0.336)	(0.325)	(0.377)	(0.872)
Employed (ref: no)										
Yes	-0.088	-0.121	-0.223	0.032	-0.036	-0.208	0.092	-0.356	0.060	-0.696
	(0.232)	(0.251)	(0.208)	(0.217)	(0.260)	(0.244)	(0.324)	(0.265)	(0.348)	(0.677)
In a relationship (ref: no)										
Yes	0.597**	0.034	-0.154	0.494**	0.130	0.165	-0.114	-0.146	-0.014	-0.063
	(0.244)	(0.259)	(0.210)	(0.220)	(0.250)	(0.229)	(0.292)	(0.286)	(0.387)	(0.882)
Constant	-1.179***	-1.246***	-0.525*	-1.464***	-1.481***	-1.135***	-2.144***	-2.368***	-1.164*	-1.267
	(0.302)	(0.331)	(0.283)	(0.302)	(0.330)	(0.341)	(0.398)	(0.425)	(0.646)	(1.108)
N	990	993	992	993	993	994	992	987	461	461

Note: * p<0.1, ** p<0.05, *** p<0.01

13.7. Views on general population issues and related policy

The preceding questions on personal future fertility preferences were asked of respondents aged 18-44. A set of more general questions regarding views on Australia's population size, as well as opinions about paid parental leave and child care were asked of the whole sample. These questions are analysed below.

Population size

Fertility decisions clearly impact on the lives of individuals and their families. However, fertility decisions (alongside mortality rates and net migration) also influence population growth, at least over the long term. In the August 2021 survey, all respondents were asked '*The Australian population is now a little under 26 million. Do you think Australia needs more people?*' This question was also asked in January 2021, as well as twice prior to COVID-19. It would appear that there has been a general increase in the per cent of Australians that were supportive of more rapid population growth during the COVID-19 period. In August 2021, 37 per cent of Australians thought that Australia needed more people, up from 34 per cent in January 2021 and 30 per cent in November 2018. Support still has not returned to the 46 per cent level observed in 2010, but is much higher than immediately prior to the pandemic.

Views on the population size also vary according to people's characteristics, as seen in Table 46. Men were more likely than women to feel that Australia needed a larger population. There were no major differences by age group, however there was a clear differentiation by highest education level. Those with higher levels of education were more likely to agree that Australia's population needed to increase. For example 46% of those with a postgraduate degree felt that Australia needs more people, compared to 32% of those with Year 12 or below education.

Table 46 Do you think Australia needs more people? Row percentages

	Yes %	No %	Don't know/ refused %	N
Sex				
Male	42	56	2	1,374
Female	31	66	3	1,750
Age group				
18-29	34	63	3	290
30-49	36	61	3	982
50-64	33	65	2	880
65+	41	58	1.5	947
Highest education level				
Postgraduate	46	53	1	752
Bachelors	43	53	4	712
Diploma or Certificate III/IV	35	63	2	827
Year 12 or below	32	66	2	739
Total	36[36]	61	2.5	

Note: percentages may not add up to 100 due to rounding

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[36] The figure of 36% differs from 37% mentioned earlier in the text, as 36% is based is on total distribution also including those who did not know or refused to answer.

Paid parental leave

One of the factors that may influence fertility decisions is the availability of paid parental leave. In August 2021, one-half of the sample were asked '*Consider a couple who both work full-time and now have a newborn child. One of them stops working for some time to care for their child. Do you think there should be paid leave available and, if so, for how long?*'. For one quarter of the sample, the person who was indicated as stopping working was changed to '*The father of the child*' and for another quarter it was changed to '*The mother of the child*'. This change in question wording had a small effect on the level of support for paid parental leave. When the person who was indicated as stopping working was '*The father of the child*' or '*The mother of the child*' rather than '*one of them*', support for paid parental leave increased – from 80 per cent to 84 per cent.

Table 47 shows how support for the paid parental leave differed according to the respondent's sex, age and highest education level as well as which question vignette they were asked.

Women were generally more supportive of paid parental leave than men, except for the scenario where it is the mother who stops working in which case there was no difference in responses between men and women. Younger people were also more supportive with a particularly large drop in support for those aged 65 and over. For the scenario where fathers stop working, 94% of those aged under 50 felt there should be paid parental leave, compared to 62% of those aged 65 and over.

Higher education was also associated with more support overall for paid parental leave.

Table 47 Percentage of respondents who agreed there should be paid parental leave, by selected characteristics and question vignette (%)

	One of them stops working for some time to care for their child.	The father stops working for some time to care for their child.	The mother stops working for some time to care for their child.
Sex			
Male	75	80	84
Female	84	87	84
Age group			
18-29	90	94	91
30-49	86	94	92
50-64	78	78	81
65+	64	62	67
Highest education level			
Postgraduate	87	93	88
Bachelors	88	91	94
Diploma or Cert III/IV	79	85	85
Year 12 or below	77	79	82
Total	80	84	84

While respondents were equally supportive of mothers and fathers receiving paid parental leave, the number of months that people thought should be provided was much less for fathers compared to mothers. When the question is left general ('one of them') the average number of months that people supported was 9.8. This was slightly but not significantly less than when 'The mother of the child' is

specified (10.4 months). However, when 'The father of the child' is specified, the number of months supported drops to 7.0.

Respondents were also asked about who should pay for paid parental leave, the response choices were "the Government", "the employer", or "other". For other responses individuals could specify their response using open text. Respondents were allowed to choose multiple options. Overall, 40% believed only the government should pay, 44% believed a combination of the government and employer, 12% believed the employer should pay and 3% had other responses.

Child care

In addition to paid parental leave, one of the major costs of having children that can be supported by government is the cost of child care. Respondents were asked *'Now consider a couple where one parent has been at home looking after a child but plans to return to work. Do you think there should be subsidised child care available and, if so, for what proportion of the cost of child care?'* For this base case group, only 12 per cent thought there should be no subsidised care. At the other end of the distribution, only 13 per cent thought there should be subsidies for the entire cost of care. The modal response (given by 37 per cent of respondents) was for about half of the cost of child care covered, with 16 per cent thinking there should be less than half of the cost covered (but at least some covered), and 21 per cent thinking that there should be more than half of the cost covered (but not all).

In total, approximately 75% thought that at least half the cost of child care should be subsidised.

When the question vignette was changed to considering a couple where the mother or the father specifically is planning to go back to work, support for covering the full cost of child care increased when mothers were mentioned. The distribution of answers is shown in Figure 52.

