



THE SENATE
SENATE FINANCE AND PUBLIC ADMINISTRATION
REFERENCES COMMITTEE

**Inquiry into gender segregation in the workplace
Public Hearing – Monday, 10 April 2017**

Questions Taken on Notice – Australian Federation of Employers and Industry

1. HANSARD, Page 56-57

Mrs Allen: There really are some issues with workplace regulation and that to have the widest possible choices open to girls is the most important thing. That means you have to encourage employers to employ. We have seen, particularly in the last decade, a withdrawal from the labour market, with many employers saying they will not take on another one. It is the whole concert of regulation, including superannuation, and workers compensation is a really big one. We have seen it in the labour market figures. Employers have cut back on hours. They will keep people on, but they will not have new hires. If we want women to progress we have to have the widest range of choice available. If you look at America, who is heavily criticised because of its minimum wage policies and those sorts of things, they have the highest number of women entrepreneurs and managers. It has not been regarded as the land of opportunity in recent years, but there we have it.

CHAIR: Thank you, Mrs Allen and Mr Brack. If you have any additional information you would like to provide you are welcome to. This question about performance in the United States is not addressed in your submission or the accompanying paper, so if there was information you wish to provide we would gratefully receive it. Although, we do not want to burden you too much.

Extract from page 31 of the paper prepared by Professor Phil Lewis (copy attached):

Sanandaji (2016), using OECD data (average 2000-2013) for industrialised countries, estimated the likelihood of the average employed woman reaching a managerial position compared to the average employed man. For a woman in the USA this is found to be 85 percent. This is far higher than for any other country in the study. As a comparison, the likelihood of an employed woman reaching a managerial position is 60 percent that of a man in the United Kingdom and 52 percent in Sweden. Norway (48 percent), Finland (44 percent) and Denmark (37 percent), countries known for their family-friendly policies, score even lower. In other words, in the USA, with no state-provided parental leave, women have a greater likelihood of reaching managerial positions than in the Scandinavian countries with extensive welfare states.

This study is included in the paper's references, cited as:

Sanandaji, N. (2016), The Nordic gender equality paradox, Timbro, Stockholm.

It may be accessed at <http://nordicparadox.se/>

The ILO's ILO Global Report Women in Business and Management: Gaining Momentum¹ contains estimates of the percentage share of women as managers in the private and public sectors; as employers and as own account workers. The table below is an extract from that report which uses data from the Laborsta and ILO statistical database. The Nordic countries have been selected for

¹ http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_316450.pdf

comparison purposes given their high level of regulation for gender equity purposes compared with the United States. Countries with higher percentages of women as managers include Latvia, Estonia, and several Central American countries.

Country	Percentage Share of Women as Managers in the Private and Public Sectors	Percentage Share of Women as Employers	Percentage Share of Women as Own Account Workers
USA	38.6	37	37
Australia	36.2	33	37
Denmark	28.4	21	32
Finland	29.7	23	35
Sweden	30.7	22	29
Norway	34.7	26	28

Source: ILO Global Report Women in Business and Management: Gaining Momentum Statistical Annex

The report also observes that while on average less than 5 per cent of CEOs were women in the largest companies in OECD countries, the US had the second highest proportion (4.8%) after China (5.6%). (page 1)

The 2015 Amex State of Women-Owned Business Report:

Between 1997 and 2015, when the number of businesses in the United States increased by 51%, the number of women-owned firms increased by 74% – a rate 1-1/2 times the national average. Indeed, the growth in the number (up 74%), employment (up 12%) and revenues (up 79%) of women-owned firms over the past 18 years exceeds the growth rates of all but the largest, publicly-traded firms – topping growth rates among all other privately-held businesses over this period.

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The only bright spot in recent years with respect to privately-held company job growth has been among women-owned firms. They have added an estimated 340,000 jobs since 2007. Among men-owned and equally-owned firms, employment has declined over the past eight years. Women-owned firms now account for 30% of all enterprises, and are growing faster in number and employment than most other firms. Despite this fact, women-owned firms employ only 6% of the country’s workforce and contribute just under 4% of business revenues – roughly the same share they contributed in 1997. When large, publicly traded firms are excluded, women-owned firms comprise 31% of the privately-held firm population and contribute 14% of employment and 12% of revenues. Combining equally-owned firms with women owned enterprises finds that women- and equally-owned firms number 14.7 million as of 2015, generate nearly \$3 trillion in revenues, and employ nearly 16 million people. Women- and equally-owned firms together represent 47% of U.S. firms and contribute 13% of total employment and 8% of firm revenues.²

² <https://d8a8a12b527478184df8-1fd282026c3ff4ae711d11ecc95a1d47.ssl.cf1.rackcdn.com//us/small-business/openforum/wp-content/uploads/2015/05/Amex-OPEN-State-of-WOBs-2015-Executive-Report-final.pdf>



the **CENTRE for**
LABOUR MARKET RESEARCH

**GENDER PAY EQUITY AND OCCUPATIONAL SEGREGATION:
a discussion of the issues and evidence**

Prof Phil Lewis
Director, Centre for Labour Market Research
University of Canberra

Contact: phil.lewis@canberra.edu.au

GENDER PAY EQUITY AND OCCUPATIONAL SEGREGATION

This discussion of pay equity examines several aspects of the issue. First, the determinants of wages need to be carefully considered. In brief, the rate of pay individuals receive is determined by the labour market – supply demand and institutional settings are all important. As discussed here, the factors determining the wage rate people receive will differ between individuals and groups of workers and there is no reason to think that everyone with a certain set of skills, such as education and experience, will, or should, receive the same rate of pay.

Second, the role of occupational segmentation receives particular attention as does the degree of within and between occupations wage differences since the distinction has great relevance to understanding gender pay differences. The Australian labour market displays a high degree of occupational segregation by gender. The nature of that occupational segregation and its role in shaping differential labour market outcomes for men and women, is discussed. The cause of gender segregation has implications for the extent to which such differences can be considered discrimination warranting consideration of gender equity policy.

Third, appropriate analysis needs to be carried out to determine the extent to which pay inequity or discrimination actually exists in the Australian labour market. Just observing different rates of pay for men and women is not sufficient evidence of discrimination.

Finally, the economic impact of any action to address any identified problem needs to be considered, to ensure that the elimination of one supposed inequity, where it is found to exist, does not lead to the imposition of another.

This paper examines each of these areas in turn.

What determines pay?

The simple answer to the question of what determines the rate of pay an individual receives is that it is determined by the labour market, where the labour market is shaped by a number of economic and institutional considerations, the most important being demand and supply of labour. The interaction between firms' demand for labour and household supply of labour determines the equilibrium wage rate. Because there are many different types of labour, there are many different labour markets. For instance, the equilibrium wage in the market for professional cricketers is much higher than the equilibrium wage in the market for university lecturers. In this paper we explore why this is true. We also explore how factors such as compensation for jobs with different positive and negative qualities help explain differences between wages.

This discussion is founded on the basis of Australia's minimum wage rates being determined by the Fair Work Commission on a gender neutral basis and paid in accordance with an award or enterprise agreement. The market mechanisms are subject to this legislated minimum rates regime as well as anti-discrimination regulation.

Demand for Labour

The demand for labour is determined by profit maximising decisions of firms. Firms will employ more workers if it is profitable to do so. A firm seeks to employ a worker as long as the value of the output produced by an additional hour (week or year) of labour, referred to by economists as the value of the marginal product of labour, is greater than or equal to the hourly (weekly or annual) cost of employing labour, of which the wage is usually the most important component. The costs of employment also include a number of aspects which a firm might offer to attract workers such as flexibility, additional leave entitlements or other benefits. It is the total cost per unit of labour which is relevant and will include the wage and costs of other benefits for employees – greater benefits will entail lower wages, all else being equal.

Thus, the wage (plus the cost of other benefits) a firm is willing to pay to a worker depends on the value of the output per unit of labour. This has two important determinants. The first is the actual output per unit of labour, that is, productivity. The second determinant is the value of a unit of output produced by the worker. Therefore, the amount a firm is willing to pay an employee depends not just on their productivity but also how much customers are willing to pay for the output produced (the output price).

Productivity depends on the skills of a worker such as those obtained through formal education and training plus experience in employment. Other skills can be inherent in the individual, such as dexterity, intelligence, diligence, politeness, interpersonal skills or entrepreneurship. Other skills include maturity, which mostly comes with age, and experience. Perhaps because it more easily lends itself to measurement, most empirical analysis has concentrated on that element of skill related to education and training, both formal and on-the-job.

However, measurement of education and training is imprecise, and is most often taken to be years of schooling or qualifications from a tertiary institution. Thus, for example, an individual with a four-year degree in education is considered to be identical to an individual possessing a four-year degree in engineering. This ignores the fact that the inherent quality of students, as proxied by tertiary entrance scores, varies considerably for certain degree disciplines (Lewis and Norris 1992, Daly et al 2011), although for most disciplines the ease of entry has diminished over time as the number of places has expanded due to the demand-driven policies of the Commonwealth government. However, entry scores still differ considerably between universities (University Rankings 2016).

The use of qualifications as a proxy for human capital also ignores the significance and value of on-the-job experience. For all the theory, principle and practice tertiary graduates have absorbed in their courses, it is what they learn in employment, what they use, modify or or discard from their academic years which makes them valuable to their employer. The value of the employee

to the employer grows as the employee learns more about the enterprise – its products, services, systems, employees and customers and their role within it - and as they increasingly become an integral part of the business. This takes time in the workforce and it creates market value for the employer (and the employee).

Nevertheless, there is overwhelming evidence that those in occupations where workers have received greater education and training, all other things being equal, receive a higher wage than those with lesser education and training (the main prediction of the human capital model) due to the greater demand for labour. However, this does not explain why people with the same length of time in education, such as that obtained through a university or TAFE qualification should have very different labour market outcomes, including pay.

The demand for labour is also significantly affected by structural and technological change. Much of the changing composition of labour demand can be attributed to changing industry mix, which is generally thought of as structural change. In 1975 the ‘soft’ services (such as health, finance, retail, education, restaurants etc.) accounted for just over 50 percent of all jobs, but by 2014 the sector accounted for over 70 percent of all jobs (Lewis 2015). By contrast, manufacturing’s share of total employment more than halved over the same period to about 8 percent in 2014. There were similar reductions in the relative shares of jobs in the ‘industrial’ services (such as construction, communications, electricity, gas and water). Primary sector (agriculture and mining) employment has for many years made up a relatively small percentage of total employment even given the recent minerals and energy boom.

