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**Pre-Budget Submission for the 2021-22 Budget**

**Authorisation**

This submission has been authorised by the NFAW Board

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**Pre-Budget Submission for the 2021-22 Budget**

This submission is being made by The National Foundation for Australian Women (NFAW).

NFAW is dedicated to promoting and protecting the interests of Australian women, including intellectual, cultural, political, social, economic, legal, industrial and domestic spheres, and ensuring that the aims and ideals of the women’s movement and its collective wisdom are handed on to new generations of women. NFAW is a feminist organisation, independent of party politics and working in partnership with other women’s organisations.

Gender-based analysis defines the ways in which public policies affect women and men differently. It does so through the systematic use of data to better tailor the development of government programs. The Commonwealth government stopped production of its Women’s Budget Statement, part of the official Budget papers in 2014, after 40 years of production.

Unsurprisingly, NFAW and a number of other commentators noted the conspicuous absence of gender-based budgeting in the August Budget. The areas targeted in the Budget--construction, energy, transport and manufacturing--were all male dominated. They received a combined $27billion. However, prior to COVID-19 it was the service sectors that dominated employment growth rather than those traditional male sectors.

We believe the 2020 Budget was a lost opportunity to maximise employment growth, to invest in social infrastructure with the greatest multiplier effects and to address the structural problems in female dominated areas that COVID-19 has exposed.

The 2021 Budget offers scope to address the deficiencies of the 2020 Budget. NFAW has commissioned independent modelling to assess the impacts on GDP that would flow from an increase in government-funded provision of services in the child care, residential aged care and residential disabled care and other social assistance over four years from 2021-22 onwards.

Under our hypothesised scenario, an increase in government-funded service delivery in the child care, aged care and disability care sectors beginning in 2021 would generate an increase GDP as soon as it was introduced. By 2030, GDP is estimated to be 1.64 per cent higher than it would be in the absence of this investment.

**Key statistics and findings**

|  |
| --- |
| A Care-led Recovery from Coronavirus* More than 900 000 people with unpaid caring responsibilities caring for young children, the elderly, or people with disabilities would like to work more hours in paid employment. Over two thirds are women.
* Government investment in the care sector would help address women’s disadvantage in the labour market, reduce the gender pay gap, improve service delivery and contribute to an increase in national labour force participation.
* Greater provision of government funded care services would increase labour supply by an estimated increase of just over 2 percent.
* Additional service delivery and higher wages would increase GDP by an estimated 1.64 percentage points relative to what it otherwise would have been in 2030. The investment would add more than an estimated $30 billion per year to the economy in 2018-19 prices.
* Costs would be partially recouped in increased income and consumption tax revenue, offsetting the estimated $19 billion costs in 2030 with a net impact on the deficit of less than $3 billion.

(See **Appendix A: Simulations of increased government expenditure in the care sectors**, by Janine Dixon, Centre of Public Studies, Victoria University)  |

**Recommendations**

NFAW recommends that Government provide additional stimulus funding in the 2021 Budget targeting social infrastructure to provide accessible, quality care, to encourage employment and to enable employers to provide ongoing, professionalised jobs.

**Discussion**

The infrastructure and tax cut measures introduced in the 2020 Budget reflected the government’s long-standing commitment to traditional, historical responses to economic downturns that have overlooked the pandemic’s very different impacts.

During 2020 the phrases “pink-collar recession” and “she-session” entered the lexicon. Economists, welfare groups and businesses agreed about the negative impact of the pandemic on women. Prior to the budget many had pressed the government to use stimulus spending to particularly address investment in social housing, support for the caring professions, child care, aged care and disability care, as well as those female-dominated sectors also hard hit in the wake of COVID-19. This was not just because of the loss of employment but also because COVID-19 exposed the opportunity to reform a number of systemic issues and would likely provide the relatively greater increase in employment.

In practice the 2020 Budget was based on business assistance, skills development, tax cuts and infrastructure investments to “rebuild the economy and to create jobs” (Treasurers speech, 6 October, 2020 p.17). The areas targeted in the budget--construction, energy, transport and manufacturing--were all male dominated. They received a combined $27billion. However, prior to COVID-19 it was the service sectors that dominated employment growth rather than those traditional male sectors. This is reflected in the recent record of the growth in female participation. Last year’s June National Accounts showed GDP decreased by 7 per cent for the quarter, while the fall in spending on services was 17.6 per cent.

During COVID-19, the majority of job losses were for women and more women than men left the labour force. The issue of withdrawal from the labour force is critical if the reason is structural rather than cyclical. This is key because increased female participation in the labour force has been vital to economic growth in recent decades. Not all those women who left the labour force have returned in the last few months.