Figure 52 Percentage distribution of responses regarding subsiding cost of child care, by question vignette
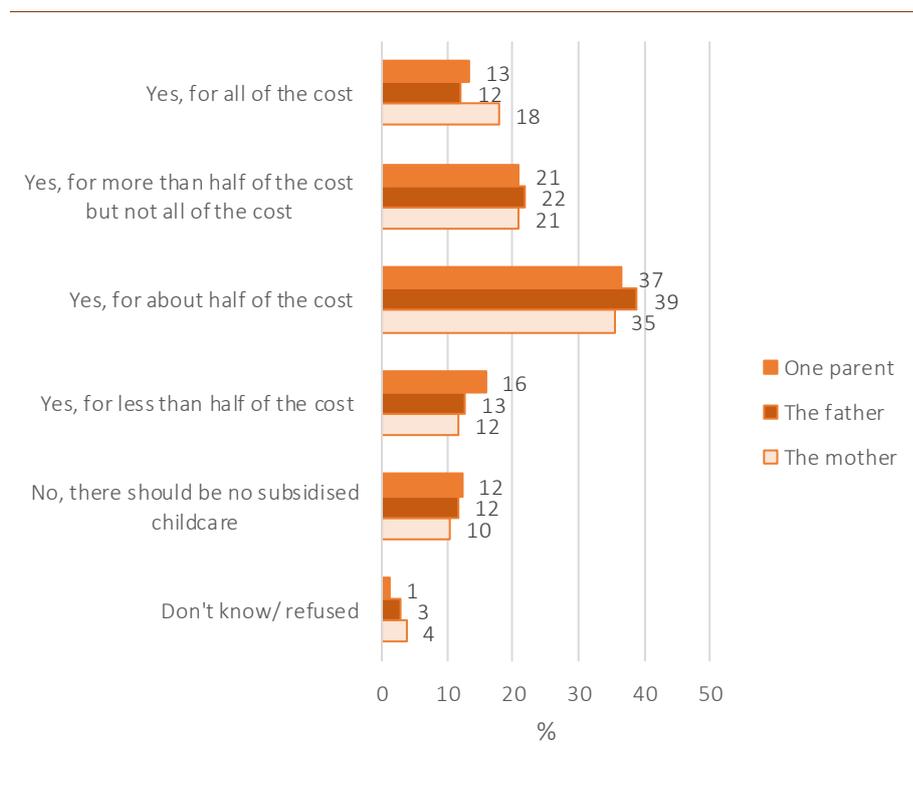
Overall, around 36 per cent of respondents felt that *more* than half the cost of child care should be subsidised. The table below shows the percentage of respondents who felt this based on their sex, age and highest education level.

People aged 30-49, and those with lower levels of education stand out as being most supportive of a large subsidisation of child care. In this age group, 47 per cent felt that more than half the cost of child care should be subsidised.

Table 48 Percentage of respondents who felt that more than half of cost of child care should be subsidised

	%
Sex	
Male	47
Female	53
Age group	
18-29	21
30-49	47
50-64	18
65+	14
Highest education level	
Postgraduate	15
Bachelors	15
Diploma or Cert III/IV	38
Year 12 or below	32
Total	36

As with paid parental leave, respondents were also asked who should pay for the cost of subsidised child care. 75% reported that it should be the Government who subsidised the cost of child care, which is considerably higher than the 40% who responded the Government should cover paid parental leave. A further 4% said the employer, 20% the government and employer together, and 1% other.

13.8. Conclusion

The results from the ANUPoll provide new information on what Australians in reproductive ages think are important when considering having children, and about the policies that can support that. The results are consistent with the literature review, and provide additional information not available through the HILDA analysis.

The survey shows that economic considerations are an important factor when thinking about future childbearing plans. In particular, the costs of raising children, and job security after having children were the factors considered most important. In addition, being able to buy a home, or a better home, was also listed as extremely important, especially for younger respondents and those with lower levels of education.

An important consideration when considering changes to fertility plans, is the potential impact of the COVID-19 pandemic. Overall the results showed that COVID-19 had not changed the childbearing plans of the majority of respondents, although a not insubstantial 19% did indicate that the spread of the pandemic had made having children in the future a lot less likely.

With regard to policies that can support parents with children, the results from the survey indicate that the support for paid parental leave was very high. More than 80% of respondents indicating there should be paid parental leave if one parent stops working to look after a newborn. Most respondents believed either just the Government, or a combination of Government and employers should pay for parental leave. Parental leave had higher support from people with a Bachelor's degree. This strong support for paid parental leave highlights the findings already shown in the literature review and the HILDA analysis which both find that parental leave has a positive impact on fertility.

Support for subsidised child care was also very high. Three-quarters (75%) of respondents felt the Government should pay for subsidised child care. Only 10-12% of respondents felt that there should be no subsidised child care at all. The provision of government support for child care had higher support from those without a university qualification. In other countries, the availability of high quality, relatively affordable, subsidised child care is found to increase fertility. While this research was unable to assess the impact of child care policy implementation in Australia, these results suggest that child care is an important factor that parents take into consideration when thinking about building a family.

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APPENDIX

HILDA data management

It is important to note that for many of the fertility measures, particularly childbearing desires, expectations and additionally intended number of children that the questions were asked differently or to a restricted sample in four of the waves (2005, 2008, 2015 and 2019). In addition, the age range who were asked the questions also changed over time. Some of these changes are outlined in Table 49. Between 2001-2004, the age range was 18-55 for women. Between 2005 and 2015 it was 18-44, and from 2016 onwards it was 18-49. For this reason, the analysis is restricted to age 44 in most cases (detailed under Table 2 below).

Table 49 Changes to questions on future fertility preferences by survey year/wave

Wave	Age range for children bearing desires and expectations	Additional restrictions[a,b]
2001	18-55	
2002	18-55	
2003	18-55	
2004	18-55	
2005	18-44	X
2006	18-44	
2007	18-44	
2008	18-44	X
2009	18-44	
2010	18-44	
2011	18-44	
2012	18-44	
2013	18-44	
2014	18-44	
2015	18-49	X
2016	18-49	
2017	18-49	
2018	18-49	
2019	18-49	X

[a] Woman or partner have had operation making it impossible to have children
[b] Based on medical advice, are aware of any physical or health reason that would make it difficult for woman and/or partner to have children / more children?

In addition, in 2005, 2008, 2011, and 2019 women were asked two questions. If they answered yes to either question they were not asked about their future fertility preferences. These two questions were if the woman or her partner had an operation making it impossible to have children, and whether based on medical advice whether they were aware of any physical or health reasons that would make it difficult for the woman and/or her partner to have children or more children.

The effect of these changes to the question has an impact on the pattern of childbearing desires over time, as seen in Figure 53. For the full sample of women aged 18-49, we see a large increase in 2005 as a result of older women aged 45-49 (who have very low childbearing desires) being excluded from 2005, and a subsequent drop as women aged 45-49 are included from 2016 onwards. If we exclude those aged 45 and over there is still an increase in 2005 but it is smaller.

