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Women's economic opportunities in the NSW labour market and the impact of early childhood education and care

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¹ The views in this paper are those of the authors and do not necessarily reflect those of NSW Treasury

Acknowledgement of Country

The NSW Treasury acknowledges that Aboriginal and Torres Strait Islander peoples are the First Peoples and Traditional Custodians of Australia, and the oldest continuing culture in human history.

We pay respect to Elders past and present and commit to respecting the lands we walk on, and the communities we walk with.

We celebrate the deep and enduring connection of Aboriginal and Torres Strait Islander peoples to Country and acknowledge their continuing custodianship of the land, seas, and sky.

We acknowledge the ongoing stewardship of Aboriginal and Torres Strait Islander peoples, and the important contribution they make to our communities and economies.

We reflect on the continuing impact of government policies and practices and recognise our responsibility to work together with and for Aboriginal and Torres Strait Islander peoples, families, and communities, towards improved economic, social and cultural outcomes.

Artwork: 'Regeneration' by Josie Rose



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General note on presentation of data in this paper

The figures, tables and other data in this paper generally reflect the latest available, or the 12-month average for the 2021 calendar year. Less recent data is presented only where this provides for the broadest reasonable comparisons across cohorts or jurisdictions. Consideration has been given to ensuring figures, tables or other data citations are representative of structural trends and are not unduly influenced by the COVID-19 pandemic.

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Executive Summary

The 2021-22 NSW Intergenerational Report (**IGR**) identified the substantial opportunity for greater economic prosperity for future generations, and greater fiscal sustainability for the State of New South Wales, presented by achieving equality in workforce participation for women and men. The scenario used to illustrate the size of opportunity was a simple one – one where there was parity in the proportion of women and men participating in the workforce, at all, be it part-time or full-time, over the next twenty years. The IGR did not consider the impact of also addressing the disparity in working hours, or in wages. Nor did the IGR estimate the impact of specific policy initiatives.

This paper sets out technical research and modelling improvements undertaken by NSW Treasury subsequent to the publication of the IGR. Most importantly, the methodology set out in this paper enables the estimation of the impact of policy measures that have a demonstrated effect on women's labour market outcomes, specifically, measures that increase the affordability, availability and quality of early childhood education and care (**ECEC**). The research and methods set out in this paper underpin estimates of both long-term economic impacts and long-term revenue impacts of successful policy intervention that boosts labour market outcomes for women with young children.

This paper takes as its starting point a closer examination of the economic inequality experienced by men and women in New South Wales across the three key labour market indicators: workforce participation, hours worked and wages. Section 1 looks at the current status of these indicators, how they have changed over time and how different age cohorts fare on each indicator and undertakes a comparison with international peers. This section demonstrates the significant and enduring disparity experienced by women in New South Wales, and the opportunity to learn from international experience. The scale of this disparity is demonstrated in a hypothetical scenario of equal outcomes in the NSW labour market across women and men. This scenario builds on the IGR's modelling of parity in the participation rate – whether women are in paid work at all – by also adjusting average hours to balance out women's and men's working hours, and closing the gender pay gap. It concludes that the NSW economy could be 15 per cent larger and average income per household \$33,000 higher if parity across all three labour market indicators were achieved in 2022-23.

Section 2 examines the drivers of unequal labour market outcomes, as the first step in being able to estimate the impacts of policy measures aimed at improving outcomes for women. What is clear from the data is that women's lower labour market outcomes in New South Wales are not for lack of educational attainment, nor the aspirations and expectations of women themselves as they undertake education and vocational training and enter the workforce. Rather, women in New South Wales lead the world in educational attainment, and collectively have been more educated than their male counterparts since 1998. Yet women are paid less than men from the very start of their careers, facing discrimination both in the structure of the workforce that they enter, and in the treatment they receive in their workplaces. This means that they are disproportionately the secondary income earners in their households ahead of any arrival of children. Labour market outcomes between women and men then diverge further if and when that household has children, driven by the markedly unequal distribution of unpaid domestic work and caring responsibilities between genders. This inequality is reinforced by policy settings that contribute to the unequal distribution of care (such as the structure of paid parental leave) and settings that disincentivise secondary earners from increasing their income (the withdrawal of family tax benefit payments, and the marginal cost of ECEC services). The disruption to their working lives that many women therefore experience when they have children, comprising career breaks as well as 'downshifting' to less remunerative and less secure work, not only diverges from the experience of men who have children, but has lifelong impacts on women's pay, the productivity of the workforce, the progression of women, including to positions of leadership and the ongoing unequal distribution of unpaid domestic work. Along with the impact of discrimination, this experience also explains the greater economic insecurity faced by women in later life.

Section 2 concludes that while there is no single policy intervention that can address the interlocking causes of women's lower engagement in the workforce and lower wages, a key factor is the uneven impact of children on the working lives of mothers and fathers respectively. Policy measures that reduce disruption around early parenthood, enabling women to maintain connection to their roles and workplaces and reducing downshifting by women, would have a material impact in redressing the economic inequality experienced by women over their lifetimes, and the loss of their skills and productivity from the workforce. Universal and affordable ECEC, by enabling parents to engage with the workforce on a full or part-time basis, is the most widely recognised policy measure available to address this.

For these reasons, in Section 3, we examine the structure of ECEC under current policy settings to identify the baseline against which policy changes can be measured. The availability and cost of ECEC is a key barrier to usage for many households. The cost of ECEC in Australia and New South Wales is high by international standards, with subsidies progressively withdrawn on the basis of household income, from a level below the average full-time wage of a single income earner. Accessibility of care, in terms of the availability of places across locations, and the type and quality of care, presents a further challenge to parents. The ECEC market is predominantly privately run, with limited system management to prevent cost escalation and to ensure supply across the State, in stark contrast to the universal public provision of education from age five onwards, although there is some provision of Fee preschool for children aged three to five. A significant determinant of availability and quality of ECEC is the workforce, who are paid well below the average wage. At the same time, there is compelling evidence for investment in high quality ECEC to support developmental and educational outcomes for children. Accordingly, there is capacity for significant policy reform to drive uptake of ECEC, by reducing out-of-pocket costs (without compromising quality) and ensuring more widespread accessibility.

In Section 4 we set out a methodology for estimating the impact of policy measures aimed at improving the availability, affordability and quality of ECEC services on women's labour market outcomes. Drawing on both the published Australian and international empirical studies, we present a new method to estimate labour market outcomes in New South Wales, focusing on two effects: *cohort effects*, which apply to primary carers (who are predominantly women) for children aged five and under, and *lifetime effects*, which apply to people who were previously primary carers for children aged five and under.

These outcomes are presented as a range, reflecting uncertainty in the behavioural response of parents with young children to a given price change. The lower range estimate for the cohort effects draws from Australian studies which rely on marginal differences in costs between Australian regions and households, within a stable policy framework. The upper range estimate for the cohort effects draws on the experience of ECEC policy reform in Quebec (and in line with the experience in other international jurisdictions) and extends the behavioural response proportionately with respect to the specific change in user costs under the policy scenarios considered. We also consider a benchmark estimate, proxying the experience in Quebec without reference to specific price reduction estimates. We note the range represents significant uncertainty in the extent of the behavioural response and hypothesise that the labour market response to a given price change may be proportionately greater in circumstances of a 'step change' in policy settings that results in ECEC services being broadly available and generally affordable. This can shift social norms by supporting greater effective choice, resetting information and expectations around the role of ECEC services and the options available to parents. This shift would not factor into the behavioural response to marginal costs differences within an unchanged policy framework. We also consider that further price reductions beyond the point where ECEC services are broadly available and affordable may yield little additional benefit with respect to labour market engagement.

The second modelling innovation is to consider the impact of improved ECEC affordability and availability on labour market outcomes for women after their children have started attending formal schooling, or *lifetime effects*. Women who take extended child-related career breaks may never reenter the workforce, and for those that do they are likely to work fewer hours and be paid less. We therefore estimate the impact of the reduction in child-related career breaks and downshifting on the labour market outcomes of women through the remainder of their careers.

Finally, using Treasury's Intergenerational Report (TIGR) model we estimate the long-term economic and revenue impacts of the estimated change in labour market outcomes. TIGR is a structural model of the NSW economy and budget and extends to 2060-61, in line with the 2021 IGR's reporting period.

We deploy this method with respect to two policy scenarios:

Scenario 1: Increasing the childcare subsidy to 100 per cent and providing universal pre-kindergarten (pre-K).

This scenario represents a policy intervention that would reduce costs of ECEC services to close to zero for households, serving to illustrate the capacity of ECEC-related interventions to address disparities in labour market outcomes between women and men.

We find the participation rate for women with children aged five and under would increase by between 3.7 and 13.4 percentage points by 2032-33 (year 10 of the policy being implemented), compared with the benchmark estimate of 8.1 percentage points. We also find that employed women with young children would work between 0.9 and 3.0 additional hours per week, which compares with the benchmark estimate of 2.0 hours. Both the lower and upper range estimates are somewhat inconsistent with the experience in international jurisdictions following significant policy interventions in ECEC, although they are possible. The benchmark estimate is, by design, in line with the international experience. These estimates reflect the cohort effects only.

When combined with the lifetime effects, we find that, relative to the 'no policy change' baseline, by 2060-61, the participation rate for all women (aged 15 and over) would increase by between 0.8 and 3.0 percentage points, with the benchmark estimate indicating 1.8 percentage points. Women overall are estimated to work an additional 0.4 to 1.2 hours per week, with the benchmark estimate indicating 0.8 hours, and women's wages would increase by between 0.8 and 2.9 per cent, with the benchmark estimate indicating 1.8 per cent. These impacts would increase the size of the NSW economy by between 1.6 and 5.8 per cent by 2060-61, with the benchmark estimate of 3.5 per cent.



Figure E.1: Scenario 1 estimated labour market impacts

Bars indicate the range; the line indicates the benchmark estimate. See Appendix A for detailed results. Source: NSW Treasury.

Scenario 2: Policy measures announced by the NSW and Commonwealth Governments

This scenario represents the package of ECEC policy measures announced by the NSW Government in the 2022-23 Budget, comprising the introduction of universal pre-Kindergarten, *Affordable Preschool* and the *Affordable and Accessible Childcare and Economic Participation Fund* by the NSW Government, and prospective changes to the Commonwealth Child Care Subsidy (CCS) announced by the Commonwealth Government. For scenario 2 we report only the upper and lower range estimates. We find the participation rate for women with children aged five and under would increase by between 2.5 and 8.9 percentage points by 2032-33 and that employed women within this group would work an additional 0.6 to 2.1 hours per week. Combined with the lifetime effects, by 2060-61 we estimate the overall participation rate for women would increase by between 0.5 and 1.7 percentage points compared with the no policy change baseline, that employed women would work an additional 0.2 to 0.7 hours per week and would be paid between 0.4 and 1.7 per cent more per hour.

The upper range estimates are broadly in line with the benchmark estimate as outlined under scenario 1, and as such more closely accord with the experience in international jurisdictions following an ECEC policy intervention that brings about a step change in affordability and availability.





These impacts would account for between 5 and 19 per cent of the gap between men and women in workforce participation, between 3 and 11 per cent of the gap in average hours worked, and between 6 and 23 per cent of the gender wages gap. This would translate into an increase in Gross State Product of between 0.5 and 1.9 per cent by 2032-33 and between 0.9 and 3.3 per cent by 2060-61.

increase the size of the national GST pool by between \$150 million and \$540 million in that year. The modelling indicates that a step-change in ECEC policy settings is likely to be associated with a significant impact on the labour market and wider economy. This is driven by the scope of ECEC reforms to provide women and men with the capacity to reduce the amount of time they need to spend on unpaid caring responsibilities. As well as increasing labour market engagement amongst parents with young children, there would also be significant benefits across the remainder of parents' careers.

This would lift NSW Government revenues by between \$160 million and \$580 million by 2032-33 and

A range of extensions to this work would assist in refining estimates around the impact of ECEC policy interventions. This includes refining estimates of the behavioural response to narrow the range, as well as refining the parameters associated with the lifetime effects. The estimates also likely underestimate the overall impact of ECEC reform on the labour market and economy, with key omissions being childhood development benefits, and labour market impacts on informal carers, most notably grandparents.

The results, however, also underscore that, while ECEC reforms are estimated to materially reduce disparities between men and women in the labour market, fully addressing inequalities in working life and economic security requires change ranging from the discrimination experienced by women in society and workplaces, through to the way in which 'feminised' work (paid and unpaid) is valued and shared across women and men.

Section 1: Outcomes for women in the NSW labour market

Introduction

Australian women start adulthood with workforce participation rates amongst the highest in the world.² They lead the world in educational attainment³ and surveys indicate they expect to have long and meaningful careers, with stable jobs, career progression opportunities and to balance working and family life.⁴

Yet women in New South Wales, and across Australia, experience lower pay and progression than men, and over time lower engagement in the workforce. They experience unequal outcomes from the labour market, from their entry into working life, and then throughout their lifetimes. The foremost driver is discrimination, both in the structure of the workforce and in individual workplaces, as well as attitudes around gender roles in the household, compounded by a range of financial disincentives faced by secondary earners (predominantly women), which see some with young dependent children take home as little as 25 cents in the dollar for every additional day of paid work.⁵ Policies designed to support parents of young children, such as parental leave, can also often discourage more equal sharing of caring responsibilities between partners.

The disruption to working life that occurs around the time of having children has a permanent 'scarring' effect on women's labour market outcomes for the remainder of their working lives. By severing the connection with the workplace or their role, as well as the need to continue shouldering a higher proportion of unpaid work and caring responsibilities, women miss out on opportunities for career progression. Women in their later careers face a significant gender pay gap and are much more likely than men to work in 'flexible' roles, which are generally less secure and have fewer opportunities for career progression.

This lifetime of inequality in labour market outcomes is the primary reason for women facing a less secure retirement than men. Workforce participation rates for NSW women aged over 65 are 11 per cent, significantly below the 19 per cent for men of the same age in 2019.⁶ Women retire with 42 per cent less superannuation than men⁷ and are less likely to own their own home.⁸

Improving economic opportunities for women would have far-reaching benefits for women. Higher incomes and greater economic security would improve their material wellbeing, while greater respect and recognition in the workplace and providing more opportunities for meaningful careers with increased progression and diversification opportunities would improve non-material wellbeing. Addressing the causes of inequality in economic opportunity would also have benefits for men: for example reducing industry and occupational segregation would provide more career options for men as well as women, and more equally distributing caring responsibilities between genders would

² OECD Statistics (2022), Labour Force Statistics, LFS by sex and age – indicators.

³ World Economic Forum (2021), *Global Gender Gap Report 2021 Insight Report*, March 2021, available at https://www.weforum.org/reports/global-gender-gap-report-2021/

⁴ Hill, E., Cooper, R., Baird, M., Vromen, A., Probyn, E. (2018). Australian Women's Working Futures: Are We Ready?, (pp. 1 -

^{27).} Geneva, Switzerland: International Labour Organization.

⁵ NSW Treasury analysis

⁶ Australian Bureau of Statistics (2022), Labour Force, Australia, Detailed April 2022.

⁷ AustralianSuper (2020), The gender super gap: How gender inequality affects superannuation, available at

https://www.australiansuper.com/superannuation/superannuation-articles/2020/02/gender-equality-and-your-superannuation/superannuation/superannuation-articles/2020/02/gender-equality-and-your-superannuation/superannuation/superannuation-articles/2020/02/gender-equality-and-your-superannuation/superannuation/superannuation/superannuation-articles/2020/02/gender-equality-and-your-superannuation/superannuation/superannuation-articles/2020/02/gender-equality-and-your-superannuation/superannuation-articles/2020/02/gender-equality-and-your-superannuation/superannuation/superannuation/superannuation-articles/2020/02/gender-equality-and-your-superannuation/superannuation/superannuation-articles/2020/02/gender-equality-and-your-superannuation/superannuation/superannuation/superannuation-articles/2020/02/gender-equality-and-your-superannuation/superannuation

⁸ Corelogic (2022), Women & Property: One year on, Australia and New Zealand.

increase the role of men in raising their children which would support closer lifetime connections between fathers and their children.⁹

Beyond the individual level, improving economic opportunities for women also represents one of the most significant opportunities to grow the overall economy. The 2021-22 NSW Intergenerational Report (IGR) showed that lifting women's participation rates to be equal with those of men would increase the size of the NSW economy by 8 per cent and allow for over 400,000 women to join the workforce by 2060-61.¹⁰

This paper focuses on gender disparities across three key metrics:

- workforce participation, which measures the proportion of the adult population either employed or seeking work;
- average hours worked, which is a measure of the *amount* of time spent working by those who are employed; and
- wages.

Taken over a lifetime, and compared with international leaders in gender equality, improving women's labour market outcomes across all three of these indicators represents a significant opportunity to lift living standards across the population. We estimate that the NSW economy could be 15 per cent larger and average income per household \$33,000 higher if parity across all three labour market indicators was achieved today.

Measuring economic security

This paper focuses on three key metrics to measure labour market outcomes for women: the workforce participation rate, average hours worked for those who are employed, and average wages.

The labour market is the primary source of income for most households,¹¹ and so is a key determinant of economic opportunities. The amount of income earned from the labour market can be determined with reference to three key indicators. Workforce participation measures the proportion of the population aged 15 and over that is either employed or actively seeking work. While this is useful in understanding the overall proportion of the population engaged in (or seeking) work, it is a binary measure that includes employed people who work as little as one hour a week, as well as those working full-time hours. The average number of hours worked, or alternatively the proportion of the workforce that is employed full-time compared with part-time, measures the *level* of engagement in the labour force. Combining both participation and average hours therefore provides a more nuanced indicator of engagement in the labour force. This can then be combined with wages – the amount of money earned for a given number of hours worked – to provide an indication of overall labour market earnings for individuals as well as for the economy as a whole.¹²

⁹ Norman, H. Fagan, C. & Elliot, M. (2017). How can policy support fathers to be more involved in childcare? Evidence from cross-country policy comparisons and UK longitudinal household data. Women and Equalities Committee.

¹⁰ NSW Treasury. (2021). 2021-22 NSW Intergenerational Report, available at: www.treasury.nsw.gov.au/sites/default/files/2021-06/2021-

²²_nsw_intergenerational_report.pdf

¹¹ Australian Bureau of Statistics (2021), Household Income and Wealth, 2019-20, Table 15.

¹² Noting that wages account for half of NSW Gross State Product





Source: Australian Bureau of Statistics, Labour Force, Australia, Detailed April 2022.

Across these three key labour market indicators, NSW women consistently lag behind NSW men. The participation rate for women aged 15 and over was 60 per cent in 2021, 9 points lower than the 69 per cent recorded for men.¹³ This gap has narrowed considerably from the 36 percentage points in 1979 (see Figure 1.1). Employed women also work fewer hours, on average, than men. In 2021, 59 per cent of women in paid work were working full-time hours, compared with 81 per cent of men.¹⁴ A growing proportion of both men and women are working part-time, but the gap between genders has been more persistent than for workforce participation (Figure 1.2).





Source: Australian Bureau of Statistics, Labour Force, Australia, Detailed April 2022.

¹³ Australian Bureau of Statistics (2022), Labour Force, Australia, Detailed April 2022.

¹⁴ Australian Bureau of Statistics (2022), Labour Force, Australia, Detailed April 2022.

Women working full-time in New South Wales were paid an average of \$1,614 per week in 2021, compared with \$1,860 for men.¹⁵ This equates to a gender pay gap of 13 per cent and means women working full-time through the year earned \$12,800 less than men on average. From 1981 to 2004 the gap improved from 21 per cent¹⁶ to 13 per cent, but has varied since then without declining any further, reaching 18 per cent in 2015 before declining again (Figure 1.3).



Figure 1.3: Average Full-time Weekly Earnings by gender, NSW, 1981-2021

Source: ABS Average Weekly Earnings, Australia, 1981 to 2022; NSW Treasury.

Labour market outcomes are not limited to only these three key measures

Alongside these three key indicators, underemployment and security of employment are also important areas in which women's and men's labour market outcomes differ. Underemployment is considerably higher for women than men in both New South Wales and Australia, and amongst the highest of Organisation for Economic Co-operation and Development (OECD) member countries.¹⁷ Similarly, women are more likely to be employed casually, which can provide a desired level of flexibility, but also results in less job security and a lack of conditions provided to permanent employees, such as paid leave. Section 2 sets out a range of additional challenges faced by women in the workplace.

Box 1.1: The impact of COVID-19 on working women

The disruption associated with the COVID-19 pandemic caused significant volatility in the NSW labour market through 2020 and 2021, which particularly impacted women. Women's employment fell 6.5 per cent between January 2020 and May 2020, during the first national lockdown, compared with a 4.3 per cent fall for men (Figure 1.4) as key industries such as retail trade, arts and recreation, accommodation and food, which employ a large proportion of women, were forced to sharply reduce their activity. These industries also have a relatively high proportion of casually employed staff.¹⁸ Employment had recovered strongly by mid-2021, particularly amongst women, ahead of the second Sydney lockdown which led to a much larger fall in employment levels amongst women than men.

 $^{^{\}mbox{\tiny 15}}$ Average of May and November readings from ABS Average Weekly Earnings

¹⁶ NSW Treasury estimate. Prior to 1981, the ABS did not report average weekly earnings by gender, instead reporting earnings in terms of a "male unit", derived from both men's and women's wages data and by assuming a standard ratio of 67 per cent for women's earnings compared with men's. ¹⁷ OECD Statistics (2022), Labour Force Statistics, LFS – Incidence of Involuntary Part-time Work

¹⁸ Australian Bureau of Statistics (2021), Participation, Job Search and Mobility Australia February 2021. Note that 2018 was used in this analysis, as the latest vintage of data is 2020 which was heavily impacted by the NSW lockdowns.



Shaded areas denote the first and second lockdowns. Source: ABS Labour Force Australia, April 2022

Women's employment has since surged to near-record levels, with the recovery significantly stronger than that experienced by men. The pandemic challenged traditional forms of work, leading to an acceleration of the take up of flexible work which can support more women to balance work and personal commitments. Whether this newfound flexibility in some industries proves to be durable is yet to be determined, as is its capacity to support higher levels of women's workforce engagement in the long term.

Labour market outcomes by age and cultural background



Figure 1.5: Participation rate by gender and age, NSW, 1981 and 2021

Source: Australian Bureau of Statistics, Labour Force, Australia, Detailed April 2022.

Age is a key driver of differences in labour market outcomes between women and men. Participation rates are similar for men and women in New South Wales until around the mid-20s, while for average hours worked and average wages a small gender gap is already present from initial entry into the workforce. From the late 20s, around the time some families start having children, women's participation rates diverge from those of men, plateauing at around 80 per cent until women reach their early 50s, while men's rise to around 90 per cent over the same period (Figure 1.5). A similar trend occurs with hours and wages from the late 20s, with the divergence between genders most pronounced in the share of full-time compared with part-time work (Figure 1.6). While for both participation and hours worked, the gap with men then remains roughly constant until early 50s, the wages gap continues to grow, peaking amongst those aged 45-54 years (Figure 1.7).





Source: Australian Bureau of Statistics, Labour Force, Australia, Detailed April 2022.





Source: Australian Bureau of Statistics, Employee Earnings and Hours, May 2021

Gender disparities are present across multiple parts of society

Disparities in labour market outcomes also persist across different cultural, demographic and socioeconomic groups. First Nations women have a lower participation rate than non-First Nations women, and a slightly smaller gap compared with First Nations men. The gender pay gap is larger amongst households who speak a language other than English at home.





Source: Accenture analysis of 2019 HILDA data for NSW Treasury for people of traditional working age (15-64 years). Given the small sample size, the estimates in Figure 1.8 may exhibit excessive volatility and may be less reliable.

