

MEMO

To: Hon Julie Anne Genter
From: Margaret Retter, Director Policy
Date: 10 April 2018
Subject: Economic modelling of the impacts of pay equity on the gender pay gap
Priority: Routine

Purpose

1. This memo provides advice requested on whether the Ministry for Women (the Ministry) has investigated economic modelling of the impacts of pay equity on the gender pay gap, and if not, why and whether this work could be explored.

Previous work on the economic modelling of the impacts of pay equity

2. The Ministry commissioned consultancy NZIER to provide a report on the economic impacts of pay equity in November 2015 (NZIER report). The Ministry commissioned this work to ensure policy discussions and modelling focused on the wider economic impacts of addressing pay equity, including direct benefits to government as well as to women and their families. We have attached the NZIER report and included a summary as Annex One. The benefits of pay equity for women and their families included:
 - increased nominal income, offset by a decline in income-related benefits or support, and increased tax.
 - greater resilience to financial shocks associated with higher incomes.
 - increased household consumption, and/or increased savings.
 - individuals may choose to increase working hours – as the wage rate increases, or may settle for a similar amount of income, or work less hours.
 - greater incentives for individuals to enter the labour market as a result of higher wage rates.
 - greater benefits for younger women, as wages may increase over a longer period of time.
3. The Treasury has also completed a high-level estimate of the potential financial risk from pay equity settlements, both for Government and across the economy in general. You have received this estimate and background work in the *Update on Oversight and Coordination of Pay Equity Claims in the State Sector* paper for the Ministerial Oversight Group on State Sector Employment Relations (MOGSSER) on 12 April.

Potential modelling of the impacts of pay equity on the gender pay gap

4. We have not commissioned work specifically on the relative impact of pay equity settlements on the overall national gender pay gap, as we have not considered this information necessary to progress policy work on either pay equity or the gender pay gap.
5. Any modelling of the impacts of pay equity on the gender pay gap should take into account the following factors:
 - 2017 research led by Prof Gail Pacheco found that the gender pay gap is larger at the higher end of the wage spectrum, and is therefore more likely to be larger in jobs that are not likely to be subject to pay equity claims. However, we note that the numbers of women at the higher end of the wage spectrum are fewer. Wage increases at the lower end of the wage spectrum are more likely to affect more women.
 - Horizontal occupational segregation (female-dominated occupations tend to be lower paid than those dominated by men) is only one contributor to the gender pay gap. Other contributors include vertical segregation (where there are a higher proportion of men than women in senior higher-paid positions); women being more likely to take career breaks and/or work part-time; and 'unexplained' factors including unconscious bias and discrimination. Dixon (2000) found that horizontal occupation segregation explained 20-40 percent of the gender pay gap. The 2017 research led by Prof Gail Pacheco found that 80 percent of the gender pay gap was due to 'unexplained' factors and did not attribute any particular portion of the remaining 20 percent to horizontal occupational segregation. The Ministry's view is that addressing pay equity will contribute to closing the gender pay gap. However the impact will be limited as pay equity will not affect other key drivers of the gender pay gap such as the career progression of women into higher paid roles.
 - The likelihood of pay equity claims being successful. Treasury/State Services Commission have done some assessment of this likelihood for the Treasury modelling on the economic impact of pay equity settlements.
 - Some impacts noted by NZIER would affect women's overall economic independence rather than the gender pay gap as such. For example, workers may decide to trade off higher wages with fewer hours, and low-income workers can be expected to receive fewer benefits or other income-related support such as tax credits. These effects would not be captured in the overall gender pay gap (which measures hourly income only) but would be captured in wider economic modelling.

Potential economic modelling of the impacts of closing the gender pay gap

6. There is a lack of New Zealand research on the economic impacts of closing the gender pay gap as a whole. However other research sources that the Ministry has drawn on as a rationale for closing the gender pay gap include:
- New Zealand research on the economic impacts of increasing women's labour force participation (Treasury 2004, Goldman Sachs 2013).
 - Australian research that indicates eliminating their whole gender pay gap could be worth around \$93 billion to the economy or 8.5 per cent of GDP (University of Canberra 2009).
 - significant amounts of research on the benefit to economies of gender equality overall, including in terms of pay, leadership positions and workforce participation.
7. We do not see a strong current need to further develop the rationale to address the gender pay gap, as addressing the gender pay gap in the public service is a priority for the Government. However, given the lack of research, it would seem sensible to frame any modelling more widely to encompass the economic impacts of closing the wider gender pay gap, with pay equity impacts treated as a subset of the wider modelling.

Options for further work if required

8. If an estimate of the impacts of pay equity on the gender pay gap is needed, you could commission the Ministry to provide a rough estimate of the potential effect of wage increases in undervalued female-dominated occupations on the gender pay gap using Household Labour Force Survey data.
9. If you decide that economic modelling on the impacts of closing the gender pay gap and/or the relative impact of addressing pay equity within closing the gender pay gap would be useful, we advise seeking support from the Minister of Finance to request Treasury to provide this level of economic modelling. Any request for modelling would need to be considered against Treasury's existing work programme. If you wished to pursue this option, we could provide you with a draft Ministerial letter to send to the Minister of Finance.

Contact for telephone discussion (if required)

Section 9 (2) (a)

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Annex One – summary of key points from NZIER report *Economic impacts of pay equity* November 2015

Potential benefits of pay equity

The report highlights some key potential benefits:

Benefits of pay equity for women and their families

- Increased nominal income, offset by a decline in income-related benefits or support, and increased tax.
- Greater resilience associated with higher incomes.
- Increased household consumption, and/or increased savings.
- Individuals may choose to increase working hours – as the wage rate increases, or may settle for a similar amount of income, or work less hours.
- Greater incentives for individuals to enter the labour market as a result of higher wage rates.
- Greater benefits for younger women, as wages may increase over a longer period of time.