For this reason, in some policy analysis we exclude women aged 45-49 particularly if these women are more likely to be in either the treatment or control group. We also exclude women from the year they stated they had an operation making it impossible to have children.

Figure 53 Mean childbearing desires by wave, by sample restrictions
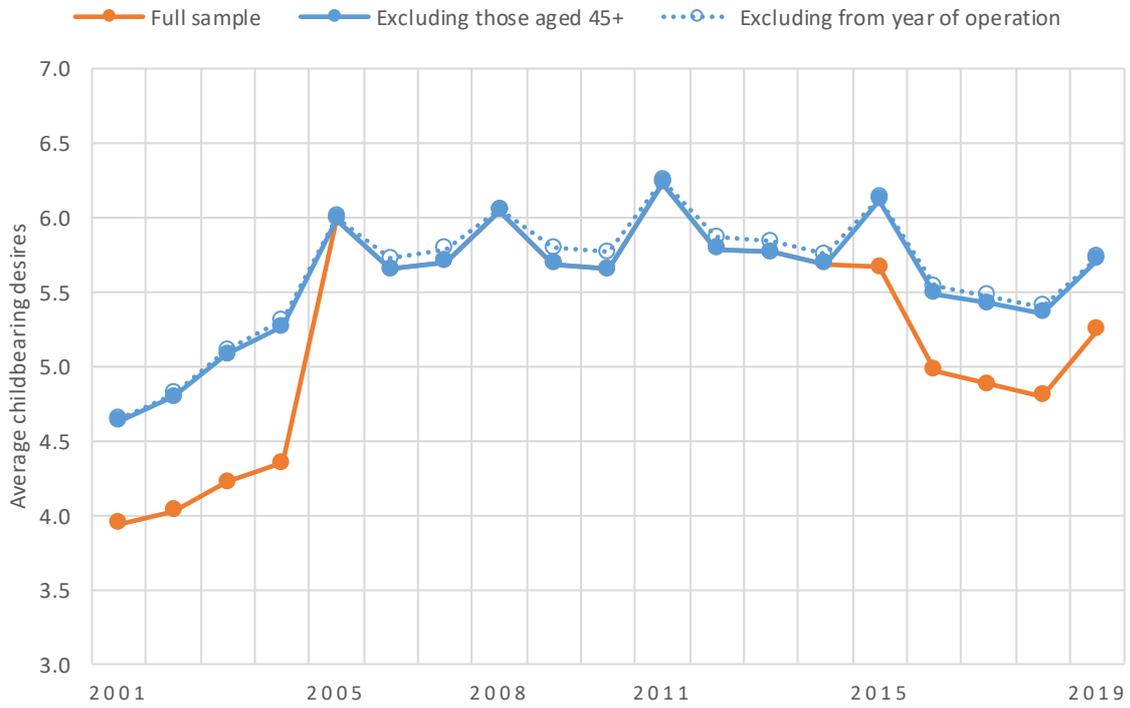
Alternative identification strategies

Baby Bonus – Identification strategy III

The figures and table show the pattern for the fertility outcomes based on Identification strategy III where women in the lowest 3 SEIFA categories where the treatment group and women in the top three SEIFA categories where in the control group. There are 23,333[37] observations based on 6,652 women (3,731 women in the top 3 SEIFA categories, and 2,921 women in the lowest 3 SEIFA categories). Separate analysis was also conducted for each parity, however there were not significant differences in the effect of the reform based on this identification strategy at any parity and therefore the parity results are not shown.

Table 50 Effect of Baby Bonus (Identification strategy III - SEIFA categories)

	(1) OLS	(2) OLS	(3) OLS-fixed effect	(4) OLS-fixed effect
Births				
Coefficient	<0.001	0.001	0.012	0.013
Standard error	(0.008)	(0.007)	(0.011)	(0.011)
Observations	23,333	22,765	23,333	22,765
Childbearing desire				
Coefficient	0.044	0.081	0.193	0.117
Standard error	(0.141)	(0.126)	(0.130)	(0.127)
Observations	20,445	19,955	20,445	19,955
Childbearing expectation				
Coefficient	0.030	0.074	0.262**	0.196
Standard error	(0.135)	(0.116)	(0.125)	(0.123)
Observations	20,410	19,921	20,410	19,921
Intended number of children				
Coefficient	0.005	0.029	0.053	0.054
Standard error	(0.042)	(0.036)	(0.035)	(0.035)
Observations	15,596	15,250	15,596	15,250
Model specifications				
Year and State Fixed Effects	Yes	Yes	Yes	Yes
Time-varying Demographics	No	Yes	No	Yes
Time-invariant Demographics	No	Yes	No	No
Individual Fixed Effect	No	No	Yes	Yes

Note: Women in lowest 3 SEIFA categories are the treatment group, women in top 3 SEIFA categories are the control group.
* p<0.1, ** p<0.05, *** p<0.01

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[37] For some analysis women with missing values, or those not asked were dropped leading to a lower sample size.

Figure 54 Baby Bonus: Probability of new birth, by treatment and control groups (Identification strategy II)

Figure 55 - Baby Bonus: Childbearing desires by treatment and control group (Identification strategy II)

Figure 56 Baby Bonus: Childbearing expectation - by treatment and control group (Identification strategy II)
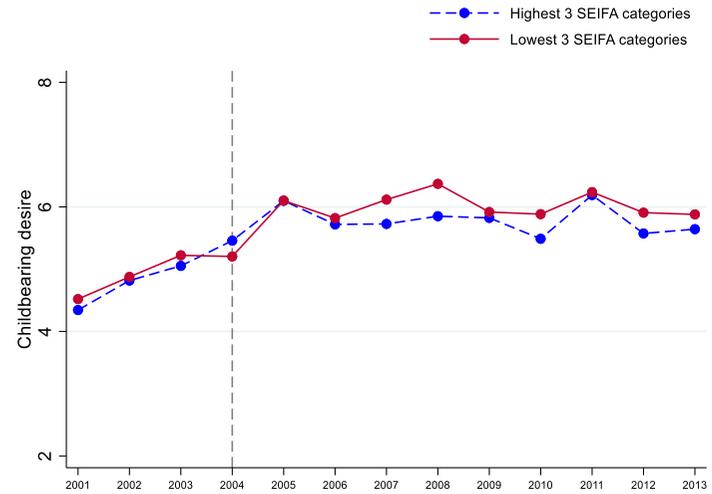
Figure 57 Baby Bonus: Additionally intended children- by treatment and control group