Economic security in retirement

Inequality in labour market outcomes is the key driver of differences in economic security in retirement

Women face a lower degree of financial security in retirement than men, with this being primarily driven by the disparity in labour market outcomes over their lifetimes. The disposable income of single women in retirement is around 15 per cent lower than for men.¹⁹ Women in Australia approaching the retirement age (55-64 years) had a median superannuation balance of \$125,000 in 2019-20, 35 per cent lower than \$192,000 for men (Figure 1.9). Women are also more likely to experience housing insecurity in retirement, constituting 54 per cent of homeless people in New South Wales aged over 65.²⁰ Women also account for 55 per cent of people on the waitlist for social housing in New South Wales.²¹ For the 62 per cent of women who retired with a partner,²² 36 per cent relied on their partner's income for living costs compared with 7 per cent of men.²³

¹⁹ The Australian Government the Treasury (2020). Retirement Income Review: final report. Commonwealth of Australia.

https://treasury.gov.au/sites/default/files/2021-02/p2020-100554-udcomplete-report.pdf p. 283

²⁰ As well as 51 per cent of all ages. Source: Australian Bureau of Statistics (2016) Census of Population and Housing: Estimating Homelessness. ²¹ NSW Treasury records

²² The Australian Government the Treasury (2020). *Retirement Income Review: final report.* Commonwealth of Australia.

https://treasury.gov.au/sites/default/files/2021-02/p2020-100554-udcomplete-report.pdf p.280

²³ Australian Bureau of Statistics (2020), *Retirement and Retirement Intentions, Australia*





Men Women

Source: Australian Bureau of Statistics Household Income and Wealth 2019-20

The key driver of economic security in retirement is lifetime earnings from the labour market, with the Commonwealth Retirement Income Review estimating the gender gap in superannuation balances to be essentially the same as differences in lifetime earnings.

The superannuation guarantee also has a range of gaps which disproportionately impact women. The Commonwealth Government and many employers do not contribute to superannuation alongside paid parental leave provisions, and the minimum contributions threshold of \$450 per month also results in twice as much foregone contributions for women as for men.²⁴ The impact of these measures, however, is quite small compared with disparities in lifetime labour market earnings. For a woman on the median income, having superannuation paid on the Commonwealth's paid parental leave scheme would see her annual retirement income increase by 0.17 per cent. Similarly, if superannuation was paid on employer paid parental leave, her annual retirement income would increase by 0.14 per cent.²⁵ The \$450 minimum threshold was abolished in the 2021-22 Commonwealth Budget.²⁶

International comparisons

Australia's performance on gender equality has been declining in recent years relative to international peers

Australia was ranked 50th in the World Economic Forum's Global Gender Gap Index in 2021, a significant decline from the 15th place in 2006 which is largely attributed to a worsening total earnings gap between women and men.²⁷

Workforce participation rates for working age women (15-64 years) in Australia are higher than those in the United States and France, but 7 percentage points below world-leaders Iceland and Sweden. Australia is also around the median of OECD countries with regards to the gap with men, with the

²⁴ The Australian Government the Treasury (2020). Retirement Income Review: final report. Commonwealth of Australia

https://treasury.gov.au/sites/default/files/2021-02/p2020-100554-udcomplete-report.pdf

²⁵ The Australian Government the Treasury (2020). *Retirement Income Review*. https://treasury.gov.au/sites/default/files/2021-02/p2020-100554-udcomplete-report.pdf

²⁶ The Commonwealth of Australia (2021), 2021-22 Budget

²⁷ World Economic Forum (2021) *Global Gender Gap Report 2021 Insight Report March 2021*, https://www.weforum.org/reports/global-gender-gap-report-2021/.; World Economic Forum (2006) *Global Gender Gap Report 2006*, https://www3.weforum.org/docs/WEF_GenderGap_Report_2006.pdf

average somewhat higher but strongly influenced by some significant outliers. The 9 point gap recorded by Australia in 2020 was slightly below the United States and only half that of Italy, but more than double that in Sweden and Israel (Figure 1.10).





Source: OECD Statistics 2022, Labour Force Statistics, LFS by sex and age - indicators

Breaking this down by age as in Figure 1.11, we see that younger women in New South Wales and Australia have amongst the highest participation rates in the world, but this advantage is reversed through middle age, with participation rates for women aged over 40 considerably lower in New South Wales and Australia compared with some international peers. Notably, in both Sweden and Finland, participation rates for women continue to increase through life until their 40s and 50s, rather than plateauing as they do in New South Wales and Australia.





Source: OECD Statistics 2022, Labour Force Statistics, LFS by sex and age - indicators

Australia has one of the largest gender gaps in usual hours worked within the OECD

In 2018,²⁸ Australian women worked around 20 per cent fewer hours per week than Australian men, which is equivalent to 8 hours a week, amongst the highest in the OECD. The gender hours gap reflects Australia's relatively high incidence of part-time work with 38 per cent of employed Australian women working less than 30 hours a week compared to the OECD average of 25 per cent in 2018.²⁹ This suggests there are factors at play in Australia that are keeping women's hours in paid work lower than those in other countries that are otherwise comparable in terms of social norms and quality of life, despite levels of education and training amongst Australian women being very high. This may relate to differences in the amount of unpaid caring and other domestic responsibilities, which is explored in more detail in section 2.





Source: OECD Statistics 2018, Average usual weekly hours worked on the main job. 2018 is the latest year with complete OECD data for Australia.

The gender pay gap for Australian women worsens over time

Australia's gender pay gap for younger women (aged 25-34) is amongst the smallest across OECD countries, but Australia's relative performance declines amongst older women. In contrast Sweden's gender pay gap remains largely unchanged when women enter the workforce and later in life (Figure 1.13).

²⁸ Most recent year for the broadest global comparisons

²⁹ OECD Statistics (2022), LFS – Employment by weekly hours worked





Source: OECD Statistics 2018, Education and earnings. 2018 is the latest year with complete OECD data for this group of countries.

Estimating the size of the economic opportunity

The NSW economy could be significantly larger if women's labour market outcomes were equal with those of men

The disparities in labour market outcomes outlined in this section have a direct bearing on the living standards of women and their families. They also have a significant impact on the overall economy, and so addressing them represents a significant economic opportunity.

The 2021-22 NSW Intergenerational Report estimated the economic opportunity associated with addressing one of the three labour market indicators. It showed that if women's participation in the paid workforce increased to be equal with men's over the next 20 years, by 2060-61 the NSW economy would be 8 per cent larger, the equivalent of \$22,000 more income per household in real 2019-20 dollars, and an additional 436,000 women would enter the labour force.³⁰ This modelling focused on workforce participation only and did not consider the two other key labour market indicators, average hours worked and wages. Yet, the lost economic opportunity presented by the wages gap between women and men has further been estimated to be substantial, for instance at around 8.5 per cent of Gross Domestic Product nationally in 2009 in an exercise by the National Centre for Social and Economic Modelling (NATSEM).³¹

As outlined in the previous sections, women's labour market outcomes differ substantially from men's across all three labour market measures. By extending this modelling to incorporate workforce participation, average hours worked per employed person, and average wages, we can see the full scale, in aggregate economic terms, of gender inequality in the workforce as of 2022-23.

The hypothetical scenario of gender equality in labour market outcomes is not an assessment of any specific package of policy reforms, but rather demonstrates the economic significance of gender equality in the workforce, in addition to its importance to individuals, families and communities. This

22_nsw_intergenerational_report.pdf

³⁰ NSW Treasury. (2021). 2021-22 NSW Intergenerational Report, available at: www.treasury.nsw.gov.au/sites/default/files/2021-06/2021-

³¹ Cassells, R., Vidyattama, Y., Miranti, R., & McNamara, J. (2009). The impact of a sustained gender wage gap on the Australian economy. Report to the Office for Women.

exercise illustrates the size of the economic opportunity that may be left on the table every year that women's labour market outcomes remain below those of men.

While increasing women's workforce participation to be equal with men is relatively straight forward in the illustrative modelling scenario, additional consideration is required in estimating the economic impact of achieving parity in wages and working hours. We utilise the Treasury Intergenerational Report (TIGR) Model, which is a structural model of the NSW Budget and economy, to estimate the economic impacts. Within this framework, growth in wages can be caused by any of three drivers: an increase in labour productivity, an increase in the labour income share or a change in the distribution of wages (therefore resulting in no change to the aggregate wage). With reference to the established method decomposing the drivers of the gender wages gap,³² we introduce the lift in women's wages into the TIGR Model as a 3.1 per cent increase in productivity and a 1.3 per cent increase in the labour income share, with the redistributed component not impacting aggregate wages, and therefore economic outcomes. A detailed outline of the method used to estimate the economic impact of closing the gender wages gap is provided at Appendix D.

Gender equality in working life represents a significant economic and social reform, and this may eventuate in a number of different ways over time. In particular, there are different ways in which unpaid caring and domestic responsibilities could be balanced between men and women, and between formal, paid work and informal, unpaid work. This is a matter of choice for individuals and families. Recognising this, this modelling assumes that while the average number of hours worked by women would increase, this would be partly offset by a decline in the average number of hours worked by men, giving men more time for care and family responsibilities. Specifically, we draw on real-world experience from Sweden – which has a much smaller gap in average hours worked – to estimate that for every additional hour of paid work undertaken by women, men would work 20 minutes less. This estimate is also broadly in line with separate analysis of New Zealand data on how more evenly sharing the unpaid workload can increase overall workforce engagement.³³

It should also be noted that this exercise ascribes value to paid work, which is measured in Gross Domestic (or State) Product, but not the value of unpaid caring and domestic responsibilities, which are not reported in conventional economic indicators. Deloitte estimated the replacement value of informal care across Australia at \$78 billion in 2020.³⁴

Full details of the modelling approach are set out in the Appendix C.

Results

The modelling indicates that if women's economic outcomes in the labour market were equal with those of men in 2022-23:

- the NSW economy could be 15 per cent or \$111 billion larger
- average income per household could be \$33,000 higher, and
- an additional 307,000 women who are among the most highly educated in the world could be in the labour force.

³³ Deloitte, Access Economics (2021), Westpac New Zealand: Sharing the Load Report May 2021, available at:

https://www2.deloitte.com/content/dam/Deloitte/nz/Documents/Economics/westpac-value-of-sharing-the-load-report.pdf

³² The approach developed in the UK (Walby, S. and Olsen, W. (2002) The impact of women's position in the labour market on pay and implications for UK productivity, Report to Women and Equality unit, pp.18-20), and applied in Australia (Cassells, R., Vidyattama, Y., Miranti, R. and McNamara, J., (2009) The impact of a sustained gender wage gap on the economy. Report to the Office of Women. National Centre for Social and Economic Modelling. November 2009. https://melbourneinstitute.unimelb.edu.au/assets/documents/hilda-bibliography/other-publications/pre2010/Cassells_etal_gender_wage_gap.off, Watson, I. (2010). Decomposing the gender pay gap in the Australian managerial labour market. *Australian Journal of Labour Economics*, 13(1), 49-79). The application with most recent data is set out in WGEA, (2019) *She's Price(d)less: The Economics of the Gender Pay Gap*, report prepared by KPMG for the Diversity Council of Australia and the Workplace Gender Equality Agency, available at: https://www.wgea.gov.au/publications/shes-pricedless-the-economics-of-the-gender-pay gap.

³⁴ Deloitte Access Economics (2020), The value of informal care in 2020, https://www.carersaustralia.com.au/wp-content/uploads/2020/07/FINAL-Value-of-Informal-Care-22-May-2020_No-CIC.pdf

Table 1.1: Estimated economic impact of achieving gender parity in labour market outcomes

| | 2022-23 | 2060-61 |
|---|----------|----------|
| Gross State Product (Real 2021-22, \$b) | +111.1 | +230.3 |
| Gross State Product (Real 2021-22, %) | +15.5 | +15.0 |
| Gross State Product per capita (Real 2021-22, \$) | +13,000 | +20,000 |
| Gross State Product per household (Real 2021-22, \$) | +33,000 | +46,000 |
| Overall participation rate uplift (ppts) | +4.6 | +4.7 |
| Additional women in the labour force | +307,000 | +461,000 |
| Source: NSW Treasury | | |

NSW Treasury | 22

Section 2: What drives gender inequality of economic opportunity?

Overview

To assess the effectiveness of policy measures aimed at improving labour market outcomes for women, it is first necessary to identify the key drivers of differences between women's and men's experience of working life, as well as to understand which factors are not important. This then provides the framework for developing a modelling methodology to assess the impact of a policy intervention in early childhood education and care, outlined in section 4.

This section sets out evidence of where women's outcomes diverge from those of men. It identifies three key drivers: (a) discrimination and the related phenomenon of gender segregation across occupations and industries, (b) the disruption to working life associated with having children, which compounds discrimination, and (c) the lasting impacts of child-related disruptions on women's later careers. These drivers interact with one another, as well as policy settings, to drive the observed disparity in labour market outcomes, and so fully addressing these disparities for all women would require a comprehensive suite of measures. Nonetheless, outcomes between men and women diverge significantly when they have children, driven by a significant increase in unpaid caring responsibilities which are not shared equally. Therefore, improving the affordability and accessibility of early childhood education should be expected to meaningfully impact outcomes by providing the opportunity for households to reduce the time they need to allocate to unpaid caring.

Early career

Australian women are the most highly educated in the world

Women in New South Wales and Australia are highly educated, both compared to men and global standards.³⁵ 37 per cent of Australian women aged 18-64 have attained a bachelor's degree or higher,³⁶ compared with 29 per cent of men, and women have exceeded men on this metric in Australia since 1998.³⁷ This disparity is set to widen even further, with an even larger gap between men and women aged 25-29 (Figure 2.1). This level of educational attainment is considerably higher than global peers, with the World Economic Forum ranking Australia first for women's educational attainment in 2021.³⁸ While studying represents an important investment in skills and future productivity, it can also impact workforce participation. 65 per cent of women aged 15-24 in Australia are engaged in education compared with 60 per cent of men the same age, and this gender gap has been steadily growing.

³⁶ Australian Bureau of Statistics (2020), Gender Indicators, Australia

³⁵ Cooper, R. and Hill, E. (2022). 'Women's economic opportunity: Thematic overview of extant research', Gender Equality in Working Life Research Initiative. Commissioned research for NSW Government Women's Economic Opportunities Review, March 2022.

³⁷ Men are more likely than women to have a vocational qualification. 29 per cent of men have a Diploma or Certificate III or IV as their highest level of educational attainment, compared with 23 per cent of women. The proportion of both genders aged 15-74 who do not have educational attainment beyond high school is equal at 38 per cent. Australian Bureau of Statistics (2021), Education and Work, Australia, May 2021. ABS (2019), Education and Work, Australia, May 1998; Australian Bureau of Statistics, Transition from Education to Work, Australia, May 1997.

³⁸ World Economic Forum (2021), Global Gender Gap Report 2021 Insight Report March 2021, https://www.weforum.org/reports/global-gender-gap-report-2021/.





Source: Australian Bureau of Statistics, Gender Indicators, Australia, December 2020.

Participation rates on entry into the workforce are equal with men and also amongst the highest in the world

As well as leading the world in educational attainment, workforce participation rates for younger women are on par with those of men and also rank highly compared with international peers. 78 per cent of NSW women aged 20-24 were engaged in the labour force in 2019, compared with 80 per cent of men, broadly in line with the picture for Australia as a whole. Figure 2.2 shows that Australia has amongst the highest workforce participation rates for women of this age, and this is not a new phenomenon, with Australia ranking similarly since at least 1990.³⁹





Source: OECD Statistics 2022, Labour Force Statistics, LFS by sex and age - indicators

³⁹ OECD Statistics (2022), Labour Force Statistics, LFS by sex an age – indicators

Women are paid less, on average, from the start of their working careers

Despite being more highly educated and having similar participation rates to men, women are paid less, on average, from the start of their careers. Women in Australia aged 20-34 working full-time earned \$120, or 8 per cent, less per week than men of the same age in 2021.⁴⁰

The data and research present a compelling explanation that the underlying cause of the gender pay gap is in fact wage discrimination, which impacts processes and practices within individual workplaces as well as the structure of the workforce as a whole. Research by the National Centre for Social and Economic Modelling (NATSEM) in 2009, after the application of several methodologies and macroeconomic modelling techniques, concluded that "simply being a woman is the major contributing factor to the gap in Australia".⁴¹

Discrimination and bias in workplaces can impact women from when they first enter the workforce

Women face discrimination and bias in recruitment processes, performance assessment and in career progression. Women are held to higher standards during recruitment processes⁴² and are less likely to be shortlisted compared to similarly qualified men, particularly women with young children, of mature age, or from a culturally diverse background.⁴³ This bias can often be subtle and tends to be exacerbated where recruitment processes are less transparent and where there is a greater degree of flexibility in applying selection criteria.⁴⁴ Where women applicants display the qualities generally viewed as desirable in male job applicants – confidence, independence and ambition – they are often perceived as lacking social skills.⁴⁵

When women are successful in gaining employment, they face discrimination in negotiating their starting salary. Male evaluators are more likely to dislike female applicants who negotiate their salary,⁴⁶ and women are less likely to be successful than men when they do seek to negotiate.⁴⁷ A blind study of one 'gig economy' platform found that women requested hourly rates 37 per cent below those of men, and this disparity persists after controlling for education level, occupational category, experience, hours of work and user rating.⁴⁸

During the course of employment, women face discrimination in evaluation processes and career progression. Women are less likely than men to be given challenging projects,⁴⁹ are more likely to be told they need more experience before being promoted and are more likely to receive vague feedback and less guidance on how to advance their career.⁵⁰ They can also be perceived as less 'likeable' in leadership roles and are less likely than men to successfully negotiate salary increases.⁵¹

In 2019, a comprehensive study undertaken for the Workplace Gender Equality Agency (WGEA) utilising the techniques established in the economic literature on the drivers of the gender pay gap estimated that gender discrimination accounts for 39 per cent of the gender wage gap, the single biggest contributor. The research by NATSEM in 2009, put the share even higher, at 60 per cent.⁵²

https://www.wgea.gov.au/sites/default/files/documents/Negotiation-Paper-Final.pdf

⁴⁰ Australian Bureau of Statistics (2021), *Employee Earnings and Hours 2021*.

⁴¹ Cassells et al (2009), which comprehensively reviews in the literature and data. Wage discrimination – that is, the differential return on skills and job characteristics depending on whether the employee is male or female – declined from the 1970s through to 1999, as set out in Borland, J. (1999) 'The Equal Pay Case – Thirty Years On' The Australian Economic Review vol 32, 265, but as Borland states this economically 'unjustified' difference in return on labour remains the greatest determinant.

⁴² Steinpreis, R. E., Anders, K. A., & Ritzke, D. (1999). The impact of gender on the review of the curricula vitae of job applicants and tenure candidates: A national empirical study. *Sex roles*, 41(7), 509-528.

⁴³ Foley, M., Cooper, R., & Mosseri, S. (2019). Gender equitable recruitment and promotion: Leading practice guide.

⁴⁴ Uhlmann, E. L., & Cohen, G. L. (2005). Constructed criteria: Redefining merit to justify discrimination. Psychological Science, 16(6), 474-480.

⁴⁵ Babcock, L., Recalde, M. P., & Vesterlund, L. (2017). Gender differences in the allocation of low-promotability tasks: The role of backlash. American Economic Review, 107(5), 131-35.

⁴⁶ Workplace Gender Equality Agency (2018), Gender and Negotiation in the workplace, available at:

⁴⁷ Artz, B., Goodall, A. H., & Oswald, A. J. (2018). Do women ask? *Industrial Relations: A Journal of Economy and Society*, 57(4), 611-636.

⁴⁸ Barzilay, A. R., & Ben-David, A. (2016). Platform inequality: Gender in the gig-economy. Seton Hall L. Rev., 47, 393.

⁴⁹ Hoobler, J. M., Lemmon, G., & Wayne, S. J. (2014). Women's managerial aspirations: An organizational development perspective. *Journal of management*, 40(3), 703-730.

King, E. B., Botsford, W., Hebl, M. R., Kazama, S., Dawson, J. F., & Perkins, A. (2012). Benevolent sexism at work: Gender differences in the distribution of challenging developmental experiences. *Journal of Management*, 38(6), 1835-1866.

⁵⁰ Correll, S., & Simard, C. (2016). Research: Vague feedback is holding women back. *Harvard Business Review*, 29.

⁵¹Rudman, L. A., & Glick, P. (2001). Prescriptive gender stereotypes and backlash toward agentic women. *Journal of social issues*, 57(4), 743-762.; Australian Workplace Relations Study (2015), *First Findings report: consolidated content from online publication*. Available at:

https://www.fwc.gov.au/sites/default/files/2021-12/awrs-first-findings.pdf

⁵² Although the estimates are not directly comparable due to differences in time period as well as the set of explanatory variables considered in each study.

Gender segregation in industries and occupations is a key driver of disparity in labour market outcomes

Discrimination and societal attitudes around gender roles also impact women's labour market outcomes on a structural level, with a key driver of this being gender segregation in industries and occupations. Gender segregation is common globally, and somewhat more pronounced in Australia.⁵³

The most male-dominated industries in New South Wales and Australia include Mining, Construction and Electricity, Gas, Water and Waste Services, all of which have workforces made up of over 80 per cent men (Figure 2.3). The most female dominated sectors are Health Care and Social Assistance and Education and Training, which both have workforces which are over 70 per cent women. These two sectors alone employ more than a third of all women in the workforce.

With respect to occupations, women make up around 70 per cent of Clerical and Administrative Workers and Community and Personal Services Workers in New South Wales, while men constitute over 80 per cent of some occupations including Machinery Operators and Drivers and Technicians and Trade Workers (Figure 2.4).

Occupational differences have been found to drive wage inequality in Australia. A 2016 study by Borland and Coelli found the distribution of employment by occupation explained most of the wage inequality in Australia between full-time workers, while human capital (using the standard approach to measurement based on age and educational attainment) explained surprisingly little.⁵⁴ Analysis of the extent to which wages are lower in female-dominated occupations has found that more detailed classifications of occupations (below the eight high level categories set out in Figure 2.4) show a larger gender gap between occupations dominated by women and men respectively.⁵⁵

The overall degree of gender segregation in the workforce has remained broadly unchanged for at least the last 35 years. $^{\rm 56}$

Figure 2.3: Proportion of employed persons by gender, industry and casual or permanent status, NSW, 2018



Lighter shades denote the portion of employed people in casual work. Note that estimates of casual employment are subject to a relatively high standard error for smaller industries. Source: ABS Participation, Job Search and Mobility Australia February 2021.

⁵³ Workplace Gender Equality Agency (2019), Gender Segregation in Australia's Workforce. Available at:

https://www.wgea.gov.au/sites/default/files/documents/18_04_Industrial_segregation.pdf

⁵⁴ Borland, J., & Coelli, M. (2016). Labour market inequality in Australia. *Economic Record*, 92(299), 517-547.

⁵⁵ Coelli, M. B. (2014). Occupational differences and the Australian gender wage gap. Australian Economic Review, 47(1), 44-62. Examines a range of studies from the 1990s onwards.

⁵⁶ Australian Bureau of Statistics (2022), *Labour Force Detailed*, April 2022.

Gender segregation in industries and occupations has an impact on pay, career progression, job security and workforce participation. Minimum and award wages are 10 per cent lower on average in industries and occupations that are dominated by women, compared with those dominated by men.⁵⁷ This has historic roots in Australia's industrial relations system, where men's pay was originally set with reference to their status as the primary – most often the sole – income earner in a household, while women were not given equivalent status.⁵⁸ Work performed primarily by women continues to be perceived as less skilled and this structural discrimination extends throughout the workforce,⁵⁹ with roles in female-dominated industries that require a bachelor's degree qualification or higher paying up to 30 per cent less than equivalent roles in male-dominated industries.⁶⁰



Figure 2.4: Proportion of employed persons by gender and occupation, NSW, 2021

Source: Australian Bureau Statistics Labour Force Detailed April 2022

Male-dominated industries also exhibit higher wages gaps within their industries than femaledominated industries. A key driver of this is that female-dominated industries tend to have a higher proportion of people employed on awards or collective agreements, while in male-dominated industries pay is more commonly negotiated on an individual basis.⁶¹ Research for the WGEA attributes 17 per cent of the gender pay gap to the impact of gender segregation in the workforce.⁶²

Gender segregation also has consequences beyond just pay. Career progression is generally more limited in female-dominated industries, which have more compressed award structures and fewer opportunities for women to enter into leadership roles or otherwise increase their influence in the workplace.⁶³ Even within female-dominated industries, men represent the majority of CEOs and key management personnel.⁶⁴ The lack of opportunities for career progression further feeds into the

⁶¹ Workplace Gender Equality Agency (2018), Gender and Negotiation in the workplace, available at:

https://www.wgea.gov.au/sites/default/files/documents/Negotiation-Paper-Final.pdf

⁵⁷ Broadway, B. and Wilkins, R. (2017) Probing the effects of the Australian system of minimum wages on the gender wage gap. *Melbourne Institute Working* Paper No. 31/17, in Foley, M., & Cooper, R. (2021). Workplace gender equality in the post-pandemic era: Where to next?. *Journal of Industrial Relations*, 63(4), 463-476.