Further, COVID-19 exposed the effect of marketisation/privatisation on the provision of human services such as in aged care, childcare and disability. Profit has too often won out over quality of services.

Our independent modelling (Appendix A), provided by Janine Dixson of the Centre of Public Studies at Victoria University, provides an alternative scenario whereby government investment in the care sector could lead to an expansionary effect on overall demand and reset the economy at higher levels of activity.

# Modelling results: Investing in care sectors would lift GDP further

Independent modelling commissioned by the NFAW analysed the impacts on GDP that would flow from an increase in government-funded provision of services in the child care, residential aged care and residential disabled care and other social assistance over four years from 2021-22 onwards.

The size of this investment is based on identifying how many people with unpaid caring responsibilities would work more if more care services were available. The available data indicates that for around 923,000 people, caring responsibilities act as a barrier to workforce participation. The model assumes that government-funded care services would be expanded to meet this need.

To support this expansion in service delivery, it is assumed that the wages of workers in these care sectors will rise, the capital stock of the sector will grow, and labour supply (measured by hours of work) would also expand to deliver these services, particularly generating more jobs for women given the female-dominated nature of these workforces.

Under this hypothesised scenario, an increase in government-funded service delivery in the child care, aged care and disability care sectors beginning in 2021 would generate an increase GDP as soon as it was introduced. By 2030, GDP is estimated to be 1.64 per cent higher than it would be in the absence of this investment.

Higher GDP is achieved not only via higher public expenditure, but also through higher household consumption and business investment and a strengthening of the currency. This effect is achieved via several channels:

* people with caring responsibilities would be relieved of these responsibilities, allowing them to allocate more time towards paid work and earn more paid income
* the higher workforce involvement of these carers would have the effect of expanding the pool of available workers that employers can draw from
* the government would receive more revenue via income taxes, GST and payroll taxes

This increase in GDP is calculated on the assumption that the higher government expenditure on the caring sectors is deficit-financed, and that no explicit policy measures are taken to recover the deficit. Without raising tax rates or redirecting government funding away from other sectors of the economy, the cost to government is mostly, but not completely, offset by increased revenue from income taxes, GST and payroll taxes. By 2030, the annual cost of the additional service delivery would be $19 billion but the net cost to government less than $3 billion.

The channel through which this investment generates a positive impact on economy output would be manifested through an improvement in the nation’s aggregate workforce participation rate, one of the “3 Ps” that are key to achieving economic prosperity. The investment also increases women’s financial security.

The model predicts that the workforce would absorb the expansion in labour supply through a slowdown in the rate of wage growth across the rest of the economy, compared to what would occur otherwise. Because the model assumes an explicit wage increase for care workers as part of this service expansion, this investment in care service would result in a narrowing the gender pay gap, given that care sector workers are predominately female and the rate of pay in the sector is below the workforce average.

The modelling was undertaken using Computable General Equilibrium (CGE) methods. The simulations were run using VUEF-G, which is a variant of the Victoria University Employment Forecasting (VUEF) model of the Australian economy that incorporates a detailed representation of the labour market and gender profile of the economy. Further details are provided in Appendix A.

Appendix A: Simulations of increased government expenditure in the care sectors

Janine Dixon

October 15, 2020

**Key statistics and findings**

1. More than 900 thousand Australians who have unpaid caring responsibilities for young children, the elderly, or people with disabilities would like to work more hours in paid employment. If this could be facilitated by greater provision of government-funded care services, labour supply would increase by over 2 per cent.
2. More than 70 per cent of this additional labour input would be supplied by women, alleviating some of the disadvantage experienced by women in the labour market.
3. Supporting carers with additional government-funded service delivery and higher wage growth in the child care, aged care and disabled care sectors underpins additional economic growth such that GDP in 2030 would be 1.64 per cent higher than it otherwise would have been. This is equivalent to an average of $1266 per person per year in 2018-19 prices, or more than $30 billion per year in aggregate.
4. Additional employment and higher wages in the care sector also directly supports women’s employment and incomes, as these sectors account for a high proportion of women’s employment.
5. This economic growth dividend underpins increased revenue from taxes on income and consumption, offsetting much of the cost to government of increased service delivery (including higher wages) in the care sector. In 2030, we estimate the cost of the additional service delivery to be $19 billion, yet the additional impact on the government deficit is less than $3 billion.

# Introduction and background

This note describes two simulations of the Australian economy over the next decade in which government expenditure in the care sectors is increased significantly.

# Methodology and model inputs

## Methodology

The simulations are run using VUEF-G, a variant of the Victoria University Employment Forecasting (VUEF) model, a Computable General Equilibrium model of the Australian economy with a detailed representation of the labour market and gender. The model is described in the Appendix.