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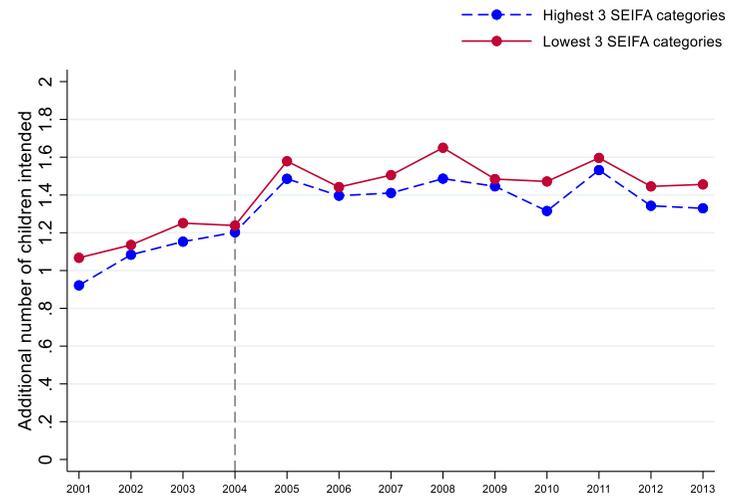
Paid Parental Leave – Identification strategy II

The control and treatment group are defined in the same way based on eligibility but the starting year for the policy has been moved from 2011 to 2009.

The table show the results for the fertility outcomes based on Identification strategy II. The figures are the same as Identification strategy I and therefore not shown.

The results are very similar to Identification strategy I, although in this case we also observe some effect for third births.

Table 51 Effect of Parental Leave Pay on new births: DiD estimates (Identification strategy II)

	(1) OLS	(2) OLS	(3) OLS-fixed effect	(4) OLS-fixed effect
Births				
All new births				
Coefficient	-0.005	-0.005	0.048***	0.045***
Standard error	(0.007)	(0.007)	(0.009)	(0.009)
Observations	35,881	34,927	35,881	34,927
First births				
Coefficient	0.026**	0.014	0.034**	0.021
Standard error	(0.013)	(0.013)	(0.015)	(0.015)
Observations	16,338	16,078	16,338	16,078
Second births				
Coefficient	-0.012	0.026	0.033	0.030
Standard error	(0.022)	(0.021)	(0.029)	(0.029)
Observations	7,179	7,005	7,179	7,005
Third births				
Coefficient	-0.017	-0.006	0.065***	0.043*
Standard error	(0.016)	(0.017)	(0.022)	(0.023)
Observations	9,029	8,706	9,029	8,706
Model specifications				
Year and State Fixed Effects	Yes	Yes	Yes	Yes
Time-varying Demographics	No	Yes	No	Yes
Time-invariant Demographics	No	Yes	No	No
Individual Fixed Effect	No	No	Yes	Yes

Table 52 shows the results for the additional fertility outcomes: childbearing desires, expectations and additionally intended children.

Table 52 Effect of Parental Leave Pay on childbearing desires, expectations and additionally intended children: DiD estimates (Identification strategy II)

	(1) OLS	(2) OLS	(3) OLS-fixed effect	(4) OLS-fixed effect
Childbearing desires				
Coefficient	0.115	0.117	0.143	0.091
Standard error	(0.110)	(0.108)	(0.107)	(0.105)
Observations	30,482	29,695	30,482	29,695
Childbearing expectations				
Coefficient	0.106	0.105	0.048	-0.020
Standard error	(0.099)	(0.097)	(0.098)	(0.096)
Observations	30,442	29,657	30,442	29,657
Additionally intended number of children				
Coefficient	0.026	0.037	-0.011	-0.010
Standard error	(0.030)	(0.030)	(0.025)	(0.026)
Observations	23,191	22,624	23,191	22,624
Model specifications				
Year and State Fixed Effects	Yes	Yes	Yes	Yes
Time-varying Demographics	No	Yes	No	Yes
Time-invariant Demographics	No	Yes	No	No
Individual Fixed Effect	No	No	Yes	Yes

Paid Parental Leave – Identification strategy III

The third possible identification strategy uses a DiD-instrumental variable (IV) research design and exploits the fact that women from the public and private sectors are differentially affected by this scheme. Prior to the introduction of this scheme, the public sector already granted very generous leave compared to the private sector. This policy will presumably act on women who work in the private sector as they are the group for whom maternity leave becomes more generous. This identification is conducted mainly in the spirit of Bassford and Fisher (2020) and involves two stages of estimation. The first predicts women's leave access prior to the policy based upon the sector in which she works. Leave access is defined as the entitlement to paid parental leave and anticipated access under the PLP scheme from 2009. Then in the second stage the strategy estimates the effect of predicted leave access on fertility outcomes.

Table 53 Effect of Paid Parental leave on selected fertility toucomes (Identification strategy III)

	(1) IV	(2) IV	(3) IV- fixed effect	(4) IV-fixed effect
Births				
Coefficient	-0.004	-0.018	-0.004	0.001
Standard error	(0.014)	(0.015)	(0.019)	(0.020)
Observations	24,597	21,934	24,597	21,934
Childbearing desire				
Coefficient	0.594**	0.399	0.297	0.004
Standard error	(0.285)	(0.312)	(0.295)	(0.323)
Observations	22,470	20,085	22,470	20,085
Childbearing expectation				
Coefficient	0.375	0.267	-0.117	-0.310
Standard error	(0.266)	(0.288)	(0.283)	(0.314)
Observations	22,430	20,049	22,430	20,049
Additionally intended number of children				
Coefficient	0.110	0.109	-0.007	0.012
Standard error	(0.081)	(0.091)	(0.074)	(0.084)
Observations	17,210	15,435	17,210	15,435
Model specifications				
Year and State Fixed Effects	Yes	Yes	Yes	Yes
Time-varying Demographics	No	Yes	No	Yes
Time-invariant Demographics	No	Yes	No	No
Individual Fixed Effect	No	No	Yes	Yes