Benefits of pay equity for employers, costs may be met through a combination of:

- Better utilisation of existing and future employment talent pool, given an ageing workforce, low productivity growth across the economy and shortages of higher-skilled labour.
- Increased productivity through decreased turnover, less absenteeism, and improved staff morale.
- Becoming an employer of choice, attracting and retaining the best and brightest staff.
- A potential reduction in the number of people employed, or the number of hours they work to reduce the wages bill.

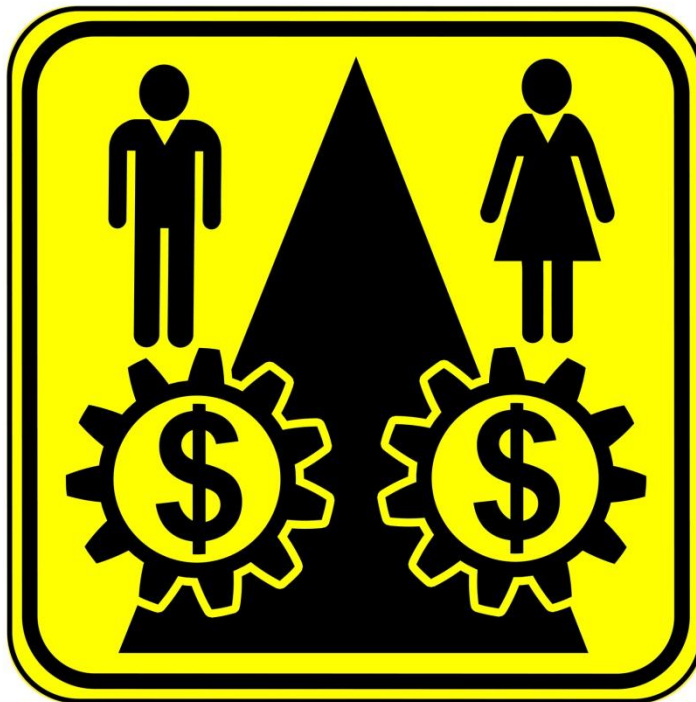
Benefits of pay equity for government

- The potential to contribute to greater economic independence for New Zealand women which in turn contributes to the Government priority of building a more competitive and productive economy, and the Better Public Services result areas.
- It is also relevant to increasing women's safety from violence as pay equity is an essential part of achieving gender equality, and gender equality and economic resilience is an important protective factor in keeping women safe from violence.
- Increased taxes for those who receive income increases, and fewer benefits or other income-related support.

Potential economic impacts

The report also highlights a number of overall economic impact considerations including:

- The importance of looking at wider impacts on the economy and accepting the dynamic nature of the economy (e.g. negative impacts of wage increases dissipate over time).
- Economy-wide modelling and running a variety of simulations is important to prevent distortions and to cover the offset impact of reduced government transfers. This was done by Treasury in the Living Wage work and has been done in New South Wales (Madden 2000).



Economic impacts of pay equity

A survey of the literature

NZIER report to the Ministry for Women

November 2015

About NZIER

NZIER is a specialist consulting firm that uses applied economic research and analysis to provide a wide range of strategic advice to clients in the public and private sectors, throughout New Zealand and Australia, and further afield.

NZIER is also known for its long-established Quarterly Survey of Business Opinion and Quarterly Predictions.

Our aim is to be the premier centre of applied economic research in New Zealand. We pride ourselves on our reputation for independence and delivering quality analysis in the right form, and at the right time, for our clients. We ensure quality through teamwork on individual projects, critical review at internal seminars, and by peer review at various stages through a project by a senior staff member otherwise not involved in the project.

Each year NZIER devotes resources to undertake and make freely available economic research and thinking aimed at promoting a better understanding of New Zealand's important economic challenges.

NZIER was established in 1958.

Authorship

This paper was prepared at NZIER by Cathy Scott.

It was quality approved by John Ballingall.

The assistance of Deborah O'Connor, Sarah Spring and Dion Gamperle is gratefully acknowledged.



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Key points

We found very limited literature directly related to the topic

Our literature review focussed on the economic impacts of implementing pay equity. We found surprisingly little information on the topic.

There was considerable information on the gender pay gap, and on pay equity systems and the drive to introduce them, particularly from a legal perspective. This was occasionally accompanied by very simplistic analysis concluding that if the gender pay gap was addressed there would be considerable increases in GDP. There was also directly relevant information in the literature on the economic impacts of minimum wage policies and adjustments, and on the introduction (or possible introduction) of a Living Wage.

Traditional economic models indicate a negative impact on the economy, which dissipates over time

Economic models are dynamic. This means that increased wage bills associated with pay equity have to be paid for by someone: there is no free lunch and it is not possible to legislate in a way that will automatically lift living standards across the board.

Increased income for those benefiting from pay equity will be at least partially offset by higher prices (reducing households' purchasing power) and employment displacement as firms look to manage higher wage bills. Both of these effects reduce living standards in aggregate.

Economic models also indicate that introducing pay equity across the board would cause GDP to fall. However, this modelling also indicates that these negative effects dissipate over time.

Models we found also looked at pay equity in a specific occupation. Results from this analysis indicated that impacts were largely contained within the sector of the economy involved, and did not impact more widely. This led commentators to suggest a gradual introduction to manage the impacts, or a careful consideration of the timing of introduction to take account of the health, or otherwise, of the economy.

Views on the impact on employment are mixed

Traditional models indicate that increases in wages would be offset by corresponding decreases in employment or reductions in worker hours as firms try to manage the impact of increased wage bills. As such, considerable care needs to be taken not to invite unintended consequences that are counter to the policy objective through implementing pay equity policies.

However, other studies showed empirical evidence of increased productivity as a result of the introduction of pay equity through less staff turnover (and lower recruitment costs), less absenteeism and better morale. These effects will mitigate the negative impacts described above – trade-offs abound. Firms in fact have a range of choices in managing increased wage bills. Their ability to manage the increases will be dependent upon the level of impact, and their existing profitability.

Both these impacts need to be taken into account in any modelling.

Industry sectors with more highly segregated workforces will be impacted more than other sectors

Industries with greater proportions of female dominated occupational groups will face greater cost impacts. This means they may be less able to use some of the other mechanisms outlined above to manage wage increases, and potentially more likely to reduce overall employment.