A key feature of VUEF-G is the modelling of time use by cohort. Cohorts are defined by highest level and field of educational attainment and gender (e.g. “Certificate III-IV, Society and Culture, Female”). Time use for each cohort is divided into paid employment, leisure, and unpaid employment (such as caring for children or elderly relatives or maintaining a household). Cohorts allocate time according to preferences (as revealed in existing time use data derived from the Census), and change their allocation through time according to changes in wages and the cost (or availability) of care services that can replace unpaid employment. By this mechanism, an increase in wages provides an incentive to forgo some leisure time and supply more labour. Similarly, an increase in the user cost of care services creates an incentive for people to forgo paid employment and provide care services themselves, for example, a parent may forgo an additional day per week of paid employment if child care costs increase.

For cohorts with significant time allocated to unpaid employment, the scope to increase employment by greater provision of government-funded care services is large. Across all levels of educational attainment, women allocate more time than men to unpaid employment, and both men and women with lower levels of educational attainment allocate more time to unpaid employment. The time-use theory in VUEF-G uses this information to estimate the labour supply response to provision of additional care services for every cohort. The aggregate impacts for men and women are calibrated to the shocks described in Section 2.2.2.

Model results are generally expressed as percentage deviations from a business-as-usual base case. The base case does not take into account the Covid-19 pandemic.

## Model inputs

### Expenditure

The key economic shocks are increases in expenditure on the care sectors.

In VUEF, the care sectors are Child Care, Residential Aged Care, Residential Disabled Care and Other Social Assistance (Disabled). Shocks to the quantity of output for each sector are introduced over four years (2021-22 to 2024-25) as set out in Table 1. Over the same time interval, wage increases are applied to two occupations, Child Carers and Personal Carers and Assistants, as set out in Table 1.

To facilitate the rapid increase in output in the care sector, shocks are applied to investment from 2020-21, one year in advance of the shocks to output. This ensures that sufficient capital stocks are in place to support the expansion.

Table 1: Expenditure shocks applied by industry and occupation (%)

|  |  |  |
| --- | --- | --- |
|  | Total increase (over 4 years) | Annual increase |
| Service delivery by industry |  |  |
|  Child Care | 35.0 | 7.79 |
|  Residential Aged Care | 8.3 | 2.02 |
|  Residential Disabled Care | 8.3 | 2.02 |
|  Other Social Assistance (Disabled) | 8.3 | 2.02 |
| Wage increase by occupation |  |  |
|  Child Carers | 21.6 | 5.0 |
|  Personal Carers and Assistants | 21.6 | 5.0 |

The expansion in output and increase in wage costs are absorbed by an increase in government expenditure. Higher wage costs increase the price of care, which has a negative impact on household (private) consumption of care services. Therefore the expansion in government expenditure covers not only the net expansion of the care sectors, but also replaces some private expenditure.

### Labour supply

The increase in the care economy is assumed to be government-funded and large enough to remove all impediments to labour market participation experienced by carers in the informal sector. This drives a significant increase in labour supply. The calculation of the shock to labour supply involves determining the number of people for which caring responsibilities act as a barrier to labour force participation, determining a suitable increase in average hours worked if formal care was made available, and converting this into a percentage increase in labour supply.

Shocks to labour supply are calculated using data from the ABS (ABS Cat. No. 6239.0, 2020), in which 923,000 people with caring responsibilities reported that they wanted to work more hours (Table 2). Approximately two-thirds of these are women, and approximately half cared for children under the age of 5.

Informal primary carers for aged and disabled people provide and average of 35.2 hours of care per week (152 hours per month), while non-primary carers provide an average of 10 hours per week (43 hours per month) (Deloitte, 2020). We assume that the increase in supply of formal care relieves primary and non-primary carers of some of their responsibilities and enables them to enter the labour force or increase their hours of formal work. We assume that primary carers increase formal employment by an average of 100 hours per month, and informal carers by 10 hours per month. Around one-third of aged and disabled carers are classified as primary carers (Deloitte, 2020).

We assume that people who care for children could increase their employment by 40 hours per month if sufficient child care was available.

Based on these assumptions, an additional 37 million hours of labour would be supplied per month, of which 27 million would be supplied by women. This is equivalent to an increase in overall labour supply of 2.06 per cent. Labour supply increases for both men and women: Men’s labour supply increases by 0.93 per cent and women’s by 3.74 per cent.

The increases in labour supply are treated as shocks to the VUEF-G model, and introduced over four years (2021-22 to 2024-25) alongside the increases in expenditure on the care sectors.