* p<0.1, ** p<0.05, *** p<0.01

Paid Parental Leave – Placebo tests

Figure 58 Paid parental leave pay placebo tests. Coefficients of fixed effects with time-varying demographic controls. Highlighted year is introduction of policy.
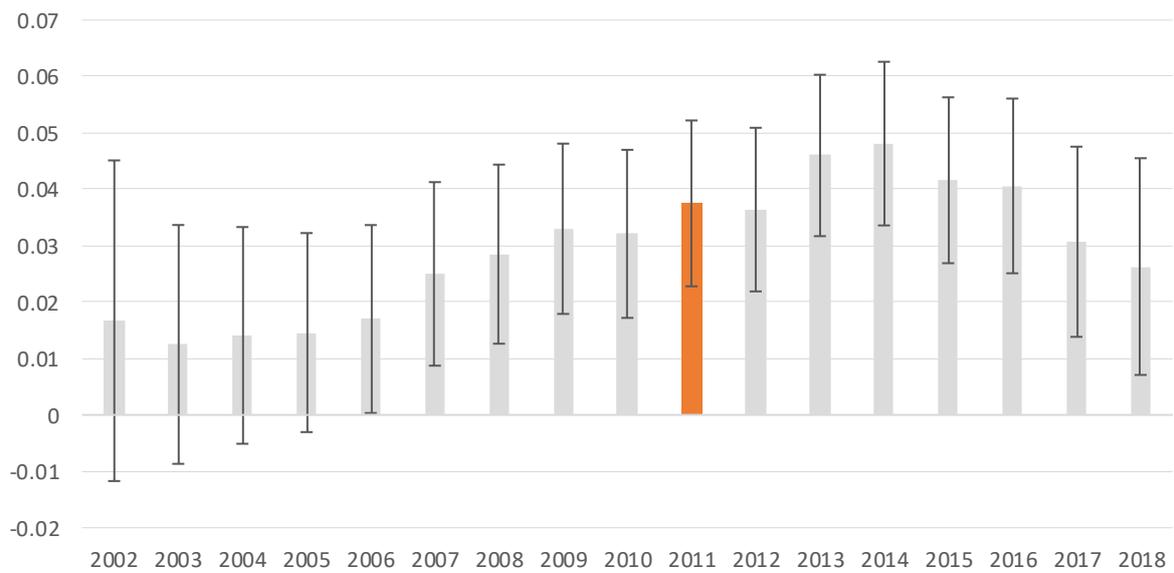
Dad and Partner Pay – Identification strategy II

The identification strategy is similar to Idenfication I (based on eligibility of partners) but now we limit the analysis to women who were unemployed or out of labour force. This subsample of women should, in theory, be more affected by their partner's access to DaPP compared to working women. However, this sample restriction leads to a large sample reduction and less precise estimates. Further, women's labour force status might itself be a function of this scheme. If this is true, then this strategy may be subject to an issue of selecting on an endogenous condition, leading to biased estimates.

Table 54 Effect of DaPP (Identification strategy II)

	(1) OLS	(2) OLS	(3) OLS-fixed effect	(4) OLS-fixed effect
Births				
Coefficient	0.007	-0.012	-0.054	-0.044
Standard error	(0.028)	(0.026)	(0.033)	(0.033)
Observations	5,321	5,309	5,321	5,309
Childbearing desire				
Coefficient	-0.041	-0.149	-0.385	-0.395
Standard error	(0.277)	(0.278)	(0.285)	(0.287)
Observations	4,943	4,933	4,943	4,933
Childbearing expectation				
Coefficient	-0.118	-0.251	-0.268	-0.251
Standard error	(0.264)	(0.266)	(0.274)	(0.275)
Observations	4,928	4,918	4,928	4,918
Additionally intended number of children				
Coefficient	-0.007	-0.030	-0.130	-0.132
Standard error	(0.069)	(0.067)	(0.096)	(0.097)
Observations	3,322	3,314	3,322	3,314
Model specifications				
Year and State Fixed Effects	Yes	Yes	Yes	Yes
Time-varying Demographics	No	Yes	No	Yes
Time-invariant Demographics	No	Yes	No	No
Individual Fixed Effect	No	No	Yes	Yes

* p<0.1, ** p<0.05, *** p<0.01

Figure 59 Probability of new birth, by treatment and control groups
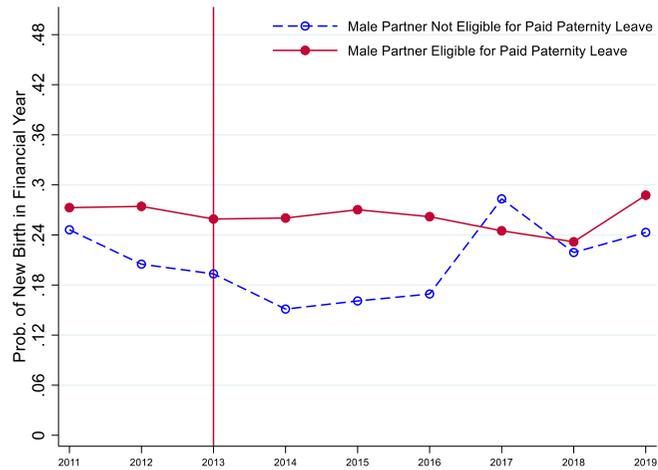
Figure 60 - Childbearing desires by treatment and control group
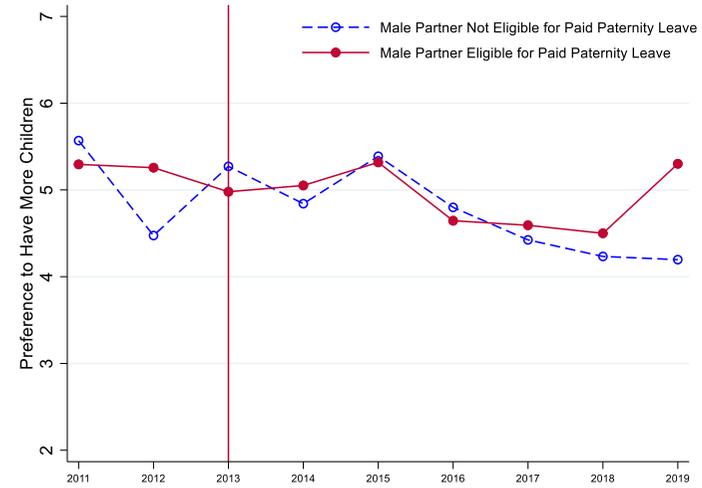
Figure 61 Childbearing expectation - by treatment and control group
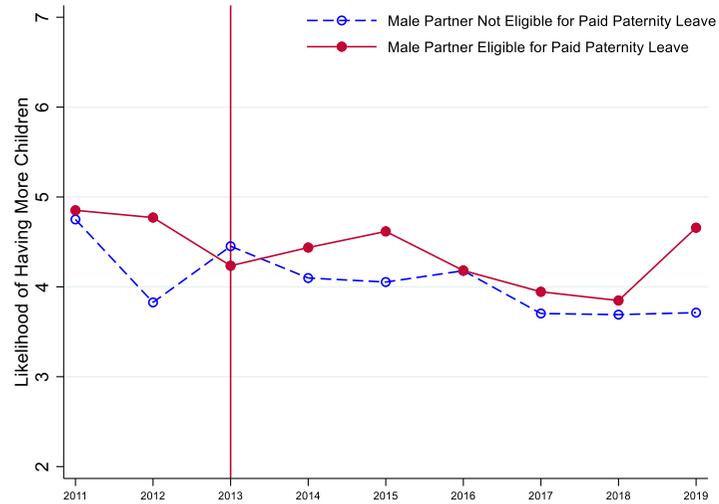
Figure 62 Additionally intended children- by treatment and control group
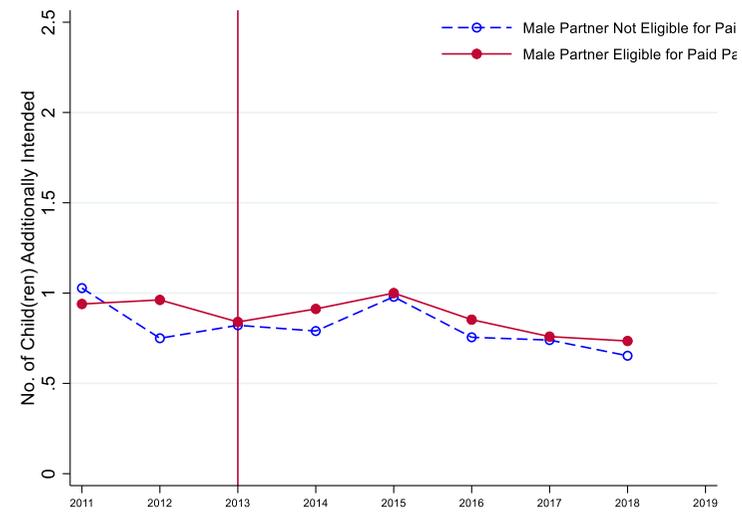
Dad and Partner pay – Placebo tests