Women’s nominal incomes increase, but this is offset by decreases in income related government support

With the exception of those who may lose their job, or reduce their hours of work (either by their own choice or by their employer’s action) nominal wages will increase through pay equity. Offsets occur in relation to drops in income-related benefits or tax support. And real wages will rise by less than nominal wages due to price increases as firms pass on higher costs of production.

This needs to be modelled carefully to consider the impact on household earnings of increases in income and offsets due to inflation, benefit or tax changes. But, indications from the work on the minimum wage and the Living Wage suggest that of lower income households, those without children benefit most. This is due to them being less likely to receive means tested government support.

It is hard to draw any conclusions about the impact on poverty, as this is dependent upon household composition, and whether people benefiting from pay equity increases are the principal earner or not.

Incomes, and decisions about expenditure, are not necessarily evenly distributed within the household. Older literature, and that from developing countries, indicates increasing women’s earnings has a positive impact on the health, education and general well-being of children and the household as a whole.

Along a similar theme, increasing the relative share of household income earned by women can mean that women have greater leverage in decision making on expenditure. This has also been linked to less domestic violence.

Applying an investment approach would suggest there are greater benefits for younger women who retain their jobs, as wages may increase over a longer period of time

Permanent increases in real wages, over a period, increase economic independence and resilience. At higher levels of income, they may also increase savings rates.

Thus we would expect to see more benefits for younger women as increased income occurs over a longer period of time.

This should also benefit these women in retirement, and increased earnings over a lifetime is related to women being better able to financially contribute to their retirement.

There are pluses and minuses for government

In terms of first-round effects, the fiscal position of government might be expected to improve through increases in tax, and declines in benefit payments, but this may be offset by second-round effects such as decreases in employment and economic output. It is also offset by the costs to government of increasing rates of pay for their own employees and those employed by firms contracted by government.

These counter-acting effects can really only be fully assessed by economy-wide modelling, and running a variety of simulations through the model.

We suggest modelling of the impacts of implementing pay equity using a variety of different scenarios

We understand that the Ministry of Business, Innovation and Employment (MBIE) is considering modelling the impacts of various pay equity scenarios. We suggest using a Computable General Equilibrium (CGE) model so that both the first-round and second-round impacts can be assessed in a robust economic framework.

Madden (2000) undertook this sort of modelling in New South Wales to assess the impacts of pay equity. New Zealand-focused models are available to undertake this analysis. A variety of simulations can be undertaken to consider the impact of different assumptions around wage-induced productivity; policy changes; impacts on benefit rates etc. The results from these models can help inform the policy and legislative responses to pay equity.

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1. The task

1.1. Your requirements

Pay equity is on the agenda for government again following the outcome of the TerraNova case. This case was taken by the Service and Food Workers Union on behalf of Kristine Bartlett against TerraNova Home and Care Ltd. After a long legal process, the Courts found that Ms Bartlett was paid significantly less than would have been paid to men with the same or substantially similar skills. And that this was a breach of the Equal Pay Act 1972. This has led to further cases, both in aged care and for other groups of workers e.g. midwives and education support workers.

In effect, the decision applied the principles of pay equity, that is, equal pay for work of equal value.

Government, through the Ministries of Health and Social Development and ACC, is a significant employer or funder of care workers. So, in this case, the Government has an interest in both the fiscal impacts and in the general operation of the labour market.

The particular response to the TerraNova case is being led though negotiations led by the Ministry of Health. A Joint Working Group comprised of representatives of employers' organisations, government and union officials are considering the wider legal issues.

The Ministry for Women (MfW) is part of an Officials Steering group, and associated Working Group, which are developing advice on the wider issues associated with pay equity. The MfW wants to continue to ensure the debate also focuses on the wider economic impacts of addressing pay equity, including direct benefits to government as well as to women and their families.

The MfW commissioned NZIER to undertake a literature review to focus on the economic impacts of pay equity. The key outputs from this review are:

- A tight summary of key points – to form the basis of your support for the Minister for Women as she engages in the Ministerial discussions and processes related to pay equity
- A report based on this desk- top review of the literature – to provide a framework for thinking about the issues and its impacts, supported by findings of relevant literature
- A future work programme – to focus on improving understanding, and potentially modelling the impacts in the New Zealand context
- A separate matrix (Excel spreadsheet) of the literature review results – these results can be sorted by publication date, author, country or topic. Each item has an annotation as to its relevance to the topic.

1.2. What we found

The literature search only revealed a few items directly focussed on the topic. As expected, there was considerable literature on the gender pay gap, amongst which there was some discussion of the concept of pay equity. Much of the literature about pay equity per se was focussed on a discussion of rights, the development of pay equity in law, and pay equity systems. There was some literature on the effect of introducing pay equity within firms including a substantive summary of the literature published by the ILO (Chicha, 2006).

We also looked at recent work on the economic impacts of the minimum wage and the Living Wage. This can have some direct relevance to pay equity, especially when considering groups of low income workers or occupations in which women predominate, such as home care workers, or some groups of retail or clerical workers.

In addition, we looked to see if the literature on how money is used within households had been updated since the work of Fleming and Easting (1994) to determine whether increases in the income of women had different impacts within households. There is considerable literature associated with intra household distribution of income in developing countries, in recent times, but not in developed countries. This literature indicates that increasing the income of women had a more significant difference on the health and education of children than general income increases. This dynamic underpins a considerable number of development aid programmes, such as micro-finance initiatives, women's rights and access to education in developing countries.

Appendix A.3 sets out our approach to the literature review in more detail, and the structure of the annotated bibliography.

1.3. Structure of this report

This report is structured as follows:

- An introduction to underlying economic models and the labour market to set the basis for understanding the issue
- The conclusions of the literature review in terms of impacts for individuals, households, firms, the government and the economy of pay equity
- A proposed programme for further work
- Bibliography.

As discussed above, a separate Excel spreadsheet contains the annotated bibliography.