Table 2: Labour supply impacts

|  |  |  |  |
| --- | --- | --- | --- |
|  | Male | Female | Persons |
| People who want to work more hours ('000 persons) |
| Cared for someone with a long-term illness or disability | 106 | 152 | 258 |
| Cared for an elderly person | 78 | 142 | 219 |
| Youngest child aged under 5 | 108 | 337 | 446 |
| Total | 292 | 631 | 923 |
|  |  |  |  |
| Additional hours supplied per person per month if sufficient care available (assumed) |
| Aged/disabled primary carer | 100 | 100 | 100 |
| Aged/disabled non-primary carer | 10 | 10 | 10 |
| Child carer | 40 | 40 | 40 |
|  |  |  |  |
| Percentage of aged/disabled carers who are primary carers | 21 | 41 | 32 |
|  |  |  |  |
| Economy-wide aggregates |  |
| Total additional hours supplied per month (million) | 10 | 27 | 37 |
| Average monthly hours worked, 2018-19 (million) | 1044 | 726 | 1770 |
| Percentage increase | 0.93 | 3.74 | 2.06 |

### Other macro settings

The shocks as described are run in two macroeconomic environments. In both cases, standard CGE macroeconomic settings apply: household consumption is a fixed proportion of household income, government consumption expenditure (other than on the caring sectors) is fixed to the baseline, and real wages adjust slowly to return the unemployment rate to the baseline.

In ***Scenario 1***, the increase in government expenditure on the caring sectors is deficit-financed, with no explicit policy measures taken to recover the deficit.

In ***Scenario 2***, the increase in government expenditure on the caring sectors is offset by a reduction in government-funded investment in infrastructure.

### Limitations

The modelling provides insights into the macroeconomy and the household sector as a whole, but does not differentiate between individuals or households by income. The key finding that greater availability of government-funded care services will have a positive impact on labour supply, is of a general nature, and we make no recommendations about the distribution of these services. The existing childcare subsidy scheme is particularly complex and creates strong disincentives to work for individuals (usually mothers) in some families. Recommendations on how to simplify this system and remove these disincentives (see for example KPMG, 2020) are not able to be derived from the CGE model.

# Results and Discussion

## Scenario 1

The increase in labour supply facilitated by additional supply of caring services is absorbed gradually by the market. By 2026, labour supply is 2.24% above the base case, and employment is 1.85% above base case, with female employment accounting for the majority of the increase (Figure 1). After 2026, labour supply stops increasing and employment gradually catches up (unemployment returns to base case level).

Figure 1: Employment and labour supply impacts, Scenario 1

The increase in labour supply causes slower overall wage growth (notwithstanding specific increases imposed on some occupations) but the net impact on labour income (higher employment and lower wages) is positive. There is a very slight slowing of income growth for males, and a strong increase in income growth for females (Figure 2).

Beneficiaries under the scenario include people who are relieved of some caring responsibilities and can work more hours, thus earning more income, and business owners, who can access a greater pool of labour. On the other hand, people who were already employed will experience slower wage growth than they otherwise would have. Overall stronger income growth underpins higher tax collections on income and consumption.

Figure 2: Impact on real labour income, Scenario 1

The increase in employment strengthens GDP growth, which remains at around 1.25 per cent above the base case from 2025 (Figure 3). Public expenditure, which includes the large additional expenditure on the care sector, grows more quickly than GDP, thus increasing its overall share of GDP. This is offset by slower export growth. Growth in household spending and investment follow a similar trajectory to GDP. Household spending is supported by stronger income growth, while investment is stimulated by the need to create more capital stocks to support the expansion in the caring sector and more widely as a response to the larger labour supply.

Figure 3: GDP and macroeconomic expenditure impacts, Scenario 1

All industries expand relative to the base case by 2030, but at differing rates (Figure 4). The expansion in Health care and social assistance is well above average, as this sector includes child care and aged and disabled care. Expansion in most other sectors is in the range of 1.5 to 1.75 per cent by 2030, with some exceptions. With strong domestic expenditure, the domestic currency strengthens, which makes trade-exposed industries (those that export or compete with imports, i.e. agriculture, mining, manufacturing, tourism and education) less competitive. Mining expands very little, being trade-exposed and capital-intensive (poorly positioned to take advantage of additional labour supply). Public Administration and Defence expands very little, as policy settings in respect of government expenditure on these activities are assumed not to deviate from the base case.

Figure 4: Impact on industry output, 2030, Scenario 1

The additional spending on care services leads to higher budget deficits over the ten-year forecast period (Figure 5). Over 2022-25, the years in which the spending is brought in, the negative impact on budget deficits increases each year, to just below $7 billion in 2025. After 2025, economic growth and the associated tax revenues begin to offset an increasing proportion of the additional care expenditure. By 2030, the deficit is less than $3 billion larger than it otherwise would have been, while the cost of the additional service delivery is almost $19 billion.