⁵⁸ Frances, R. (2000). One Hundred Years of Women's Wage-Fixing. Journal of Interdisciplinary Gender Studies: JIGS, 5(2), 84-93.;

Bennett, L. (1994). Women and enterprise bargaining: the legal and institutional framework. Journal of Industrial Relations, 36(2), 191-212.;

⁵⁹ Cortis, N., & Meagher, G. (2012). Recognition at last: Care work and the equal remuneration case. Journal of Industrial Relations, 54(3), 377-385.

⁶⁰ Impact Economics and Policy. (2022). Addressing Australia's Critical Skills Shortages: Unlocking Women's Economic Participation.

⁶² WGEA, (2019) She's Price(d)less: The Economics of the Gender Pay Gap, report prepared by KPMG for the Diversity Council of Australia and the Workplace Gender Equality Agency, available at: https://www.wgea.gov.au/publications/shes-pricedless-the-economics-of-the-gender-pay-gap.

⁶³ Birch, E., & Preston, A. (2021). 'The Australian labour market in 2020'. *Journal of Industrial Relations*, 63(3), 303-320.

Cooper, R., Mosseri, S., Vromen, A., Baird, M., Hill, E., & Probyn, E. (2021). Gender matters: a multilevel analysis of gender and voice at work. British Journal of Management, 32(3), 725-743.

Foley, M., & Cooper, R. (2021). Workplace gender equality in the post-pandemic era: Where to next? *Journal of Industrial Relations*, 63(4), 463-476. Charlesworth, S., & Heron, A. (2012). New Australian working time minimum standards: reproducing the same old gendered architecture? *Journal of Industrial relations*, 54(2), 164-181.

⁶⁴ Workplace Gender Equality Agency (2019). *Gender Segregation in Australia's Workforce*.

https://www.wgea.gov.au/sites/default/files/documents/18_04_Industrial_segregation.pdf

gender wage gap, and also reduces the likelihood that women remain engaged in the workforce.

Female-dominated industries are generally more likely to offer part-time and more flexible roles than male-dominated industries, which tend to be less flexible and require longer working hours.⁶⁵ These roles provide many women with the means to balance their career with responsibilities outside of work and this is one of the reasons many women choose to work in these industries, but the corollary is that female-dominated industries generally offer jobs that are less secure, provide fewer conditions such as paid leave, and fewer opportunities for career progression.⁶⁶ The experience of the COVID-19 pandemic has expanded expectations on flexibility in terms of access to remote work,⁶⁷ including that flexibility per se does not have to be synonymous with poorer conditions and fewer opportunities for career progression. However remote working opportunities do not tend to arise equally across workplaces, and are not prevalent in frontline services.

Male-dominated industries tend to be associated with significant cultural challenges for women seeking to work within them. Women are more likely to experience gendered harassment in male-dominated industries, with around 50 per cent of women employed in the construction and transport, postal and warehousing industries experiencing gendered harassment, and around three quarters of women in the mining industry.⁶⁸ Sexual and gendered harassment helps perpetuate ongoing gender segregation as women become more likely to leave hostile working environments.⁶⁹

The impact of having children

Labour market outcomes diverge more substantially between men and women around the time families have children

Across all three key labour market indicators discussed in Section 1, the gap between men and women is widest for households with young and multiple children.⁷⁰ Over 80 per cent of births in New South Wales in 2019 were to women aged between 25 and 39 and this coincides with when we see the NSW women's participation rate diverge from the men's rate.⁷¹ The underlying cause of this disparity is the unequal distribution of unpaid domestic work and caring responsibilities between genders. This is, in turn, driven by the interaction between attitudes and established practices, a range of policy settings including early childhood education and care, paid parental leave and the tax and transfer system, and the pre-existing disparity in wages and career progression that means women with a male partner are much more likely to be the secondary income earner before the arrival of children.⁷²

This section focuses on couples featuring a male and female partner around the time they have children. This focus is the purposes of outlining how this stage of life is a significant driver of disparities in labour market outcomes between men and women at the population level. However, we do not intend to suggest that all families with children are of this form – they are not, and many women and men will never have children– nor overlook or detract from the experiences of others in their family life.

⁶⁷ NSW Innovation and Productivity Council (2020), *Our experience during COVID-19 and what it means for the future of work, available at:*

⁷⁰ Accenture analysis for NSW Treasury

⁷² NSW Treasury analysis of HILDA data (Wave 19).

⁶⁵ Doan, T., Thorning, P., Furuya-Kanamori, L., & Strazdins, L. (2021). What contributes to gendered work time inequality? An Australian case study. Social Indicators Research, 155(1), 259-279.

⁶⁶ Cooper, R., Mosseri, S., Vromen, A., Baird, M., Hill, E., & Probyn, E. (2021). Gender matters: a multilevel analysis of gender and voice at work. *British Journal of Management*, 32(3), 725-743.

https://www.treasury.nsw.gov.au/sites/default/files/2020-11/Full-Report-NSW-Remote-Working-Insights-Report-1-2020%20%281%29.pdf

⁶⁸ Foley, M., Oxenbridge, S., Cooper, R., & Baird, M. (2020). 'I'll never be one of the boys': Gender harassment of women working as pilots and automotive tradespeople. *Gender, Work & Organization.*

⁶⁹ Cooper, R., Baird, M., Foley, M., & Oxenbridge, S. (2021). Normative collusion in the industry ecosystem: Explaining women's career pathways and outcomes in investment management. *Human Relations*, 74(11), 1916-1941.; Foley, M., Oxenbridge, S., Cooper, R., & Baird, M. (2020). 'I'll never be one of the boys': Gender harassment of women working as pilots and automotive tradespeople. *Gender, Work & Organization*.

⁷¹ Australian Institute of Health and Welfare (2021). Australia's mothers and babies. https://www.aihw.gov.au/reports/mothers-babies/australias-mothers-babies-data-visualisations/contents/demographics-of-mothers-and-babies/maternal-age

The gendered distribution of unpaid work has direct implications on paid employment and is exacerbated when women take time out of the workforce to care for young children

Women spend significantly more time performing unpaid domestic work and caring responsibilities compared with men. This disparity is consistent for households with and without children: overall, women in New South Wales spend around 50 per cent more time performing unpaid work than men.⁷³ For households without children, unpaid work mostly refers to housework and errands (around three quarters) as well as caring responsibilities.⁷⁴ Women are two and a half times more likely than men to be the primary carer for a person with disability or who is elderly.⁷⁵





Source: HILDA; NSW Treasury.

The volume, composition, and distribution of unpaid work changes considerably for households with young children. The volume of unpaid work increases nearly threefold, to an average of around 9.1 hours per day for women and 5.7 hours for men (Figure 2.5). This is primarily driven by an increase in caring responsibilities, which account for around five hours per day for women and two and a half hours for men, and 94 per cent of primary carers of young children in Australia are women.⁷⁶ When added together with paid work, women with young children spend around an additional 5 hours a week, or 45 minutes per day performing both paid and unpaid work compared with men. Australian women also perform 20 per cent more unpaid work than the average in OECD countries.⁷⁷

When women remain in or return to the workforce following the birth of a child, they are more likely than men to seek greater flexibility in their work to enable them to undertake caring responsibilities.⁷⁸ However, high quality flexible work at a level that is commensurate with the skills and experience of women with young children is limited, and as a result, women often 'down-shift' into poorer-quality

⁷³ NSW Treasury analysis of HILDA data (Wave 19)

⁷⁴ NSW Treasury analysis of HILDA data (Wave 19)

⁷⁵ Australian Bureau of Statistics (2018), Disability, Ageing and Carers, Australia: Summary of Findings 2018.

⁷⁶ NSW Treasury analysis; Australian Bureau of Statistics (2021) Labour Force Status of Families, June 2021

⁷⁷ OECD (2022), *Time Use*. Time spent on unpaid work includes routine housework, shopping, care for household members, caring for a child, caring for an adult, care for non-household members, volunteering, travel related to household activities and other unpaid activities.

⁷⁸ Tannous, K., & Smith, M. (2013). Access to full-time employment: Does gender matter?. *Australian Journal of Labour Economics*, 16(2), 237-257; Cooper, R. and Hill, E. (2022). '*Women's economic opportunity: Thematic overview of extant research'*, Gender Equality in Working Life Research Initiative. Commissioned research for NSW Government Women's Economic Opportunities Review, March 2022

work when they re-enter the workforce.⁷⁹ Further, this greater flexibility at work often comes with greater economic insecurity, as women move into roles that are lower paying and precarious, with more fragmented hours, in industries with greater levels of casualisation.⁸⁰

The unequal distribution of unpaid domestic work and caring responsibilities is partly driven by attitudes toward gender roles at home and in the workplace. The *Household Income and Labour Dynamics in Australia* (HILDA) survey indicates that in 2019, 26 per cent of men and 21 per cent of women in New South Wales agreed with the proposition that "it is better for everyone involved if the man earns the money and the woman takes care of the home and children".⁸¹

The unequal distribution and high volume of unpaid work is compounded by the interaction between policy settings and underlying inequalities in the labour market. Women are far more likely to earn less than a male partner even before the arrival of children,⁸² which means there are financial incentives for the male partner to remain within the workforce while women downshift or drop out of the workforce entirely.

Paid parental leave is typically structured around the distinction between primary and secondary carers, which can entrench the role of men as supporters rather than equal partners in caring for young children from the very early stages.⁸³ The relatively high cost and, in some regions, poor availability of early childhood education and care reduces its scope to assist households in lowering their overall caring workload, and the tax and transfer system disincentivises secondary income earners from taking on additional work, primarily due to the structure of the family tax benefit.

Paid parental leave

Paid parental leave (PPL) has an important influence on the way women and men engage in the labour market when they have young children. PPL schemes play two key roles in relation to labour market engagement over time. Firstly, they maintain women's attachment to the workplace, and the labour force more generally, around the time of having children. Secondly, PPL can play a role in encouraging a more even distribution of unpaid caring and other domestic responsibilities between partners where it enables men to take on a substantial early caring role.⁸⁴ PPL thereby mitigates the impact of having young children on both women's current and lifetime earnings.

There are three key factors which impact the success of PPL schemes in supporting these two broad objectives. Firstly, the period of leave, with 26 weeks considered to be that which optimises both childhood development as well as women's labour market engagement.⁸⁵ Secondly, the level of pay provided during leave. Wage-replacement can support both objectives, by maintaining income for women and better incentivising men to take leave and therefore share responsibility for caring responsibilities.⁸⁶ Thirdly, design features which not only provide for, but also actively encourage both parents to take parental leave, support a more even distribution of unpaid caring responsibilities, not only during the period of that leave, but also setting norms which can endure throughout the child's life.⁸⁷

In Australia (and New South Wales), paid parental leave is provided through three key channels. The

⁷⁹ Cooper, R. and Hill, E. (2022). 'Women's economic opportunity: Thematic overview of extant research', Gender Equality in Working Life Research Initiative. Commissioned research for NSW Government Women's Economic Opportunities Review, March 2022 .

⁸⁰ Cooper, R., Baird, M., Foley, M., & Oxenbridge, S. (2021). Normative collusion in the industry ecosystem: Explaining women's career pathways and outcomes in investment management. *Human Relations*, 74(11), 1916-1941.;Cooper, R. and Hill, E. (2022). '*Women's economic opportunity: Thematic overview of extant research'*, Gender Equality in Working Life Research Initiative. Commissioned research for NSW Government Women's Economic Opportunities Review, March 2022 ⁸¹ NSW Treasury analysis of HILDA

⁸³ Deloitte (2021) Westpac New Zealand Sharing the Load Report, May 2021, available at:

https://www2.deloitte.com/content/dam/Deloitte/nz/Documents/Economics/westpac-value-of-sharing-the-load-report.pdf

⁸⁴ Baird, M., Hamilton, M., & Constantin, A. (2021). Gender equality and paid parental leave in Australia: A decade of giant leaps or baby steps?. *Journal of Industrial Relations*, 63(4), 546-567.

⁸⁵ Australian Human Rights Commission (AHRC) (2013). Investing in Care: Recognising and Valuing Those Who Care. Vol. 2: Technical Papers. Sydney: Australian Human Rights Commission. Available at: http://humanrights.gov.au/pdf/sex_discrim/publications/ UnpaidCaringVolume2_2013.pdf (accessed 29 March 2021); Baird, M., & Constantin, A. (2015). Analysis of the impact of the government's MYEFO cuts to paid parental leave. Women and Work Research Group, University of Sydney Business School, December.

⁸⁶ Baird, M., Hamilton, M., & Constantin, A. (2021). Gender equality and paid parental leave in Australia: A decade of giant leaps or baby steps?. Journal of Industrial Relations, 63(4), 546-567.;

Bergqvist, C., & Saxonberg, S. (2017). The state as a norm-builder? The take-up of parental leave in Norway and Sweden. Social *Policy & Administration*, 51(7), 1470-1487.;

Karu, M., & Tremblay, D. G. (2018). Fathers on parental leave: An analysis of rights and take-up in 29 countries. *Community, Work & Family*, 21(3), 344-362. ⁸⁷ Deloitte (2021) Westpac New Zealand Sharing the Load Report, May 2021, available at:

https://www2.deloitte.com/content/dam/Deloitte/nz/Documents/Economics/westpac-value-of-sharing-the-load-report.pdf

⁸² NSW Treasury analysis of HILDA

national public paid parental scheme provides up to 18 weeks of paid leave to a primary carer at the minimum wage, plus an additional two weeks of "Dad and Partner Pay." Under changes announced in the 2022-23 Commonwealth Budget, to be introduced from March 2023, primary and secondary carers' leave entitlements will be combined and able to be shared by both parents at their discretion. Under the scheme's current design, the primary carer is defined as the birth mother, although this provision can be transferred to a male, or same-sex partner.⁸⁸ This is one of the design features which has contributed to women accounting for over 95 per cent of those accessing primary carer leave, while only a quarter of eligible men have accessed the two-week entitlement for secondary carers.⁸⁹

Many workers are also entitled to PPL through workplace agreements, generally provided as a result of bargaining between employers and unions. In Australia just over 50 per cent of workers covered by workplace agreements are entitled to paid primary carer leave through this channel, but less than a quarter have provisions for secondary carers' leave, and workplace agreements represent a shrinking proportion of the overall workforce.⁹⁰ The average length of PPL entitlements under this channel is 12 weeks.⁹¹

Around 50 per cent of employers have policies which provide PPL for their staff, a figure that has been broadly stable since the introduction of the Commonwealth scheme. Of these schemes, over 80 per cent provide leave at full pay, with the average leave period being 10.7 weeks in 2019, up only marginally over the decade.⁹²

Australia's hybrid system of PPL results in somewhat uneven coverage across the workforce with respect to the amount of time, the amount of pay and sharing provisions. Few workers are entitled to PPL for 26 weeks at wage replacement level, and provisions that encourage (mostly male) secondary carers to share caring responsibilities are not commonplace.

Early Childhood Education and Care (ECEC)

ECEC refers to the range of services targeted at children younger than school age. These services range from those primarily aimed at caring for children, to those that balance care with educational programs including preschool. Affordable, accessible and high quality ECEC is essential in providing the opportunity for many women to remain engaged in the workforce because it can reduce the amount of time required to care for young children in circumstances where women are the overwhelming proportion of those who leave the workforce or reduce hours to care for their children. Where ECEC is both affordable and available at appropriate times and formats, it can also expand the nature and amount of paid work available to parents with young children. ECEC can also be critical in early childhood development, particularly for children from disadvantaged backgrounds.⁹³ While ECEC can reduce the overall volume of unpaid caring responsibilities within households, it does not directly address the uneven distribution, nor address care for school-aged children.

Section 3 of this paper provides an overview of ECEC in New South Wales, including some of the specific challenges facing the sector and households engaging with it. Section 4 provides an overview of evidence on the specific impact of ECEC on labour market outcomes and presents modelling on the impact of reforms to ECEC in New South Wales.

The tax and transfer system and workforce disincentive rates

The structure of the tax and transfer system can be a key driver of differences in workforce participation between men and women.⁹⁴ Even amongst couples who do not have children, women are

⁸⁸ Arthur, D. (2022) 'Changes to the Paid Parental Leave Scheme' Budget Review 2022-23, Australian Parliamentary Library Research Publications, April 2022, available at

https://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/pubs/rp/BudgetReview202223/PaidParentalLeaveScheme ⁸⁹ Baird, M., Hamilton, M., & Constantin, A. (2021). Gender equality and paid parental leave in Australia: A decade of giant leaps or baby steps?. *Journal of Industrial Relations*, 63(4), 546-567;

⁹⁰ Baird, M., Hamilton, M., & Constantin, A. (2021). Gender equality and paid parental leave in Australia: A decade of giant leaps or baby steps?. *Journal of Industrial Relations*, 63(4), 546-567;

⁹¹ Baird, M., Hamilton, M., & Constantin, A. (2021). Gender equality and paid parental leave in Australia: A decade of giant leaps or baby steps?. *Journal of Industrial Relations*, 63(4), 546-567;

⁹² Baird, M., Hamilton, M., & Constantin, A. (2021). Gender equality and paid parental leave in Australia: A decade of giant leaps or baby steps?. *Journal of Industrial Relations*, 63(4), 546-567;

 $^{^{\}rm 93}$ For further detail see Box 3.1 under Section 3 of this paper.

⁹⁴ Jaumotte, F. (2004). Labour force participation of women: Empirical evidence on the role of policy and other determinants in OECD countries. *OECD Economic studies*, 2003(2), 51-108.

likely to earn less than a male partner.⁹⁵ This means that where a couple decides that they will not both work full-time after having a child, there are financial incentives for women to be the partner that leaves the workforce or reduces hours. The tax and transfer system compounds this disincentive by applying a household income test to certain payments, most notably the Family Tax Benefit and the Commonwealth Child Care subsidy (CCS). The combination of lower pay, and the withdrawal of benefits, means that secondary income earners – mostly women – can take home as little as 25 cents for each additional (gross) dollar earned from working, which is a significant disincentive to women considering entering the workforce, or taking on more hours.⁹⁶

The specific impact of this on take-home pay for secondary income earners is known as the 'workforce disincentive rate' (WDR) and will vary for each household depending on their specific characteristics including the income of each partner and the number of children. Figure 2.6 provides an indication of the WDR for three 'cameo' households, representing typical full-time equivalent incomes for both partners in low (25th percentile), middle (median) and high (75th percentile) income households in New South Wales.⁹⁷

Under current policy settings, the 'cameo' lower income household with two children faces the highest WDR, with a secondary income earner taking home between 21 and 28 cents in the dollar if they want to work between 2 and 5 days per week on average, with the withdrawal of Commonwealth transfer payments – primarily the Family Tax Benefit – as well as the cost of childcare being the key drivers. The 'cameo' middle income household with two children faces a lower WDR than the lower income household because after working two days they are no longer eligible for the Family Tax Benefit. The cost of childcare, however, is a more significant contributor, accounting for up to around half of income after tax. The 'cameo' higher income household faces the lowest WDRs of all three examples because they are typically ineligible for Commonwealth transfer payments based on the income of the primary income earner, and childcare costs, while attracting a lower subsidy rate, account for a smaller proportion of overall income.





Net Childcare Costs 📕 Tax 🧧 Commonwealth transfer payments

Commonwealth transfer payments comprise Family Tax Benefit A, B and rent assistance. Current policy settings include changes to the childcare subsidy announced in the 2021-22 Budget applicable to the second and subsequent children. See the Appendix B for more detail on the assumptions and methodology underpinning the workforce disincentive rate modelling. Source: 2019 HILDA and NSW Treasury analysis.

⁹⁵ NSW Treasury analysis of HILDA data (Wave 19).

⁹⁶ Stewart, M. (2018). Personal Income Tax Cuts and the New Child Care Subsidy: Do They Address High Effective Marginal Tax Rates on Women's Work?. Tax and

Transfer Policy Institute, Australian National University. ⁹⁷ NSW Transfer analysis of HILDA data (Ways 19)

⁹⁷ NSW Treasury analysis of HILDA data (Wave 19)

Policy settings interact with underlying discrimination to entrench unequal labour market outcomes for women with young children

The interaction between attitudes and established practices, underlying inequality in the labour market, based on individual or systemic discrimination, and policy settings, particularly in ECEC, paid parental leave and the tax and transfer system, means that the gender gap in labour market participation and hours worked peaks when women are aged in their 30s and early 40s. While the participation rate is no longer lower than for younger women, this is partly a function of entry into the labour market for some women as they complete their studies – as also occurs with men and lifts their participation rate to around 90 per cent – offset by temporary, or in some cases permanent exit from the labour force to care for young children. A significant number of women fall back to part-time work during this time, many of whom never return to full-time work.

The lifetime effects of career disruptions

Career disruptions associated with having young children impact women's labour market outcomes for the remainder of their careers

Women's labour market outcomes continue to lag behind those of men even once their children are attending school, and even once they are adults, with a key driver being the lasting effects of career disruptions associated with having children. This, combined with the ongoing impact of discrimination and gender segregation, and ongoing inequality in the distribution of unpaid caring and other domestic responsibilities, results in women being less likely to participate in the labour force, being more likely to work part-time, and being paid less than men.

The length and circumstances of career breaks associated with having children has a lasting impact on women's labour market outcomes. Some women never re-enter the workforce, which can be challenging after an extended break and often results in lower pay and fewer opportunities for career progression.⁹⁸ Where women have ongoing unpaid caring responsibilities, for school-age children or people with disability or the elderly, only part-time or flexible work may be suitable, which can further limit options and career progression.⁹⁹ For women who return to their previous role, time out of the workforce can deplete human capital, as there is less opportunity to develop skills and experience, including engaging in on-the-job training.¹⁰⁰ Noting the extensive empirical evidence that women will generally receive lower returns on their human capital simply because they are female, employer perceptions of skills and characteristics such as commitment are also important.¹⁰¹ Both of these effects can lead to a loss of seniority and fewer opportunities for career progression.

WGEA research estimates that a quarter of the gender wage gap can be explained by time taken out of the workforce due to interruptions, a further 7 per cent by the higher incidence of part-time employment amongst women, and another 7 per cent by the unequal distribution of unpaid caring responsibilities, which continues after children start attending school.¹⁰² Time spent out of the labour force is a key predictor of future labour market engagement, and the length of career breaks associated with having children can have an impact on long-term labour market engagement.¹⁰³

Unpaid caring responsibilities often fall on grandparents and other providers of informal care, which impacts their capacity to engage in the labour market

In Australia, it is common for grandparents to frequently provide childcare for their grandchildren,

⁹⁹ Cooper, R. and Hill, E. (2022). 'Women's economic opportunity: Thematic overview of extant research', Gender Equality in Working Life Research Initiative. Commissioned research for NSW Government Women's Economic Opportunities Review, March 2022

⁹⁸ Arun, S. V., Arun, T. G., & Borooah, V. K. (2004). The effect of career breaks on the working lives of women. Feminist Economics, 10(1), 65-84.

¹⁰⁰ Kureishi, W., McKenzie, C., Sakata, K., & Wakabayashi, M. (2021). Does a Mother's Early Return to Work after Childbirth Improve Her Future Employment Status?. Asian Economic Journal, 35(3), 215-245.

¹⁰¹ Kureishi, W., McKenzie, C., Sakata, K., & Wakabayashi, M. (2021). Does a Mother's Early Return to Work after Childbirth Improve Her Future Employment Status?. Asian Economic Journal, 35(3), 215-245.

¹⁰² WGEA (2019). *She's Price(d)less: The Economics of the Gender Pay Gap*, report prepared by KPMG for the Diversity Council of Australia and the Workplace Gender Equality Agency, available at: https://www.wgea.gov.au/publications/shes-pricedless-the-economics-of-the-gender-pay-gap.