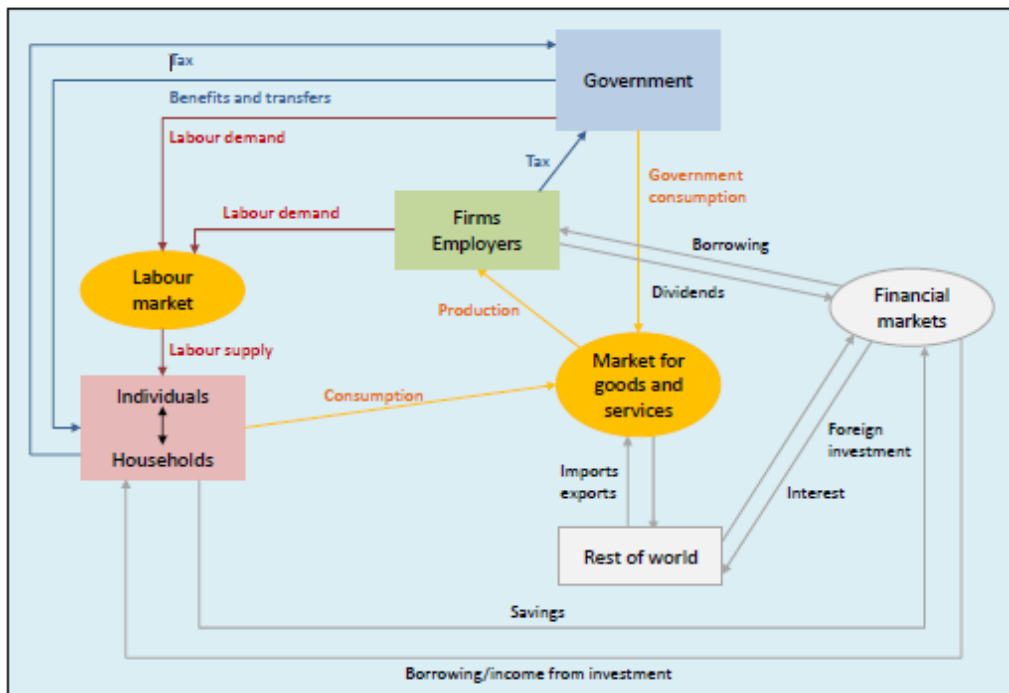
2. An economy-wide framework

Not only does someone have to pay for pay equity, in order to understand who pays there is a need to look beyond the first-round impacts on recipients of pay equity gains, to the wider impacts on the economy.

The figure below illustrates a model of the economy. It clearly shows the myriad inter-linkages between firms, households, the government and the global economy. In thinking about pay equity in this project we've focussed primarily on the domestic economy, and the market for goods and services and the labour market, as this is where we expect the majority of impacts to be.

Figure 1 Stylised model of an economy's inter-linkages

Economy: Macro-economic circulation



Source: NZIER

The first and second order impacts you might expect to see from introducing pay equity are outlined below.

For individuals/households who receive adjustments

First order impacts will include:

- Increased income, offset by a decline in income-related benefits or support, and increased tax payments
- Greater resilience associated with higher incomes
- Increased consumption, and/or increased savings

- Individuals may choose to increase working hours – as the wage rate increases, or may settle for a similar amount of income and work fewer hours
- Greater incentives for individuals to enter the labour market as a result of higher wage rates.

Second round impacts will include:

- Increased prices paid for goods and services
- Real wages are subsequently impacted by these price increases, but remain higher than before the pay equity adjustment.

For employers/firms, costs may be met through a combination of:

- A reduction in the number of people employed, or the number of hours they work to reduce the wages bill
- Increased prices, then potentially a decline in sales revenue (depending on the price elasticity of demand for the product)
- Increased productivity through decreased turnover, less absenteeism, and improved staff morale
- Other related efficiency gains
- Innovation – including displacing labour with capital (e.g. increasing automation in call centres or moves to self-service web-based channels for sales or service delivery)
- Decreased dividends paid to shareholders/owners.

Second round impacts will include:

- Increased input prices for goods and services related to the general inflationary effects, and therefore further pressure on prices, profits and labour
- Increased pressure for wage increases from other workers to maintain “relativity” and to cope with increased inflation.

For government as employer or through contracting with firms that employ workers who receive adjustments, impacts include:

- Increased expenditure on wages of contracts
- As with other employers – reductions in the workforce, or hours worked; efficiency gains; productivity increases; innovation
- Policy or legislative changes which decrease service levels so as to contain the increased wage/contract costs e.g. changing entitlements to the number of hours of personal care available for older or disabled people.

For government as fiscal manager, impacts include:

- Increased taxes for those who receive income increases, and lower benefits or other income related support
- Lower taxes and increased income related support associated with declines in employment

- Less company tax, if profits decrease
- Less tax on shareholder dividends, if company profits decrease
- Financing the additional expenditure through tax increases, reductions in expenditure in other areas, or using surpluses (thus not re-paying debt or funding other expenditure priorities) or deficit funding.

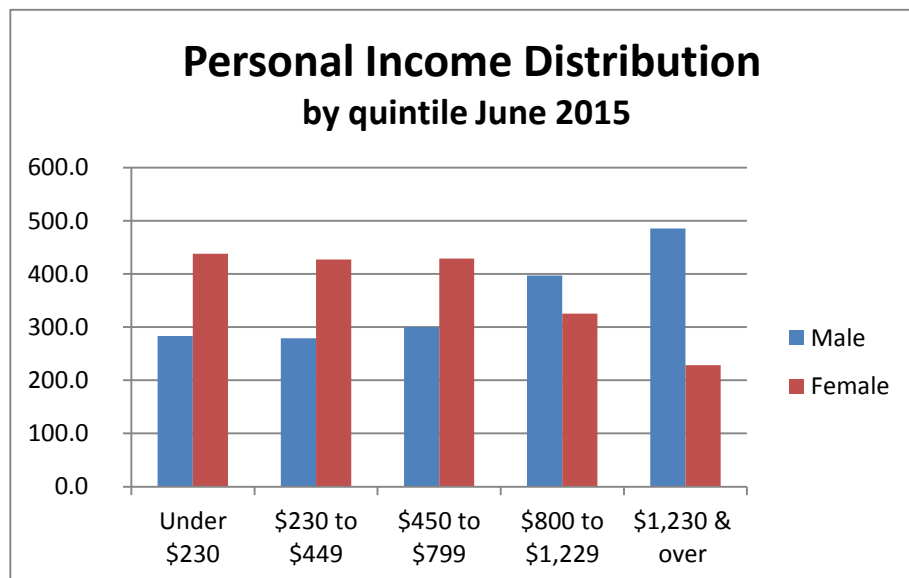
3. Women in the labour market – a quick update on the latest data