Figure 5: Impact on government budget balance relative to base case ($m), Scenario 1

## Scenario 2

In Scenario 2, the budgetary cost of the additional expenditure on care is offset by a reduction in government expenditure on infrastructure investment. The overall results are very similar to Scenario 1.

Despite the reduction in government-funded infrastructure investment, the impact on aggregate investment is still positive in Scenario 2, albeit smaller than in Scenario 1 (Figure 6). This detracts only slightly from GDP growth.

Figure 6: Comparison of GDP and Investment impacts, Scenario 1 and Scenario 2

Industry impacts are similar except there is a notable difference in output in the Construction sector (Figure 7).

Figure 7: Impact on industry output, 2030, Scenarios 1 and 2

Unlike Scenario 1, in which the government deficit is greater than the base case throughout the simulation period, in Scenario 2, the average deficit is approximately the same as the base case average (Figure 8).

Figure 8: Impact on government budget balance relative to base case ($m), Scenarios 1 and 2

# Conclusions

An increase in expenditure on care services delivers clear economic benefits and helps to alleviate female economic disadvantage. Spending on care services delivers a double dividend, of job creation in the care sector, and positive labour supply impacts for over 900 thousand Australians who perform unpaid work caring for the elderly, disabled and children. More than 70 per cent of the labour supply impact benefits women.

The economic growth derived from additional employment underpins an increase in budget revenue that offsets much of the cost to government of increased service delivery.

An option for achieving a complete offset of the costs of the additional service delivery is to reduce government spending on infrastructure. This option leads to smaller impacts on investment and construction activity, nonetheless the impacts are still positive, as is the overall outcome for GDP and employment.

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# Tables

Note – in all tables, “2020” refers to the year ending June 30, 2020 (financial year).

Table 3: Scenario 1 Macro results (percentage deviation from base case unless otherwise stated)

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
| Macro aggregates |  |  |  |  |  |  |  |  |  |  |  |
| GDP | 0.00 | 0.01 | 0.20 | 0.45 | 0.75 | 1.09 | 1.24 | 1.37 | 1.47 | 1.56 | 1.64 |
| Household expenditure | 0.00 | 0.07 | 0.29 | 0.57 | 0.89 | 1.17 | 1.23 | 1.28 | 1.33 | 1.37 | 1.41 |
| Investment | 0.00 | 0.08 | 0.25 | 0.49 | 0.79 | 1.04 | 1.21 | 1.35 | 1.46 | 1.54 | 1.60 |
| Exports | 0.00 | -0.14 | -0.31 | -0.41 | -0.44 | -0.27 | 0.07 | 0.36 | 0.62 | 0.83 | 1.02 |
| Imports | 0.00 | 0.10 | 0.36 | 0.67 | 1.00 | 1.25 | 1.26 | 1.26 | 1.26 | 1.26 | 1.26 |
| Public expenditure | 0.00 | 0.00 | 0.59 | 1.23 | 1.93 | 2.68 | 2.67 | 2.67 | 2.66 | 2.66 | 2.65 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Labour supply |  |  |  |  |  |  |  |  |  |  |  |
| Male | 0.00 | 0.00 | 0.21 | 0.42 | 0.63 | 0.84 | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 |
| Female | 0.00 | 0.00 | 0.93 | 1.87 | 2.81 | 3.77 | 3.75 | 3.75 | 3.74 | 3.74 | 3.74 |
| Persons | 0.00 | 0.00 | 0.55 | 1.11 | 1.68 | 2.25 | 2.24 | 2.23 | 2.22 | 2.22 | 2.22 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Employment |  |  |  |  |  |  |  |  |  |  |  |
| Male | 0.00 | 0.02 | -0.03 | 0.01 | 0.12 | 0.27 | 0.45 | 0.59 | 0.70 | 0.78 | 0.84 |
| Female | 0.00 | 0.02 | 0.69 | 1.46 | 2.30 | 3.18 | 3.36 | 3.51 | 3.61 | 3.69 | 3.75 |
| Persons | 0.00 | 0.02 | 0.32 | 0.71 | 1.17 | 1.67 | 1.85 | 1.99 | 2.10 | 2.18 | 2.23 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Labour income |  |  |  |  |  |  |  |  |  |  |  |
| Male | 0.00 | 0.03 | -0.06 | -0.13 | -0.17 | -0.21 | -0.17 | -0.12 | -0.05 | 0.02 | 0.09 |
| Female | 0.00 | 0.02 | 0.79 | 1.59 | 2.44 | 3.31 | 3.29 | 3.31 | 3.35 | 3.40 | 3.46 |
| Persons | 0.00 | 0.03 | 0.35 | 0.70 | 1.08 | 1.48 | 1.49 | 1.53 | 1.58 | 1.64 | 1.71 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Government budget balance ($m) | 0 | -360 | -2228 | -3904 | -5540 | -6827 | -5543 | -4570 | -3836 | -3288 | -2882 |