Figure 63 Dad and partner pay placebo tests. Coefficients of fixed effects with time-varying demographic controls. Highlighted year is introduction of policy
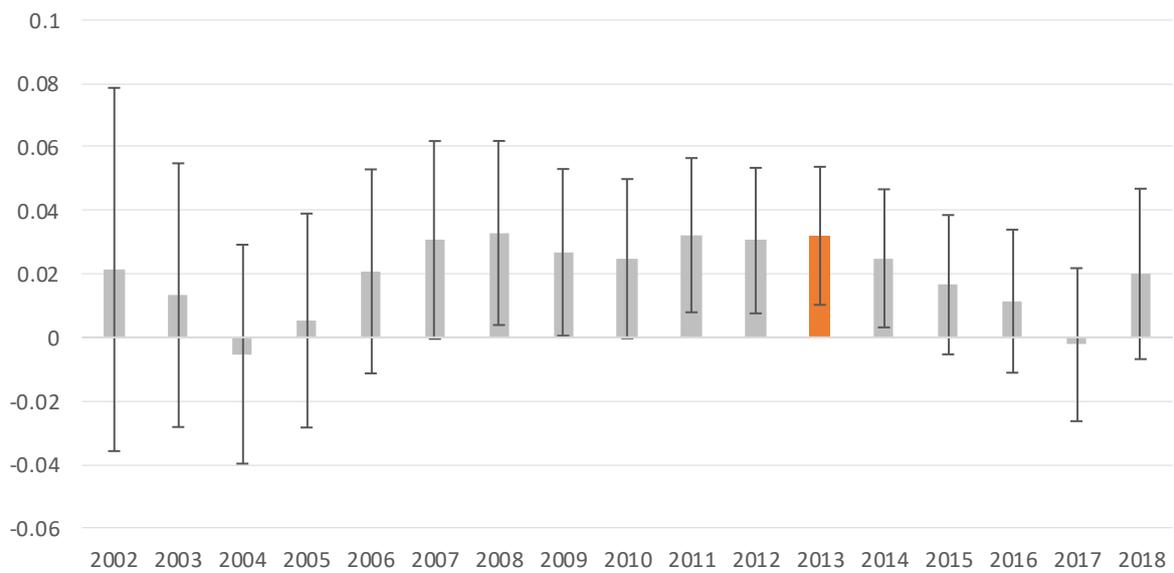
FTB – Identification strategy I

In this alternative identification strategy, we restrict the sample to FTB-A recipients, set as the treated women those with family taxable income fell into the taper rate affected range and as control women those family taxable income fell out of the affected range.

Table 55 Effect of FTB (Identification strategy I)

	(1) OLS	(2) OLS	(3) OLS-fixed effect	(4) OLS-fixed effect
Births				
Coefficient	0.001	-0.003	-0.021	-0.025
Standard error	(0.017)	(0.018)	(0.022)	(0.023)
Observations	7,727	6,466	7,727	6,466
Childbearing desire				
Coefficient	-0.173	-0.193	-0.179	0.014
Standard error	(0.194)	(0.194)	(0.182)	(0.183)
Observations	7974	6,654	7,974	6,654
Childbearing expectation				
Coefficient	0.051	0.026	-0.010	0.228
Standard error	(0.168)	(0.170)	(0.164)	(0.163)
Observations	7,970	6,649	7,970	6,649
Additionally intended number of children				
Coefficient	0.008	-0.018	-0.027	-0.011
Standard error	(0.043)	(0.042)	(0.034)	(0.034)
Observations	5,241	4,389	5,241	4,389
Model specifications				
Year and State Fixed Effects	Yes	Yes	Yes	Yes
Time-varying Demographics	No	Yes	No	Yes
Time-invariant Demographics	No	Yes	No	No
Individual Fixed Effect	No	No	Yes	Yes

* p<0.1, ** p<0.05, *** p<0.01

Determinants of childbearing intentions—alternative models

Table 56 Childbearing desires, by parity fixed effects

	Full sample		Parity 0		Parity 1		Parity 2	
	Coef.	Se	Coef.	Se	Coef.	Se	Coef.	Se
Number of children (ref: childless)								
1 child	-0.766***	(0.076)						
2 children	-4.444***	(0.105)						
3 children	-6.854***	(0.144)						
Age group (ref: 25-29)								
18-24	-0.343***	(0.054)	-0.107*	(0.063)	0.084	(0.237)	-0.278	(0.054)
30-34	0.058	(0.060)	-0.000	(0.087)	0.335*	(0.183)	-0.029	(0.060)
35-39	-0.595***	(0.091)	-0.806***	(0.172)	0.038	(0.288)	-0.360*	(0.091)
40-44	-1.442***	(0.116)	-2.225***	(0.244)	-0.818**	(0.392)	-0.527**	(0.116)
45-49	-1.724***	(0.143)	-3.275***	(0.317)	-1.121**	(0.485)	-0.309	(0.143)
Education level (ref: Year 11 or below)								
Bachelor Degree or higher	0.443***	(0.138)	0.060	(0.154)	0.208	(0.725)	1.599***	(0.138)
Diploma/ Cert III/IV	0.431***	(0.119)	0.320**	(0.152)	0.365	(0.421)	0.491*	(0.119)
Year 12	0.213*	(0.123)	0.011	(0.133)	-0.338	(0.578)	0.419	(0.123)
Relationship status (ref: Single)								
Married	0.784***	(0.068)	0.700***	(0.105)	0.958***	(0.251)	0.117	(0.068)
Cohabiting	0.824***	(0.054)	0.563***	(0.065)	1.136***	(0.204)	0.527***	(0.054)
Employment (ref: Permanent full-time)								
Permanent part-time	-0.054	(0.047)	0.027	(0.067)	0.154	(0.139)	-0.027	(0.047)
Casual full-time	0.072	(0.062)	0.137*	(0.076)	0.197	(0.290)	-0.045	(0.062)
Casual part-time	0.046	(0.045)	0.018	(0.057)	0.442**	(0.178)	0.127	(0.045)
Self-employed	0.145*	(0.087)	-0.053	(0.151)	0.401	(0.283)	0.113	(0.087)
Not working	0.116**	(0.050)	-0.009	(0.070)	0.005	(0.169)	0.132	(0.050)
Household income (log)	-0.014	(0.027)	-0.006	(0.030)	0.009	(0.106)	0.141	(0.027)
Remote area	-0.180**	(0.074)	-0.091	(0.103)	-0.060	(0.275)	-0.279	(0.074)
Observations	65,520		24,528		74,22		11,426	