Our report (NZIER 2013) looked at differences in earnings of men and women. It discussed changing patterns in earnings related to age, qualifications, average hours of work, occupational segregation and labour force participation. This argued that the earnings gap between men and women has narrowed as women have gained qualifications that enable them to enter higher paid occupations. However, differences remain relating to the higher propensity for women to engage in part time work, and though continued occupational segregation.

We have not sought to fully update that information and analysis, but it is worth a reminder of the latest data.

Average hourly earnings for women in the June 2015 quarter (Statistics NZ, 2015) were \$25.35 and for men \$29.44. Figure 2 shows income distribution. Women are over-represented in the lower income groups.

Figure 2 Distribution of weekly income by quintile



Source: Statistics NZ, Household Income Survey June 2015

Statistics NZ's June 2015 release calculated the gender pay gap was 9.9 percent. This means that a typical male earned about 10 percent more for an hour's work than a typical female. The analysis shows the gender pay gap has generally been decreasing since 1998, and has stabilised in the last few years.

In October 2015, Statistics NZ published a report entitled "Women at work: 1991-2013". This report provided a comprehensive analysis of occupational gender

segregation, income and educational achievement. It noted that the extent of occupational gender segregation is still significant. Forty-four percent of women would have to change occupation for men and women to have the same occupational distribution – the Occupational Dissimilarity Index. This though is an improvement from 1991 when the Index was 52%.

The most common occupations amongst women are shown in Table 1.

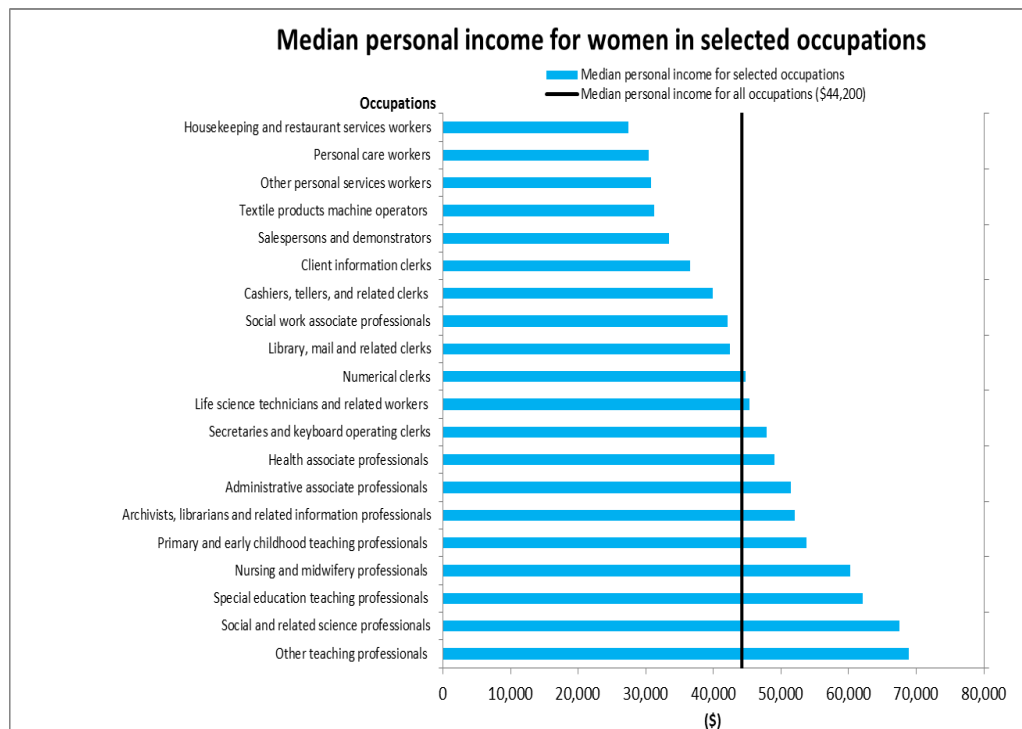
Table 1 Common occupations of New Zealand women

Occupation	Percent of all employed women
Sales assistant	5.9
General clerk	5.2
Registered nurse	3.4
Caregiver	3.1
Primary school teacher	2.8

Source: Statistics NZ

The graph below shows the median income in the top 20 female dominated occupations, as compared to the overall median income (for full time workers only).

Figure 3 Median incomes for top 20 female dominated occupations



Source: NZIER, from data published by Statistics NZ

4. Results from the literature review

4.1. Overall economic impacts

Madden (2000) modelled the impact of pay equity on the New South Wales economy. This analysis used a two region (NSW and Australia as a whole) general equilibrium model of the economy, based at Monash University. Some modifications were necessary in order to be able to model the impact of pay equity. There was a more detailed breakdown of occupational classification, so that female dominated occupational groups could be identified, and a pay equity adjustment modelled.

This paper modelled two different scenarios. These were:

- A 1% across the board pay increase to all employees within the occupations (51) identified as female intensive
- An across the board pay rise to female-dominated occupations sufficient to close the gender wage gap by 1%.

Table 2 Macroeconomic effects of across the board pay equity measures

Impacts diminish over time

Variable (% change)	1% wage increase (short run)	1% wage increase (long run)	1% close in wage gap (short run)	1% close in wage gap (long run)
Real GDP	-0.12	-0.06	-0.36	-0.18
Employment	-0.17	-0.09	-0.50	-0.27
CPI	0.22	0.12	0.66	0.37
Real consumption	-0.07	-0.04	-0.21	-0.11
Real wage	0.14	0.09	0.42	0.27

Source: Madden 2000

The research also looked at impacts for industry. All industries were expected to contract, along the lines of the results above, but as might be expected, the impacts were greater for industries with more female dominated occupations.