Table 4: Scenario 1: Industry results (percentage deviation from base case)

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
| Industry output |  |  |  |  |  |  |  |  |  |  |  |
| Agriculture | 0.00 | -0.05 | 0.01 | 0.14 | 0.33 | 0.63 | 0.89 | 1.10 | 1.27 | 1.41 | 1.52 |
| Mining | 0.00 | -0.03 | -0.08 | -0.12 | -0.16 | -0.16 | -0.11 | -0.04 | 0.03 | 0.12 | 0.20 |
| Manufacturing | 0.00 | -0.05 | 0.00 | 0.13 | 0.34 | 0.66 | 0.95 | 1.20 | 1.41 | 1.58 | 1.72 |
| Electricity, Gas, Water | 0.00 | 0.01 | 0.10 | 0.24 | 0.43 | 0.66 | 0.82 | 0.96 | 1.08 | 1.18 | 1.27 |
| Construction | 0.00 | 0.05 | 0.17 | 0.36 | 0.61 | 0.84 | 1.02 | 1.17 | 1.29 | 1.39 | 1.47 |
| Wholesale | 0.00 | 0.02 | 0.18 | 0.41 | 0.71 | 1.04 | 1.23 | 1.39 | 1.51 | 1.61 | 1.70 |
| Retail | 0.00 | 0.06 | 0.30 | 0.58 | 0.91 | 1.20 | 1.25 | 1.29 | 1.32 | 1.35 | 1.37 |
| Accommodation | 0.00 | -0.02 | 0.12 | 0.35 | 0.65 | 1.04 | 1.30 | 1.52 | 1.70 | 1.85 | 1.98 |
| Transport | 0.00 | -0.03 | 0.03 | 0.17 | 0.36 | 0.64 | 0.86 | 1.04 | 1.20 | 1.33 | 1.44 |
| Information, Communication | 0.00 | -0.01 | 0.14 | 0.37 | 0.66 | 1.01 | 1.23 | 1.41 | 1.55 | 1.66 | 1.76 |
| Finance | 0.00 | 0.02 | 0.18 | 0.41 | 0.71 | 1.03 | 1.21 | 1.36 | 1.48 | 1.58 | 1.67 |
| Rental, leasing | 0.00 | 0.00 | 0.15 | 0.37 | 0.65 | 0.97 | 1.17 | 1.33 | 1.47 | 1.57 | 1.66 |
| Professional, scientific, technical services | 0.00 | 0.02 | 0.16 | 0.38 | 0.67 | 0.98 | 1.21 | 1.38 | 1.52 | 1.63 | 1.72 |
| Administration | 0.00 | -0.01 | 0.14 | 0.36 | 0.65 | 1.00 | 1.22 | 1.39 | 1.53 | 1.65 | 1.74 |
| Public administration, safety | 0.00 | 0.00 | 0.03 | 0.07 | 0.12 | 0.17 | 0.20 | 0.21 | 0.23 | 0.24 | 0.25 |
| Education | 0.00 | -0.10 | -0.13 | -0.05 | 0.11 | 0.43 | 0.81 | 1.11 | 1.35 | 1.53 | 1.67 |
| Health care, social assistance | 0.00 | 0.02 | 1.43 | 2.95 | 4.59 | 6.35 | 6.40 | 6.44 | 6.46 | 6.48 | 6.49 |
| Arts, recreation | 0.00 | 0.02 | 0.20 | 0.44 | 0.73 | 1.03 | 1.17 | 1.28 | 1.36 | 1.43 | 1.49 |
| Other services | 0.00 | 0.03 | 0.22 | 0.48 | 0.80 | 1.14 | 1.30 | 1.43 | 1.53 | 1.61 | 1.67 |
| Ownership of dwellings | 0.00 | 0.00 | 0.01 | 0.03 | 0.09 | 0.18 | 0.29 | 0.41 | 0.53 | 0.65 | 0.77 |

Table 5: Scenario 2: Macro results (percentage deviation from base case unless otherwise stated)