¹⁰³ Arun, S. V., Arun, T. G., & Borooah, V. K. (2004). The effect of career breaks on the working lives of women. *Feminist Economics*, 10(1), 65-84; Kureishi, W., McKenzie, C., Sakata, K., & Wakabayashi, M. (2021). Does a Mother's Early Return to Work after Childbirth Improve Her Future Employment Status?. *Asian Economic Journal*, *35*(3), 215-245.

and this role is more commonly assumed by women. A recent survey found that among women with young children who work full-time hours, 45 per cent used grandparent care either 'every' or 'most' weeks.¹⁰⁴ This phenomenon is not unique to Australia, with various surveys and studies demonstrating a large prevalence of grandparent childcare in the United States, Mexico and in European countries, among others.¹⁰⁵

Many grandparents providing care are of working age and may wish to continue earning an income through employment, particularly as they are often in good health and face financial pressures.¹⁰⁶ However, time transfers to their children in the form of childcare for grandchildren limits the labour supply of grandparents. The unequal distribution of caring responsibilities extends also to this age group, which is one driver of the relatively larger gender participation gaps experienced by older women.¹⁰⁷ A US study found that becoming a grandparent caused women to reduce their working hours by 30 per cent, while observing no effect for men.¹⁰⁸

Unequal labour market outcomes result from systemic inequality

Labour market outcomes are one of the most critical components of economic opportunity, as the major source of income inequality as well as life satisfaction.¹⁰⁹ As set out above, they exhibit significant gender disparity, the underlying cause of which is in large part discrimination, impacting many women long before and if they have children.

However, labour market outcomes between women and men diverge most significantly around the time when they have young children, driven by a significant increase in, and the unequal distribution of unpaid caring and domestic responsibilities, and exacerbated by a range of policy settings including paid parental leave, early childhood education and care and the tax and transfer system. This then causes a permanent divergence in labour market outcomes between women and men for the remainder of their working lives.

Policy measures to address workforce engagement amongst parents with young children should therefore be expected to materially impact outcomes not only while children are young, but also when they grow older and start attending school. There is strong evidence that reducing the out-of-pocket costs of ECEC and improving its availability can increase labour force engagement for parents with young children, and this has been the grounds on which a range of stakeholders have advocated for reforms in this sector, including prominently in the course of the NSW Government's Women's Economic Opportunities Review.¹¹⁰

However, inequality in labour market outcomes experienced by women and men is systemic: it has a set of drivers that interact with one another. Some of these are deeply embedded in social attitudes, and either conscious or unconscious, bias. Others arise from more economic drivers, particularly in the way in which pay, workplace conditions, PPL, the availability and cost of ECEC and the tax and transfer system operate together to affect and limit choices that women, and men, may make. As with any significant system change, a comprehensive suite of measures is most effective to improve outcomes

¹⁰⁹ Borland, J., & Coelli, M. (2016). Labour market inequality in Australia. *Economic Record*, 92(299), 517-547.

¹¹⁰ NSW Treasury (2022) *Women's Opportunity Statement*, NSW 2022-23 Budget.

¹⁰⁴ Cortis, et al. (2021). Challenges of work, family and care for Australia's retail, online retail, warehousing and fast-food workers.

https://apo.org.au/sites/default/files/resource-files/2021-10/apo-nid315209.pdf

¹⁰⁵ Rupert, P., & Zanella, G. (2018). Grandchildren and their grandparents' labor supply. *Journal of Public Economics*, 159, 89-103.; Backhaus, A., & Barslund, M. (2021). The effect of grandchildren on grandparental labor supply: evidence from europe. *European Economic Review*, 137, 103817; Cabrera-Herández & Padilla-Romo (2021). Women as Caregivers: Full-time Schools and Grandmothers' Labor Supply. *Working Papers 2021-03, University of Tennessee*, Department of Economics. https://ideas.repec.org/p/ten/wpaper/2021-03.html

¹⁰⁶Women, U. N. (2019). Progress of the world's women 2019–2020. UN Women, as presented in Devercelli, A., Beaton-Day, F. (2020), Better Jobs and Brighter Futures, Investing in Childcare to Build Human Capital, Washington DC. World Bank.

¹⁰⁷ Backhaus, A., & Barslund, M. (2021). The effect of grandchildren on grandparental labor supply: evidence from europe. *European Economic Review*, 137, 103817

¹⁰⁸ Rupert, P., & Zanella, G. (2018). Grandchildren and their grandparents' labor supply. *Journal of Public Economics*, 159, 89-103.

Some other recent examples include Wood, D., Griffiths, K. & Emslie, O. (2020). *Cheaper childcare – a practical plan to boost female workforce participation.*; Centre for policy development, *Starting Better*, available at: https://cpd.org.au/2021/11/starting-better-centre-for-policy-development/

across a population and enable effective choice,¹¹¹ with the impact of policy interventions working together likely to be greater than the sum of individual policy interventions addressing the drivers of unequal labour market outcomes in isolation.

¹¹¹ The need for a comprehensive suite of measures is well established, for example, in the area of health promotion, which is similarly focused on enabling effective choice, see Australian Institute of Health and Welfare, *Health Promotion*, https://www.aihw.gov.au/reports/australias-health/health-promotion

Section 3: Early childhood education and care

Overview

Widely available and affordable early childhood education and care (ECEC) is one of the key policies available to support women's labour market outcomes. The relationship between the net cost of ECEC services and women's labour force participation rates is well documented in both Australian and international literature. The price of ECEC services paid by households in New South Wales and Australia is also relatively high by international standards. This aligns with the evidence presented in sections one and two indicating that while younger women in Australia are engaged in the labour force at amongst the highest rates in the world, our relative performance declines around the same age brackets as when people have children. However, realisation of the benefits of ECEC relies not only in the reduction of net costs but measures that ensure that the sector is able to deliver sufficient places to meet the expected increase in demand, while maintaining quality.

The dual roles of early childhood education and care

ECEC services perform two important roles: for children, high quality ECEC services are closely associated with improved childhood development outcomes. In particular, high-quality interactions between staff and children within ECEC services are associated with improved lifetime improvements in literacy, numeracy, and social skills.¹¹² The focus of this paper is on women's labour market outcomes, rather than on childhood development, however recognising these developmental benefits is critical in informing the scope for ECEC sector reform, including the potential drawbacks of cost-quality trade-offs. Box 3.1 therefore provides an overview of these benefits.

For parents, ECEC services provide the means to reduce the overall load of unpaid caring responsibilities within the home. As outlined in section 2, this load generally falls more heavily on women, and is a key driver of disparities in labour market outcomes between women and men. Affordable and accessible ECEC services support parents to remain within the workforce when they have children, and to work more hours than they would otherwise be able to. Ameliorating the career disruption experienced by a cohort of women around the time they have children enables those women to maintain a connection with their workplace and occupation. This then has an impact on the trajectory of labour market outcomes over the lifetime of those women.

Box 3.1: Investment in high quality early childhood education and care supports children's development and school readiness

A child's brain is growing rapidly in the years from birth to commencing formal school. Their environment and experiences during these years shape their physical, social, cognitive, and emotional development. There is a broad consensus across disciplines that developmental outcomes achieved during this time are pivotal to the health and wellbeing of the child well into adulthood.¹¹³ Favourable experiences during these years promote on-track development outcomes, which provide the foundational skills a child will use in formal schooling and in life.

 ¹¹² OECD (2018) 'Chapter 1. Overview: Promoting quality early childhood education and care, child development and learning' in *Engaging Young Children*, March 2018, available at https://www.oecd.org/education/engaging-young-children-9789264085145-en.htm.
¹¹³ Heckman, J. J., & Masterov, D. V. (2007). The productivity argument for investing in young children. *National Bureau of Economic Research*, Working Paper

¹¹³ Heckman, J. J., & Masterov, D. V. (2007). The productivity argument for investing in young children. *National Bureau of Economic Research*, Working Paper 13016, April 2007; Devercelli, A., Beaton-Day, F. (2020), *Better Jobs and Brighter Futures, Investing in Childcare to Build Human Capital*, Washington DC. World Bank.; Cunha, F., Heckman, J. J., Lochner, L., & Masterov, D. V. (2006). Interpreting the evidence on life cycle skill formation. *Handbook of the Economics of*
Conversely, negative experiences during the first five years of life risk the social and economic future of the child.¹¹⁴ In this way, disadvantage experienced at the start of life – due to poverty, mental illness within the household, family violence or neglect – compounds throughout adulthood. For example, Heckman and Masterov (2007) find that children from disadvantaged backgrounds, who do not benefit from early childhood intervention, have greater interactions with the criminal justice system than those with who participated in intervention programs.¹¹⁵ Further, children who are exposed to adverse experiences will be more likely to have unhealthy behaviours (such as addiction) and experience chronic disease as an adult.¹¹⁶ Australian evidence suggests that children who are lagging in their development when they commence formal school rarely catch up to their peers.¹¹⁷

Participation in quality early learning and care services can support children's development before formal school.¹¹⁸ The benefits of these programs apply to all children and include school readiness, development of socio-emotional skills, and support for the cognitive and behavioural foundations of long-term physical and mental health. For children experiencing disadvantage or residing in an adverse environment, evidence shows that early interventions can create a 'buffer' of protective factors.¹¹⁹ Attendance in early learning and care programs can link children to other services, such as community support and health programs, ultimately reducing some of the impact of risk and harm.

In addition to supporting the health and wellbeing outcomes of individuals, quality early learning and care interventions build human capital – the stock of skills, education, experience and other personal attributes that support productive participation in society and in the labour force. Human capital is an important input to productivity, a powerful lever of economic growth.

Effective investment in ECEC also reduces costs to government through reduced spending on the education, justice and health systems. In particular, it can contribute to the development of children from disadvantaged backgrounds and better equip them to engage in learning programs, reducing interactions with the justice system and lowering levels of chronic disease. On this basis, investment in effective ECEC provision should be prioritised as an important strategy for societies aiming to improve overall productivity and achieve sustainable economic growth.

ECEC reforms and the labour market

The relationship between the ECEC sector and women's labour market engagement is well-documented

The provision of more affordable and accessible ECEC services supports a higher level of workforce engagement amongst women with young children, both in terms of workforce participation rates as well as the average number of hours worked.

The direction of this relationship for both measures is consistent across a range of international and Australian studies, although there is less consistency on the precise impact of a given cost reduction

Education, 1, 697-812.; Engle, P. L., Fernald, L. C., Alderman, H., Behrman, J., O'Gara, C., Yousafzai, A., ... & Global Child Development Steering Group. (2011). Strategies for reducing inequalities and improving developmental outcomes for young children in low-income and middle-income countries. *The Lancet*, 378(9799), 1339-1353.; Heckman, J. J. (2006). Skill formation and the economics of investing in disadvantaged children. *Science*, 312(5782), 1900-1902.; Naudeau, S., Kataoka, N., Valerio, A., Neuman, M. J., & Elder, L. K. (2011). *Investing in Young Children. An Early Childhood Development Guide for Policy Dialogue and Project Preparation*, The World Bank, Washington DC.; Neuman, M. J., & Devercelli, A. E. (2013). What matters most for early childhood development: a framework paper; and Shafiq, M. N., Devercelli, A., & Valerio, A. (2018). Are there long-term benefits from early childhood education in low-and middle-Income countries?. Available at SSRN 3270603.

¹¹⁴ Heckman, J. J., & Masterov, D. V. (2007). The productivity argument for investing in young children.

¹¹⁵ Heckman, J. J., & Masterov, D. V. (2007). The productivity argument for investing in young children.

¹¹⁶ NSW Ministry of Health (2019) The First 2000 Days Conception to Age 5 Framework. February 2019. Available at:

https://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2019_008.pdf

¹¹⁷ NSW Ministry of Health (2019) The First 2000 Days Conception to Age 5 Framework. February 2019. Available at:

https://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2019_008.pdf

¹¹⁸ Blanden, J., Del Bono, E., Hansen, K., & Rabe, B. (2022). Quantity and quality of childcare and children's educational outcomes. *Journal of Population Economics*, 35(2), 785-828.

¹¹⁹ NSW Ministry of Health (2019) The First 2000 Days Conception to Age 5 Framework. February 2019. Available at:

https://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2019_008.pdf

across these studies. These studies can be grouped into two types: those based on the examples of policy reform in overseas jurisdictions, and those based on analysis of Australian data, which utilise differences in average costs between regions or households to estimate a price elasticity.

Studies of international reforms

Malik provides a synthesis of literature on policy reforms in a range of international jurisdictions, and reports that these studies consistently find a significant impact on maternal labour force participation rates following the introduction of policy measures which provided universal access to affordable ECEC services for children below school age.¹²⁰ The countries included in this sample, summarised in Table 3.1, are diverse, each with its own distinct system and cultural context.¹²¹ The interventions studied in each of these countries differ in scope and magnitude, with the greatest impacts associated with interventions that target the broadest eligible population and with childcare attendance either full-time and/or compulsory. It should be noted that where there is an intervention of a significant magnitude that has flow on effects within the broader childcare and early learning ecosystem, this may serve to magnify the positive labour force effect beyond what is strictly be attributable to the price change in isolation.¹²²

| Country | Study | Description of policy intervention | Effect on maternal labour force unless otherwise stated | Additional parameters |
|--------------------|--|--|--|---|
| Canada (Quebec) | Baker et al. (2008) ¹²³ | Phased-in universal childcare from 1997 to 2000, with a \$5-\$7 per day fee for parents | +7.7 percentage points (employment) | Increase in employment of married women with a child aged 0 to 4 years old. |
| Canada (Quebec) | Lefebvre and Merrigan (2008) ¹²⁴ | Phased-in universal childcare from 1997 to 2000, with a \$5-\$7 per day fee for parents | +8.1 percentage points | Estimated increase in participation rate of mothers with at least one child aged between 1 and 5 in 2002. |
| Germany | Bauernschuster and Schlotter (2015) ¹²⁵ | Beginning in 1996, introduced free part- time childcare for ages 3 - 4 | +3.5 percentage point (employment) | Change in employment between 1996 to 2001 caused by a 10 percentage point increase in public childcare coverage (enrolments). |
| Chile | Martínez and Perticará (2017) ¹²⁶ | Beginning in 2006, introduced free full-time childcare available for children younger than age 5 | +8.8 percentage points | Increased likelihood of continuous labour force participation of mothers with a child aged 5 and below who are employed under baseline. An 18.8 percentage point increase is estimated for mothers not employed at baseline. |
| Israel | Schlosser (2006) ¹²⁷ | Beginning in 1999, gradual rollout of compulsory free preschool for ages 3 - 4 | +8.1 percentage points (employment) | Increased likelihood of employment of mothers with children aged 2 to 4 years (noting preschool was not available to 2 year olds). |

Table 3.1: Summary of impacts from selected international studies

¹²⁰ Malik, R. (2018). The effects of universal preschool in Washington, DC: Children's learning and mothers' earnings. Washington, DC: Center for American Progress.

¹²¹ Baker, M., Gruber, J., & Milligan, K. (2008). Universal child care, maternal labor supply, and family well-being. Journal of Political Economy, 116(4), 709-745; Lefebvre, P., & Merrigan, P. (2008). Child-care policy and the labor supply of mothers with young children: A natural experiment from Canada. Journal of Labor Economics, 26(3), 519-548.; Brewer, M., Cattan S., Crawford, S., and Rabe, B. (2016) Free Childcare and Parents' Labour Supply: Is More Better?', IZA Institute of Labour Economics Discussion Paper Series, December 2016; Bauernschuster, S., & Schlotter, M. (2015). Public child care and mothers' labor supply – Evidence from two quasi-experiments. Journal of Public Economics, 123, 1-16.; Martínez, C., & Perticará, M. (2017). Childcare effects on maternal employment: Evidence from Chile. Journal of Development Economics, 126, 127-137.; Schlosser, A. 'Public Preschool and the Labor Supply of Arab Mothers: Evidence from a Natural Experiment', The Economic Quarterly 53 (3) (2006): 517–553.; Malik, R. (2018). The effects of universal preschool in Washington, DC: Children's learning and mothers' earnings. Washington, DC: Center for American Progress.

¹²² Lefebvre, P., & Merrigan, P. (2008). Child-care policy and the labor supply of mothers with young children: A natural experiment from Canada. Journal of Labor Economics, 26(3), 519-548.

¹²³ Baker, M., Gruber, J., & Milligan, K. (2008). Universal child care, maternal labor supply, and family well-being. Journal of Political Economy, 116(4), 709-745. ¹²⁴ Lefebvre, P., & Merrigan, P. (2008). Child-care policy and the labor supply of mothers with young children: A natural experiment from Canada. Journal of Labor Economics, 26(3), 519-548.

¹²⁵ Bauernschuster, S., & Schlotter, M. (2015). Public child care and mothers' labor supply — Evidence from two quasi-experiments. Journal of Public Economics, 123, 1-16

¹²⁶ Martínez, C., & Perticará, M. (2017). Childcare effects on maternal employment: Evidence from Chile. Journal of Development Economics, 126, 127-137 ¹²⁷ Schlosser, A. 'Public Preschool and the Labor Supply of Arab Mothers: Evidence from a Natural Experiment', The Economic Quarterly 53 (3) (2006): 517– 553.

| Country | Study | Description of policy intervention | Effect on maternal labour force unless otherwise stated | Additional parameters |
|---------|---------------------------------------|---|--|--|
| England | Brewer et al (2016) ¹²⁸ | Free full-time childcare at age 4 (30 hours per week) | +5.7 percentage points | Increased likelihood of labour force participation at the end of the first year of eligibility for full-time care. |
| England | Brewer et al (2016) ¹²⁹ | Free part-time childcare at age 3 (15 hours per week) | +2.1 percentage points | Increased likelihood of labour force participation at the end of the first year of eligibility for part-time care. |

Source: Reproduced from Malik, R. (2018). The effects of universal preschool in Washington, DC: Children's learning and mothers' earnings. Washington, DC: Center for American Progress.

Studies based on Australian data

A range of Australian studies seek to estimate the relationship between ECEC costs and labour market participation by utilising differences in prices between Australian regions or households to estimate an elasticity, primarily utilising the Household Income and Labour Dynamics in Australia (HILDA) survey. The elasticity should be interpreted as the change arising from a 1 per cent increase in the cost of ECEC services, so for example a workforce participation elasticity of -0.2 indicates that for every 1 per cent increase in the price of ECEC services, the workforce participation rate for the relevant cohort will decrease by 0.2 per cent.

For the most part, these studies adapt the method first set out in Gong et al (2010),¹³⁰ to control for measurement error in childcare prices. There are variations between studies in their model specification, and also in the characteristics of the target cohort, including characteristics of the parents (e.g. single, partnered, women only or all primary carers) and the age of the children (under 5 only, or school-age children attending out of school hours care). Elasticity estimates for the relationship between the gross cost of ECEC services and:

- workforce participation range from -0.07¹³¹ to -0.3¹³², and
- aggregate number of hours worked range from -0.11¹³³ to -0.7.¹³⁴

Elasticities are found to be generally higher where the sample encompasses families with school-age children, amongst single parents and for lower income households. A forthcoming technical paper from the NSW Productivity Commission¹³⁵ applies a similar method to more recent HILDA waves (2009 to 2020) to estimate labour supply elasticities for partnered and single primary carers of children age between 0 to 4 (with an estimate that 90 per cent are women) and finds elasticities of 0.07 on workforce participation and 0.16 for aggregate hours worked. These are similar to estimates by Gong and Breunig (2012)¹³⁶ which have been used in a range of assessments of ECEC policy reform in Australia.¹³⁷

¹²⁸ Brewer, M., Cattan S., Crawford, S., and Rabe, B. (2016) Free Childcare and Parents' Labour Supply: Is More Better?', IZA Institute of Labour Economics Discussion Paper Series, December 2016

¹²⁹ Brewer, M., Cattan S., Crawford, S., and Rabe, B. (2016) Free Childcare and Parents' Labour Supply: Is More Better?', IZA Institute of Labour Economics Discussion Paper Series, December 2016

¹³⁰ Gong, X., Breunig, R. V., & King, A. (2010). How responsive is female labour supply to child care costs: New Australian estimates.

¹³¹ Gong, X., & Breunig, R. (2012). Estimating net child care price elasticities of partnered women with pre-school children using a discrete structural labour supply-child care model (No. 2012-01). Treasury Working Paper.

¹³² Gong, X., Breunig, R. V., & King, A. (2010). How responsive is female labour supply to child care costs: New Australian estimates.

¹³³ Gong, X., & Breunig, R. (2012). Estimating net child care price elasticities of partnered women with pre-school children using a discrete structural labour supply-child care model (No. 2012-01). Treasury Working Paper.

¹³⁴ Gong, X., Breunig, R. V., & King, A. (2010). How responsive is female labour supply to child care costs: New Australian estimates.

¹³⁵ NSW Productivity Commission (forthcoming), Early Childcare Costs and Labour Force Participation. NSW Productivity Commission Technical Research Paper Series.

¹³⁶ Gong, X., & Breunig, R. (2012). Estimating net child care price elasticities of partnered women with pre-school children using a discrete structural labour supply-child care model (No. 2012-01). Treasury Working Paper.

¹³⁷ Wood, D., Griffiths, K. & Emslie, O. (2020). *Cheaper childcare – a practical plan to boost female workforce participation*. Grattan Institute Report. ; Parliamentary Budget Office. Behavioural assumptions and PBO costings. Information paper 01/2020.

Table 3.2: Summary of selected elasticities from Australian studies

| Study | Employment (unless stated) | Hours Worked | Key parameters |
|---|--|--|--|
| Gong et al. (2010) ¹³⁸ | -0.3 | -0.7 | Elasticities are for partnered women with a child under 13 years. |
| Gong and Breunig (2012) ¹³⁹ | -0.070 (-0.059 net price elasticity) | -0.106 (-0.096 net price elasticity) | Elasticities are for partnered women with a child aged 5 years or younger. |
| NSW Productivity Commission (forthcoming) ¹⁴⁰ | -0.07 (participation) | -0.16 | Elasticities are for partnered and single primary carers with a child aged 4 years or younger. |
| Apps et al. (2016) ¹⁴¹ | Not estimated | -0.25 | Elasticities are for partnered women in two-person households with a preschool aged child. |
| Mumford et al. (2020) ¹⁴² | -0.15 (participation) | -0.20 | Elasticities are for partnered and cohabitating mothers with at least one child aged under 5. |

Comparison between international and Australian estimates

In general, there is significant variation in elasticity estimates in the international and Australian literature, although those estimated through analysis of interregional price variation within Australia using HILDA are generally, but not uniformly, lower than the implied elasticities from overseas studies based on case studies of policy reform. For example, the estimated labour market impacts reported in Lefebvre and Merrigan,¹⁴³ combined with the estimated change in net costs estimated by Baker et al,¹⁴⁴ indicate implied elasticities of -0.211 for participation and -0.349 for aggregate hours. This is considerably higher than the net price elasticities of -0.059 for employment and -0.096 for hours estimated by Gong and Breunig,¹⁴⁵ with both studies focusing on women with children aged five and under.

This could be simply explained through statistical uncertainty, noting that the Gong and Breunig estimates are not statistically significantly different from the (much higher) estimates published in an earlier paper by the same authors.¹⁴⁶ Alternatively, it could indicate that elasticity is, in general, not linear. Specifically, the behavioural response to a step change in price, implemented alongside changes to the overall policy framework, is likely to be greater than what would be expected by simply scaling up the behavioural response from marginal changes in price within an otherwise unchanged policy framework. For instance, significant policy interventions are often accompanied by extensive publicity, and uptake of a service may be influenced by uptake by family, friends and peers. This can act in combination with the specific policy intervention to shift attitudes and reset knowledge and expectations about the role of ECEC and the balance between working life and family responsibilities in the early childhood years. The implications of this variation in elasticity estimates are explored in more detail in section 4.

¹³⁸ Gong, X., Breunig, R. V., & King, A. (2010). How responsive is female labour supply to child care costs: New Australian estimates. *IZA Discussion Paper No. 5119*, August 2010.

¹³⁹ Gong, X., & Breunig, R. (2012). Estimating net child care price elasticities of partnered women with pre-school children using a discrete structural labour supply-child care model (No. 2012-01). Treasury Working Paper.

¹⁴⁰ NSW Productivity Commission (forthcoming), Early Childcare Costs and Labour Force Participation. NSW Productivity Commission Technical Research Paper Series.