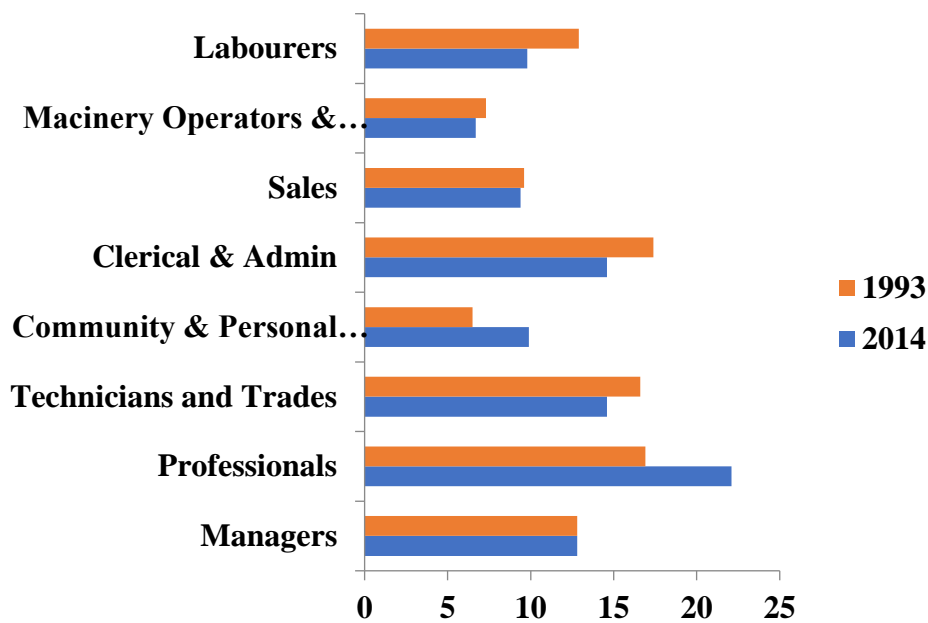
The growth in share of employment in services is a common trend in advanced developed economies like Australia as consumers become richer (demand is income elastic).

Changes in industry composition have combined with technological change to systematically change the demand for skills. Technological change has allowed for, or even driven, a restructuring of occupations within industries.

For the workforce, as a whole, jobs and the skills required can be conveniently described according to three types of skills – motor, cognitive and interactive (Kelly and Lewis 2006). Motor skills refer to the ability to perform physical tasks and would be found in abundance in such jobs as motor mechanics, welders and hairdressers. Cognitive skills refer to the amount of knowledge possessed and would be dominant in such jobs as computer programmers and accountants. Interactive skills are those required for communication between management and employees, between employees and employees; and between employees and customers. Interactive skills are extensively required in management and sales and marketing jobs. In practice, most jobs will require some combination of these skills.

Structural and technological changes have reduced the relative demand for motor skills, increased the relative demand for cognitive skills and, in particular, have greatly increased the demand for interactive skills. Particularly important is the growth in the services sector and, within this sector, the retail industry, and the relative decline in importance of manufacturing. These changes have had important impacts on the structure of the labour force (Lewis 2015). For example, the relative decline in manufacturing has reduced the demand for people (mainly male) with motor skills while there has been a huge growth in employment of women in jobs requiring interactive skills. In the youth labour market full-time jobs for, relatively unskilled, school leavers have declined severely over time while most jobs are part-time with over 80 percent of these jobs held by students (Lewis 2015).

Figure 1: Occupation of Employment, 1993 and 2014, Australia, percent



Source: Lewis (2015).

The structural and technological changes have had a significant impact on the demand for labour by occupation as seen in Figure 1. The relative decline in employment of those with manual skills, such as tradespersons and labourers is clearly seen. Also clear is the relative growth of occupations in the professional and associate professional categories where interactive skills are significant, including community and personal service workers. While part of this growth is no doubt due to the industry changes noted above, particularly the growth in demand for services, part of this is also due to technological change. Less obvious is the relative decline in employment in clerical occupations. Kelly and Lewis (2010) argue that this is due to technological change and, particularly developments in information and communication technologies (ICTs) which have replaced routine clerical tasks in much the same way as previously innovation in technology allowed for the replacement of routine manual tasks.

Coelli and Borland (2015) also investigated changes in the occupation structure in Australia between 1966 and 2011, and the effect of these changes on the earnings distribution. They found increasing job polarisation (growth in high and low skill jobs, declines in middle skill jobs) in the 1980s and 1990s and

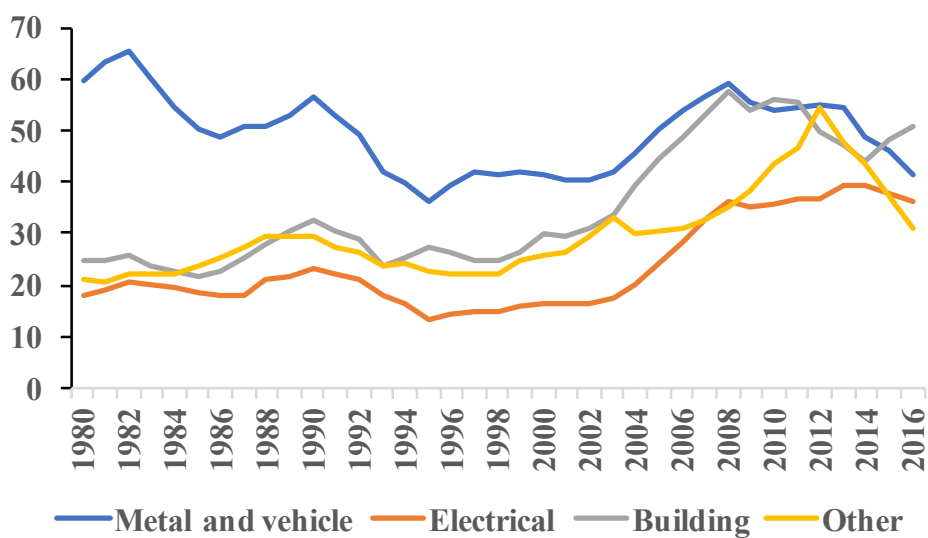
general upskilling in the 1970s and 2000s. In other words there has been a “hollowing out” of occupations.

Coelli and Borland (2015) show that job polarisation has been primarily a male phenomenon and no consistent job polarisation is evident for women. They also confirmed the earlier results of Kelly and Lewis (2010) that occupation changes were consistent with the loss of jobs that were high in routine task intensity.

The decline in demand for manual skills is also evident in the numbers of new entrants to these occupations, proxied by apprentices in-training. Figure 2 shows the number of apprentices in training for the largest trades for males, namely Metal and Vehicle, Electrical and Building; and for the trade which has the most females, Other Trades (Lewis and Corliss 2010).

The number of trainees in the traditionally male trades declined from 1980 until the start of the “boom” in the 2000s when numbers rose as demand for labour increased to meet the needs of, particularly, mining and construction, before falling to what would appear to be the ‘new normal’ levels post-boom.

Figure 2: Apprentices in-training by trade occupation, 1980–2016



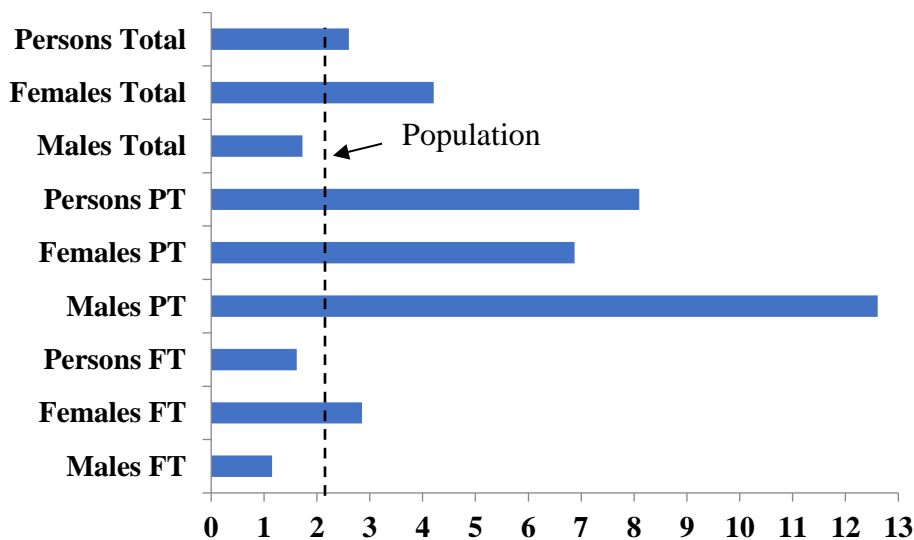
Source: NCVER (2016).

A similar pattern is observable for the traditional female trades, Other Trades. These declining trends are remarkable given a rise in male employment for the economy as a whole of over 58 percent and an over 135 percent rise in female employment during the same period.

Perhaps the most significant impact of changes in the Australian economy has been on employment of males. Figure 3 shows the annualised rate (not compounded) of growth in employment over the relatively long term - 37 years. By way of comparison the corresponding rate of growth in the adult population, which is approximately the growth in labour supply, was about 2.1 percent.

The major trend in the Australian labour market is that the demand for full-time workers, particularly males, has not kept pace with supply. There has been a substitution of females, particularly part-time workers, for full-time male workers. For particular groups, the changes in demand have been particularly noticeable. For instance, a full-time job for anyone 15-20 years old is now an exception rather than the rule and employment prospects are poor for many displaced older males (Lewis 2015).

Figure 3: Employment growth, annualised percentage change, 1978-2015



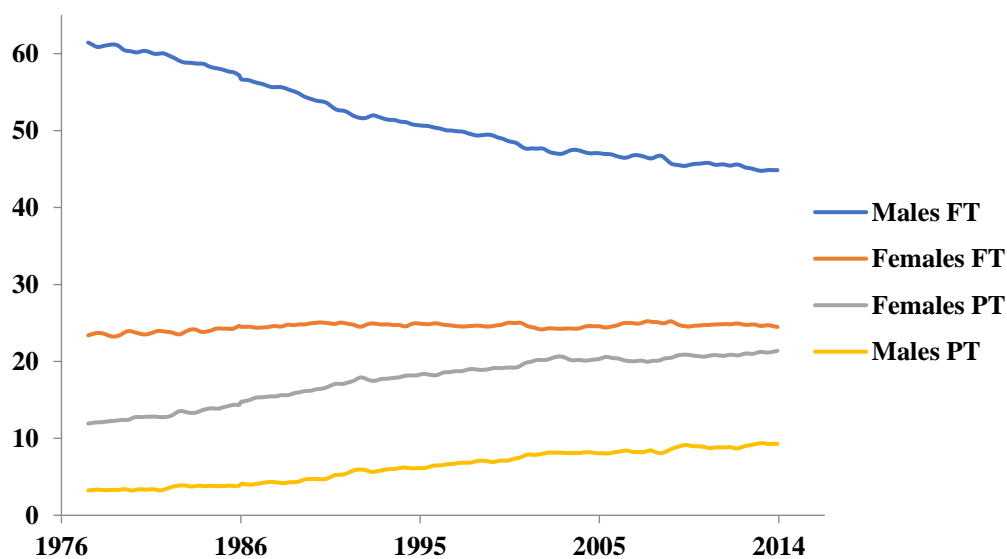
Source: Lewis (2015)

Figure 4 shows that the composition of labour demand has changed markedly over time. In the 1970s over 60 percent of all those in employment were men working full-time. This had fallen to less than half of all jobs in 2014.