In addition, the study ran scenarios on adjusting specific female dominated occupational categories, rather than an across the board adjustment. These were for librarians and hairdressers. These showed similar patterns, but very much smaller overall impacts, and any impacts were limited to the occupational groups themselves.

Overall the analysis showed that there would be a reduction in employment, higher real wages and lower economic output in both the short and the long term, but that

long term negative consequences are significantly smaller than short term consequences. Overall living standards – as measured by real consumption – decrease as employment and price effects more than offset the gains from higher wages.

Madden also concluded that there were benefits in spacing out the introduction of pay equity measures across different occupational groups.

He also noted that the model did not consider increased productivity associated with neither pay equity, nor the possibility that wage rises were absorbed by producers, nor a range of different fiscal responses by government for pay equity measures in occupations dominated by government employment. He recommended extending future modelling to include these variables.

4.2. Implications for government

The Madden study did not report on the overall impact for government.

The KPMG study of the economic impact of the introduction of the Living Wage in the UK (KPMG 2015) has some relevance here. This study modelled an across the board increase in wages, but focussed on increasing wage rates for low income earners. This group of low income earners covers a number of the occupations dominated by women e.g. home care workers, and some clerical and retail work

KPMG concluded that government was the major beneficiary of the introduction of a Living Wage.

Overall KPMG calculated the cost of implementing the Living Wage at £12.4b or 1.3% of the national wage bill. This represented an average increase of 15% for lower paid workers.

KPMG then looked at how this additional cost could be funded. They suggested it could be funded by productivity gains, reductions in employment, price increases, reduced firm profits, or a combination of these factors. They then looked at a number of scenarios to determine the impact for government:

- Financed by reductions in employment – in this scenario they calculated there would be very little change to the tax take, and therefore impact on government.
- Employers/firms through reductions in profits/dividends – Under this scenario Government would lose £2.6b of corporation tax and gain £6.6b in additional personal income tax and benefit offsets Thus there would be a net increase for government of £3.9b.
- Price increase – a 1% increase in prices was forecasts. Under this scenario KPMG calculated government would receive additional income tax and offset in benefits of £6.6b. Higher prices will positively impact government revenue through VAT, but adversely impact consumption. Thus they forecast a net gain to government of just the £6.6b associated with income tax and benefits
- Higher productivity – under this scenario there is no change to the employment level, but an increase in wages. Thus they calculate a £6.6b increase in government revenue.

However, under all these scenarios government has to increase public sector wages and/or contract prices to meet the Living Wage.

They then looked at the overall cost of the Living Wage. Simulations conducted through the National Institute of Economic and Social Research (NiGEM) macroeconomic model indicated that 70% of the cost was likely to come through price effects, and 30% through a reduction in employment. This model did not allow for productivity effects, but KPMG did expect some productivity impacts to occur, albeit not to the extent of offsetting the full costs of the Living Wage.

KPMG then looked at a combination of these four scenarios and therefore concluded that the net revenue gain for government from a 1% increase in wages after one year, less the cost of higher public sector wages and higher procurement costs would be £1.7b.

Each year Treasury and MBIE model the impact of increasing the minimum wage. This is outlined in more detail in below (see Section 4.3). But impacts for government are largely focussed on the increased wage/contract costs, rather than the economy-wide effects.

More in-depth modelling, including assumptions about benefit impacts, will be needed in order to more clearly identify the balance of implications for government. Using a CGE (computable general equilibrium) model will also identify these second-round implications.

4.3. The labour market

The Madden work did indicate some reductions in employment levels (see Section 4.1) above.

Every year Treasury and MBIE model the impact of increasing the minimum wage. The 2015 analysis (Minister for Workplace Relations and Safety, 2014) proposed an increase of 2.3% to \$14.60. This was accompanied by a regulatory impact statement that identified some of the economic impacts. This modelling looked at implications for employment, wage earners and additional costs to government of its own employees or contracted employees (this is focussed on additional costs to the Ministries of Health, Social Development and Education and the ACC – thus many of the same workers that might be impacted by pay equity measures). The results are shown in Table 3.

Table 3 Minimum wage modelling

Measures	Status quo	Preferred option	Living Wage
Adult minimum hourly rate	\$14.25	\$14.75	\$18.80
Number of people impacted	62, 700	115,100	547,000
Restraint on employment	No change	Negligible	-27,000
Additional costs to government	No change	\$18.3m	\$540.5m

Source: Minister for Workplace Relations and Safety, 2014

4.4. Firms/employers

Much has been written on the impact of minimum wage policies, and more latterly Living Wage policies on firms. The traditional view, still widely held and supported by research (e.g. Lammam, 2014) is that such policies result in economic inefficiencies plus a reduction in employment (McLaughlin, 2009 provides a summary of the literature; as does House of Commons, 2015 and Wihbey, 2015). McLaughlin also argues that there is some empirical evidence that such policies can improve productivity though both more commitment from workers, and through firms responding to increased cost by taking a “high road strategy” – offering higher quality products and services, thus potentially increasing revenue to offset wage increases.

The literature indicates a similar tension in relation to the implementation of pay equity.

A review of different pay equity models across a number of countries undertaken for the ILO (Chicha, 2006) looked at the implications for firms of pay equity. This report was based on previous ILO studies, and a wide range of international studies, so is in effect a good summary of the research at that time. It looked at models in operation in Sweden, Quebec, United Kingdom, Netherlands, France and Switzerland. Most of these systems had an element of voluntarism in that firms could opt into pay equity by undertaking reviews within their own firms and adjusting wages accordingly. The study acknowledges the increased costs to firms. It also indicated that women’s wages increased and identified direct benefits to employers such as:

- Improved retention rates – thus reducing recruitment costs
- Improved employee performance and productivity
- Greater staff satisfaction – through reduced turnover, reduced absenteeism.