¹⁴¹ Apps, P., Kabátek, J., Rees, R., & van Soest, A. (2016). Labor supply heterogeneity and demand for child care of mothers with young children. *Empirical Economics*, 51(4), 1641-1677.

¹⁴² Mumford, K., Parera-Nicolau, A., & Pena-Boquete, Y. (2020). Labour supply and childcare: Allowing both parents to choose. *Oxford Bulletin of Economics and Statistics*, 82(3), 577-602.

¹⁴³ Lefebvre, P., & Merrigan, P. (2008). Child-care policy and the labor supply of mothers with young children: A natural experiment from Canada. *Journal of Labor Economics*, 26(3), 519-548.

 ¹⁴⁴ Baker, M., Gruber, J., & Milligan, K. (2008). Universal child care, maternal labor supply, and family well-being. *Journal of Political Economy*, 116(4), 709-745.;
 Note that Lefebvre and Merrigan report estimates for the change in hours worked, while Baker et al do not, hence the reliance on the former.
 ¹⁴⁵ Gong, X., & Breunig, R. (2012). Estimating net child care price elasticities of partnered women with pre-school children using a discrete structural labour supply-child care model (No. 2012-01). Treasury Working Paper.

¹⁴⁶ Gong, X., Breunig, R. V., & King, A. (2010). How responsive is female labour supply to child care costs: New Australian estimates. *IZA Discussion Paper No.* 5119, August 2010.

The ECEC sector in New South Wales

User costs for ECEC services in New South Wales and Australia are high by international standards

The cost of ECEC services payable by households in New South Wales and Australia is amongst the highest in the OECD. Figure 3.1 shows the net cost of childcare as a proportion of average wages for a middle-income household across OECD countries, with costs in Australia twice the OECD average. Australia also ranks as having amongst the highest net costs for households at other income levels.¹⁴⁷

Figure 3.1: Net childcare costs as a per cent of average wages household income, OECD countries



Chart shows the net cost of full-time centre-based childcare as a proportion of average wages for a family with a primary income earner on the average wage and a secondary income earner on 67 per cent of the average wage. Data is latest available and is from 2018 for New Zealand and Russia, from 2020 for Australia, Canada, Israel, South Korea, Switzerland, Turkey, and the OECD average, and 2021 for all other countries. Source: OECD Statistics.

Fees for ECEC services in New South Wales are generally levied at a daily rate based on the opening hours of the service, typically between 8 and 12 hours, regardless of the number of hours a child may actually attend on a given day. There are two key measures of costs: the gross cost which is charged by service providers, and the net cost which is payable by families and is determined by subtracting the value of the Commonwealth Child Care Subsidy from the gross cost. The average hourly gross cost of Centre-Based Day Care services in New South Wales was \$11.05 in June 2021 (latest data),¹⁴⁸ which translates into a daily cost of \$110.50 for a centre that opens ten hours per day. The net cost for a household is then determined based on their household income, and so a middle-income household with both parents working full-time would pay \$5.53 per hour or \$55.25 per day for a service that charges for 10 hours.¹⁴⁹

While these are average costs, the actual cost of ECEC services varies considerably by location, with generally higher prices associated with inner metro regions with higher average household incomes. All but one of the 39 CBDC services in North Sydney and Hornsby charged above the CCS hourly fee cap of \$12.31 in June 2021, and collectively charged the highest fees of any region in the State at \$14.75 per hour. In contrast all ten CBDC services in the New England and North West region charged fees below the cap and on average charged the lowest fee of all regions at \$8.63 per hour.

https://www.dese.gov.au/early-childhood/resources/june-quarter-2021

¹⁴⁷ Based on measures reported by the OECD which estimate the net childcare costs as a proportion of household income where one partner in a couple earns 67 per cent of the average wage and the other partner earns either the average wage (shown in Figure 3.1), 67 per cent of the average wage or the minimum wage. Source: OECD (2022), Net childcare costs (indicator). doi: 10.1787/e328a9ee-en.

¹⁴⁸ Department of Education, Skills and Employment (DESE) (2021) Data on families and children in child care for the June quarter 2021,

¹⁴⁹ Based on a household income of \$180,000, or roughly the sum of the average hourly full-time wage for men and women, which would translate to a subsidy of 50 per cent under 2021-22 policy settings.

Gross and net costs have been rising faster than both inflation and average wages in recent years – the gross cost in New South Wales increased by 4.9 per cent per year on average between 2012 and 2021, while the net cost increased at a slightly slower annual pace of 4.3 per cent.¹⁵⁰

High costs reduce utilisation

The cost of ECEC services in New South Wales and Australia is a key barrier to usage for many households. Analysis undertaken by Hurley and Noble (2021) found that 39 per cent of Australian families believe early childhood education and care is 'too expensive'.¹⁵¹ Australia ranks below the OECD average, with ECEC enrolments for children aged five and under and not yet in school around 14-20 percentage points lower than countries such as Sweden, Norway and Denmark, which also lead in women's workforce participation (Figure 3.2).



Figure 3.2: Proportion of children aged 0-5 enrolled in ECEC, OECD countries

Enrolment data for ages 0-2 for Belgium, Czech Republic, France, Greece, Ireland, Italy, Luxembourg, Netherlands, Poland, Switzerland and the United Kingdom are sourced from indicator PF3.2 of the OECD Family Database and are OECD estimates based on information from European Union Statistics on Income and Living Conditions data (EU-SILC). All other enrolment and population data are sourced from OECD.Stat. Data for Portugal and data for ages 0-2 for Ireland and United Kingdom are for 2018. Data for ages 0-2 for Switzerland are for 2014. All other data are for 2019. Enrolment rates reflect the sum of enrolments age five and younger as a proportion of that population, adjusted to account for children aged 3 to 5 who attend formal school. Source: NSW Treasury estimates based on OECD Statistics and OECD Family Database.

In New South Wales, around 300,000 children access ECEC services each year, representing around 57 per cent of children aged 0-5 not yet in school.¹⁵² Usage generally increases with age, with close to 90 per cent of four year-olds attending an ECEC service, and then declines for five year-olds as they start formal schooling. Children attending ECEC services are enrolled for an average of 31 hours per week, or around three days.

¹⁵⁰ NSW Treasury estimates from DESE data.

¹⁵¹ Noble, K., & Hurley, P. (2021). Counting the cost to families: assessing childcare affordability in Australia.

¹⁵² Includes CBDC, FDC and dedicated preschool services, adjusted for estimated dual enrolments across service types. NSW Treasury estimates based on ROGS, DESE, ABS and DOE.



Figure 3.3: Estimated proportion of children attending ECEC by age, NSW, 2021-22

Includes CBDC, FDC and preschool services. Source: NSW Treasury estimates based on ROGS, DESE, ABS, DOE.

The data set out above, together with the analysis set out in section 2, indicates that the high cost of ECEC services in New South Wales is a key driver of lower levels of labour force engagement amongst women with young children, and all women more generally. This suggests there is scope to improve women's labour market outcomes through policy reforms that lower the out-of-pocket cost of ECEC. The manner in which this can be achieved however turns on the extent to which government is able to effectively reduce out-of-pocket costs, which is informed by the institutional features of the ECEC sector.

The ECEC sector operates as a mixed market in New South Wales, with a means-tested Commonwealth subsidy scheme in place

In contrast to school education, the provision of ECEC is largely decentralised. The provision of services has not historically been system managed to ensure spread of services to meet need, but rather has operated as a mixed market with private sector 'for-profit' services alongside not-for-profit providers, local government and State government.

There are three main types of ECEC service for children under school age operating in New South Wales: Centre-Based Day Care (CBDC), Family Day Care (FDC), and dedicated preschool services.

CBDC represents the majority of enrolments in the sector, with over 250,000 children enrolled in over 3,300 centres across the State.¹⁵³ Around 75 per cent of CBDC services are operated for profit by the private sector, with the remainder operated by either the community sector or local government.¹⁵⁴ CBDC services typically operate around 10 hours per day and set to cater for those working standard business hours. They cater for children aged between 0 and 5 and typically provide a preschool (i.e. an educational) program for children aged 3-5. They are primarily funded from fees payable by parents and the Commonwealth government in the form of the Commonwealth Child Care Subsidy (CCS – see below and Box 3.2), with some funding also provided by the NSW Government primarily for the delivery of preschool programs.

FDC is a smaller-format service typically operating in residential premises with one or two staff and accommodated 30,000 children in 2021.¹⁵⁵ While many FDC services operate hours similar to CBDC, some others utilise the smaller-format to provide more flexible arrangements, catering for those working irregular hours such as shift-workers.¹⁵⁶ Similar to CBDC, FDC is funded primarily by fees and

¹⁵⁵ Department of Education, Skills and Employment (DESE), (2021) Data on families and children in childcare for the June quarter 2021, https://www.dese.gov.au/early-childhood/resources/june-quarter-2021.

¹⁵³ Department of Education, Skills and Employment (DESE), (2021) Data on families and children in childcare for the June quarter 2021, https://www.dese.gov.au/early-childhood/resources/june-quarter-2021.

¹⁵⁴ Based on information provided by the NSW Department of Education; Australian Children's Education & Care Quality Authority (2022) NFQ Snapshot Q1 2022, May 2022, available at: https://www.acecqa.gov.au/sites/default/files/2022-05/NQF%20Snapshot%20Q1%202022%20FINAL.pdf.

¹⁵⁶ Blaxland, M., & Adamson, E. (2017). Comparative perspectives on family day care: structure, regulation, and research gaps. Social Policy Research Centre, UNSW Sydney.

the CCS.

Dedicated preschools provided ECEC services to around 27,000 children aged between 3 and 5 across New South Wales in 2021.¹⁵⁷ They are typically run by the community sector or local government and usually operate similar hours to schools (9am – 3pm). They are primarily funded by the state government as well as fees payable by parents.

All three types of services are regulated by both the Commonwealth and NSW Government, with respect to the number of staff and qualification requirements, health and safety, and other service delivery settings.

Fees charged by operators are not directly regulated by either level of Government, but funding arrangements in place include some features which influence the level of fees charged by operators.

The NSW Government's primary role in the ECEC sector relates to the provision of preschool programs, primarily in dedicated community-run preschool services. The NSW Government requires operators to pass on 75 per cent of additional funding provided for the provision of preschool services in dedicated preschool services. The Commonwealth Government has more direct influence on the cost of childcare through the design of the CCS. The subsidy level itself has a direct bearing on the cost payable by families. The fee cap sets a limit on the proportion of the gross fee charged by the provider which can attract a subsidy payment and this influences prices across the sector: 84 per cent of CBDC and FDC service providers nationally charged at or below the fee cap in June 2021.¹⁵⁸ The CCS is described in more detail in Box 3.2.

Box 3.2. The Commonwealth Government's Child Care Subsidy (CCS) is the primary channel of government subsidisation of ECEC costs

The CCS is a subsidy provided by the Commonwealth Government to reduce the cost of childcare, replacing the Child Care Benefit and the Child Care Rebate in 2018.

The CCS is paid directly to providers to reduce the out-of-pocket fees paid by families, with families paying the difference between the gross cost and CCS payment. There are several factors that affect the amount of the subsidy. These include:

- the provider's hourly rate relative to the 'fee cap' which is the maximum hourly amount payable by the CCS and it is set by the Commonwealth Government,
- the family's combined income, which determines the percentage of the hourly rate or fee cap to be received through the CCS, and
- the level of activity of the family, including both paid and unpaid activities (work, education, and volunteering), which determines the number of hours a family is eligible to receive the CCS.

The subsidy rate is based on tiered system of combined family income thresholds. In 2021-22, families earning \$70,015 or less were eligible to have 85 per cent of the cost of childcare from an approved provider subsidised. Above this income level up to \$175,015, the subsidy decreases by 1 per cent for each \$3,000 of family income to reach 50 per cent. Incomes between \$175,015 and \$254,305 were eligible for a 50 per cent subsidy. Above this level up to \$344,305 the subsidy percentage decreases by 1 per cent for each \$3,000 of family income to reach \$3,000 of family income to reach 20 per cent.¹⁵⁹ Families with incomes above \$354,305 were ineligible to receive the subsidy. In March 2022, the CCS was expanded such that families with more than one child aged 5 or under can receives a higher subsidy rate for their second and other younger children.¹⁶⁰

Several features of the CCS can act to disincentivise labour market engagement amongst households. As outlined in section 2, the means testing of the subsidy based on household

¹⁵⁸ Department of Education, Skills and Employment (DESE), Data on families and children in child care for the June quarter 2021,: available at: www.dese.gov.au/early-childhood/resources/june-quarter-2021

¹⁵⁷ ABS (2021) Preschool Education, Australia 2021, available at: www.abs.gov.au/statistics/people/education/preschool-education-australia/

¹⁵⁹ Services Australia, (2022) Child Care Subsidy, available at: https://www.servicesaustralia.gov.au/child-care-subsidy.

¹⁶⁰ Department of Education, Skills and Employment (2022), *Higher Child Care Subsidy*, available at: https://www.dese.gov.au/child-care-package/child-care-subsidy/family-eligibility-and-entitlement/higher-ccs

income acts as a particular disincentive for secondary income earners, particularly given subsidies start to be withdrawn from where household income exceeds \$70,015, which is below the average wage for a single income earner. The complexity of the CCS can also be confusing for households.¹⁶¹ Where this leads to uncertainty as to the level of subsidy they are entitled to, particularly if they are considering changes to their working arrangements, this complexity can act as a further barrier to ECEC uptake, as well as labour market engagement.¹⁶²

In addition to cost of ECEC, the quality of services, accessibility of places and workforce availability are important to utilisation

Policy interventions that significantly lower the net costs of ECEC services for parents can be expected to substantially increase utilisation, on the basis that the intervention does not compromise the quality of the services themselves, or parents' perceptions of quality.

Accordingly, for policy reform to succeed in lifting utilisation, it will need to ensure the sector is able to respond to the expected growth in demand while continuing to provide a quality service that retains parents' confidence. This is in addition to the value of quality ECEC in supporting childhood development outcomes (as set out in Box 3.1). Some studies have found the introduction of ECEC reforms in Quebec was associated with a decline in childhood behavioural outcomes,¹⁶³ which has been attributed to undue focus on providing additional places at the expense of quality.¹⁶⁴

The quality of services is influenced by many factors, and it can be difficult to definitively measure, but a common benchmark is the frequency of positive versus negative staff-child interactions.¹⁶⁵ This is influenced by¹⁶⁶:

- child to staff ratios,
- the nature and quality of qualifications held by ECEC staff,
- the level of experience of ECEC staff,
- staff participation in workplace training and professional development,
- existence of standards, regulations, and guidelines for the delivery of services, and
- systems to affect the monitoring and rating of services against benchmarks and improvement where services fall short of benchmarks.

Accessibility

In addition to costs, the location, operating hours and availability of places are key factors in the utilisation of ECEC services. Recent analysis by the Mitchell Institute suggests that 36.5 per cent of Australian children aged 0 to 4 years old live in areas where access to ECEC services is most scarce, as measured by the number of childcare places available per child.¹⁶⁷ In these areas, there are more than three children per one childcare place.¹⁶⁸ The analysis shows that these areas are disproportionately located in rural and regional areas, where lower levels of accessibility is correlated with the most experienced disadvantage.¹⁶⁹ This is attributed to 'thin markets', which are caused by "market deficiencies ranging from low numbers of providers to immature markets to market failure".¹⁷⁰ In the context of private markets for ECEC services, this phenomenon may arise:

¹⁶⁵ OECD (2018) Engaging Young Children: Lessons from research about quality in early childhood education and care. Starting Strong, OECD Publishing, Paris.
 ¹⁶⁶OECD (2018) Engaging Young Children: Lessons from research about quality in early childhood education and care. Starting Strong, OECD Publishing, Paris.
 ¹⁶⁷ Hurley, P., and Matthews, H., & Pennicuik, S. (2022) Deserts and oases: How accessible is childcare? Mitchell Institute, Victoria University.

¹⁶⁸ Hurley, P., and Matthews, H., & Pennicuik, S. (2022) Deserts and oases: How accessible is childcare? Mitchell Institute, Victoria University.
 ¹⁶⁸ Hurley, P., and Matthews, H., & Pennicuik, S. (2022) Deserts and oases: How accessible is childcare? Mitchell Institute, Victoria University.

¹⁶⁹ Hurley, P., and Matthews, H., & Pennicuik, S. (2022) *Deserts and oases: How accessible is childcare?* Mitchell Institute, Victoria University.
 ¹⁷⁰ Reeders, D., Carey, G., Malbon, E., Dickinson, H, Gilchrist, D., Duff G., Chand., S., Kavanagh, A. & Alexander, D. (2019). *Market Capacity Framework*. Centre for Social Impact: Sydney, p. 3.

¹⁶¹ The Smith Family (2021) Small Steps, Big Futures Report: Community insights into preschool participation. August 2021, available at:

https://www.thesmithfamily.com.au/-/media/files/research/reports/small-steps-big-future-report.pdf.

¹⁶² The Smith Family (2021) Small Steps, Big Futures Report: Community insights into preschool participation. August 2021, available at:

https://www.thesmithfamily.com.au/-/media/files/research/reports/small-steps-big-future-report.pdf.

¹⁶³ Baker, M., Gruber, J., & Milligan, K. (2008). Universal child care, maternal labor supply, and family well-being. Journal of political Economy, 116(4), 709-745. ¹⁶⁴ Currie, J., & Almond, D. (2011). Human capital development before age five. in *Handbook of labor economics* (Vol. 4, pp. 1315-1486). Elsevier.

- in areas with smaller populations: the low population of some areas may represent a revenue risk to service providers who instead may open ECEC centres in areas with larger populations with greater guaranteed demand for services, and
- in areas of greater relative disadvantage: areas of higher socio-economic status, that are already generally well-serviced by ECEC providers, are more likely to be able to afford higher ECEC fees, resulting in greater revenue potential for service providers. Conversely, areas of greater disadvantage are less likely to be able to absorb higher ECEC fees, reducing the revenue potential for service providers.

The opening hours of ECEC services are also critical in their accessibility for families. CBDC services tend to operate for up to 12 hours per day which can support families with relatively standard working hours. Some family daycare services provide additional flexibility that may be required by those with irregular working hours such as shift-workers, although FDC accounts for only 10 per cent of CCS-supported places in New South Wales. Community preschool services generally offer more limited hours, aligned more closely with standard school hours of 9am to 3pm, which can limit their capacity to support working parents. Families can also often face difficulties in securing places for their children in suitable ECEC services, with around 16 per cent of those prevented from working citing caring for children due to their inability to access childcare.¹⁷¹

Workforce

Workforce constraints are a key issue impacting the sector, with 11 per cent of centres across Australia requiring special permission to open due to lacking sufficient qualified staff.¹⁷²

These challenges have intensified in the wake of the COVID-19 pandemic, with half of ECEC providers surveyed recently indicating that staff turnover had either 'increased' or 'greatly increased' since the pandemic.¹⁷³ Recruiting for vacant positions has also been difficult during this period, with almost half of all job vacancies in ECEC settings remaining unfilled in early 2021.¹⁷⁴ Service providers indicated that challenges in recruiting and retaining staff were related to:

... a lack of access to casuals causing additional stress, and staff leaving the sector... sick leave due to mental health and exhaustion... poor pay and conditions contributing to a lack of applicants, as well as the poor quality of graduates.¹⁷⁵

The average pay of a child carer – 96 per cent of whom are women¹⁷⁶ – was \$28.80 per hour in May 2021, well below the average of \$45.90 across all occupations and lower than that for hospitality workers and sales assistants.¹⁷⁷ Due to the high labour intensity of the ECEC sector, labour costs form a substantial part of providers' operational costs, which means that wage increases are more likely to result in higher fees. This dynamic has the potential to undermine policy measures aimed at reducing costs for households, however failing to address the staffing crisis would limit the number of places available, which would also undermine the policy intent.

¹⁷¹ Australian Bureau of Statistics (2020) Barriers and Incentives to Labour Force Participation, 2018-19; Australian Bureau of Statistics (2020) Retirement and Retirement Intentions, 2018-19.

¹⁷² ABC (2022), Australian childcare 'in crisis', as new figures show 11 per cent need special federal government waiver to legally operate, available at: https://www.abc.net.au/news/2022-02-09/australian-childcare-sector-crisis/100814160

¹⁷³ Community Early Learning Australia (CELA), Early Learning Association Australia (ELAA) and Community Child Care (CCC) (2021), Investing in our future: Growing the education and care workforce, available at: https://www.cccinc.org.au/docs/publications_investing-in-our-future_growing-the-education-andcare-workforce.pdf

¹⁷⁴ Community Early Learning Australia (CELA), Early Learning Association Australia (ELAA) and Community Child Care (CCC) (2021), Investing in our future: Growing the education and care workforce, available at: https://www.cccinc.org.au/docs/publications_investing-in-our-future_growing-the-education-andcare-workforce.pdf

¹⁷⁵ Community Early Learning Australia (CELA), Early Learning Association Australia (ELAA) and Community Child Care (CCC) (2021), Investing in our future: Growing the education and care workforce, available at: https://www.cccinc.org.au/docs/publications_investing-in-our-future_growing-the-education-andcare-workforce.pdf

¹⁷⁶ Brennan, D., Charlesworth, S., Adamson, E., & Cortis, N. (2017). Out of kilter: changing care, migration and employment regimes in Australia. In *Gender, Migration, and the Work of Care* (pp. 143-165). Palgrave Macmillan, Cham.

¹⁷⁷ Australian Bureau of Statistics (2021) Employee Earnings and Hours, May 2021

Implications

There is strong evidence that lowering the cost of ECEC services in New South Wales, which are high by international standards, would increase the utilisation of ECEC services and lead to an increase in labour market outcomes for primary carers of young children, who are predominantly women. The next section sets out an approach to modelling the specific impact of policy interventions in the NSW ECEC sector and deploys this with respect to two policy reform scenarios.

Section 4: Estimating the impact of ECEC reforms on labour force outcomes

Overview

The previous sections outlined how the disruption to women's careers associated with having children is a key driver of disparity in labour market outcomes between men and women. This impacts women while they are caring for young children and also has a scarring effect which causes permanently lower levels of engagement in the labour force as well as lower wages. Reforms that lower the outof-pocket cost of ECEC services would increase utilisation of these services and in doing so would reduce the overall load of unpaid caring responsibilities, most of which falls on women. Lowering costs thereby increases labour market engagement for women while their children are young and also leads to higher engagement and wages for women once their children are attending school and beyond. This section sets out a method for estimating these impacts within a long-term structural model of the NSW economy and deploys this scenario with respect to two example policy scenarios: one where subsidies are increased to 100 per cent, and a second based on the package of ECEC reforms recently announced by the NSW and Commonwealth Governments.

Method

The method used to estimate labour market impacts is based on estimating two types of effects: *cohort effects*, or changes in workforce participation and hours worked by primary carers (who are predominantly women) for children aged five and under, and *lifetime effects*, or changes in workforce participation, hours worked and wages by people who were previously primary carers for children aged five and under. Impacts are estimated for each year until 2060-61, to align with the structure of the NSW Treasury Intergenerational Report (TIGR) Model, which is used to translate the derived labour market impacts into economic and fiscal impacts.

Cohort effects

The cohort of the labour market that is directly affected by ECEC policy interventions in our method is primary carers of children aged five and under. In 2021, this cohort comprised 420,000 people, of which 94 per cent were women. This represents 6 per cent of the NSW adult population (aged 15+).

Estimating the *cohort effects* turns on the expected behavioural response to a given price change, which is often expressed as an elasticity. As outlined in the previous section, there is considerable variation in estimates of this behavioural response across the Australian and international evidence, which may be explained by either statistical uncertainty or non-linearity in the elasticity of labour supply with respect to the price of ECEC services. While some previous assessments of proposed ECEC policy reforms in Australia have relied exclusively on the (lower) Australian elasticity estimates, we instead report results as a range. The lower range estimate is based on the most commonly cited Australian elasticity estimate, while the upper range estimate is based on an elasticity derived from the experience in Quebec, which experienced similar labour market impacts as those in range of international jurisdictions following significant policy interventions in their ECEC sectors.

The lower range estimate utilises the elasticity estimated by Gong and Breunig,¹⁷⁸ which has been used in some previous assessments of the impact of ECEC policy proposals in Australia.¹⁷⁹ In line with several other Australian studies, it utilises differences in average childcare costs between labour market regions to assess the impact of these cost differences on labour supply for partnered women with pre-school age children. The underlying data is from the Household, Income and Labour Dynamics in Australia (HILDA) survey between 2005 and 2007.