Structural change, particularly the relative growth of services and relative decline in manufacturing, together with technological change, have reduced demand for manual labour, which has had the greatest impact on men.

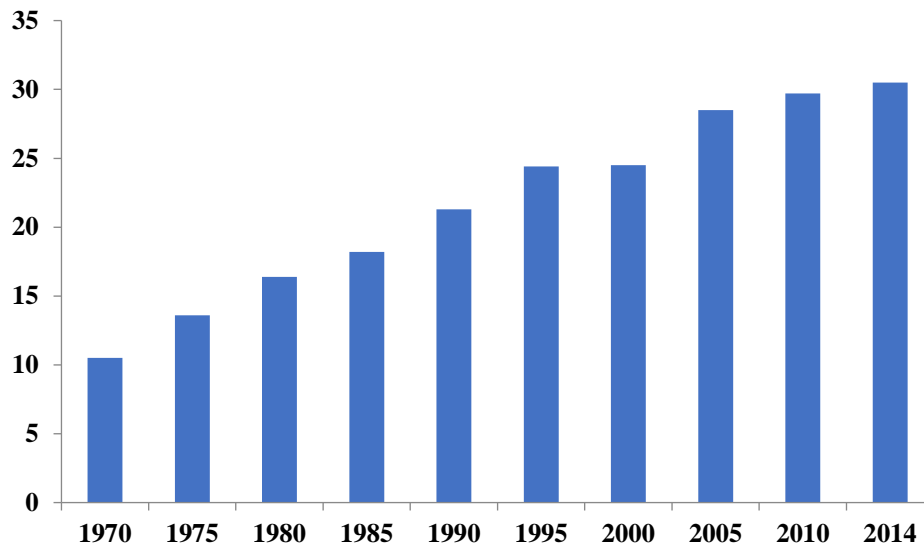
The growth in demand for part-time workers has mostly benefitted those who wish to balance paid work with other activities such as caring, child rearing and study. The main beneficiaries have been women with children and students (Lewis 2015).

Figure 4: Composition of employment, percent of total employed, 1978-2014



Source: Lewis (2015)

Figure 5: Part-time employment, percent of total, 1970-2014



Source: ABS (various years) *Labour Force, Australia*, Cat. No. 6203.0, 6202.0

The growth in part-time employment (less than 35 hours per week) has been almost continuous since the 1970s when only 10 percent of all jobs were part-time. The growth in part-time employment appeared to have reached a peak in the early 2000s but began to grow again reaching over 30 percent of all employment in 2014. More detailed examination of the labour force data shows this latest rise in part-time employment is attributable mainly to more men working part-time in response to the decline in available full time work (Wilkins and Wooden 2014).

The long-term trend is largely explained by the change in industry mix towards services. Much demand for labour in the service sector differs according to the time of the day or day of the week, particularly in retail, banking, fast food, restaurants etc., Therefore, flexibility in hours worked is required to meet peaks in demand which is greatly facilitated by part-time employees.

Labour supply

Of the many trade-offs each of us faces in life, as individuals or households, one of the most important is how to divide up the 24 hours in a day between paid labour and other activities such as study, leisure, caring for family members and household duties. Every hour spent in these activities is one hour less spent working. Because in devoting an hour to other activities a person gives up an hour's earnings from working, the *opportunity* cost of leisure (and other activities) is the wage. The higher the wage we could earn working, the higher the opportunity cost of other activities. Therefore, as the wage increases we might expect people to seek to work more (supply more labour).

Although we normally expect the labour supply curves for most individuals to be upward sloping, it is possible that higher wages actually result in some wishing to reduce the quantity of labour supplied. This is because of the *substitution effect* and the *income effect*. The substitution effect of a wage change refers to the fact that an increase in the wage makes alternatives to paid work more expensive *relative* to paid work. For a wage change, the substitution effect refers to the fact that an increase in the wage raises the opportunity cost of other activities and causes a worker to devote *more* time to working and less time to other activities.

The income effect of a price change refers to the change in the quantity demanded of a good or service that results from changes in consumer purchasing power as a result of a price change. Because non-paid activities are normal goods the income effect of a wage change will cause a worker to devote *less* time to working and more time to alternative activities.

So, the substitution effect of a wage increase causes a worker to supply a larger quantity of labour, but the income effect causes a worker to supply a smaller quantity of labour. Whether a worker supplies more or less labour following a wage increase depends on whether the substitution effect is larger than the income effect. To the extent that individuals and households have different preferences for goods and services (which can be purchased with the proceeds

of paid work) and alternatives such as study, leisure, family duties, caring etc., supply of labour would be expected to differ according to gender, household composition and other demographics.

The supply of labour by individuals is further complicated in that it depends on the preferences and market wage of others in the household. For instance, where there is already a well-paid breadwinner in the household this will affect the supply decisions of others in the household. The growth in demand for part-time and casual workers has greatly facilitated the ability of households to choose optimum combinations of hours by individuals in the household. This is particularly the case for young people wishing to combine study with paid work and parental support; and for women combining paid work with caring and other unpaid work.

Another factor affecting supply is the existence of *compensating differentials*. It is necessary for a premium to be paid to attract workers to otherwise unattractive jobs. This could be due to a range of factors including jobs which are difficult, in remote areas or have generally unpleasant working conditions. Generally, workers in these jobs receive a premium to compensate them (Miller et al 1996). It follows that if there is a wage premium to attract supply of people for unpleasant work there is the potential for a wages discount to exist for work which is relatively pleasant. For instance, firms with attractive non-wage conditions, such as flexible working arrangements, child-care facilities or generous personal leave, would be likely to attract certain workers at a lower wage than other employers.

Labour market outcomes

Labour market outcomes are determined by supply and demand for labour. The outcomes include the wage paid and the level of employment for individual workers in the myriad of segments of the labour market. Since demand and supply are usually quite different depending on which segment of the labour market is under consideration it would be expected that wage and employment outcomes are usually quite different for different individuals. This is true even

for those who appear to be very similar in terms of the amount of human capital they possess.

Hubbard et al (2016) use the following example to explain why top class cricketers are paid far more than garbage collectors when the total value to society of having the garbage taken away certainly is greater than the total value of cricket matches. But wages—like prices—do not depend on total value, but on *marginal* value. The *additional* cricket matches a team expects to win by signing a top cricketer may result in millions of dollars in increased revenue. The supply of people with the ability to play cricket at the top level is very limited. The supply of people with the ability to be garbage collectors is much greater. If a garbage collection firm hires another worker the additional garbage collection services it can now offer will bring in a much smaller amount of revenue. The total value of cricket matches and the total value of garbage collection are not relevant in determining the relative salaries of cricketers and garbage collectors.

Similarly, why does Cate Blanchett earn more today relative to the typical actor than stars did in the 1940s? The gap between the amounts paid to Cate Blanchett, Hugh Jackman and Chris Hemsworth are paid to star in movies and the salary paid to an actor in a minor role is much greater than the gap between the salaries paid during the 1930s and 1940s to stars such as Bette Davis and the salaries paid to ‘bit’ players. In fact, in most areas of entertainment the highest-paid performers—the ‘superstars’—now have much higher incomes relative to other members of their professions than was true a few decades ago.

The increase in the relative incomes of superstars is mainly due to technological advances. With DVDs, Internet streaming video and pay television, the value to movie studios of producing a hit movie has risen greatly. Not surprisingly, the movie studios have also increased their willingness to pay large salaries to stars who they think will significantly raise the chances of a film being successful. This process has been going on for a long time. For instance, before the invention of the motion picture anyone who wanted to see a play had to

attend the theatre and see a live performance. Limits on the number of people who could see the best actors perform created an opportunity for many more people to succeed in the acting profession, and the gap between the salaries earned by the best actors and the salaries earned by average actors was relatively small. Today, when a hit movie starring Cate Blanchett appears on DVD, millions of people will buy or rent it, and they will not be forced to spend money to see a lesser actor, as their great-grandparents might have been.

The point about these examples is that wages are determined by demand and supply not by any moral or other sentiments which may be held to be very important. Where demand is higher, relative to supply then wages will be higher. As an example which may have more relevance here, in Australia there are more than three times more new graduates in accountancy than there are in pharmacy. Graduate Careers Australia (GCA 2016) conducts a survey of students each year soon after graduation and in 2015 this survey reported that new accountancy graduates earned, on average, \$50 000 per year compared to new pharmacy graduates who earned, on average, \$42 000 per year. The graduates look almost identical in terms of human capital – both groups have a three-year degree. The supply of graduates in accounting far exceeds those graduating in pharmacy but the demand for accounting graduates is also far higher than for pharmacists so pharmacists are paid less.

In fact there are quite noticeable differences in starting salaries of graduates with very similar levels of education (GCA 2016). For instance, dentistry graduates had a median starting salary of \$85,000 while medicine graduates had a mean salary of only \$65,000 despite having a similar period of training while optometrists had the same median starting salaries as dentists with fewer years of training. Education graduates with a four-year degree earned \$61,000 – more than engineers, \$60,000, who also had a four-year degree.

The changes in demand due to structural and technological change discussed above have also had important impacts on labour market outcomes with respect to pay. It has been pointed out that there has been a “hollowing out” of occupations with reduced demand for people in routine tasks.

Coelli and Borland (2015) show that changes in occupational composition, and associated earnings changes, contributed significantly to growth in overall earnings inequality from the mid-1980s to the mid- 2000s.

Table 1: Growth in occupations by pay level, Australia, percent

	Low pay	Middle pay	High pay
1966-2011	2.2	-19.2	17.0
1991-2011	1.5	-8.5	7.0

Source: Coelli and Borland (2015).

This has had a significant impact on the distribution of income. For instance, Table 1 shows that there has been a growth in high paid jobs while middle-pay jobs have experienced significant decline and growth in low paid jobs has been very low.