The report also indicated that firms adopting pay equity were seen as more attractive places to work, and thus found it easier to attract high quality staff. This carried further into positive reputational effects, which positively influenced demand for their goods and services.

These findings were echoed in the study of the impact of the implementation of a Living Wage policy in London (London Economics, 2009). London Economics reviewed the literature and supplemented this with qualitative research through interviews and questionnaires, and an analysis of financial data of organisations which implemented a Living Wage policy in London. Similar findings are evident in Wills and Linneker, 2012; Dutton, Reaside, Mazza and Chen, 2014; and in Rubery's 2003 summary of the literature in developing and developed countries, for example.

It is notable that the economic models employed in analysis (e.g. Madden, 2000, KPMG, 2014 and those used by MBIE/Treasury), tend to factor in employment displacement impacts, rather than productivity gains. However, it is possible using CGE models to understand the level of efficiency gains required to offset employment losses, and test the reality of those gains.

Goldman Sachs (2013) coined a term "womenomics" identifying the growing impact of expenditure by women on the economy as a result of increased wages. Their analysis in Japan indicated that relative to men, Japanese women tend to spend more on items such as cosmetics/toiletries, healthcare-related, housing/repairs & maintenance, and gardening-related. They saw this influence being significant in the value of future stocks of companies producing these goods and services. This reinforces some of the marketing/sales literature that indicates broadly women are responsible for more of the day-to-day expenditure of households, and there are differences between women's own expenditure to that of men. However, given the dynamic effects in the economy, this may be offset by decreases in stocks for firms producing more goods and services preferred by men.

4.5. Households

Studies on pay equity generally reported increased household income, but offset by reductions in benefits support and increases in tax paid. Over time, we'd also expect to see price increases impact adversely on households, meaning that necessary goods and services would cost more.

Many studies argued that minimum wages policies, Living Wage policies, and pay equity policies for low income workers weren't necessarily well targeted to improving the position of low income households as they were targeted to individuals not households. Households could comprise of a low income wage earner and a higher income wage earner, thus not best targeted to low income households.

Treasury undertook an analysis of the impact of the Living Wage proposals in New Zealand in 2013. This summarised the increase in household wages, after changes in benefits support, and the change in reduction in benefits paid by government for different household types.

Overall, Treasury argued that this proposal was not a good way of increasing wages for low income families with children as the majority of people who would benefit from this were single adults. Single parent families, who are over-represented in the low wage group, benefit less than others because of the steep abatement arrangements associated with government support. Treasury also indicated it would likely have a negative impact on employment and inflation (as identified above in Section 4.1).

Nonetheless, it demonstrates substantial benefits for government and households. In Table 4, the column on the change in government reflects both the increase in tax paid, and the decreases in benefit support paid for a household. Again, this has relevance as there is a cross over between lower paid workers who might be captured under pay equity changes and workers captured under such a Living Wage proposal. This particular analysis looked at the impacts on households. However, the second round impacts were not modelled in this analysis. We would expect these to reduce any net savings to government.

Table 4 Changes in after tax earnings and government support from the Living Wage

Household type	Increase in pre-tax earnings	Increase in earnings post tax	Decrease in benefit support	% change	Consolidated change in Government expenditure/revenue
Sole parent two children	\$102	\$82	\$58	30%	\$78
Two parents, two children (one adult working half time)	\$189	\$153	\$88	42%	\$126
1 Adult Full time employment	\$93	\$75	0	32%	\$18

Source: Treasury, 2013

The data presented on occupational gender segregation, together with information on wages for some of these groups (see Section 3), mean that pay equity could have similar implications.

Again, this depends upon household composition. An analysis of the household composition of workers in this group would be necessary to fully understand the implications.

Smith's (2015) analysis of household income in the US on the impacts on dual income households as women's earnings rise indicated that women's contributions to family income are essential for most families. This is clearly the case for single-mother families, but her study showed increasing importance for dual income families. Her analysis showed that increasing labour market participation and income made a very significant difference in the economic well-being and economic security in dual income households.

Older studies looked at intra-household income distribution. Fleming and Easting 1994 indicated that income earned by women was more likely to be spent on household necessities, and health and education for children. This is echoed in the research in developing countries (see Doss, 2011 for a summary), and is the basis of many development programmes. These studies also showed an increase in the quality of food i.e. more nutritious food, being purchased by women whose incomes

increased. It was also one of the major rationales for the payment of NZ Family Benefit to directly to mothers – phased out in the 1980s. However, we’ve not identified any more recent research on these matters in developed countries, so it is difficult to draw any conclusions as to whether this distinction is still the case.

While there is little relevant recent research on this issue, the OECD and others acknowledge that increases in household earnings do not mean that these gains are equally distributed amongst household members.

Many authors suggest a bargaining model of decision making in regard to household spending choices e.g. both partners discuss spending priorities and allocation of household and their own personal expenditure. These studies argue that if women earn a relatively greater proportion of household earnings, they have more control over household decision-making as they bring more to the table.

More recent work on financial decision making in Pasifika households by the Families Commission (2007) and the Families Commission (King and Waldegrave, 2012) indicated that it was women that knew the money situation in their family and “controlled” or managed money in their households.

4.6. Individuals

Improving pay equity may have economic and social impacts.

The general purpose of pay equity is to improve the wages of women, and by its nature it does so. This was clearly indicated in many of the studies cited. The extent to which this occurs depends upon household type and the structure and rules associated with tax and benefit provisions, as are the second-round offsets associated with increased prices, or decreases in overall employment. Depending on the choice of individual women, this may also increase labour market participation. Many studies cite long term economic benefits from increased labour force participation (e.g. Goldman Sachs 2013).

Increased wages over a period of time for an individual can result in:

- Increased economic wellbeing
- Increasing economic resilience
- Increased savings – perhaps aiding home ownership, or savings provision for superannuation, which has traditionally been an areas where women are disadvantaged (Hyman, 2004).