The upper range estimate is based on the experience in Quebec, as documented in Lefebvre and Merrigan.¹⁸⁰ Quebec in particular shares some similarities with New South Wales, being a subnational jurisdiction with a similar baseline (that is, prior to the policy intervention) participation rate for women with young children.¹⁸¹ The policy reform package included the introduction of free universal preschool for children in the year before school, a reduction in childcare fees (to \$5 per day, equivalent to around \$8 AUD today when adjusted for inflation), and measures to ensure the ECEC sector could provide sufficient places to meet the induced demand.¹⁸² Under the policy, the average subsidy for a two-parent household in Quebec increased from around 45 per cent prior to the reforms to around 80 per cent following their introduction.¹⁸³ Being a subnational jurisdiction also allowed for a natural experiment, through comparison with other Canadian provinces which did not implement the reforms. Lefebvre and Merrigan report that the participation rate for the cohort of women with children under school age increased by 8.1 percentage points as a result of the policy. This is broadly in line with the response reported in another notable study by Baker et al which relies on a different data source.¹⁸⁴ We rely on the Lefebvre and Merrigan study because they also report the increase in hours worked for this cohort (a 22 per cent increase in hours worked), which is not reported by Baker et al, due to differences in the underlying data. For the upper bound, we convert these labour market impacts into an elasticity with reference to the estimated change in subsidy levels. This is not a precise predictive exercise. We note that the authors' declined to estimate a price elasticity citing disparities in the pre-intervention pricing structure between households, as well as noting that low-income households likely faced liquidity constraints under the baseline policy settings, in which tax credits played a more significant role. Nonetheless estimating a price elasticity from the available data, even if somewhat imperfect, provides the best available means for present purposes to use existing empirical evidence to model responses to similar policy intervention scenarios.

Given the identified issues in converting the measured effects into a price elasticity, we therefore also consider a benchmark estimate, also based on the experience in Quebec, but as a fixed effect rather than a derived elasticity. This estimate simulates the same labour market response as was experienced in Quebec without reference to differences in the specific price reduction. Section 3 outlined that if there is non-linearity in elasticity between marginal and step changes in price, this could be explained by the impact of a significant policy intervention on behaviour (reflecting changes in information, attitudes and expectations), relative to the way in which people may respond to smaller cost variations in a stable policy setting. Where this is the case, further cost reductions beyond the initial step change may have diminishing marginal returns with respect to their impact on labour force engagement. This is therefore proxied in the benchmark estimate by simulating the same impacts as those experienced in Quebec without reference to specific features of a policy intervention that brings about a step change in the affordability and availability of ECEC services. The benchmark estimate is only deployed for one of the policy scenarios given it does not function as a means to compare alternative policy design features.

¹⁷⁸ Gong, X., & Breunig, R. (2012). Estimating net child care price elasticities of partnered women with pre-school children using a discrete structural labour supply-child care model (No. 2012-01). Treasury Working Paper.

¹⁷⁹Wood, D., Griffiths, K. & Emslie, O. (2020). Cheaper childcare - a practical plan to boost female workforce participation. Grattan Institute Report; Parliamentary Budget Office. Behavioural assumptions and PBO costings. Information paper 01/2020.

¹⁸⁰ Lefebvre, P., & Merrigan, P. (2008). Child-care policy and the labor supply of mothers with young children: A natural experiment from Canada. *Journal of Labor Economics*, 26(3), 519-548.

¹⁸¹ Estimated by Lefebvre and Merrigan 2008 to be 60.9 per cent in the absence of the policy reform package, in line with the estimated 62.0 per cent baseline rate estimated in New South Wales (NSW Treasury estimates based on HILDA and ABS Labour Force).

¹⁸² There are some other differences in the studies, including that Lefebvre and Merrigan include all women (partnered and single) with children aged 1-5, while Baker et al focus on partnered women only with children aged 0-4. Lefebvre, P., & Merrigan, P. (2008). Child-care policy and the labor supply of mothers with young children: A natural experiment from Canada. *Journal of Labor Economics*, 26(3), 519-548; Baker, M., Gruber, J., & Milligan, K. (2008). Universal child care, maternal labor supply, and family well-being. *Journal of Political Economy*, 116(4), 709-745.

 ¹⁸³ Baker, M., Gruber, J., & Milligan, K. (2008). Universal child care, maternal labor supply, and family well-being. *Journal of Political Economy*, 116(4), 709-745.
 ¹⁸⁴ Baker, M., Gruber, J., & Milligan, K. (2008). Universal child care, maternal labor supply, and family well-being. *Journal of Political Economy*, 116(4), 709-745.

Table 4.1: Summary of the elasticities assumed in NSW Treasury modelling

| Estimate | Based on | Elasticity (participation / employment) ¹⁸⁵ | Elasticity (aggregate hours) |
|-------------|------------------------------|---|------------------------------|
| Lower range | Gong & Breunig (2012) | -0.06 | -0.10 |
| Benchmark | Lefebvre and Merrigan (2008) | +8.1ppt (fixed effect) | +22% (fixed effect) |
| Upper range | Lefebvre and Merrigan (2008) | -0.21 | -0.35 |

Accounting for quality

The quality of ECEC can play an important role in parents' decision to utilise services and therefore should be expected to also impact the labour market response. Quantifying a precise estimate is particularly challenging given the multiple dimensions against which quality can be measured, and a lack of standardised data across jurisdictions. Conducting an ex-ante assessment of a given policy intervention on quality is similarly challenging. The provision of a preschool program (rather than just childcare) has been associated with very high utilisation rates in international jurisdictions.¹⁸⁶ We therefore account for this by adding a 10 per cent loading to the estimated behavioural response for parents whose children become eligible for expanded preschool services under the policy scenarios and also report the sensitivity of our findings to this assumption.

Lifetime effects

The disruption to working life associated with having young children has lasting effects on labour market outcomes for women for the remainder of their careers, as outlined in section 2. A proportion of women who take a career break when they have children never return to the workforce.¹⁸⁷ Of those that do return to the workforce, they are more likely to work part-time than full-time on their return, and their wages are lower than they otherwise would be.¹⁸⁸

In addition to immediate labour supply effects on the cohort of women with children aged five and under, in order to estimate the impact of a policy intervention over the medium and long term, we need to estimate the effect that greater engagement in the workforce at this stage of life can be expected to have on labour market outcomes for these cohorts when they are no longer in the cohort using ECEC services.

This type of effect appears to have begun to be seen in the data from Quebec, following the implementation of their ECEC reform package, with Figure 4.1 showing women's workforce participation continuing to grow at a faster pace than for Canada overall well beyond the full implementation of the policy in 2002. This growth has been attributed to a significant uplift in labour market participation and hours worked amongst women with children aged 6-11, but who benefited from the ECEC policy intervention when their children were aged five and under.¹⁸⁹

However, the literature to date has not quantified these effects over the remainder of women's careers. While the lifetime effects of disruption to women's working lives are well established in the empirical literature, there are no published modelling parameters to estimate how reducing this disruption affects labour market outcomes for a given cohort over the life course.

¹⁸⁵ Note that in line with the use of these estimates within a long-term structural model of the NSW economy, proportional changes in employment and participation are assumed to be the same, with the economy trending toward a constant unemployment assumption of 4.5 per cent in line with the baseline projections from the NSW 2021-22 Intergenerational Report.

¹⁸⁶ OECD (2022), Family Database, Proportion of children aged 3-5 enrolled in pre-primary education or primary school

¹⁸⁷ Arun, S. V., Arun, T. G., & Borooah, V. K. (2004). The effect of career breaks on the working lives of women. *Feminist Economics*, 10(1), 65-84.

¹⁸⁸ Arun, S. V., Arun, T. G., & Borooah, V. K. (2004). The effect of career breaks on the working lives of women. *Feminist Economics*, 10(1), 65-84.

¹⁸⁹ Lefebvre, P., Merrigan, P., & Verstraete, M. (2009). Dynamic labour supply effects of childcare subsidies: Evidence from a Canadian natural experiment on low-fee universal child care. *Labour Economics*, 16(5), 490-502.





Shaded area indicates period over which ECEC reforms introduced. Source: Desjardins D., Freestone, C., Billy-Ochieng, R and Powell, N. (2022). Equal Measures: Advancing Canada's working women in a post-pandemic economy', *RBC Thought Leadership*.

We have therefore derived these parameters by drawing on an Australian (Queensland) study which examined the impacts of careers breaks on women¹⁹⁰ and report the sensitivity of our findings to these specific parameters. Specifically, for the cohort who remains in the workforce under the policy scenario, but would have left the workforce under the baseline (no policy change) scenario, we 'remove' the following estimated career break penalties:

- Participation impact: we estimate that 22 per cent of women who take an extended childrelated career break do not return to the workforce, based on the difference in return-to-work estimates between this group and women who take short non-child-related career breaks.¹⁹¹
- Hours impact: we assume a similar impact as for participation, namely that 22 per cent of women who take an extended child-related career break and then return to work shift from full to part-time. We further assume that this effect would apply to women who would have 'downshifted' to part-time work under the baseline scenario but remain working full-time under the policy scenario.
- Wages impact: we estimate the wage penalty for women who take extended child-related career breaks to be 20 per cent, based on the weighted average wage penalty reported in the study of women who returned to work in a similar role, and those who returned to a different role, and suffered an additional wage penalty.¹⁹²

These parameters are applied to the estimated participation and hours uplift from the *cohort effects* with respect to the 'graduating cohort' of primary carers at the point their children enter school.¹⁹³ That is, the lifetime effects apply only once women no longer have children aged five and under and are based on the reduction in career breaks or downshifting while they have children. There is evidence these parameters may be conservative. An assessment of labour market engagement in

¹⁹⁰ Arun, S. V., Arun, T. G., & Borooah, V. K. (2004). The effect of career breaks on the working lives of women. *Feminist Economics*, 10(1), 65-84. ¹⁹¹ This is lower than the reported 30 per cent of women who take extended child-related career breaks and reflects the difference between this group and women who took a short non-child related career break. This is an intentionally conservative interpretation based on the assumption that a proportion of women who take career breaks do so with the intention of never returning to work and would be less susceptible to change their behaviour as a result of more affordable ECEC services. We proxy this effect with reference to the 10 per cent of women who take short non-child related career breaks who plan not to return to work, given this group would not be impacted by ECEC policies. This adjustment is not used for the wages parameter given this is exclusively based on those who have returned to work. Arun, S. V., Arun, T. G., & Borooah, V. K. (2004). The effect of career breaks on the working lives of women. *Feminist Economics*, 10(1), 65-84.

¹⁹² Arun, S. V., Arun, T. G., & Borooah, V. K. (2004). The effect of career breaks on the working lives of women. *Feminist Economics*, 10(1), 65-84. ¹⁹³ With an adjustment to account for the roughly 4 per cent of women with children aged 5 who have another child.

Quebec for women with children aged 6-11, who benefited from the ECEC policy while their children were aged 1-5, finds a similar uplift in participation and hours worked amongst women with a lower level of education as occurred while their children were directly benefiting from the policy, although no statistically significant impact amongst women with children aged 6-11 with a higher degree of education.¹⁹⁴

These impacts rely on the absence of either a career break, or a reduction in working hours, and therefore rely on coverage across all ages under school age. That is, where a policy reduces the cost of ECEC services only for children aged, say, four, but otherwise leaves existing arrangements in place for other children aged younger than four, the *lifetime effects* would be significantly lower because there would be no material change to labour market engagement from women while their children are not covered by the policy. Therefore, where policy scenario does not provide for an even reduction in user costs for children aged 0-5, we adjust the lifetime effects to align with the year-of-age that receives the lowest level of cost reduction. This is a conservative approach in that it precludes the potential for any marginal increase in the lifetime effects from policies that do not target *all* children aged 5 and under.

Primary carers compared with women

The studies outlined above have generally estimated the impact of changes in the cost of ECEC services on labour market impacts for women with children aged five or under. A small proportion of (estimated to be 5.7 per cent)¹⁹⁵ of primary carers are men, and so we apply the estimated effects outlined above to men in proportion to this share.

Introducing labour market impacts into the Treasury Intergenerational Report (TIGR) Model

The TIGR Model is a long-term structural model of the NSW economy and NSW Government Budget used to project the State's long-term fiscal position. The model is built on a '3-Ps' framework, where economic growth in the long term is driven by:

- population: the rate of growth and age composition determines the size of the working age population,
- participation: the proportion of the working age population who are part of the workforce (either employed or actively seeking employment), and
- productivity: the economic output for each hour worked.

The model is designed to show the impact of long-term structural changes – in particular demography and the labour market – on the State's economy and budget. Major upgrades to the model take place every five years ahead of the publication of the NSW Intergenerational Report, the latest of which was published in June 2021, with minor updates to maintain alignment with the latest NSW Budget. The modelling set out in this paper is based on the version of TIGR aligned with the 2021-22 NSW Half Yearly Review, released in December 2021, although the estimated impacts will not materially differ with the update to align with the 2022-23 Budget. Because the model is structural it does not feature dynamic estimates of adjustment mechanisms. Therefore, estimates are provided only from year 10 of the policy implementation from which point any dynamic adjustment is assumed to have run its course.

The modelled impact on participation and average hours worked are introduced to the TIGR model as a change in full-time and part-time participation rates by gender. Closing the wages gap is less straightforward because within the structural modelling framework, wage increases must come from one of three sources: increases in productivity, increases in the wages share of economic output or redistribution of wages between wage earners. As outlined in section 1 and Appendix D, we consider that fully closing the gender wages gap would rely on a combination of all three mechanisms. We draw on that analysis for this exercise, noting that 25 per cent of the wages gap is attributed to career

¹⁹⁴ Lefebvre, P., Merrigan, P., & Verstraete, M. (2009). Dynamic labour supply effects of childcare subsidies: Evidence from a Canadian natural experiment on low-fee universal child care. *Labour Economics*, 16(5), 490-502.

¹⁹⁵ NSW Treasury analysis; ABS (2021) *Labour Force Status of Families*, June 2021, Table 9, available at: https://www.abs.gov.au/statistics/labour/employmentand-unemployment/labour-force-status-families.

breaks associated with having children, which leads to a relative reduction in skills and experience.¹⁹⁶ Within our framework, this is therefore attributed to productivity, and on this basis, we introduce the wages uplift into the TIGR Model by increasing productivity growth.

Policy scenarios

This method is now used to assess the impact of two key policy scenarios on women's labour market outcomes and the NSW economy more generally.

Scenario 1: Increasing the childcare subsidy to 100 per cent and providing universal pre-kindergarten

Under this scenario:

- the Commonwealth Child Care Subsidy (CCS) is increased to 100 per cent and
- preschool services are provided for up to five days per week at zero cost to households for children in the year before school, including access to out-of-hours care subject to demand.

Scenario 2: Policy measures announced by the NSW and Commonwealth Governments

Under this scenario we estimate the combined impact of ECEC policy measures announced by the NSW Government in the 2022-23 Budget and prospective changes to the CCS committed by the Commonwealth Government.

The key policy measures announced by the NSW Government in the 2022-23 Budget are:

- the introduction of *Universal pre-Kindergarten* (pre-K), which will provide universal preschool for children in the year before they commence school for up to five days per week, to be progressively introduced from 2024-25 to 2030-31;
- the introduction of Affordable Preschool, which will provide funding to ECEC service providers of \$2,000 per year per child for children aged 4 and 5 receiving a preschool program in centrebased day care and \$4,000 for children aged 3 to 5 attending community and mobile preschools, commencing January 2023, with this being progressively replaced by pre-K for children in the year before school; and
- the creation of the Affordable and Accessible Childcare and Economic Participation Fund (the Fund) which will provide up to \$650 million per annum in funding to deliver more accessible and affordable ECEC services.

The Commonwealth Government has outlined that it intends to implement changes to the CCS subsidy schedule for the first child in childcare to:

- increase the CCS to 90 per cent for households with annual incomes up to \$75,000;
- increase the CCS for households with annual incomes above \$75,000, with the specific rate tapering from 90 per cent to reach zero for households with annual incomes of \$530,000;

Households with annual incomes above \$530,000 would not be eligible for the subsidy and there would be no change to the subsidy rate for the second or subsequent children.¹⁹⁷

Estimated cost reductions under the policy scenarios

The primary mechanism by which the policy scenarios are introduced into the model is through estimated reductions in the average hourly cost of ECEC services. The model identifies primary carers by their children's age as well as their household income and so cost reductions can be introduced with reference to these factors.

 ¹⁹⁶ WGEA (2019). She's Price(d)less: The Economics of the Gender Pay Gap, report prepared by KPMG for the Diversity Council of Australia and the Workplace Gender Equality Agency, available at: https://www.wgea.gov.au/publications/shes-pricedless-the-economics-of-the-gender-pay-gap
 ¹⁹⁷ Australian Labor Party (2022) Labor's Plan for Cheaper Child Care, available at: https://www.alp.org.au/policies/cheaper-child-care.

Under Scenario 1 average hourly costs are estimated to be reduced by 98 per cent, based on an increase in the subsidy to 100 per cent, with adjustments to account for ECEC services which charge above the fee cap, and for the provision of universal pre-K for 30 hours per week at zero cost.

Scenario 2 is more complex due to the interaction of multiple policy measures. For children in the year before school, the average hourly cost of ECEC services is estimated to decline by 98 per cent, primarily due to the introduction of universal pre-K for 30 hours per week at zero cost. Additional out-of-hours care is assumed to be available on demand at an average hourly cost in line with the (new) CCS rates.

For children aged four and under not eligible for universal pre-K, the average hourly cost of ECEC services is estimated to decline by 60 per cent on average compared to 2021-22 policy settings.¹⁹⁸ This is based on the combination of changes to the Commonwealth CCS which lowers out-of-pocket costs for nearly all households, the provision of funding to preschools, 60 per cent of which is assumed to ultimately flow through to households in the form of fee reductions, and the Fund, 77 per cent of which is assumed to flow through to households in the form of fee reductions. Hourly cost reductions for any specific family depend on the age and number of children attending ECEC services, their household income, and whether they are enrolled in a preschool program or a Fund-supported ECEC service.

Additional details relating to these estimates are set out in Appendix E.

Results

Scenario 1: Increasing the Child Care Subsidy to 100 per cent and providing universal pre-kindergarten

For scenario 1, we find the participation rate for women with children aged five and under would increase by between 3.7 and 13.4 percentage points by 2032-33 (year 10 of the policy being implemented), compared with the benchmark estimate of 8.1 percentage points. We also find that employed women with young children would work between 0.9 and 3.0 additional hours per week, which compares with the benchmark estimate of 2.0 hours. Both the lower and upper range estimates are somewhat inconsistent with the experience in international jurisdictions following significant policy interventions in ECEC, although they are possible. The benchmark estimate is, by design, in line with the international experience. These estimates reflect the cohort effects only.

When combined with the lifetime effects, we find that by 2060-61, the participation rate for *all women* (aged 15 and over) would increase by between 0.8 and 3.0 percentage points, with the benchmark estimate indicating 1.8 percentage points. Women overall are estimated to work an additional 0.4 to 1.2 hours per week, with the benchmark estimate indicating 0.8 hours, and women's wages would increase by between 0.8 and 2.9 per cent, with the benchmark estimate indicating 1.8 per cent.

The lifetime effects initially result in a smaller behavioural response than the cohort effects, but the group to which they apply grows steadily over time as more women benefit from the policy, such that lifetime effects account for 61 per cent of the uplift in aggregate hours worked by 2060-61. These impacts would increase the size of the NSW economy by between 1.6 and 5.8 per cent by 2060-61, with the benchmark estimate of 3.5 per cent.

Scenario 1 represents a policy intervention that would fully address the affordability of ECEC services by reducing costs to near zero for households. It therefore serves as a proxy for the capacity of ECEC policy interventions alone to address disparities in labour market outcomes between women and men. By 2060-61, the labour market impacts estimated for scenario 1 would account for between 9 and 33 per cent of the participation gap between men and women, with the benchmark estimate of 20 per cent. They would account for between 6 and 19 per cent of the gap in average working hours, with the benchmark estimate of 12 per cent and between 11 and 40 per cent of the wages gap, with the

¹⁹⁸ This baseline excludes changes to the cost of second and subsequent children announced by the Commonwealth in the 2021-22 Budget and introduced in March 2022.

benchmark estimate of 24 per cent. This range of outcomes does not appear inconsistent with the qualitative outline of the key drivers of gender disparity presented in section 2.



Figure 4.2: Scenario 1 estimated labour market impacts

Bars indicate the range; the line indicates the benchmark estimate. See Appendix A for detailed results. Source: NSW Treasury.

For wages, we can compare this with research for the WGEA which attributes 25 per cent of the wages gap to career breaks and a further 7 per cent to unpaid care and work.¹⁹⁹ ECEC would not fully address these factors but would be expected to have a significant impact on both. The benchmark estimate appears most consistent with the WGEA study.

Scenario 2: Policy measures announced by the NSW and Commonwealth Governments

For scenario 2 we report only the upper and lower range estimates, with the benchmark having served its purpose. We find the participation rate for women with children aged five and under would increase by between 2.5 and 8.9 percentage points by 2032-33 and that employed women within this group would work an additional 0.6 to 2.1 hours per week. Combined with the *lifetime effects*, by 2060-61 we estimate the overall participation rate for women would increase by between 0.5 and 1.7 percentage points compared with the no policy change baseline, that employed women would work an additional 0.2 to 0.7 hours per week and would be paid between 0.4 and 1.7 per cent more per hour.

The upper range estimates are broadly in line with the benchmark estimate as outlined under scenario 1, and as such more closely accord with the experience in international jurisdictions following an ECEC policy intervention that brings about a step change in affordability and availability.

These impacts would account for between 5 and 19 per cent of the gap between men and women in workforce participation, between 3 and 11 per cent of the gap in average hours worked, and between 6 and 23 per cent of the gender wages gap.

These estimates would translate into an increase in Gross State Product of between 0.5 and 1.9 per cent by 2032-33 and between 0.9 and 3.3 per cent by 2060-61. This would lift NSW Government revenues by between \$160 million and \$580 million by 2032-33 and increase the size of the national GST pool by between \$150 million and \$540 million in that year.

¹⁹⁹ WGEA (2019) She's Price(d)less: The Economics of the Gender Pay Gap, report prepared by KPMG for the Diversity Council of Australia and the Workplace Gender Equality Agency, available at: https://www.wgea.gov.au/publications/shes-pricedless-the-economics-of-the-gender-pay-gap





Bars indicate the range. See Appendix A for detailed results. Source: NSW Treasury.

Sensitivities and areas for further research

This paper presents a new method for estimating the likely impact of changes in ECEC policy on women's labour market outcomes in Australia, building on previous approaches in two key aspects. Firstly, we draw on international as well as Australian evidence to consider the elasticity of the labour market response and whether it is constant, as implied in some previous policy assessments. We consider that significant policy change to lift ECEC uptake through lowering prices may have a different behavioural response to more marginal variations in price within relatively stable policy settings. Secondly, to enable us to understand the longer-term impacts of a policy targeted at a particular stage of working life (when families have children aged five and under), we introduce the concept of lifetime effects based on the observed divergence in labour outcomes between women and men from this stage onwards. This enables us to estimate how changed ECEC policy settings impact the labour market over time.

There is scope for further research on both these aspects of the approach, to refine the estimates set out in this paper.

The key sensitivity in our findings is in the behavioural response amongst women with young children, and acknowledging this, our primary outputs are reported as a range. This range reflects significant differences between estimates of the elasticity of women's labour supply to the cost of ECEC, which may reflect either statistical uncertainty or non-linearity. Marginal changes in cost within an otherwise unchanged policy framework may yield a more muted behavioural response than those from a policy intervention which brings about a step change in affordability and availability. The upper range estimates appear high when deployed for scenario 1, but plausible when used in scenario 2. It is possible to infer from this that there may be a ceiling to potential gains in terms of labour market outcomes specifically, with additional cost reductions below a threshold minimum price – similar to the \$5 per day model implemented in Quebec – yielding relatively little additional benefit. However, any such inference should be treated with caution, given the real-world evidence base is expanding with greater research focus.