Clearly, institutional and economic factors cause wage rates to deviate from that which would be determined by the individual's attributes as predicted by the human capital model. For instance, Chiswick and Miller (1985) found that in 1981 workers in the public sector received a wage premium of between 8.4 percent and 10 percent above that of otherwise 'identical' workers in the private sector. Also, wage rates differ for the same occupations across industries. Generally, wages are positively related to industry size, monopoly power of firms and the extent of union power (Norris et al 2004).

Monopoly power on behalf of firms and workers would be expected to raise wages above their 'market' rates. Monopoly firms charge prices above the competitive level and, therefore, there is the potential for them to earn excess profits (economic rents) and for these rents to be shared by labour. The ability

of workers to extract part of these rents will be enhanced by unionisation. Restrictions on entry to a profession or trade, as exist in medicine or licensed trades, also prevent competition and raise wages above the market rate. Restrictions include reducing access to university or training places, preventing overseas competition in terms of immigration or restricting employer or consumer access to the free market.

To the extent that unions raise wages for union members (and others who may not be members but whose wages are determined by union power in bargaining or granting of awards) then this is equivalent to a decrease in labour supply with consequent raising of acceptance wages and lower employment.

A phenomenon which has received attention by labour economists recently to explain differences in pay is the concept of monopsony (Manning 2003). Until fairly recently the term 'monopsonist', was mainly used by economists to refer to a firm that is the sole buyer or sole employer for the present discussion. While in competition a firm can employ workers at the going wage, a monopsonist must raise its wages to attract new workers. Since it must also pay the increased wage to its existing workers, the extra cost of employing an extra worker exceeds the wage. The potential exists for the firm to use its monopoly power in the labour market to pay a wage rate below the value of the marginal product.

Examples of monopsony are often difficult to find but perhaps the market for teachers or nurses, where state and territory governments are the major employers, may be an appropriate example. It is difficult for governments to raise wages to reduce teacher shortages since the cost of raising all teachers' wages is extremely costly.

However, a modern interpretation of monopsony (see, for instance, Manning 2003) is that some firms have some market power which allows them to set wages which are different to the market rate set by the market demand and supply. Workers in monopsonistic firms can be paid less than in competitive firms.

Why would workers be willing to accept lower wages in some firms than they would in others? We have already discussed above the idea of compensating differentials whereby workers with ‘good’ employers in ‘pleasant’ jobs would be willing to work for less than they would in less attractive jobs. This might be particularly the case for some workers, such as students and women with young children, for whom some employers might be able to offer a package of attractive working conditions, such as flexibility or family-friendly workplaces, in exchange for lower wages. The differences in wages between workers taking the package and those who don’t will depend on the elasticity of supply of the two groups of workers. Those who value the non-wage benefits would be more willing to supply their labour and will accept lower wages.

Therefore, differences in wages would be expected to exist both between and within occupations in firms characterised by a degree of monopsony. Clearly, however, enforcing a uniform wage across all workers would result in those wanting the non-wage benefits being worse off.

Finally, in this context, it is important to consider the role of the Australian industrial relations system. It would be expected that decentralised bargaining would result in wider disparities in earnings compared to highly centralised systems since institutionally determined wages, by their nature, impose wages which are greater than would be obtained in the market. This could explain the smaller observed gender pay gap in the public sector than in the private sector (Barron and Cobb-Clark, 2010). To the extent that wages are made higher for certain groups in the labour market than they would get in a free market, employment of these workers would be less than in a free market.

Other institutional factors include legislation aimed at addressing perceived inequities which may have unintended consequences, such as other inequities. For instance, increases in award rates of pay for child-care workers may make child-care less affordable and therefore reduce the supply of women in the labour market. Penalty rates for working weekends and so called ‘unsocial’ hours increase the pay for those willing to work these hours. However, for those

who have caring responsibilities, such as women with children, who can't work on weekends or at nights, their pay rates will be reduced relative to, say, young men who do choose to work during these times. On the other hand, to the extent that their male partners can carry out caring duties at weekends some women may want to work but because less jobs are available, due to high labour costs, penalty rates reduce employment opportunities for some women.

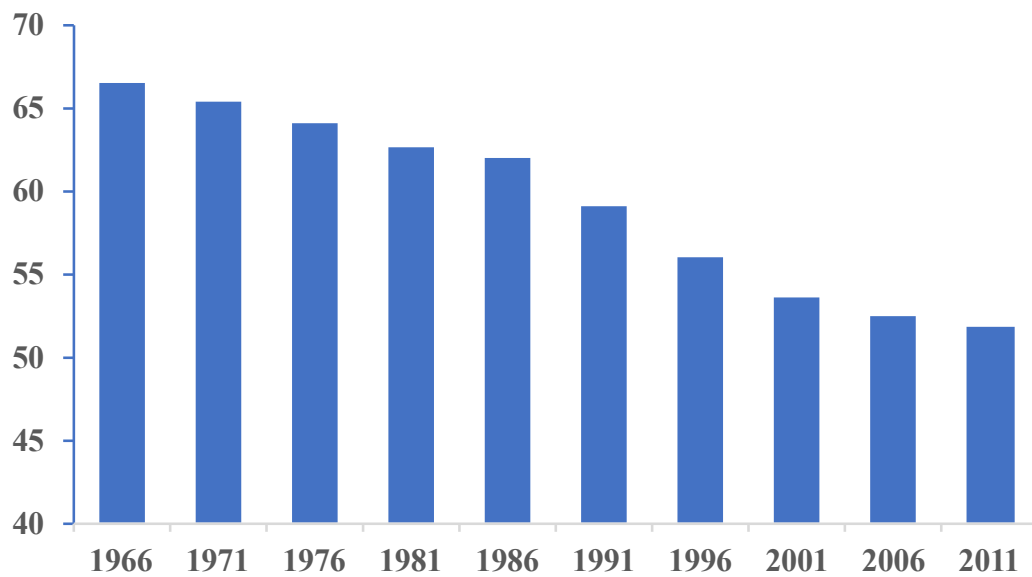
Segregation

The Australian labour market is highly segregated by gender but it is far from alone in this respect. It is common to all industrialised countries and, even though legislation to reduce it is widespread, segmentation still persists (World Bank 2012). Many countries have been attempting to address this for a long time, particularly the Scandinavian countries, with little effect (Schumpeter 2014). Recent research has shown that, in fact, the Scandinavian countries have among the highest gender pay gaps and points to their extensive welfare states as being important contributors. This will be discussed later.

One measure of the degree of segmentation is the Duncan index (Duncan and Duncan 1995) which is the minimum percentage of employed females which would need to change occupations in order to be distributed across occupation as male employees are.

Although this index has been diminishing over time the Duncan index (Figure 6) suggests a high degree of segmentation persists with just over half of all employed women needing to change occupations to have the same occupational distribution as men. The persistence of segmentation suggests that it is largely due to supply-side factors.

Figure 6: Duncan index of segmentation, percent.



Source: derived from Borland and Coelli (2016)

Segregation, whereby certain occupations contain a large number of people from certain groups, is largely attributed to choices made before entering the labour market. For instance, boys' and girls' choices about their future occupations determine their choices of education, degree discipline or trade qualification they undertake. Year 12 female retention rates are more than 10 percentage points higher than for males and university participation is higher for females (Lewis 2015). Recent research indicates that in the last decade boys' school performances in literacy and English have deteriorated compared to girls; and girls have improved their performance in mathematics and physical sciences (Buckingham 2004).

Clearly, there are complex social and economic factors determining occupational segregation. However, there is little reason to believe that choices of occupation are sub optimal *per se*. Indeed, the greater participation of females than males in post compulsory education is evidence of greater opportunities for women although their employment is highly concentrated in certain occupations.

Nevertheless, there is still a view among some that occupational segregation is a problem which needs to be addressed (see Struthers, 2015, for a review of the Australian and international literature). It is maintained that the very low representation of women in occupations, such as most trades (as low as 2 percent), is a social and economic problem and policy must be aimed at ‘correcting’ this imbalance. These include addressing the perceived information gap whereby young women regard the trades unfavourably to other career paths.

While any inefficiency in occupational choice due to misinformation or misperception does suggest there may be a role for policy, it is not exactly obvious why encouraging women into traditional ‘male’ trades is necessary or desirable. Clearly the relative demand for tradespersons has been in decline due to structural and technological change and the question arises as to why women should be encouraged to move to occupations in relative decline.

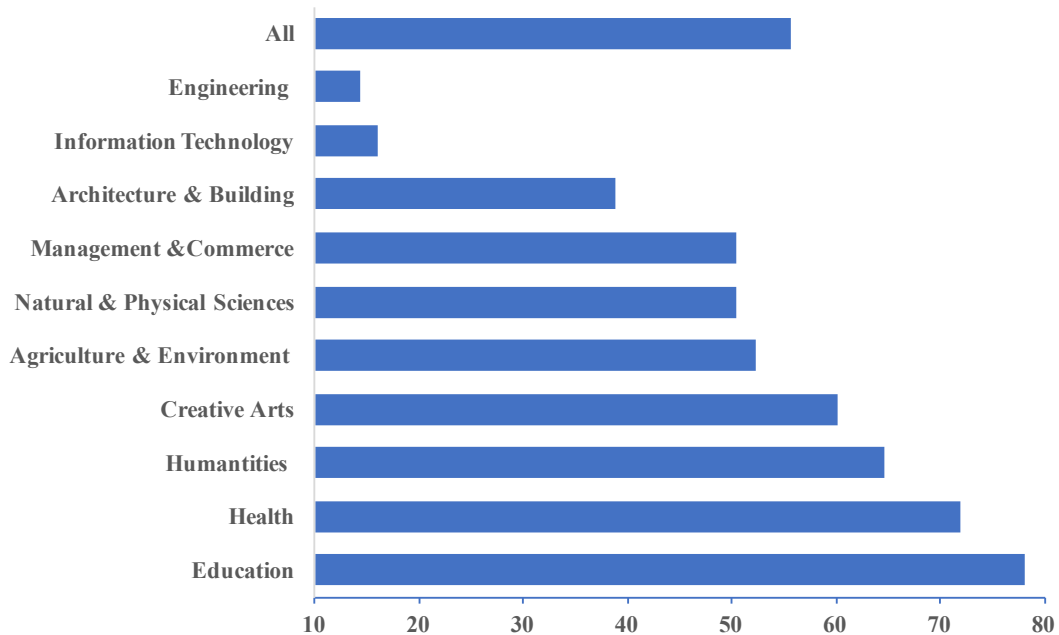
While the economy has experienced a shortage of tradespersons at particular times, most notably during the ‘mining boom’, shortages are best filled by temporary migration, given that there is no evidence of a sustained shortage of tradespersons in Australia. Encouraging women to further expand supply in a segment of the economy in relative decline is unlikely to improve the position of women. Also, if more women enter ‘male’ trades they must not enter other occupations which are experiencing relative growth such as in services which are increasingly demanding better-educated women.