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|   | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
| Macro aggregates |  |  |  |  |  |  |  |  |  |  |  |
| GDP | 0.00 | 0.01 | 0.14 | 0.37 | 0.66 | 0.99 | 1.11 | 1.23 | 1.32 | 1.40 | 1.46 |
| Household expenditure | 0.00 | 0.07 | 0.00 | 0.34 | 0.69 | 1.06 | 1.06 | 1.12 | 1.17 | 1.21 | 1.25 |
| Investment | 0.00 | 0.08 | -0.24 | -0.03 | 0.24 | 0.57 | 0.64 | 0.76 | 0.86 | 0.93 | 0.99 |
| Exports | 0.00 | -0.14 | 0.38 | 0.20 | 0.09 | 0.04 | 0.46 | 0.70 | 0.90 | 1.07 | 1.22 |
| Imports | 0.00 | 0.10 | -0.21 | 0.18 | 0.56 | 0.96 | 0.87 | 0.90 | 0.91 | 0.93 | 0.94 |
| Public expenditure | 0.00 | 0.00 | 0.60 | 1.24 | 1.93 | 2.69 | 2.67 | 2.66 | 2.66 | 2.65 | 2.65 |
|   |  |  |  |  |  |  |  |  |  |  |  |
| Labour supply |  |  |  |  |  |  |  |  |  |  |  |
| Male | 0.00 | 0.00 | 0.20 | 0.41 | 0.62 | 0.83 | 0.82 | 0.82 | 0.81 | 0.81 | 0.81 |
| Female | 0.00 | 0.00 | 0.93 | 1.86 | 2.81 | 3.76 | 3.74 | 3.73 | 3.73 | 3.72 | 3.72 |
| Persons | 0.00 | 0.00 | 0.55 | 1.11 | 1.67 | 2.24 | 2.22 | 2.22 | 2.21 | 2.21 | 2.21 |
|   |  |  |  |  |  |  |  |  |  |  |  |
| Employment |  |  |  |  |  |  |  |  |  |  |  |
| Male | 0.00 | 0.02 | -0.11 | -0.06 | 0.06 | 0.23 | 0.39 | 0.54 | 0.64 | 0.72 | 0.78 |
| Female | 0.00 | 0.02 | 0.61 | 1.39 | 2.23 | 3.14 | 3.30 | 3.44 | 3.55 | 3.63 | 3.69 |
| Persons | 0.00 | 0.02 | 0.23 | 0.64 | 1.10 | 1.63 | 1.79 | 1.93 | 2.04 | 2.12 | 2.18 |
|   |  |  |  |  |  |  |  |  |  |  |  |
| Labour income |  |  |  |  |  |  |  |  |  |  |  |
| Male | 0.00 | 0.03 | -0.21 | -0.30 | -0.36 | -0.39 | -0.41 | -0.37 | -0.33 | -0.28 | -0.23 |
| Female | 0.00 | 0.02 | 0.68 | 1.46 | 2.28 | 3.16 | 3.09 | 3.08 | 3.10 | 3.13 | 3.17 |
| Persons | 0.00 | 0.03 | 0.22 | 0.55 | 0.91 | 1.32 | 1.27 | 1.29 | 1.32 | 1.36 | 1.41 |
|   |  |  |  |  |  |  |  |  |  |  |  |
| Government budget balance ($m) | 0 | -360 | 1667 | 186 | -1318 | -2963 | -1204 | -165 | 622 | 1218 | 1670 |

Table 6: Scenario 2 Industry results (percentage deviation from base case)