This size of the range also suggests that price should be considered alongside other factors in assessing the likely impacts of the policy reform on labour market outcomes. Explicit consideration

of the potential for policy interventions to impact information, attitudes and expectations, may help refine future estimates.

With respect to the lifetime effects, while there is strong evidence of the lasting impacts of career breaks and downshifting on women's labour market outcomes, there are no published modelling parameters (to the authors' knowledge) to quantify the impact of reducing this disruption through an ECEC policy intervention.

We therefore test the sensitivity of our results by reducing our estimates by 50 per cent across all three labour market indicators (participation, hours and wages), and report our results only with respect to the upper range estimate for scenario 2, noting similar proportionate impacts would apply to the other estimates and scenarios. Halving all of the lifetime effects parameters reduces the estimated participation rate uplift across all women aged 15 and over in 2060-61 by 0.4 percentage points (from 1.7 to 1.3), the average weekly hours worked uplift by 0.2 hours (from 0.7 to 0.5) and reduces the wages uplift by 0.9 percentage points (from 1.7 to 0.8 per cent). Rather than accounting for 60 per cent of the impact by 2060-61, the lifetime effects only account for 43 per cent under this sensitivity, with no change to the cohort effects. This indicates that future refinements to this parameter could have a material impact on these results.

However, it is possible our estimates are in fact too conservative. We do not account for a further effect that would serve to lift women's wages and counter the gender pay gap, being the wages impact from those who do not shift to part-time work. Part-time workers earn less than full-time workers even after controlling for other characteristics including gender, qualifications, experience and industry, and part-time work has been shown to contribute around 7 per cent to the gender wage gap in Australia.²⁰⁰

There would therefore be significant utility in future research aimed at refining these parameters. Further work in this area to better understand the impacts of reforms would require analysis of data over an extended period of time, but we note the implementation of the NSW and Commonwealth Government reforms may provide the opportunity to commence longitudinal research.

We also consider the sensitivity of the results to the quality adjustment, whereby we apply a 10 per cent loading to the behavioural response where the policy intervention includes a significant expansion in preschool services. Removing this loading reduces the participation uplift by 0.1 percentage points (from 1.7 to 1.6 percentage points), the hours uplift by 0.05 hours (from 0.71 to 0.66 hours) and the wages uplift by 0.2 percentage points (from 1.7 to 1.5 per cent). This impact is relatively minor and does not significantly impact the overall findings. There is nonetheless scope to consider measures of quality improvement and their impact on ECEC utilisation and labour market participation that can be applied in future ex ante assessments.

There is also scope for a range of other extensions to the modelling approach presented in this paper. Increasing the availability and affordability of childcare would likely reduce the burden placed on informal, non-maternal care providers such as grandparents, and particularly grandmothers, with positive effects for their labour supply. This experience has been documented in the literature where, for example, Cabrera-Hernández and Padilla-Romo find that the subsidisation of childcare (through lengthening formal school hours in Mexico) increases the labour force participation and employment of grandmothers.²⁰¹ The impact on labour market outcomes would also yield positive effects on the superannuation savings of women at retirement, although estimating these is beyond the scope of this paper.

The modelling is also focused on the long-run structural determinants of economic growth: population, participation, and productivity, in line with the design of the TIGR model, and so this modelling has not considered the adjustments mechanisms that would play out over the shorter term as the policies are implemented and scaled up. In particular, the combination of a significant investment into the ECEC sector as well as a significant increase in the labour supply would be expected to be associated with an adjustment period ahead of the return to the long-run trend

 ²⁰⁰ WGEA (2019) She's Price(d)less: The Economics of the Gender Pay Gap, report prepared by KPMG for the Diversity Council of Australia and the Workplace Gender Equality Agency, available at: https://www.wgea.gov.au/publications/shes-pricedless-the-economics-of-the-gender-pay-gap
 ²⁰¹ Cabrera-Hernández, F., & Padilla-Romo, M. (2021). Women as Caregivers: Full-Time Schools and Grandmothers' Labor Supply. In Working Paper.2021-03, Haslam College of Business November 2021.

estimates set out in this modelling. Similarly, the modelling presented in this paper is focused on the demand side, with the key assumption that the supply of ECEC places is increased sufficiently to meet this demand.

The modelling also does not incorporate the potentially significant economic implications of improved early childhood development outcomes. As detailed in Box 3.1, it is likely that the policy scenarios outlined in this paper would improve childhood development outcomes and these may be expected to contribute to improved labour market outcomes over the projection period. To the extent that this leads to improved health, cognitive and behavioural outcomes, these benefits can compound over a lifetime, alleviating the need for acute crisis responses in health, justice and social services, which itself benefits fiscal sustainability.²⁰²

Finally, this modelling does not consider the impact of increased ECEC availability or improved labour market outcomes for women on fertility rates in New South Wales. Research suggests that childcare policies reduce the high opportunity cost of parenthood and increase work-family life compatibility.²⁰³ On this basis, childcare policies may have a positive effect on fertility.²⁰⁴ A number of international studies have considered the impact of ECEC policy interventions on fertility, generally indicating a positive impact.²⁰⁵ Future modelling could consider this impact and account for the effect in the underlying population projections.

²⁰² NSW Treasury. (2021). 2021-22 NSW Intergenerational Report, available at: www.treasury.nsw.gov.au/sites/default/files/2021-06/2021-22 nsw intergenerational report.pdf

²⁰³ Gray, E., Reimondos, A., Lazzari, E., Breunig, R., Steinhauser, R., Zhang, J., Biddle, N., Gray, M., (2022) Impact of policies on fertility rates, available at: https://population.gov.au/sites/population.gov.au/files/2022-03/ANU_Impacts-of-Policies-on-Fertility-Rates-Full-report.pdf
²⁰⁴ Gray, E., Reimondos, A., Lazzari, E., Breunig, R., Steinhauser, R., Zhang, J., Biddle, N., Gray, M., (2022) Impact of policies on fertility rates, available at:

 ²⁰⁴ Gray, E., Reimondos, A., Lazzari, E., Breunig, R., Steinhauser, R., Zhang, J., Biddle, N., Gray, M., (2022) *Impact of policies on fertility rates,* available at: https://population.gov.au/sites/population.gov.au/files/2022-03/ANU_Impacts-of-Policies-on-Fertility-Rates-Full-report.pdf
 ²⁰⁵ Mörk, E., Sjögren, A., & Svaleryd, H. (2013). Childcare costs and the demand for children — evidence from a nationwide reform. *Journal of Population*

Economics, 26(1), 33-65.; Gathmann, C., & Sass, B. (2018). Taxing childcare: Effects on childcare choices, family labor supply, and children. Journal of labor Economics, 36(3), 665-709; Gray, E., Reimondos, A., Lazzari, E., Breunig, R., Steinhauser, R., Zhang, J., Biddle, N., Gray, M., (2022) Impact of policies on fertility rates, available at: https://population.gov.au/sites/population.gov.au/files/2022-03/ANU_Impacts-of-Policies-on-Fertility-Rates-Full-report.pdf

Appendix A. Detailed modelling results

Scenario 1: Increasing the childcare subsidy to 100 per cent and providing universal pre-K

Scenario 2: Policy measures announced by the NSW and Commonwealth Governments

| | 2032-33 (Year 10) | | 2060-61 (IGR Projection) | | 2032-33 (Year 10) | | 2060-61 (IGR Projection) | | | |
|--|----------------------|-----------|-----------------------------|--------|----------------------|---------|-----------------------------|--------|--------|---------|
| | Lower | Benchmark | Upper | Lower | Benchmark | Upper | Lower | Upper | Lower | Upper |
| ECONOMY | | | | | | | | | | |
| GSP (Nominal \$b) | +10.5 | +23.3 | +38.1 | +63.3 | +139.7 | +228.8 | +6.0 | +21.9 | +35.7 | +129.1 |
| GSP (Nominal %) | +0.9 | +2.0 | +3.3 | +1.6 | +3.5 | +5.8 | +0.5 | +1.9 | +0.9 | +3.3 |
| GSP (Real 2021-22 \$b) | +8.2 | +18.2 | +29.9 | +24.7 | +54.6 | +89.4 | +4.7 | +17.1 | +13.9 | +50.5 |
| GSP (Real 2021-22 %) | +0.9 | +2.0 | +3.3 | +1.6 | +3.5 | +5.8 | +0.5 | +1.9 | +0.9 | +3.3 |
| GSP per capita (Real 2021-22 \$) | +900 | +2,000 | +3,300 | +2,100 | +4,700 | +7,800 | +500 | +1,900 | +1,200 | +4,400 |
| GSP per household (Real 2021-22, \$) | +2,100 | +4,700 | +7,700 | +4,900 | +10,800 | +17,800 | +1,200 | +4,400 | +2,800 | +10,000 |
| NSW GOVERNMENT OWN-SOURCE REVENUES | | | | | | | | | | |
| Total (\$m) | +280 | +620 | +1,020 | +2,090 | +4,620 | +7,600 | +160 | +580 | +1,170 | +4,270 |
| National GST Pool (\$m) | +260 | +570 | +940 | +1,720 | +3,810 | +6,240 | +150 | +540 | +970 | +3,520 |
| NSW share* (\$m) | +70 | +160 | +270 | +460 | +1,020 | +1,680 | +40 | +150 | +260 | +950 |
| *Assumes no change in relativities | | | | | | | | | | |
| WOMEN'S LABOUR MARKET INDICATORS | | | | | | | | | | |
| All NSW Women aged 15+ | | | | | | | | | | |
| Participation (ppt) | +0.6 | +1.3 | +2.1 | +0.8 | +1.8 | +3.0 | +0.4 | +1.3 | +0.5 | +1.7 |
| % of 2021 gap with men closed ²⁰⁶ | 7 | 14 | 24 | 9 | 20 | 33 | 4 | 14 | 5 | 19 |
| Increase in employment ('000) | +22 | +48 | +78 | +39 | +85 | +140 | +13 | +47 | +23 | +81 |
| Average hours worked (hours) | +0.2 | +0.4 | +0.7 | +0.4 | +0.8 | +1.2 | +0.1 | +0.4 | +0.2 | +0.7 |
| % of 2021 gap with men closed ²⁰⁷ | 3 | 7 | 11 | 6 | 12 | 19 | 2 | 6 | 3 | 11 |
| Switch from part-time to full-time work ('000) | +24 | +53 | +83 | +49 | +108 | +166 | +13 | +48 | +28 | +95 |
| Wages (%) | +0.3 | +0.6 | +1.1 | +0.8 | +1.8 | +2.9 | +0.1 | +0.6 | +0.4 | +1.7 |
| % of 2021 gap with men closed ²⁰⁸ | +4 | +9 | +15 | +11 | +24 | +40 | +2 | +8 | +6 | +23 |
| NSW Women with a child aged 0 to 5 | | | | | | | | | | |
| Participation (ppt) | +3.7 | +8.1 | +13.4 | +3.7 | +8.1 | +13.3 | +2.5 | +8.9 | +2.3 | +8.4 |
| Average hours worked (hours) | +0.9 | +2.0 | +3.0 | +0.9 | +2.0 | +2.9 | +0.6 | +2.1 | +0.6 | +2.0 |

²⁰⁶ Gap in 2021 estimated at 9 percentage points based on the 12-month average of the NSW participation rate for men and women in 2021. Source: ABS (2022) Labour Force, April 2022

²⁰⁷ Gap in 2021 estimated at 6.6 hours based on the ABS (2021) Characteristics of Employment Survey, August 2021.

²⁰⁸ Gap in 2021 estimated at 7.3 per cent based on hourly wages from the ABS (2021) *Characteristics of Employment Survey*, August 2021.

Appendix B. Workforce disincentive rate cameo modelling

Modelling workforce disincentive rates

The workforce disincentive rate generally refers to the proportion of additional earnings lost to a household from a member of the household increasing their participation in the workforce, generally by increasing the average number of days worked per week. It is a similar concept to the effective marginal tax rate, while also taking into account childcare costs.

While there is no publicly available distributional data on workforce disincentive rates faced by a typical household, cameo analysis – which models the impact of a policy change on a hypothetical representative household – has been provided in Section 2 of this paper to illustrate the marginal impact of a secondary earner (typically women) working an additional day.

Drivers of workforce disincentive rates

Workforce disincentive rates are highly varied and dependent on unique personal and household circumstances including:

- The hourly wage or equivalent full-time salary of the secondary income earner
- The number of days worked in a week by the secondary income earner
- The annual wage or salary of the primary income earner
- The number of children, and associated need for childcare for a given level of work.

The primary drivers of the workforce disincentive rate are:

- the progressive structure of personal income tax, which is based on individual income.
- the structure of Commonwealth transfer payments, particularly Family Tax Benefits A and B (FTB-A and FTB-B), which are based on household income.
- the structure of the Child Care Subsidy, which is based on household income.

Cameo modelling parameters

The specific households chosen for this analysis represent a 'typical' low (25th percentile), middle (50th percentile) and high-income (75th percentile) household with children aged 5 and under, based on NSW Treasury analysis of HILDA data.

The cameo modelling included in this analysis assumes the following characteristics:

- Children aged 5 and under require formal care in a long-day care setting
- Children are assumed to spend 10 hours a day in CBDC which costs \$11.14 an hour²⁰⁹
- If the secondary earner works full-time (five days a week) they would earn their full-time salary
- For every day the secondary earner works results in exactly one day of CBDC
- The couple is renting and paying sufficient rent to qualify for the maximum amount of Commonwealth Rent Assistance, should their income qualify them for it.
- The modelling is based on current policy settings and includes the latest 2022-23 Commonwealth Budget tax announcements applicable for 2021-22 and the 2021-22 Commonwealth Budget changes to increase the subsidy rate by 30 percentage points for the second child and subsequent children at a maximum rate of 95 per cent and removing the annual childcare subsidy cap.

²⁰⁹ Based on escalating the average cost of NSW CBDC services with CPI. Source: Department of Education Skills and Employment (2020) Child Care in Australia report March quarter 2020, available at: www.dese.gov.au/child-care-package/early-childhood-data-and-reports/quarterly-reports/child-care-australia-report-march-quarter-2020

Appendix C. Estimating the size of the economic opportunity of achieving gender parity in labour market outcomes

Overview

This section describes the method used to estimate the economic opportunity of achieving parity between genders across all three labour market indicators (participation, hours worked and wages) as presented in section 1. An overview of this scenario is set out in section 1.

Method

Participation

The participation gap measures the increase in female participation required to reach parity with men. The gap is estimated to be 9 percentage points in New South Wales in 2021 and projected in the IGR to remain relatively stable around this figure.²¹⁰

To close the participation gap, we increase the female participation rate to equal the rate of men, in line with the modelling approach outlined in the NSW IGR. The increase to the size of the labour force is greater than that reflected in the NSW IGR due to upward revisions to the underlying population projections consistent with the 2021-22 NSW Half Yearly Review. The unemployment rate is assumed to trend to the long-run average of 4.5 per cent, consistent with the IGR.

Average hours worked

The hours worked gap measures the increase in average hours worked by women required to reach parity with men. The gap is estimated to be 6.6 hours in 2021.²¹¹

The modelling approach draws on the experience in Sweden to estimate a plausible value on which both genders converge. Sweden is an architype of working hours in an economy with high levels of gender parity in labour force activity. It has a substantially narrower gender hours gap than Australia (ranked 8th among OECD countries in 2018 compared with Australia at 28th), as well as having higher average working hours for all persons (36.4 hours per week, compared with Australia at 35.7 hours per week in 2018).²¹²

Drawing on differences in the overall level as well as the gender distribution of average hours worked in Sweden, we simulate the impact of equalising the hours worked gap on the NSW economy by increasing the average number of hours worked by women and reducing the average number of hours worked by men at a ratio of three to one respectively, such that the values converge.²¹³ This ratio is broadly consistent with separate research on the labour force impact of a more equal distribution of unpaid work in New Zealand.²¹⁴

For the purposes of producing a stylised scenario, the average *uplift* in the level of hours worked per week is assumed to remain constant over the projection period, noting the *level* declines over time in both the base case and the scenario in line with population ageing due to a higher instance of part-time work amongst older workers.

This approach recognises that in achieving gender parity in the number of hours of paid work, it would also be necessary to address the unequal distribution of unpaid domestic and caring responsibilities.

²¹¹ ABS (2021) Characteristics of Employment Survey, August 2021, available at: https://www.abs.gov.au/statistics/labour/earnings-and-workingconditions/characteristics-employment-australia.

²¹⁴ Deloitte (2021) Westpac New Zealand Sharing the Load Report, May 2021, available at:

²¹⁰ 12-month average in 2021. Source: Australian Bureau Statistics (2022) Labour Force, April 2022; 2021-22 NSW Intergenerational Report

²¹² OECD (2022) Average usual hours worked on the main job, OECD.stat, accessed 3 Jun 2022, available at https://stats.oecd.org. Note, some adjustments have been made to account for differences between the OECD data and the Treasury Intergenerational Report (TIGR) model which is based on ABS data.
²¹³ That is, for every 3 hour increase in the average number of hours worked by women, the average number worked by men is decreased by 1 hour.

https://www2.deloitte.com/content/dam/Deloitte/nz/Documents/Economics/westpac-value-of-sharing-the-load-report.pdf and the state of t

Wages

For the purposes of producing a stylised scenario, the gender wages gap is estimated at 13 per cent in 2021 based on average weekly earnings.²¹⁵ Under the baseline the size of the wages gap is assumed to remain constant over the projection period based on the assumption of no changes to current policy settings and holding drivers of the labour gap at current levels. This is in line with evidence that indicates the wages gap is no lower in 2021 than it was in 2004.

To close the wages gap, we increase female average hourly earnings to equal male average hourly earnings, with this being attributed to a combination of productivity growth, a change in the labour share of income, and rebalancing between genders. These proportions are based on a decomposition of the drivers of the wages gap. The decomposition and broader methodology are expanded upon below in Appendix D.

The wages gap is measured with reference to average male wages, meaning that closing the estimated 13 per cent wages gap requires a 15 per cent increase in female hourly wages. This has been modelled as a 3.1 per cent increase in labour productivity and a 1.3 percentage point increase in the labour income share, with the remainder being accounted for by redistribution between wage earners.²¹⁶ These contributions take into account the change in the female share of overall hours worked that results from the change in female participation and average hours worked outlined above.

²¹⁵ Australian Bureau of Statistics (2021) Average Weekly Earnings, November 2021.

Appendix D. Modelling the macroeconomic impact of closing the gender wages gap²¹⁷

Overview

To understand how the gender wage gap may be narrowed and the macroeconomic benefits, several studies have sought to decompose the drivers of the gender pay gap. While examining this research in detail is necessarily beyond the scope of this paper, the main drivers of the gender wage gap in Australia were recently decomposed in research for the Diversity Council of Australia and the Workplace Gender Equality Agency by KPMG using an approach based on the Walby and Olsen method (Figure D.1).²¹⁸

Figure D.1: Drivers of the gender wage gap in Australia, 2017



Gender discrimination

The most significant single driver of the wages gap is gender discrimination. According to the most recent analysis, undertaken for WGEA in 2019, gender discrimination is estimated to account for 39 per cent of the gender wage gap in Australia. In the analysis, 'gender discrimination' is interpreted as the element of the gender pay gap that would remain if men and women had the same levels of the other factors.²²⁰ Much of the gap in human capital has been reduced over time, but the wages gap remains in large part because discrimination remains. Gender discrimination in the workplace is linked to workplace culture, hiring, promotion and access to training.

The European Institute for Gender Equality (EIGE) completed modelling on various scenarios around women's economic outcomes, including closing the gender pay gap.²²¹ With the earnings of men assumed to remain unchanged, the modelling found that with an increase in female hourly wages there would be little to no impact on GDP per capita. This is due to increased labour costs for employers and no improvement in productivity. An interpretation of this finding is that arbitrarily increasing female wages to close the gender pay gap (in effect removing all discrimination) in isolation would not have a beneficial macroeconomic outcome as measured by GDP per capita. Rather,

²¹⁷ This appendix, including the research and methodology, was developed by Neal Sarma and Harry Ottley of NSW Treasury.

²¹⁸ WGEA (2019). She's Price(d)less: The Economics of the Gender Pay Gap, report prepared by KPMG for the Diversity Council of Australia and the Workplace Gender Equality Agency, available at: https://www.wgea.gov.au/publications/shes-pricedless-the-economics-of-the-gender-pay-gap; Walby, S. and Olsen, W. (2002) The impact of women's position in the labour market on pay and implications for UK productivity, Report to Women and Equality unit, pp.18-20.

²¹⁹ WGEA, *She's Price(d)less*. Note: 'Other' refers to age (years) (3 per cent), tenure with current employer (1 per cent) and working in government or an NGO (1 per cent). For simplicity, due to the relatively small contribution of these three drivers to the overall gender wage gap they are not considered further in this note. Figures may differ slightly from those quoted in other sources and elsewhere in this paper due to rounding.

²²⁰ In theory, this element of the gender pay gap could also reflect any other unobserved differences between men and women. However, for simplicity, this modelling exercise follows the WGEA (2019) approach of assuming that this element of the gender pay gap reflects only discrimination. This is lower than the equivalent estimate by Cassells et al (2009) that 60 per cent of the gender wages gap is attributable to 'being a woman', which encompasses direct discrimination, noting that the decomposition in this study is not directly comparable due to differences in the factors included in each study. WGEA, (2019) *She's Price(d)less;* Cassells, R., Vidyattama, Y., Miranti, R. and McNamara, J., (2009) The impact of a sustained gender wage gap on the economy. Report to the Office of Women. National Centre for Social and Economic Modelling. November 2009. https://melbourneinstitute.unimelb.edu.au/assets/documents/hilda-bibliography/other-publications/pre2010/Cassells_etal_gender_wage_gap.pdf

²²¹ European Institute for Gender Equality (2017) *Economic Benefits of Gender Equality in the European Union*. Available at: https://eige.europa.eu/gender-mainstreaming/policy-areas/economic-and-financial-affairs/economic-benefits-gender-equality.

improving female labour productivity through other means would have positive macroeconomic impacts and increase female wages as a related impact.

There is a growing body of research that relates the gender wage gap to women receiving a smaller share of firm rents than men. Card et al. split the gender wage gap into a sorting component and a bargaining component, and find that these two channels explain around 20 per cent of the overall gender wage gap in Portugal.²²² They find that women are over-represented among firms with lower wage premiums for both genders (sorting) and that women also gain a smaller share of firm-wide rents than their male co-workers within the same firm (bargaining). A study of New Zealand firms by Sin et al. finds that of the remaining 13 to 17 per cent gender wage gap after considering gender differences in sorting among occupations, industries or firms, at most 4.5 percentage points can be explained by productivity, with the remaining gap arising due to women being less successful at bargaining for firm rents, which may be explained by discrimination against women.²²³

The research and literature on this topic are not settled, as there are other possible explanations for how a reduction of the unexplained component of the gender wage gap could impact the economy. For example, higher female wages could themselves act to induce an increase in effort and productivity of women. Nevertheless, drawing on the modelling approach of EIGE and the empirical research of Card et al. and Sin et al., it is assumed for our purposes that reducing this component of the gender wage gap will primarily be related to the labour share of income.

Occupational and industry gender segregation

Occupational and industrial segregation drives 16 per cent of the gender pay gap, with the continued overrepresentation of women in low paying occupations and industries. It has been suggested that a key driver of occupational and industrial segregation has been organisational cultures, attitudes and behaviours, as well as social norms.²²⁴ To understand the macroeconomic implications of addressing this particular driver of the gender pay gap, it is useful to consider the means through which the gap would be addressed and the potential economic responses.

One way in which this segregation could be reduced is through a gradual redistribution of the workforce to a more equal gender distribution across industries and occupations. That is, an increase in the share of women in higher paying industries and occupations, and an increase in the share of men in lower paying industries and occupations. On the assumption that total employment and output remains unchanged, this would imply that, on average, economy-wide hourly female wages increase, while economy-wide hourly male wages decrease.

An alternative way in which the gender pay gap associated with occupational and industry segregation could be reduced is via an increase in pay for female-dominated occupations and industries. For the private sector, this has parallels with reducing gender discrimination more generally (see above) and would likely lead to an increase in the labour income share.