Whether or not segregation is seen as a problem, changing occupation choices is essentially the area of social and education policy rather than one of changing pay relativities.

To the extent that occupational choice made before entering the labour market results in occupational segregation it can be regarded as a factor restricting the supply of labour to certain segments of the labour market. To the extent that supply of, for example women, increases the supply to certain occupations

these would be expected to have lower pay and for those occupations where supply is reduced would be expected to have higher pay, all else being equal.

Figure 7: Graduating Australian university students by gender, females as a percentage of all students.



Source: University Rankings, Australia (2016), *University Rankings*, <http://www.universityrankings.com.au/gender-balance-ratio.html>

As an example, consider the choice of main discipline area chosen by university undergraduates in Figure 7. Whereas women make up about 56 percent of all university first-degree graduates, they make up only 14 and 16 percent, respectively, of Engineering and Information Technology graduates. On the other hand, women make up, respectively, 65 percent, 72 percent and 78 percent of graduates in Humanities Health and Education. Clearly this distribution of students by gender and discipline is a major reason for occupational segregation.

It is important to distinguish between the reasons for segmentation and its impact on earnings and conditions. Women may choose to enter occupations that offer part-time and more flexible working arrangements and are willing to accept lower wages necessary to induce employers to offer these non-wage conditions. Lower wages and other outcomes associated with these

occupations would not constitute discrimination and should, therefore, not be seen as a policy problem.

If, however, occupations that have a high percentage of women have lower pay solely because they have high percentages of women then this is said to signify discrimination (see, for example, MacDonald and Charlesworth 2013) and can be considered a policy problem.

It is important to reiterate here that the pay an individual receives is determined by supply and demand – the bundle of pay and conditions desired by the worker and the value to the employer of the output from the work done. This is the foundation of the approach of economists to the issue of whether or not women's work is undervalued. Alternative views usually associated with sociologists, psychologists and industrial relations academics (see, for example Grimshaw and Rubery 2007) seek to make a distinction between “discrimination” and “undervaluation”. The occupational segregation problem is seen as one arising from the concentration of women in occupations which are “undervalued” because they are traditional female roles. A consequence of this would be that employers receive a discount on hiring women because the value they get from their skills, education and training exceeds the amount they need to pay them compared to men.

In effect these alternative approaches make value judgments about the worth of work which departs from the principle that wages depend on the value to employer and consumer and capacity to pay. So how are we to value work done? This takes us back to the types of examples used earlier. Why is an accountant paid more than a pharmacist? Why is a top cricketer paid more than a garbage collector? Why is a nurse paid less than an engineer? Whereas the market tells us how society values these jobs and the amount people in them get paid, the alternative is to subjectively evaluate “worth” by adopting normative values as to the usefulness of different jobs, the equivalence of different skills etc. Whatever method is employed to assign pay according to perceived “worth” it is almost certain to result in undesirable outcomes as do other attempts to impose prices on the market which are different to those

determined by supply and demand.

Estimates suggest that both males and females working in male-dominated occupations earn more than similar workers in female-dominated occupations (see, for example Miller 1994, Gregory 1999 and Coelli 2014). Therefore, gender composition of occupations is suggested to have an independent influence on average earnings. However, it is necessary to examine why female earnings are lower.

Australian research has demonstrated that if women were distributed among occupations in the same proportions as men, female earnings would in fact be lowered (Rimmer 1991, Kidd 1993, Vella 1993, Lee and Miller 2004). That is, a number of occupations into which males are crowded are low paying. The lower earnings of females are more due to their over-representation in the lower grades and under-representation in the higher grades within occupations and industries. More recent research (Baron and Cobb-Clark 2010, Cobb-Clark and Tan 2011) comes to the view that females are not over represented in low paying occupations.

Recent work by Coelli (2014) that when measuring within occupations and between occupations the degree of aggregation is important. Coelli (2014) shows that the level of disaggregation chosen makes a substantial difference to the measurement of contribution of occupational segregation to the gender wage gap (Table 2).

The proportion of the gender pay gap that is attributable to between occupations (segmentation) differences and within occupation differences depends on the degree of aggregation at which pay differences are measured.

Table 2: Decompositions of hourly earnings gap by level of occupational aggregation

Level of aggregation	Occupations identified	Occupational contribution	Within-occupation differences	Total log wage gap
One-digit	8	-10.6	110.6	100
Two-digit	44	15.6	84.4	100
Three-digit	103	30.1	69.9	100
Four-digit	326	35.9	64.1	100

Source: derived from Coelli (2014)

It is commonly known that between group differences increase as the group is more narrowly defined. For instance, suppose we are interested in how pay differs across Australia and consider the pay of people in Sydney and Melbourne. Little difference would be observed between the average for the two cities but considerable difference between the average of suburbs within each city – the between groups (Sydney and Melbourne) variation is small relative to within groups (suburbs) variation. If we now make the groups the suburbs we would expect much greater between group variation (poor and rich suburbs) compared to within group (each suburb) variation.

In the case of gender pay differences if we consider all workers as a whole (one occupation) all of the differences between men and women are within occupation. Going to the 1-digit level, there will be differences in average pay between, say, trades and professionals but within trades between construction (with mostly men) and hairdressing (mostly women) which indicate large within occupation differences, but also there will be between occupational differences. If we now go to the next level of disaggregation, sticking with the trades, the difference between construction and hairdressing now is a between occupation difference rather than a within occupation difference. We could go splitting jobs into more and more specific occupations until we specify every

single job as an occupation in which case all of the differences observed are between occupations.

This suggests that it is somewhat problematic in decomposing observed discrepancies between the pay of men and women between those due to the occupation of employment and that attributable to wage discrimination *per se*.

Measuring Discrimination

Discrimination exists when individuals belonging to a particular group are denied the *opportunities* to develop their capabilities or denied equal rewards for equal capabilities. Inequality of *outcomes* does not imply discrimination. As discussed above, pay outcomes for individuals are determined by a whole range of factors including their inherent abilities, choices regarding education, occupation, industry and time worked.

In order to identify wage discrimination and take appropriate steps to address it, it is necessary to be able to measure the extent of discrimination. For otherwise identical workers in the same job, in the same firm this is relatively straightforward. Even in this simple case it is not clear that the wage rate truly measures an individual's abilities. For instance, two workers may be paid the same wage because of award requirements but one might well be more productive. Young workers are, generally, paid junior rates for doing essentially the same job as adults but it is recognised that their lack of maturity make them less productive, particularly with respect to their interactive skills. In universities most lecturing staff do essentially the same work but there are many different salary levels.

Measuring discrimination between different occupations or industries is extremely difficult. This difficulty arises because of the need to identify otherwise identical individuals. As discussed above the productivity of an individual depends on a whole range of factors including inherent abilities (with respect to motor, cognitive and interactive skills), experience, on-the-job training and formal education in school or tertiary institutions. In addition, the

wage a worker receives depends not just on their productivity but the monetary value of their output. To the extent that consumers are willing to pay different prices for different goods and services, the monetary value of an hour of work by similarly qualified individuals will differ between industries and occupations. In most empirical studies these difficulties of including all these factors are largely ignored and researchers mainly use formal education and years of experience as proxies for human capital. Not surprisingly, models based on this approach explain only a small amount of the variation in individual earnings (see, for instance Miller 1994a, Wooden 1999a and Lee and Miller 2004).

Australian studies of the gender based wage differential (the wage gap) have produced a wide range of estimates. Broadly, the methodology employed by researchers to analyse wage discrimination is to estimate the wage gap, and then determine the extent to which this gap can be explained by human capital theory, demographics and job status, and then estimate a remainder (residual). This residual is then considered to be the result of discrimination. This is despite there being a number of other factors not considered in this modelling process, which could explain a considerable proportion of this discrepancy. While it is difficult to see how a residual such as this can be definitely viewed as providing convincing evidence of wage discrimination, as this appears to be the preferred methodology, it is discussed here.

The evidence suggests that the gender wage gap in Australia has narrowed since the 1970s. Some degree of wage gap, however, appeared to have persisted in the 1990s (Borland 1999) and still does so in the 2000s (Borland and Coelli 2016). Recent average weekly earnings data (ABS 2016a) report an average wage gap of around 16 percent in full-time adult weekly ordinary time earnings. Using the ABS (2016a) *Employee Earnings and Hours* data, the average hourly gender pay gap in May 2016 based on total cash earnings for full-time male and female non-managerial employees was 9.6 percent. For workers attaining their “first significant job” there is a gap of 20 percent but this falls to 4 percent when numerous job characteristics, such as hours worked, occupation and education, are controlled for (Buchler and Dockery 2015).

Estimates of wage discrimination in Australia published in 1999 include those produced by Reiman (1999) (9.2 percent) and Meng (1999) (10.3 percent). Wooden (1999a) suggested a figure of 10 percent in the 1990s. Wooden (1999b), however, found that occupational segregation was responsible for between 3.9 and 4.9 percent of the wage gap across all employees. Once managerial employees are excluded however, as they are much less likely to receive award determined pay, this falls to between 2.1 and 3.6 percent.

Lee and Miller (2004) sought to examine the 'glass ceiling' effect and found that differences in earnings between men and women were much greater at the top end of the earnings distribution than at the bottom. Kee (2006) and Baron and Cobb-Clark (2010) came to the conclusion that gender differences in employment across occupations advantage (rather than disadvantage) all women except those in high-paid, private-sector jobs, while disparity in labour market experience plays a much more important role in explaining relative private-sector wages. Chahen et al (2013) found that the glass ceiling was evident even after controlling for self-selection in employment.

It is, therefore, necessary to ask whether the pay gap is because women are paid less because they are women and are being directly discriminated against, or because of the industries and/or occupations they are employed in. If it is the second of these, the question needs to be asked, are women being crowded into such industries and/or occupations due to discrimination or does this reflect optimal choices of those individuals. Without definitive evidence of discrimination (or undervaluation), it would be difficult to justify a pay adjustment on equity grounds.

The concentration on earnings differentials ignores all the other non-monetary aspects of jobs which individuals find important such as safety, security, leave entitlements and flexibility. For instance, in a study of over 40 Australian jobs Flatau and Lewis (1993) used 11 different variables to describe occupations including pay, superannuation, leave entitlements, training, fringe benefits and

job security. They concluded that

'The results presented show clearly that defining labour market segmentation in terms of wages alone or some other single attribute is fraught with difficulties because of the lack of correlation between these characteristics. Only by considering the multidimensional aspect of job characteristics and distinguishing between communality of factors and specific factors can segmentation be analysed. Adopting this approach, it has been possible to cluster occupations into groups which are relatively homogenous with respect to certain job characteristics.