Using an investment model-type approach, it would be expected that younger women would benefit more, as they may receive this increase in income over a longer period. However, in order to determine the implications of the current set of pay equity issues, the age profile of the work force in these groups would need to be identified. In the profile produced by the Ministry for Women on the aged-care workforce (provided to us as part of this project), the median age was 49 years.

Aizer (2010) looks at the impact on domestic violence of increases in women's income. This work not only summarised relevant studies, but also undertook an empirical analysis on the extent to which closing the gender pay gap resulted in reductions in domestic violence. This was based on the household bargaining model outlined above. Her findings suggest that in addition to more equitable distribution of resources, the level of violence against women decreases as a gender wage gaps reduce. Given that this also has important implications for child outcomes, she argues that improved pay parity may also have important intergenerational effects.

5. A programme of further work

The economic impact of pay equity is only one of the factors that should be considered when making any policy decisions on the implementation of pay equity, but is important for demonstrating the trade-offs and potential unintended consequences of pay equity that our framework and literature review highlight as risks. Economic analysis helps to quantify not only the immediate impacts on firms, government and individuals, but also the important second-round economy-wide effects.

We would suggest using a CGE (Computable General Equilibrium) model to model the overall economic effects, as per Madden (2000). The simulations would involve lifting nominal wages towards equity levels in the most affected sectors and letting the model show how these initial impacts ripple out through the economy and the *net* effects on individuals, firms, sectors and the government coffers.

We would also suggest undertaking a number of simulations, based on data from wider sources, to take account of the following variables:

- Potential productivity gains – given the employment conditions and nature of the work in various affected occupations, using a CGE model will allow you to understand the magnitude of offsetting productivity gains that might be required to help firms manage costs.¹
- Understanding the household-type of potentially impacted workers to better understand the impact on benefits and income related tax changes for government. A profile should be able to be drawn from Census material to match household type, occupation, and income.

The implications of gradual introduction of pay equity should also be considered by using a dynamic CGE model that allows for phased changes in wages. This should include:

- Individual occupational groups (as per the Madden example), as well as more general increases across female-dominated occupational groups to understand the relative impacts.
- Phased introduction across a number of years to manage impacts on the wider economy.

¹ That is, you would be able to ascertain what productivity improvements would be required to balance the potential costs to firm from higher wage bills.

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Appendix A Appendices

A.1 Definition of Pay equity

This explanation is taken from the MBIE website:

“Pay equity means gender doesn’t affect what people are paid. It means women receive the same pay as men for doing the same work and for doing work that is different, but of equal value. The value of work is assessed in terms of skills, knowledge, responsibility, effort and working conditions. Other considerations in setting remuneration can include market rates, productivity and performance.”

A.2 Background in New Zealand

Equal pay legislation was passed for the state sector in 1960 (the Government Service Equal Pay Act), and for all employees with the Equal Pay Act 1972. Attention turned to the achievement of pay equity during the 1980s, leading to the passing of the Employment Equity Act in 1990, which was repealed shortly afterwards following a change of government.

In 2003, the Government set up a Taskforce on Pay and Employment Equity in the Public Sector and the Public Health and Education Sectors. Following this, pay and employment equity reviews took place in the public service from 2005 to 2009, undertaken by a Pay and Employment Equity Unit (the unit) within the Department of Labour.

In February 2009 the equity reviews and the unit were discontinued. Following the closure of the unit, the Ministry of Women’s Affairs was instructed to expand its policy and research role on the gender pay gap and other employment issues.

(from Ministry for Women 2014)

A.3 The approach to the literature review

The objective of this literature review was to identify material that looked at the economic impacts of pay equity. It was done in a relatively short timeframe.

The scope of the search was limited to material from/on the following countries/geographic areas: New Zealand, Australia, United Kingdom, Europe, Canada and the United States. We also included high-level material with a broad international focus.

We started the literature review by conducting a series of searches using electronic bibliographic databases such as Te Puna, NZresearch, Econlit, REPEC, JSTOR and Google Scholar, and web searching to cover international bodies such as the OECD, IZA, United Nations and various government agencies and institutions from the countries of interest.

Search terms encompassed variations on the following ‘pay equity’, ‘equal pay’, ‘pay parity’, ‘Living Wage’, ‘minimum wage’, ‘gender gap’, ‘inequality’, ‘gender equality’,

'women', 'female', 'economic impact', and "economic effect'. We supplemented these searches by doing some citation searches on key recurring references that appeared frequently in the bibliographies of recent articles and reports that surveyed this topic area, and the research output of individual key authors.

During the course of our searching, we encountered a high volume of material that described the gender pay gap for given countries or sectors but did not address the economic effects of pay equity. This we tended to filter out as we went unless it was useful for context or as a lead to other material. We also filtered out material focused on women in individual developing countries as it was deemed out of scope for this piece of work.

We were also asked to widen the search and look for material that considered how spending decisions were made within households and between household members and how promoting pay equity and economic empowerment reduced violence against women. Additional searching was performed using appropriate key phrases to look for relevant items.

In addition to the bibliography in our report, an additional formal output from this literature review is the accompanying results matrix (spreadsheet). For each item there is bibliographic detail, an abstract where available, a comment on the relevance of the item to this piece of work, country and its topic focus i.e. pay equity, minimum wage, Living Wage, equality/inequality, and household expenditure. These results can be sorted by publication date, author, country or focus.

Table 5 shows two examples from our search results. There are over 150 items in our results matrix.

Table 5 Annotated literature search findings - examples

(not all columns of matrix are included here)

Year	Title	Relevance	Focus	County
2004	Achieving pay and employment equity for women - human rights and business/development imperatives	Scene setting. Provides a good overview of why women face pay discrimination in the workforce. Then discusses why pay equity not only good for women but good for society as a whole. Finally outlines what needs to be considered to achieve pay equity for women.	Pay equity	Multiple countries
2013	A Literature Review on the Effects of Living Wage Policies	Literature review. Provides empirical evidence of the effects of Living Wage laws introduced in other countries. One of the key findings from the literature was though the Living Wage is inefficient it does have some effect on alleviating poverty.	Living Wage	Multiple countries

Source: NZIER