A number of female-dominated occupations such as nursing and teaching are employed largely by the public sector. For the public sector, the treatment of an increase in public sector wages under the ABS National Accounts framework would likely result in an increase in public sector prices and nominal output, leaving real output unchanged. As such, male wages and labour productivity would be largely unchanged, but the economy-wide labour income share would increase.²²⁵

²²² Card, D., Cardoso, A. and Kline, P. (2016). Bargaining, Sorting, and the Gender Wage Gap: Quantifying the Impact of Firms on the Relative Pay of Women, *The Quarterly Journal of Economics*, vol 131(2), pages 633-686.

²²³ Sin, I, Stillman, S. and Fabling, R. (2020). What Drives the Gender Wage Gap? Examining the Roles of Sorting, Productivity Differences, Bargaining and Discrimination. *The Review of Economics and Statistics*. 1-44.

²²⁴ WGEA (2019). She's Price(d)less: The Economics of the Gender Pay Gap, report prepared by KPMG for the Diversity Council of Australia and the Workplace Gender Equality Agency, available at: https://www.wgea.gov.au/publications/shes-pricedless-the-economics-of-the-gender-pay-gap; Broadway, B. and Wilkins, R. (2017) Probing the effects of the Australian system of minimum wages on the gender wage gap. Melbourne Institute Working Paper No. 31/17, in Foley, M., & Cooper, R. (2021). Workplace gender equality in the post-pandemic era: Where to next?. Journal of Industrial Relations, 63(4), 463-476.

²²⁵ Second round effects of an increase in public sector wages are also possible as the increased government expenditure would likely need to be funded by an increase in taxation, which could reduce productivity. On the other hand, the higher wages may induce greater effort from workers but this may not be observed in official measures of public sector productivity due to measurement issues.

Care, family responsibilities and workforce participation

Care, family responsibilities and workforce participation drive around 40 per cent of the gender wage gap. This group can be further decomposed into three more specific drivers:

- o years not working due to interruptions, contributing 25 per cent of the gap,
- \circ part-time employment, contributing 7 per cent of the gap, and
- \circ $\,$ unpaid and carer work, also contributing 7 per cent of the gap.

These are discussed in further detail below.

Years not working due to interruptions

Time out of the workforce to care for children is a key driver of career interruptions for women. Career interruptions can impact on wages due to reduced tenure and experience, as well as missing out on opportunities to build skills and attend training, and having skills depreciate. As such, the impact of reducing career interruptions for women would increase women's experience and skills, which in turn can be expected to be reflected in an increase labour productivity.

Part-time employment

Women represent the majority of the part-time workforce. Part-time workers earn less than full-time workers even after controlling for other characteristics including gender, qualifications, experience and industry. Part-time workers may have fewer opportunities to develop their skills and miss out on promotion opportunities. These issues are discussed in greater detail in Section 2. It has been suggested that the flexibility afforded by part-time work comes at a price, and that some highly paid senior roles pay a premium for the willingness to work extremely long hours at unpredictable times.

Research suggests that the link between hours worked and labour productivity (output per hour worked) is complex and uncertain. While longer hours can lead to greater productivity for reasons such as fixed employment costs and increased capital utilisation, longer hours can eventually also increase fatigue reducing productivity.²²⁶ As such, simply increasing the share of women (or men) in full-time positions may not necessarily increase labour productivity on an output per hours worked basis. Indeed, a study of private sector firms in Belgium by Garnero et al. suggests that the wage discount observed for part-time female workers is not related to lower productivity but instead reflects lower hourly wages compared with their productivity, which is reflected in higher employer rents.²²⁷

On this basis, reducing this aspect of the gender wage gap could imply an increase in the labour income share, similar to eliminating gender discrimination more generally (see above). On the other hand, an increase in hours worked by women (via a shift to greater full-time employment) would increase the level of experience of women over the longer term, which could be reflected in an increase in productivity. This is especially likely to be the case if there is discrimination against part-time female workers which continues resulting in reduced promotion or skill development opportunities for part-time workers relative to full-time workers. While there remains considerable uncertainty, for the purposes of this exercise it is assumed that reducing the gender wage gap driven by part-time work would result primarily in higher productivity, noting that some part of the effect may alternatively be apportioned to a higher labour income share.

Unpaid and carer work

The level of unpaid work undertaken by women relative to men (proxied by hours of housework each week) also contributes to the gender pay gap.²²⁸ On the assumption that this reduces women's participation in the labour market, as well as reducing opportunities for personal investment in skills outside of formal employment, reducing this aspect of the gender pay gap is assumed to be reflected

²²⁶ Collewet, M., & Sauermann, J. (2017). Working hours and productivity. *Labour Economics*, 47, 96-106.

²²⁷ Garnero, A., S. Kampelmann and F. Rycx (2014). Part-time Work, Wages and Productivity: Evidence from Belgian Matched Panel Data, *Industrial and Labor Relations Review*, vol. 67 (3), pp. 926-954.

²²⁸ WGEA, (2019) *She's Price(d)less: The Economics of the Gender Pay Gap*, report prepared by KPMG for the Diversity Council of Australia and the Workplace Gender Equality Agency, available at: https://www.wgea.gov.au/publications/shes-pricedless-the-economics-of-the-gender-pay-gap.

in an increase in labour productivity.

It should be noted that each of the three drivers discussed above could be addressed by a complete redistribution of work between men and women, with the gender pay gap reduced by men doing more unpaid work, taking more career breaks and working fewer hours (as discussed in Appendix C). The magnitude of the redistribution of work, and any resulting negative impacts on male productivity, may offset the macroeconomic impacts of reducing the gender pay gap. For the purposes of this analysis, it is assumed that male participation in the labour market remains unchanged, any small changes in hours worked do not negatively impact male productivity which is held at current levels, and these aspects of the gender pay gap are reduced via increasing female participation in the labour market and hours worked.

A proposed approach to modelling an increase in female hourly wages

This analysis has shown that a range of different measures and actions can bring about an increase in female hourly wages to reduce the gender pay gap, and that each of these also has particular implications for other economic variables such as labour productivity, the labour income share and male hourly wages. At a broad and high-level, the economic benefits associated with an increase in female hourly wages that is unspecified as to the driver(s) of that increase can be modelled by adopting a weighted average of the specific drivers of the gender pay gap discussed above.

Table D.1: Potential implications of addressing drivers of the gender wage gap

| Driver | Contribution (%) | Potential dominant economic impact from increasing female wages due to this driver: |
|--|---------------------|---|
| Gender discrimination | 41 | Increase in labour income share |
| Occupational and industry segregation | 18 | Higher female average earnings/ lower male average earnings |
| Years not working due to interruptions | 26 | Increase in female productivity |
| Part-time work | 7 | Increase in female productivity |
| Unpaid care work | 7 | Increase in female productivity |

Source: WGEA;²²⁹ NSW Treasury analysis.

From Table D.1, a 'generic' increase in female hourly wages can be expected to reflect an increase in labour productivity (with a 41 per cent contribution to the overall increase in female hourly wages), an increase in the labour income share (41 per cent contribution) and a decrease in male hourly wages (17 per cent contribution).

In particular, on this basis, a 1 per cent increase in female hourly wages to reduce the gender pay gap could potentially be modelled as follows:

- 0.17 per cent increase in labour productivity
- 0.09 percentage point increase in labour income share
- 0.12 per cent decrease in male hourly wages

The above adjusts for the current female share of overall hours worked to translate the contributions in Table D.1 to overall impacts for these variables.²³⁰ If an increase in female hourly wages is accompanied by an increase in average hours, leading to an overall increase in the female share of total hours worked (as in the case of the modelling exercises outlined in Section 1, Section 4 and

²²⁹ WGEA, (2019) She's Price(d)less: The Economics of the Gender Pay Gap, report prepared by KPMG for the Diversity Council of Australia and the Workplace Gender Equality Agency, available at: https://www.wgea.gov.au/publications/shes-pricedless-the-economics-of-the-gender-pay-gap. ²³⁰ For example, an increase in female hourly wages is assumed to be partly reflected in an increase in female labour productivity while male labour

productivity remains unchanged, and overall labour productivity is a weighted average of male and female labour productivity.

Appendix C), these impacts are likely to be larger, subject to the extent that any reductions in male labour force activity offset impacts.

Limitations and areas for further research

This analysis has shown that a range of different measures and actions can bring about an increase in female hourly wages to reduce the gender pay gap, and that each of these also has particular implications for other economic variables such as labour productivity, the labour income share and male hourly wages. The interactions between drivers, their causes and effects are complex and uncertain. As a result, there are a number of simplifying assumptions underpinning this proposed approach.

By using the weighted average of specific drivers of the wage gap, the approach assumes that each specific driver of the gender wage gap is equally likely to be addressed, although in reality certain drivers of the gender wage gap may be more easily addressed than others. Ideally, any specific policy measures that are under consideration to address the gender pay gap would be considered individually and in greater detail as they can have different implications for the economy.

In addition, the proposed approach assumes that there is no significant displacement of male labour market activity in response to an increase in female labour market activity. Further, the WGEA decomposition of the gender wage gap is itself subject to a number of limitations, and the interrelationships between different drivers as well as potential second round effects on the economy are complex.

Finally, there is limited empirical research into these issues that is Australia-specific, and there is a risk that findings drawn from overseas research may not be applicable in an Australian context. Further research could consider these issues in more detail and refine the proposed modelling approach presented here.

Appendix E. Detailed ECEC reform modelling method

Method

This technical appendix acts as a supplement to Section 4 and sets out supporting information on the modelling methodology, data and assumptions used to estimate the impact of ECEC reforms on labour force outcomes.

At a high-level, the modelling approach consists of four steps:

- 1. First, baseline estimates are established by estimating the current and projected price of ECEC under a no policy change scenario, and by identifying the current and projected labour force characteristics of the women with children aged 0 to 5 years old eligible to benefit from the proposed policy measures.
- 2. We estimate the impact of the policy measures on net hourly ECEC service costs. Assumptions underpinning the translation of the policy scenarios into a change in the out-of-pocket costs faced by households are included under 'policy scenario assumptions'.
- 3. Applying the elasticities described above, we estimate an increase in the participation rate for women with their youngest child in the group eligible for the policy, as well as an increase in the number of hours worked on average per week by employed women in this group. We also account for the (relatively small) proportion of fathers who are currently primary carers by assuming the same impact on this group.
- 4. Finally, we estimate the impact of changes to women's labour outcomes on the NSW economy and NSW Government revenue by introducing new estimates of women's participation, hours worked and wages to the NSW Treasury Intergenerational Report (TIGR) model (formerly known as the Long-Term Fiscal Pressures Model).²³¹

Data

Early childhood education and care costs and usage

In order to simulate a policy reform that changes rates of ECEC usage and lowers the out-of-pocket cost of ECEC services, it is necessary to estimate the current 'baseline' – that is, no policy change – out-of-pocket costs faced by households in New South Wales. Estimates are produced for each year until 2060-61, to align with the structure of the TIGR Model, which is used to model the economic and fiscal response of the derived labour market impacts.

Baseline usage and costs have been estimated using a combination of survey-based and administrative data sources. The Child Care Subsidy (CCS) is administered by the Commonwealth Government and detailed administrative data on childcare usage and costs is not available to NSW Treasury. As a result, the data may not be as precise as it would be if it were based on the underlying administrative records.

The following data on CBDC and FDC services has been sourced from the Department of Education Skills and Employment (DESE):²³²

- total enrolment numbers,
- average hours attended per week,
- average gross costs per hour, and

²³¹ Further information on the model is available in the following technical note: NSW Treasury (2021), 2021 Intergenerational Report Technical Note and Sensitivity Tables, June 2021, available at: www.treasury.nsw.gov.au/sites/default/files/2021-06/2021%20NSW%20IGR%20-%20Technical%20Note%20and%20Sensitivity%20Tables.pdf

²³² Department of Education Skills and Employment (2020) Child Care in Australia report March quarter 2020, available at: www.dese.gov.au/child-carepackage/early-childhood-data-and-reports/quarterly-reports/child-care-australia-report-march-quarter-2020

• total subsidy expenditure.

While DESE does not publicly report the average weeks per year of childcare use, discussions with DESE indicated this was around 40 weeks per year, driven by a financial-year reporting timeline which means children entering school are generally only enrolled for half the year.

Preschool enrolment, hours and costs are sourced from the Productivity Commission Report on Government Services (RoGS) and ABS.²³³ Preschool programs are delivered through multiple channels and are generally defined as play-based learning delivered by a qualified teacher aimed at children in year or two years before commencing formal school.²³⁴ For the 74 per cent of programs delivered through CBDC, hours of usage are already captured through the CBDC and FDC estimates set out above.²³⁵ The remainder of preschool is delivered through dedicated preschool services, mostly community or government-run.²³⁶ Hours (assumed to be just under 15 hours per week, 40 weeks per year) and enrolments of preschool delivered in these settings are additional to the childcare hours counted above in CBDC and FDC settings. When comparing these estimates against data on the size of the population of children aged 0 to 5 years old (discussed further below), around 6 per cent of children are assumed to attend both preschool and childcare.²³⁷

The baseline average net cost per hour was estimated by summing total gross costs and subtracting the subsidy. The current average subsidy was estimated at 66 per cent of gross ECEC costs.²³⁸

The subsidy varies with household income based on Commonwealth CCS policy settings.²³⁹ Using estimates of the proportion of households, and children, in each subsidy band derived from HILDA, the average subsidy level for these households is adjusted in line with household income, with the overall subsidy weighted to achieve the same result as for all households overall.²⁴⁰ An additional adjustment is made to account for the 14 per cent of childcare centres nationally who charge above the Commonwealth fee cap.²⁴¹ This is assumed to be more common amongst households on higher incomes and is given effect by slightly moderating the impact of any policy-induced price change.

Estimates are projected to 2060-61. The baseline average hourly gross cost, subsidy and resulting net costs are assumed to grow in line with CPI, consistent with the escalation in CCS income bands and the fee cap.²⁴² Baseline usage in terms of hours per week and weeks per year are assumed to be constant.

Population

Data on the size of the New South Wales population of children aged 0 to 5 years old, and the number of mothers with their youngest child in this age group, are used to estimate the size of the cohort likely to be impacted by the modelled policy reforms.

The number of children aged 0 to 5 years old, grouped by age, is sourced from ABS population data.²⁴³ Forward projections are sourced from the TIGR Model.²⁴⁴ Due to population ageing, the population share of children aged 5 and under is estimated to decline over the projection period, from 7.4 per cent of the overall population in 2020 to 6.0 per cent by 2061.

The number of mothers by age of youngest child is sourced from a combination of HILDA data, reweighted to match the number of children derived above and projected forward using a combination

²³³ Productivity Commission (2020) *Report on Government Services 2020*, available at: www.pc.gov.au/research/ongoing/report-on-governmentservices/2020/child-care-education-and-training/early-childhood-education-and-care; ABS (2020) *Preschool Education*, *Australia*, available at:

www.abs.gov.au/statistics/people/education/preschool-education-australia/2020

²³⁴ ABS (2021) 'Methodology', Preschool Education, Australia.

²³⁵ Productivity Commission (2020) Report on Government Services 2020, Table 3A11.

²³⁶ Productivity Commission (2020) *Report on Government Services* 2020, Table 3A11.

²³⁷ The 6 per cent estimate is based on advice from the NSW Department of Education; NSW Treasury analysis; Department of Education Skills and Employment (2020) Child Care in Australia report March quarter 2020; ABS (2021) Preschool Education, Australia.

²³⁸ This was verified as being broadly correct through conversations with the Commonwealth Department of Education, Skills and Employment.

²³⁹ Services Australia, (2022) Child Care Subsidy, available at: https://www.servicesaustralia.gov.au/child-care-subsidy.

²⁴⁰ NSW Treasury analysis; Household, Income and Labour Dynamics in Australia (HILDA) Survey, Wave 19 (2001 to 2019), available at:

https://dataverse.ada.edu.au/dataverse/DSSLongitudinalStudies

²⁴¹ NSW Treasury analysis; Department of Education Skills and Employment (2020) Child Care in Australia report March quarter 2020.

²⁴² Department of Education, Skills and Employment (2022). Determining a Childcare Subsidy. Childcare Provider Handbook, available at:

www.dese.gov.au/child-care-package/child-care-provider-handbook/appendix-child-care-subsidy/determining-child-care-subsidy; Australian Government (2022), 3.5 CCS Entitlement. *Family Assistance Guide*, available at: https://guides.dss.gov.au/family-assistance-guide/3.

²⁴³ ABS (2022) National, state and territory population, September 2021, available at: https://www.abs.gov.au/statistics/people/population/national-state-and-territory-population/latest-release#states-and-territories

 $^{^{\}rm 244}$ Population projections are consistent with the NSW 2021-22 Half Yearly Review.

of growth in children aged 5 and under and growth in the population of women aged 15-44, weighted in line with the average age of giving birth.²⁴⁵ This leads to a decline in the proportion of women who have a youngest child aged 5, in line with declining fertility rates as outlined in the 2021 NSW IGR.²⁴⁶

We also account for a small proportion of families where fathers are primary carers. We estimate that 5.7 per cent of families with children or dependents aged 0 to 4 years old have male primary carers based on NSW Treasury analysis of ABS survey data.²⁴⁷

Labour force characteristics

The participation rate and average hours worked by women by age of their youngest child are sourced from HILDA and reweighted to be consistent with the TIGR model.²⁴⁸ The rate at which women are assumed to retire is consistent with baseline participation rate forecasts included in 2021 NSW IGR.

Policy assumptions

This section builds upon the methodology outlined in Section 4, with a particular focus on setting out additional assumptions made with respect to the policy scenarios. Under both scenarios, it is assumed that the cost reduction for households intended by the policy has been achieved in practice.

Scenario 1: Increasing the childcare subsidy to 100 per cent and providing universal pre-kindergarten

As outlined in Section 4, an adjustment is made to the total average subsidy value to account for the proportion of ECEC services which charge above the fee cap. We assume that this primarily affects households with children aged 0 to 3 years old and that children receiving care and education in pre-school and pre-kindergarten in the two years before school are generally not impacted by this due to the different delivery setting.

Scenario 2: Policy measures announced by the NSW and Commonwealth Governments

With respect to the *Universal pre-Kindergarten* policy, in addition to the assumptions outlined in Section 4, it is assumed that additional out of hours care is available to meet demand, with costs in line with CCS rates. Usage of out of hours care is assumed to be consistent with that by primary school children.²⁴⁹

The Affordable Preschool policy will provide \$4,000 per child in funding to community preschools for the provision of a preschool program for children aged 3-5, and \$2,000 per child in funding to CBDC services for the provision of a preschool program for children aged 4-5. It is assumed that 60 per cent of funding made available to ECEC providers is fully passed on to households in the form of cost savings on ECEC expenses, which is estimated by assuming the total subsidy does exceed current net annual costs, based on estimates derived through the process described above. Additional funds arising from this adjustment are assumed to be retained by providers and used to improve availability and quality. The policy is assumed to be replaced with Universal Pre-Kindergarten for children in the year before school as the policy is scaled up, such that there is no overlap in coverage between these policies.

It is assumed that the Affordable and Accessible Childcare and Economic Participation Fund (the Fund) will expend \$100 million in 2023-24, \$270 million in 2024-25, \$405 million in 2025-26 and \$650 million per annum from 2026-27, escalating with CPI thereafter. The policy is assumed to provide

²⁴⁵ NSW Treasury analysis; HILDA data (Wave 19); Australian Institute of Health and Welfare (AIHW) (2021). Maternal Age. Australia's mothers and babies, available at www.aihw.gov.au/reports/mothers-babies/australias-mothers-babies-data-visualisations/contents/demographics-of-mothers-and-babies/maternal-age

²⁴⁶ NSW Treasury (2021) 2021-22 NSW Intergenerational Report, available at https://www.treasury.nsw.gov.au/nsw-economy/nsw-intergenerationalreport/2021-nsw-intergenerational-report-treasury-technical; NSW Treasury (2021) 'Preliminary Fertility Rate Projections for the 2021 NSW Intergenerational Report', *Treasury Technical Research Paper Series TTRP 21-01*, available at: https://www.treasury.nsw.gov.au/nsw-economy/nsw-intergenerational-report/2021nsw-intergenerational-report-treasury-technical.

²⁴⁷ NSW Treasury analysis; ABS (2021) *Labour Force Status of Families,* June 2021, Table 9, available at: https://www.abs.gov.au/statistics/labour/employmentand-unemployment/labour-force-status-families.

²⁴⁸ Labour force projections are consistent with the NSW 2021-22 Half Yearly Review. The underlying participation rate projections are set out in NSW Treasury (2021) 'Preliminary Participation Rate Projections for the 2021 Intergenerational Report', *Treasury Technical Research Paper Series TTRP 20-01*, available at: https://www.treasury.nsw.gov.au/nsw-economy/nsw-intergenerational-report/2021-nsw-intergenerational-report-treasury-technical.
²⁴⁹ Department of Education, Skills and Employment (DESE) (2021). Data on families and children in child care for the June quarter 2021, https://www.dese.gov.au/early-childhood/resources/june-quarter-2021

services to children aged 0 to 4 years old, excepting those eligible for the universal pre-K policy measure. In the initial years until and including 2025-26, it is assumed that 70 per cent of the Fund is used to reduce out of pocket ECEC costs and the remaining 30 per cent is used to improve the accessibility and availability of the services. From 2026-27, this allocation is amended to 77 per cent and 27 per cent respectively, noting that this provides for a minimum of \$150 million available to service providers to support accessibility and availability.

This funding envelope is used to estimate the reduction in user costs that would be achieved by targeting it to specific income tiers, with a higher weighting allocated to households on low-to-middle household incomes between \$70,015 and \$254,305 (in 2021-22, escalating thereafter), representing around three quarters of households with children aged between 0 and 5.²⁵⁰ This requires estimates of the induced demand for ECEC services, which is estimated on an aggregate hours basis using an iterative process noting that cost reductions arising from the Fund itself contributes to the induced demand.

The induced demand for ECEC services is estimated with reference to both international²⁵¹ and Australia literature.²⁵² We utilise the experience in Quebec to estimate the change in head count, adjusting for differences in the estimated price change and baseline usage. Estimates of the change in average or aggregate hours are not available from the Quebec study and so we scale estimates in the Australian literature proportionately with the head count estimates. Once the policy is operating in full in 2026-27, we estimate an increase in the enrolment head count of 20 per cent, or 47,000 additional places for children aged four and under, not otherwise covered by universal pre-K, and an increase in average hours of use of 13 per cent per child enrolled, for a total increase in aggregate hours of 36 per cent.

The Fund is assumed to reduce costs for targeted households up to a maximum of 95 per cent subsidy, equal to the maximum subsidy rate for second and subsequent children under both current and proposed CCS settings.²⁵³

Assumptions about the allocation of the Fund represent modelling assumptions only, informed by the policy parameters and previous policy measures including the Start Strong program which requires ECEC service providers to pass on 75 per cent of funding provided under the program to families in the form of fee reductions.²⁵⁴ The actual allocation is dependent upon the final design of the Fund, market dynamics, and interactions with Commonwealth assistance. Cost savings for any specific household will depend on these factors, as well as the specific circumstances of each household.

Changes to the CCS as proposed by the new Commonwealth Government are estimated with reference to estimates of the specific rates set out by the Grattan Institute.²⁵⁵

²⁵⁰ NSW Treasury analysis; HILDA data (Wave 19)

 ²⁵¹ Baker, M., Gruber, J., & Milligan, K. (2008). Universal child care, maternal labor supply, and family well-being. Journal of political Economy, 116(4), 709-745.
 ²⁵² Gong, X., & Breunig, R. (2012). Estimating net child care price elasticities of partnered women with pre-school children using a discrete structural labour supply-child care model (No. 2012-01). Treasury Working Paper.

²⁵³ Services Australia, (2022) Child Care Subsidy, available at: https://www.servicesaustralia.gov.au/child-care-subsidy.

²⁵⁴ NSW Department of Education (2022) Start Strong. Grants and funded programs, available at https://education.nsw.gov.au/early-childhood-

education/operating-an-early-childhood-education-service/grants-and-funded-programs/start-strong

²⁵⁵ Grattan Institute (2022). Explainer: everything you need to know about the major parties' new childcare policies, 4 April 2022, available at:

https://grattan.edu.au/news/explainer-everything-you-need-to-know-about-the-major-parties-new-childcare-policies/

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