Table 57 Childbearing expectations, by parity fixed effects

	Full sample Coef.	Se	Parity 0 Coef.	Se	Parity 1 Coef.	Se	Parity 2 Coef.	Se
Number of children (ref: childless)								
1 child	-0.889***	(0.077)						
2 children	-4.847***	(0.099)						
3 children	-7.168***	(0.135)						
Age group (ref: 25-29)								
18-24	-0.225***	(0.052)	-0.075	(0.061)	0.242	(0.206)	0.130	(0.052)
30-34	-0.098*	(0.059)	-0.149*	(0.088)	-0.016	(0.185)	-0.160	(0.059)
35-39	-0.831***	(0.087)	-1.055***	(0.167)	-0.309	(0.265)	-0.518***	(0.087)
40-44	-1.417***	(0.107)	-2.078***	(0.213)	-0.839**	(0.332)	-0.456**	(0.107)
45-49	-1.317***	(0.129)	-2.373***	(0.267)	-0.625	(0.406)	-0.086	(0.129)
Education level (ref: Year 11 or below)								
Bachelor Degree or higher	0.404***	(0.131)	0.014	(0.150)	0.299	(0.637)	1.573***	(0.131)
Diploma/ Cert III/IV	0.413***	(0.112)	0.348**	(0.151)	-0.050	(0.381)	0.488**	(0.112)
Year 12	0.263**	(0.118)	0.005	(0.131)	-0.360	(0.544)	0.251	(0.118)
Relationship status (ref: Single)								
Married	0.891***	(0.066)	0.898***	(0.101)	1.124***	(0.237)	-0.006	(0.066)
Cohabiting	1.012***	(0.053)	0.797***	(0.064)	1.566***	(0.188)	0.386**	(0.053)
Employment (ref: Permanent full-time)								
Permanent part-time	-0.052	(0.043)	-0.073	(0.067)	0.040	(0.129)	0.117*	(0.043)
Casual full-time	0.034	(0.058)	0.078	(0.075)	-0.200	(0.247)	0.124	(0.058)
Casual part-time	0.033	(0.043)	-0.061	(0.058)	0.308*	(0.161)	0.171*	(0.043)
Self-employed	0.077	(0.079)	-0.024	(0.125)	0.155	(0.260)	0.076	(0.079)
Not working	0.170***	(0.047)	-0.035	(0.068)	0.205	(0.139)	0.249***	(0.047)
Household income (log)	0.013	(0.026)	0.022	(0.029)	-0.027	(0.099)	0.141*	(0.026)
Remote area	-0.078	(0.073)	-0.043	(0.099)	0.102	(0.265)	-0.242	(0.073)
Observations	65,352		24,452		7,404		11,414	

Table 58 High childbearing desire but low expectation, by parity, fixed effects

	Full sample		Parity 0		Parity 1		Parity 2	
	Coef.	Se	Coef.	Se	Coef.	Se	Coef.	Se
Number of children (ref: childless)								
1 child	0.539***	(0.111)						
2 children	2.329***	(0.150)						
3 children	3.438***	(0.240)						
Age group (ref: 25-29)								
18-24	0.253**	(0.113)	-1.138***	(0.111)	0.454	(0.379)	0.158	(0.113)
30-34	0.244**	(0.106)	1.347***	(0.114)	0.701*	(0.398)	0.234	(0.106)
35-39	0.433**	(0.172)	3.036***	(0.154)	0.416	(0.585)	0.559	(0.172)
40-44	1.049***	(0.260)	4.713***	(0.219)	0.833	(0.802)	1.964*	(0.260)
45-49	1.418***	(0.430)	5.927***	(0.451)	1.527	(1.233)	16.396	(0.430)
Education level (ref: Year 11 or below)								
Bachelor Degree or higher	-0.122	(0.261)	-0.890***	(0.171)	0.926	(1.166)	-2.536	(0.261)
Diploma/ Cert III/IV	-0.587***	(0.195)	-0.645***	(0.166)	1.009	(0.821)	-2.383*	(0.195)
Year 12	-0.219	(0.222)	-0.719***	(0.160)	1.484	(0.939)	-18.836	(0.222)
Relationship status (ref: Single)								
Married	-1.354***	(0.116)	-1.180***	(0.137)	-1.810***	(0.430)	-1.326**	(0.116)
Cohabiting	-1.441***	(0.096)	-1.345***	(0.109)	-2.215***	(0.346)	-1.371**	(0.096)
Employment (ref: Permanent full-time)								
Permanent part-time	0.073	(0.097)	0.174	(0.142)	0.176	(0.293)	-0.383	(0.097)
Casual full-time	0.081	(0.139)	0.195	(0.156)	0.524	(0.533)	-2.753**	(0.139)
Casual part-time	-0.037	(0.098)	0.015	(0.117)	-0.192	(0.319)	-0.738	(0.098)
Self-employed	0.040	(0.172)	-0.074	(0.238)	0.089	(0.490)	0.856	(0.172)
Not working	0.050	(0.095)	0.454***	(0.123)	-0.195	(0.313)	-0.486	(0.095)
Household income (log)	-0.012	(0.055)	-0.173***	(0.055)	0.321	(0.235)	-0.070	(0.055)
Remote area	-0.167	(0.133)	0.099	(0.120)	0.292	(0.539)	1.003	(0.133)
Observations	13,462		17,982		1,243		642	