The above analysis suggests that the nature of occupational segregation is more complex than commonly suggested.' (p. 293)

There are many factors determining occupational differences and wages between men and women. These include industry effects, extent of union power, monopoly power and monopsony which also needs to be examined. The uncertainty in identification of these determinants and their measurement are not yet fully understood. Coelli (2014) points to this uncertainty and the range of variables needed to be considered to understand the role of occupation in the gender wage gap.

Job satisfaction

Dockery and Buchler (2016) undertook a novel approach to investigate the degree to which occupational segregation is driven by differences in preferences. They analysed patterns in women's and men's job satisfaction conditional upon the degree of feminisation of the occupation in which they work using HILDA data from 2001 to 2012. Their main findings were:

- There are substantial differences between different groups of women. In particular, mothers, wives and older women, women who are more likely to have caring responsibilities and be doing more unpaid work – are especially likely to prefer the type of work done

in those occupations that are more highly feminised.

- On average, unmarried, younger, childless women prefer the type of work done in feminised occupations when compared to men, who tend to be less satisfied with work done in feminised occupations.
- However, unmarried, younger, childless women are not significantly more satisfied with the type of work done in feminised occupations relative to that done in other occupations.

In summary, unmarried, younger, childless women are very different to married, older women and mothers, who do have a strong preference for work done in feminised occupations over that done in other occupations.

Also, they found that:

- In more feminised occupations, mothers, wives and older women are particularly more satisfied with hours of work and the flexibility available to balance work and non work commitments.
- In feminised occupations women, but in particular mothers, older women and wives, are most satisfied with part-time hours and men are most satisfied working full-time.
- men and women's satisfaction with flexibility appear to be similarly enhanced when working in more feminised occupations.

The authors' findings are all consistent with women being attracted to those occupations because they accommodate the role of carer or secondary income earner.

The authors conclude that

“women [in feminised occupations] who have higher levels of unpaid work are more likely to have their preferences correctly matched, consistent with their social gender roles.”

and

“The women who are most likely to face work and family arrangements that conform to [the male breadwinner model] – married women and those with dependent children – are the women who most appreciate the hours of

work and flexibility offered in highly feminised occupations. Married and older women are also less dissatisfied with wages in those occupations, consistent with women's role as the income earner often being secondary to her (male) partner's.

... women's job preferences are a bit more like men's when they are younger, unmarried and before having children, but then drift towards preferencing highly feminised occupations”

(Dockery and Buchler 2016, p 21)

There appears to be overwhelming support for the view that the major reason for differences in employment outcomes is due to women's role in the household, particularly as carer. Some, therefore, advocate for policies to increase access to, or lengthen, paid parental leave and other work flexible arrangements. Another policy others argue for is to extend such arrangements to men or rearrangement of work organisation to move from the 'male model' to hours and organisation suited to a "female" model. However, as research has demonstrated (see below) where these policies have been extensively pursued (such as Belgium, Denmark, Finland and Sweden) there has been no noticeable effects on gender segmentation and a persistent gender wage gap.

Family-friendly policies

An important factor that affects pay differentials is women leaving the labour force or spending less time in it than men, particularly for child rearing. Women, generally, have spells of non-paid employment in which experience, and possibly other skills, are lost. Rummery (1992) for Australia has estimated that about a third of the discrepancy between male and female earnings is due to interrupted participation in work. Correll (2013) has estimated for the USA a penalty of 5 to 7 percent of pay per child.

The link between child rearing, segmentation and gender pay differences has led to suggestions that there is a need for “family-friendly” policies. However, a body of research is pointing to these policies actually increasing the gender pay gap.

Sanandaji (2016), using OECD data (average 2000-2013) for industrialised countries, estimated the likelihood of the average employed woman reaching a managerial position compared to the average employed man. For a woman in the USA this is found to be 85 percent. This is far higher than for any other country in the study. As a comparison, the likelihood of an employed woman reaching a managerial position is 60 percent that of a man in the United Kingdom and 52 percent in Sweden. Norway (48 percent), Finland (44 percent) and Denmark (37 percent), countries known for their family-friendly policies, score even lower. In other words, in the USA, with no state-provided parental leave, women have a greater likelihood of reaching managerial positions than in the Scandinavian countries with extensive welfare states.

The key factor in explaining the lack of women in managerial positions is women’s working hours. In the Scandinavian countries the average employed man works 22 percent more hours than the average working woman. Also, many women take long parental leave, paid by the welfare state, and thus fall behind in their careers.

Researchers overseas have investigated the impact of family-friendly policy in greater detail than in Australia (see, for instance, Gornick and Meyers 2003; Jacobs and Gerson 2004; Mandel and Semyonov 2005, 2006). The findings suggest that mother-friendly interventions, while enabling more women to become economically active, are costly for women’s occupational attainment and pay.

Mandel and Semyonov (2005) in a study of 20 industrialised countries, including Australia, found that developed welfare states are associated with higher rates of women’s participation in the labour force but also with higher concentration of women in feminised occupations. Women are also more under-represented in managerial positions. These characteristics reduce

women's earnings capacity and thereby increase the gender earnings gap.

Belgium, Denmark, Finland and Sweden are countries with degrees of what Mandel and Semyonov (2005) term Welfare State Intervention (WSI), and they had very high levels of gender earnings inequality. By way of contrast, in countries with relatively low levels of WSI the gender gap is considerably lower in liberal states. The exception is Australia which had a relatively low WSI during the data period (1991-2000) and relatively low gender earnings inequality. Mandel and Semyonov (2005) attribute this to Australia's "liberal economy with a highly regulated wage system". (p960)

Of the countries studied the USA had the lowest WSI and lowest net gender earnings gap.

The authors attribute a greater pay gap to family-friendly policies which are usually viewed as aiming to reduce gender inequality. Given that the gender division of labour within households is unequal, policies that facilitate parental employment by reducing the conflicting demands of paid work and childcare are directed in practice mainly at mothers. They argue that the implementation of such policies lowers women's work effort and encourages employers to pay less per hour. Options for parents to reduce working time or to take brief or prolonged absences from the labour market create a more flexible working environment for the individual parent, but because it is mainly mothers who actually utilise these options, women are likely to suffer a collective pay penalty. This view is very similar to the OECD findings on women progressing to managerial positions discussed above.

Implementing these policies and restructuring of work is not without cost to employers. They carry expensive risks for employers in terms of workplace flexibilities and managing working hours. While certain large well-resourced organisations maintain that such policies are cost effective for them, it is unlikely to be true for many other firms, particularly small firms. For instance, some employers struggle with a year's maternity leave arrangements and the

likely resultant part-time employment subsequently. Employers do put a value on time spent by workers in the workplace.

The incidence of work from home has not increased greatly over time. According to Wilkins and Wooden (2014), over 23 percent of the workforce undertake part of their paid work from home but only about 6 percent work entirely from home and these are mostly self-employed. It appears working from home works only in limited circumstances.

Employers value attendance at the workplace and there are rewards in terms of pay. At present Australian employees have the right to request a number of aspects of flexibility and these can only be refused on “reasonable business grounds”. However, for higher skilled / responsible jobs time out can come at a cost not just to employees but also employers. Lewis et al (2015) found that for small businesses complying with industrial relations regulation was already very costly. In their study businesses suggested that there was significant inequality arising from the regulation in its current form. There was a perceived inequality in the form of greater rights for the employees over the employers. Furthermore, the employment relationship and the workplace was regarded as considerably over-regulated.

Bargaining

Another potential explanation for the gender wage gap relates to gender differences in negotiating over wages and the success of such negotiations. Despite there being strong overseas evidence of gender differences in bargaining behaviour and differences in the responses to bargaining by men and women (Babcock et al 2006), there appears to be little empirical evidence in Australia on the extent to which there are gender differences in bargaining over wages and the impact of this on wages received.

Overseas studies have found that women are less likely to seek to negotiate over their salary (see, for instance, Babcock and Laschever 2003, Babcock et al

2006, Gerhart and Rynes 1991, Greig 2008, Hall and Kreuger 2008). There is also evidence that men who negotiate over their salary receive a higher salary than women (Gerhart and Rynes 1991). It has also been found that female employees negotiate lower wages than males and this is irrespective of whether they are negotiating with a female or male employer (Dittrich et al 2014).

An explanation to the observed gender differences in bargaining over wages is that pay is only one important factor for (some) women. Other conditions of employment such as flexibility may also be very important and women may bargain for better conditions in exchange for pay. Unfortunately, there is little published work on gender differences in bargaining in Australia.

The structure of work

The work of Goldin represents a different approach to gender equity (see, for example, Goldin 2014, 2015). She rejects the view that equal pay has to involve government intervention and it does not depend on the improvement of women's bargaining skills or increasing women's will to compete with men. Goldin reiterates the view that family-friendly policies are usually accompanied by decreases in women's average hourly pay and dimmer prospects for promotion because the cost of accommodating flexible hours by firms is high, and will only reinforce gender differences in the workplace.

Goldin identifies hours worked as an important variable explaining gender differences in occupations and pay. There is a price for flexibility for both employers and employees, and in those occupations where face time or continual presence is important, the less time a person works, the less value per hour of work. Goldin points to the impact of compensating differentials - there is value attached to what she terms 'temporal flexibility'.

Golding finds that the residual (unexplained) differences by occupation in earnings by gender are largely due to the value placed on the hours and job continuity of workers, including the self-employed. In her view, increasing 'temporal flexibility' would significantly reduce the gender pay gap. The key

is that working arrangements must decrease employers' costs in substituting the hours of one worker for another. Effective substitution relies on having equally skilled and effective workers on the job and zero transaction costs.