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|   | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
| Industry output |  |  |  |  |  |  |  |  |  |  |  |
| Agriculture | 0.00 | -0.05 | 0.23 | 0.32 | 0.48 | 0.70 | 0.98 | 1.16 | 1.32 | 1.44 | 1.54 |
| Mining | 0.00 | -0.03 | 0.05 | 0.03 | -0.01 | -0.06 | -0.02 | 0.02 | 0.07 | 0.12 | 0.17 |
| Manufacturing | 0.00 | -0.05 | 0.21 | 0.30 | 0.46 | 0.69 | 1.00 | 1.22 | 1.40 | 1.54 | 1.66 |
| Electricity, Gas, Water | 0.00 | 0.01 | 0.05 | 0.17 | 0.34 | 0.56 | 0.68 | 0.80 | 0.90 | 0.99 | 1.06 |
| Construction | 0.00 | 0.05 | -0.07 | 0.05 | 0.24 | 0.50 | 0.60 | 0.72 | 0.82 | 0.90 | 0.97 |
| Wholesale | 0.00 | 0.02 | 0.02 | 0.27 | 0.57 | 0.91 | 1.07 | 1.22 | 1.34 | 1.43 | 1.51 |
| Retail | 0.00 | 0.06 | 0.00 | 0.35 | 0.72 | 1.10 | 1.09 | 1.15 | 1.19 | 1.22 | 1.25 |
| Accommodation | 0.00 | -0.02 | 0.21 | 0.44 | 0.73 | 1.08 | 1.34 | 1.55 | 1.71 | 1.85 | 1.96 |
| Transport | 0.00 | -0.03 | 0.17 | 0.29 | 0.45 | 0.67 | 0.89 | 1.06 | 1.19 | 1.30 | 1.39 |
| Information, Communication | 0.00 | -0.01 | 0.15 | 0.37 | 0.65 | 0.98 | 1.18 | 1.34 | 1.47 | 1.57 | 1.66 |
| Finance | 0.00 | 0.02 | 0.09 | 0.33 | 0.61 | 0.94 | 1.09 | 1.23 | 1.34 | 1.43 | 1.50 |
| Rental, leasing | 0.00 | 0.00 | 0.11 | 0.31 | 0.56 | 0.86 | 1.04 | 1.18 | 1.30 | 1.39 | 1.47 |
| Professional, scientific, technical services | 0.00 | 0.02 | 0.06 | 0.25 | 0.52 | 0.84 | 1.02 | 1.18 | 1.31 | 1.40 | 1.48 |
| Administration | 0.00 | -0.01 | 0.16 | 0.36 | 0.62 | 0.94 | 1.15 | 1.31 | 1.43 | 1.53 | 1.61 |
| Public administration, safety | 0.00 | 0.00 | 0.03 | 0.07 | 0.11 | 0.16 | 0.18 | 0.20 | 0.21 | 0.22 | 0.23 |
| Education | 0.00 | -0.10 | 0.32 | 0.33 | 0.43 | 0.60 | 1.05 | 1.32 | 1.53 | 1.70 | 1.82 |
| Health care, social assistance | 0.00 | 0.02 | 1.37 | 2.91 | 4.56 | 6.33 | 6.38 | 6.42 | 6.45 | 6.47 | 6.48 |
| Arts, recreation | 0.00 | 0.02 | 0.09 | 0.36 | 0.67 | 1.00 | 1.11 | 1.22 | 1.30 | 1.37 | 1.43 |
| Other services | 0.00 | 0.03 | 0.09 | 0.38 | 0.71 | 1.08 | 1.20 | 1.33 | 1.42 | 1.50 | 1.56 |
| Ownership of dwellings | 0.00 | 0.00 | 0.01 | -0.01 | 0.00 | 0.05 | 0.13 | 0.21 | 0.29 | 0.38 | 0.47 |

# Appendix: VUEF-G

VUEF-G is a variant of the VUEF model which adds a gender dimension to the existing labour market modelling framework (J.Dixon and Nassios, 2020). We formulate labour supply in a labour-leisure framework in which we also introduce home-produced domestic services (“housework”), which covers activities such as cleaning, cooking, and caring for family members, particularly children. We assume that households choose leisure, domestic services and consumption to maximise utility subject to three constraints: (i) a time constraint on total labour, leisure and housework; (ii) a budget constraint equating household wage income to expenditure on consumption (other than domestic services) and purchased domestic services (such as childcare); and, (iii) a production constraint for domestic services, which are a combination of home-produced and purchased domestic services.

VUEF-G contains all the features of a standard MONASH – style dynamic CGE model [P. Dixon and Rimmer (2002)], namely:

1. equations describing demand for domestic and imported goods and services by industries, investors, households, government and the rest of the world;

2. equations describing demand for factors of production by industries;

3. market clearing conditions for all goods and services and factors of production;

4. zero pure profit conditions determining basic prices of goods and services;

5. equations linking basic and purchaser prices through taxes and margins;

6. equations linking industry-specific capital supply to investment;

7. equations linking investment by industry to expected rates of return; and

8. equations to ensure that wage adjustment is sticky.

These equations are described in detail in many references including P. Dixon and Rimmer (2002) and Adams et al (2015).

VUEF adds to the standard MONASH framework a detailed specification for labour supply. In VUEF, the working-age population is disaggregated into many skill groups. Each skill group chooses its occupational composition of employment by maximising wage income subject to a transformation frontier.

VUEF therefore adds to the standard CGE framework a method for determining occupational employment and wages. However, participation and unemployment rates by skill group are typically exogenous, or simply indexed to their national equivalents. This treatment fails to acknowledge the likelihood that labour supply is more elastic among part time workers, particularly women. VUEF-G addresses this gap by formalizing the differences in time use between men and women.

VUEF-G comprises a large system of non-linear equations which is solved in the GEMPACK software (Horridge et al, 2018).