Table 59 Number of additional children intended, by parity, fixed effects

	Full sample Coef.	Se	Parity 0 Coef.	Se	Parity 1 Coef.	Se	Parity 2 Coef.	Se
Number of children (ref: childless)								
1 child	-0.823***	(0.020)						
2 children	-1.557***	(0.029)						
3 children	-1.985***	(0.042)						
Age group (ref: 25-29)								
18-24	0.018	(0.016)	-0.004	(0.021)	-0.041	(0.064)	0.053	(0.016)
30-34	-0.082***	(0.017)	-0.080***	(0.030)	-0.012	(0.049)	-0.025	(0.017)
35-39	-0.181***	(0.026)	-0.373***	(0.070)	-0.098	(0.069)	-0.077*	(0.026)
40-44	-0.171***	(0.033)	-0.559***	(0.090)	-0.146*	(0.083)	-0.058	(0.033)
45-49	-0.041	(0.039)	-0.503***	(0.105)	-0.059	(0.099)	0.002	(0.039)
Education level (ref: Year 11 or below)								
Bachelor Degree or higher	0.115***	(0.040)	0.097*	(0.056)	0.092	(0.150)	0.182*	(0.040)
Diploma/ Cert III/IV	0.111***	(0.032)	0.139**	(0.059)	0.063	(0.099)	0.052	(0.032)
Year 12	0.112***	(0.036)	0.066	(0.051)	-0.055	(0.143)	0.070	(0.036)
Relationship status (ref: Single)								
Married	0.021	(0.019)	0.043	(0.035)	0.106*	(0.060)	0.034	(0.019)
Cohabiting	0.060***	(0.016)	0.041*	(0.023)	0.103**	(0.049)	0.060*	(0.016)
Employment (ref: Permanent full-time)								
Permanent part-time	-0.018	(0.012)	0.005	(0.022)	0.006	(0.029)	0.010	(0.012)
Casual full-time	-0.018	(0.020)	-0.026	(0.029)	0.022	(0.056)	-0.020	(0.020)
Casual part-time	-0.001	(0.013)	0.003	(0.020)	0.093**	(0.043)	0.013	(0.013)
Self-employed	-0.013	(0.020)	-0.030	(0.042)	0.098	(0.065)	-0.022	(0.020)
Not working	-0.026*	(0.013)	-0.020	(0.023)	0.077**	(0.037)	0.028	(0.013)
Household income (log)	0.015*	(0.008)	0.014	(0.011)	0.013	(0.031)	0.029**	(0.008)
Remote area	-0.005	(0.021)	-0.010	(0.032)	0.006	(0.057)	-0.073	(0.021)
Observations	48,426		18,949		5,265		8,176	

Table 60 Predictive margins from logit regression of stating each factor was a 'very important' consideration for having (more) children.

	How old you are	Being able to buy a home or a better home	Having someone to care for you when you are old	The availability and affordability of quality child care	The general cost of raising children	The security of your, or your partners job	Having someone to love	Having time for leisure or social activities	Having time and energy for your career	Giving your parents grandchildren
Number of children										
Childless	0.27	0.34	0.10	0.24	0.40	0.41	0.34	0.24	0.26	0.11
At least 1 child	0.31	0.22	0.13	0.25	0.41	0.37	0.41	0.24	0.18	0.09
Sex										
Male	0.24	0.28	0.11	0.20	0.36	0.36	0.38	0.24	0.21	0.11
Female	0.33	0.31	0.12	0.28	0.44	0.43	0.36	0.24	0.25	0.09
Age										
18-29	0.27	0.38	0.11	0.29	0.49	0.48	0.44	0.25	0.28	0.11
30-49	0.30	0.24	0.11	0.21	0.35	0.34	0.33	0.23	0.19	0.10
Education										
Postgraduate	0.34	0.30	0.14	0.29	0.42	0.39	0.39	0.24	0.23	0.11
Bachelors	0.30	0.23	0.11	0.23	0.33	0.34	0.41	0.24	0.22	0.11
Diploma or Cert III/IV	0.26	0.24	0.08	0.20	0.41	0.40	0.34	0.21	0.18	0.10
Year 12 or below	0.29	0.36	0.13	0.26	0.42	0.42	0.37	0.26	0.27	0.10
Employed										
No	0.24	0.28	0.13	0.26	0.41	0.35	0.36	0.22	0.23	0.12
Yes	0.30	0.30	0.11	0.24	0.40	0.41	0.37	0.24	0.23	0.09
In a relationship										
No	0.29	0.27	0.13	0.24	0.40	0.32	0.37	0.26	0.21	0.10
Yes	0.29	0.31	0.10	0.24	0.41	0.44	0.37	0.23	0.24	0.10

Table 60 Predictive margins from logit regression of stating each factor was a 'very important' consideration for having (more) children (continued)

	Your spouse or partner having time and energy for a career	Being able to make major purchases	Providing more purpose to life	The stress and worry of raising children	The impact children would have on the environment	Uncertainty due to the COVID-19 pandemic	Impact children would have on economic growth and the retirement system	Other caring responsibilities (for example for those with a disability or elderly relatives)	The benefits or costs of additional siblings for your existing children	The gender of your existing children
Number of children										
Childless	0.26	0.18	0.24	0.31	0.18	0.19	0.10	0.12	0.26	0.18
At least 1 child	0.17	0.14	0.27	0.20	0.14	0.17	0.10	0.11	0.17	0.14
Sex										
Male	0.22	0.17	0.26	0.25	0.16	0.18	0.09	0.08	0.19	0.05
Female	0.22	0.15	0.24	0.27	0.16	0.18	0.11	0.15	0.23	0.03
Age										
18-29	0.26	0.21	0.28	0.29	0.19	0.23	0.12	0.12	0.27	0.09
30-49	0.19	0.13	0.23	0.24	0.15	0.16	0.09	0.11	0.21	0.03
Education										
Postgraduate	0.23	0.15	0.24	0.22	0.14	0.19	0.09	0.12	0.23	0.04
Bachelors	0.21	0.14	0.28	0.19	0.15	0.18	0.09	0.08	0.22	0.04
Diploma or Cert III/IV	0.20	0.15	0.25	0.28	0.16	0.20	0.10	0.13	0.18	0.03
Year 12 or below	0.24	0.19	0.24	0.29	0.18	0.17	0.11	0.12	0.24	0.04
Employed	0.23	0.17	0.28	0.25	0.17	0.21	0.10	0.14	0.21	0.06
No	0.22	0.16	0.24	0.26	0.16	0.18	0.10	0.11	0.22	0.03
Yes										
In a relationship										
No	0.17	0.16	0.27	0.21	0.15	0.17	0.11	0.12	0.21	0.04
Yes	0.26	0.16	0.24	0.30	0.17	0.19	0.10	0.11	0.21	0.04