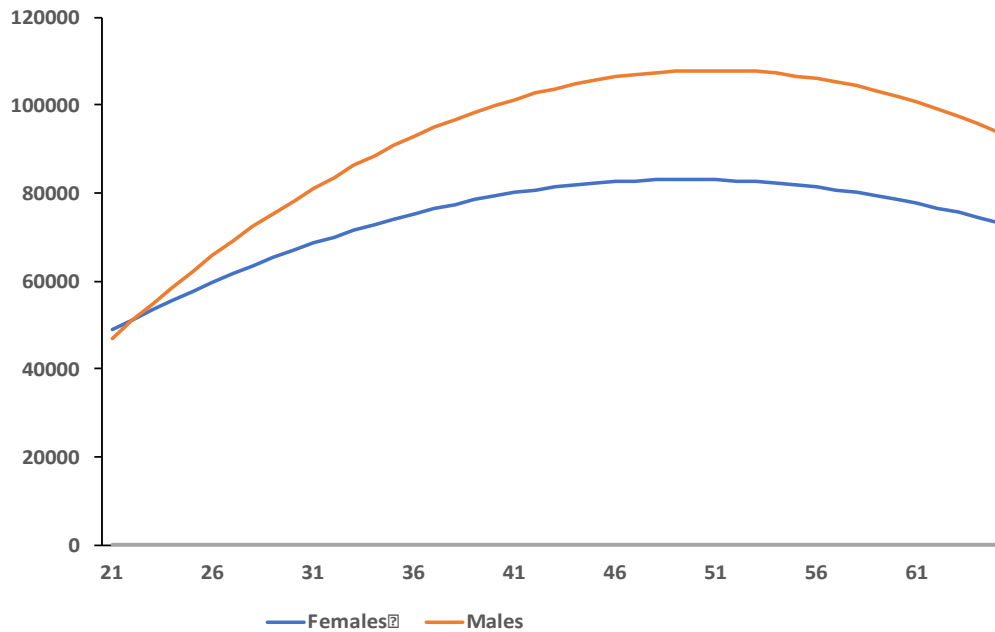
For many employers long, inflexible work days and weeks are profitable with specific work schedules tailored to episodic increases in demand. Also, for many employees putting in lengthy amounts of time at work is necessary to achieve their, and the organisation's, desired outcomes. Hours of work in many occupations are worth more when given at particular times and when the hours are more continuous. As a consequence earnings in these occupations have a nonlinear relationship with respect to hours.

Goldin (2014) uses a vast amount of data for the USA which is not easily available for Australia but some of her results are replicable.

By examining the gender pay gap for cohorts of women college graduates of different year of birth she finds there is a decreasing pay gap across cohorts. The youngest cohort (born around 1978) has the smallest gender gap and the oldest (born around 1958) has the largest gender gap at each age. More importantly, the gaps within cohorts greatly increase over time. Whereas women in their late 20s are earning around 92 percent of what comparable men receive, those in their early 50s receive just 71 percent.

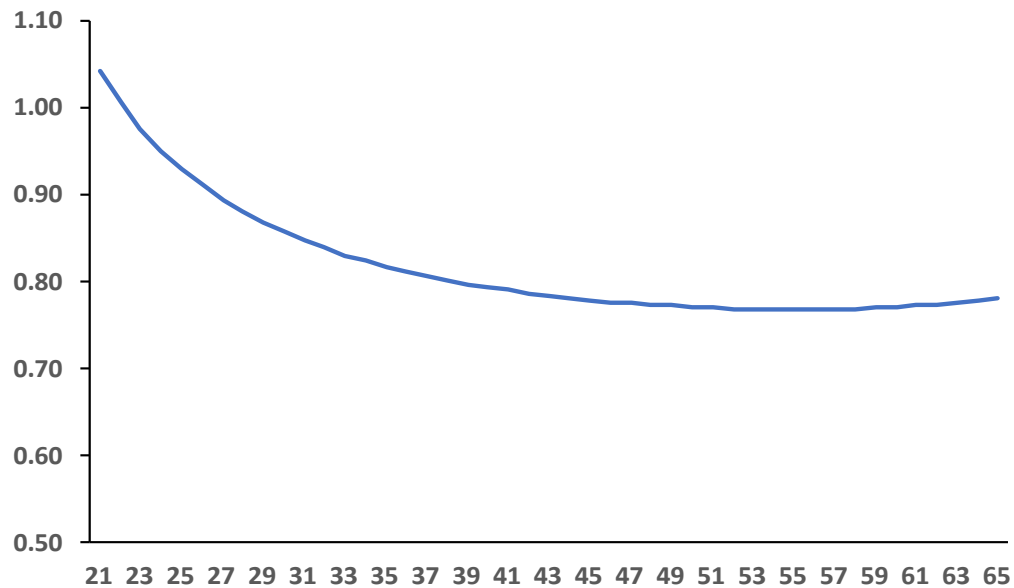
Figure 8 shows similar data for median earnings of Australian bachelor degree holders for men and women of all years of birth working full-time by age in 2011. Figure 9 shows the same data but as a ratio of male to female earnings.

Figure 8: Age/earnings profiles of Australian university bachelor graduates by gender, 2011



Source: unpublished, ABS Census of Population and Housing (2011)

Figure 9: Ratio of female to male Australian university bachelor graduate earnings by age, 2011

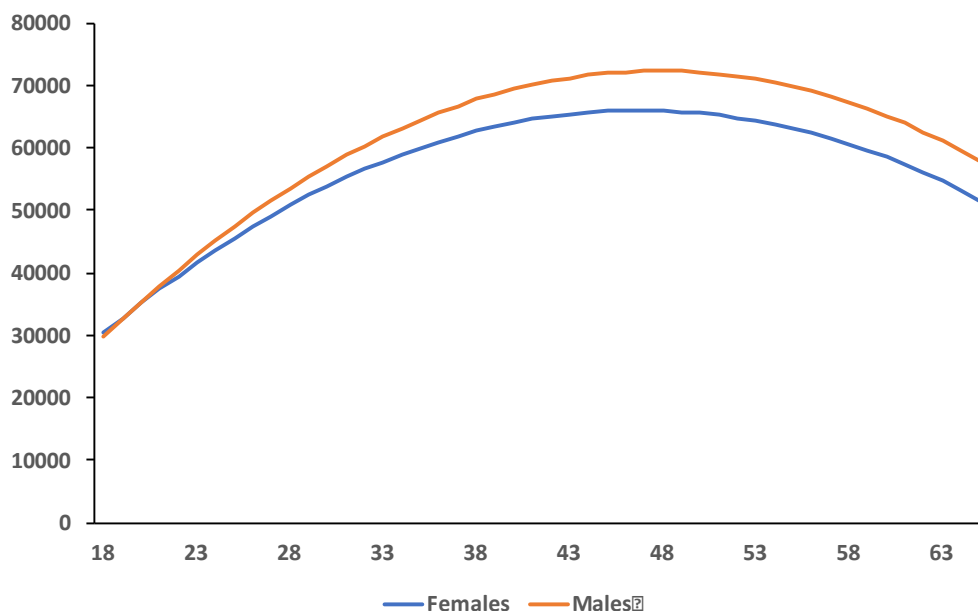


Source: unpublished, ABS Census of Population and Housing (2011)

What the figures show is that on graduation there is no difference between (smoothed) male and female earnings but women in their late 20s earn about 90 percent that of men and by the time women are in their 50s they receive less than 80 percent of men's earnings. This percentage remains fairly constant for the rest of the working life.

A similar analysis is shown in Figures 10 and 11 but for full-time workers whose highest qualification is a year 12 certificate.

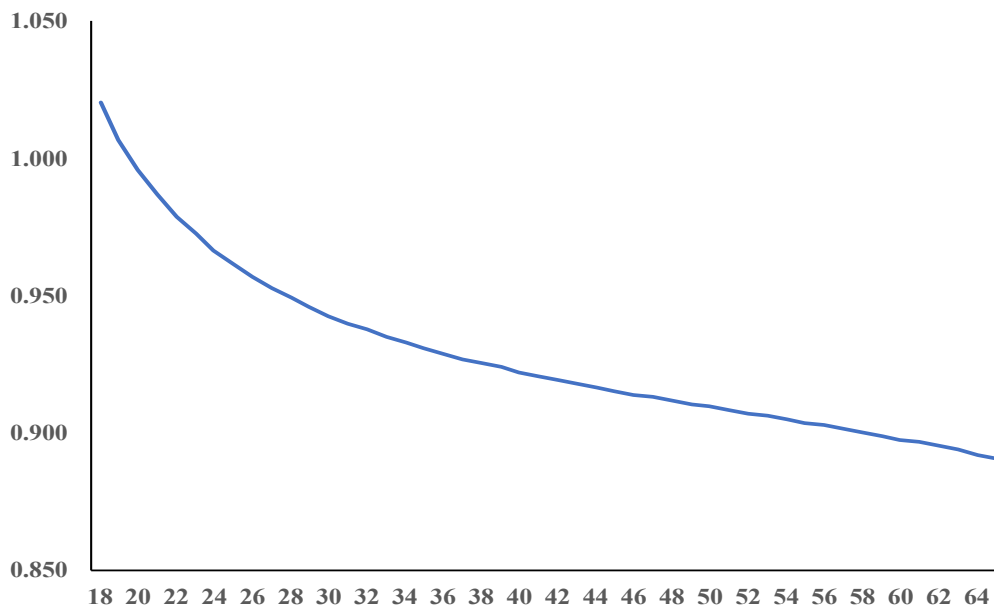
Figure 10: Age/earnings profiles of year 12 graduates by gender, 2011



Source: unpublished, ABS Census of Population and Housing (2011)

The results are similar to university graduates in that after graduation there is little difference in earnings between males and females but by the late 20s female earnings have fallen to 95 percent that of males. This percentage continues to decline to 90 percent by the end of working life.

Figure 11: Ratio of female to male year 12 graduate earnings by age, 2011



Source: unpublished, ABS Census of Population and Housing (2011)

A second set of evidence Goldin uses is the gender wage gaps by occupations at the three-digit level. She finds that the relationship between the gender earnings gap and occupations for all men and women is accounted for mainly (85 percent) by the gaps within occupations, not across occupations (the remaining 15 percent). By comparison, Coelli (2014) using a similar level of disaggregation (see Table 2 above), found the corresponding percentages for Australia to be 64 percent and 36 percent respectively. Looking only at college graduates in the USA, Goldin found that 65 percent of the gender pay gap is due to that within occupations and 35 percent is due to the distribution of occupations by gender.

That is, the gender earnings gap would not be reduced much if women were distributed among occupations in exactly the same proportions as men. In Australia the majority of researchers conclude that occupational differences do not contribute to the gap (Chapman and Mulvey 1986; Rimmer 1991; Kidd 1993; Kidd and Meng 1997; Lee and Miller 2004; Kee 2006; Barón and Cobb-Clark 2010; Cobb-Clark and Tan 2011). While women are under-represented in high-paying manager occupations, they are also under-represented in the

lowest paying labourer occupations. According to Norris et al (2004) there is a general view that women might be made worse off by such a redistribution.

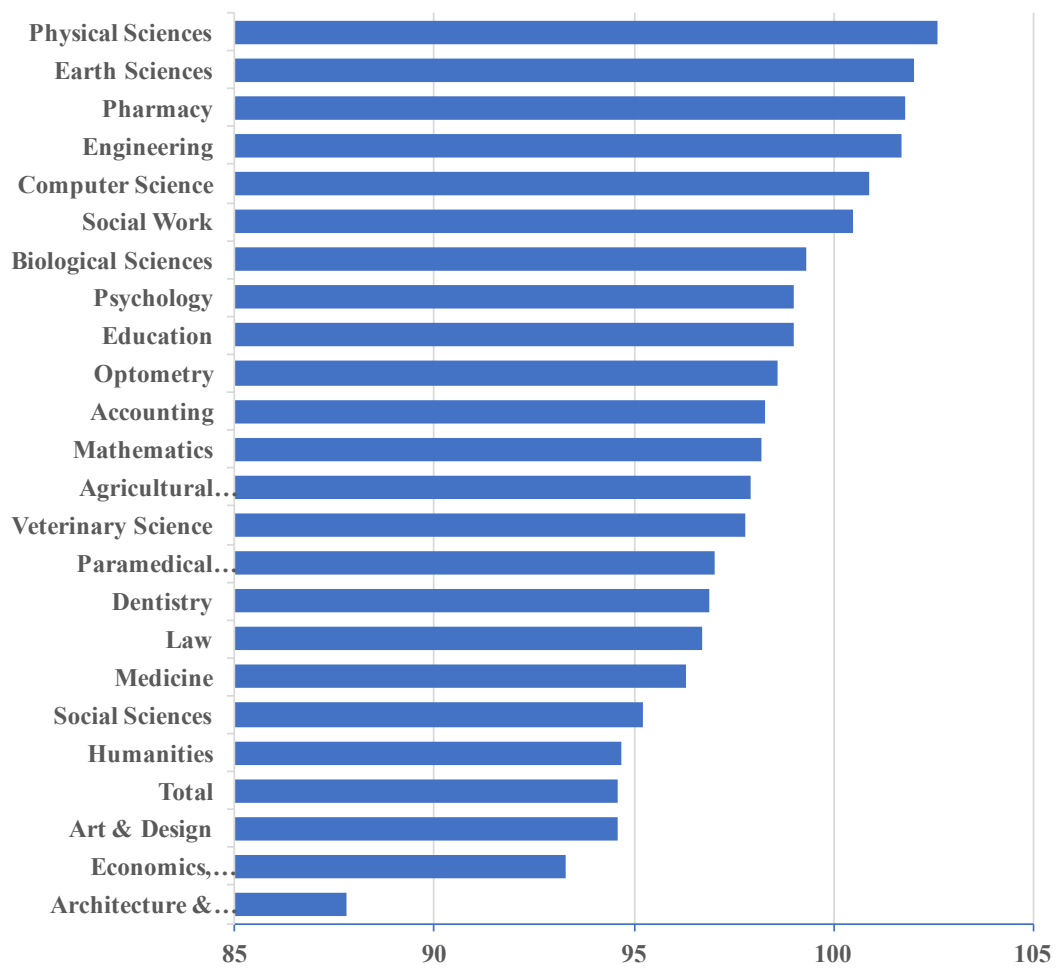
Looking now at the extent of differences in graduate salaries by type of occupation, Goldin (2014) examines relatively high paid US individuals in various occupations. The occupations are grouped into Business and Finance, Health, Science/Technology and Other. This classification can be done for the higher-income groups, but not for those with lower incomes.

The Business and Finance occupations have relatively large gender earnings gaps, while for Technology and Science the gaps are relatively small. Gaps in the Health group vary greatly between occupations. The Health occupations with a high rate of self-ownership (e.g., dentist, podiatrist) generally have larger gender earnings gaps than those with low rates of self-ownership (e.g., pharmacist, various types of therapists).

Figure 12 takes a somewhat different approach using the more limited Australian data. It shows the ratio of female to male starting salaries for new Australian bachelor graduates by degree discipline for 2015.

The results are similar to those found by Goldin for the USA, but from a somewhat different data set. The Economics and Business graduates have relatively large gender earnings gaps, while for Technology and Science graduates the gaps are relatively small and for some disciplines women have higher median earnings than men. Gaps in the Health group vary somewhat between disciplines.

Figure 12: Starting salaries of Australian university bachelor graduates by discipline, ratio of females to males, 2015



Source: Graduate Careers Australia (2016)

Starting salaries are only a small part of the story – what is more important is the earnings of graduates over their working lives. This is captured better by the rate of return to a qualification. Rate of return analysis considers earnings of graduates over their lifetime compared to that of non-graduates (year 12 school leavers) as the returns to an investment in education. The investment is all the costs of undertaking education including the opportunity cost of not working during study. The rate of return to education is calculated in the same way as a return on any other physical or financial asset.

Table 3 below shows estimates by Corliss et al (2015) of rates of return for various degrees using 2006 Census data.

Table 3: Rates of return for bachelor degrees, Australia, 2006, percent.

Discipline	Males	Females	Ratio Female/Male
Humanities	3	9	3.00
Science	10	11	1.10
Allied Health	13	14	1.08
Mathematics and Statistics	13	12	0.92
Information Technology	17	15	0.88
Engineering	15	14	0.93
Architecture	9	6	0.67
Medicine	16	15	0.94
Nursing	17	14	0.82
Dentistry	20	17	0.85
Education	11	10	0.91
Visual and Performing Arts	*	*	
Commerce	17	15	0.88
Law	17	15	0.88
Economics	18	15	0.83

Note: * denotes a rate of return of zero or less.

Source: Corliss et al (2015).

The table shows the large disparities between the returns to different disciplines. For instance, Dentistry and the Business disciplines are very high while for Humanities it is low and for the Visual and Performing Arts is zero or negative. In all disciplines except humanities, science and allied health the rates of return are lower for women than for men. However, these rates of return are calculated from the median of all graduates and include those working full-time, part-time, unemployed and not in the labour force. They, therefore, do not necessarily reflect differences in rates of pay but also labour market status.

Daly et al (2015) calculate the rates of return for graduates from various disciplines (unfortunately not the Business disciplines) for those who are employed full-time throughout their careers. These results are given in Table 4.

Table 4: Rates of return for bachelor degrees, employed full-time, Australia, 2006, percent.

Discipline	Males	Females	Ratio Female/Male
Humanities	13	20	1.54
Science	17	22	1.29
Allied Health	15	19	1.27
Mathematics and Statistics	13	12	0.92
Information Technology	13	13	1.00
Engineering	12	11	0.92
Architecture	7	6	0.86
Medicine	13	13	1.00
Nursing	10	10	1.00
Dentistry	17	14	0.82
Education	7	8	1.14
Visual and Performing Arts	4	6	1.50

Source: Daly et al (2015).

Interestingly, when only those employed full-time are considered the rate of return for women in most of the disciplines considered equals or exceeds that of men. This clearly shows that the most important factor determining the rates of return for women relative to men is whether they remain in full-time employment during their careers. It also points to the absence of discrimination.

As an aside, why doesn't everyone choose a degree which has a high rate of return and why do people study for degrees with low rates of return. It can't be because of lack of ability since most of the degrees require similar skill sets for entry. For Medicine and Dentistry there are formal restrictions on number of university places which limit choice but most other degrees do not have formal restrictions apart from the necessity of achieving the relevant entrance score. This does not differ greatly between business, arts and science disciplines although it differs considerably between universities (University Rankings 2016)

The most obvious answer is that people choose their degree and subsequent career on the basis of a set of qualities, only one of which is pay.

Goldin regards the reasons for differences in pay in the USA relate mainly to the way in which work is structured. She finds that the average time worked per week in the Business and Finance occupations (plus lawyers in the 'Other' category) has a very large impact on hourly pay. However, weekly time worked in the Technology and Science occupations has only a small impact. Those in Business and Finance occupations who work, say, 50 hours per week are, on average, paid disproportionately more than those who work 40 hours per week (their average hourly rate is greater). Their counterparts in Technology and Science occupations who work 50 hours per week only increase their weekly or annual earnings proportionately more than those working 40 hours (average hourly rate is constant).

The reason why there is a non-linearity in hours and pay relates to the ability of work to be reallocated within the firm with little cost to the firm. Non-linearity in labour value arises when it is costly to employers to allow workers to be off the job temporarily, when it is difficult to hand over tasks to colleagues, and when interdependent teams must coordinate schedules – as in many finance and legal occupations. Non-linearity means that a person working 30 hours a week is worth less than half what a person working 60 hours is worth.

Linearity, on the other hand, arises when employees can substitute for one another with relatively low cost, when there are many independent team members and when information systems lower the cost of handing over clients to fellow workers when a particular person is not available (medical centres and pharmacies are examples). Here, a person who works 30 hours a week is worth exactly half that of someone working a 60-hour-a-week.

A restructuring of jobs has happened already in many organisations in response to market drivers, including technological change and there is evidence of less people working long hours. Wilkins and Wooden (2014) show that the percentage of male workers working 50 hours or more per week has fallen from

26.1 percent in 2003 to 22.2 percent in 2013 (Table 5). This supports Goldin’s view that restructuring of work is already taking place.

The decline in men working long hours is especially remarkable given that the changing occupational distribution of employment, discussed earlier, has favoured managerial and professional occupations, particularly for women’s employment in these occupations. These are the occupations associated with long working hours and where longer hours are associated with career advancement (Wooden and Drago 2009).

Table 5: Weekly hours worked, Australia, percent of all employed

	0-34	35-40	41-49	50+	All
Males					
2003	15.5	43.6	14.8	26.1	100
2008	15.9	45.8	14.0	24.3	100
2013	17.6	46.8	13.4	22.2	100
Females					
2003	47.7	36.9	7.5	8.0	100
2008	46.4	38.8	7.0	7.7	100
2013	47.7	38.6	6.5	7.2	100

Source: Wilkins and Wooden (2014)

Among women, the hours distribution has changed very little over the last decade. The part-time employment share remains at the same very high level (47.7 percent), while the incidence of long working hours remains relatively low and has declined slightly (from 8.0 percent to 7.2 percent).

Improved substitutability between workers through new technologies and fewer restrictions on how firms organise the workplace are the key to reducing the gender pay gap. Linearity in pay is achieved when employees can substitute for each other in a relatively costless fashion, For instance, health practices and pharmacies have largely moved away from being sole proprietor businesses to

being operated by several professionals where there is a great deal of substitutability between workers as there is in hospitals.

It is likely that for a whole range of jobs linearity is not possible or where costs of linearity would be prohibitively high (construction engineer, legal counsel, merchant banking come to mind) and the “male model” of work organisation is essential for its viability. However, it is possible that new technologies might change this as they have in many other industries and occupations.

Changes to the structure of work organisation are most likely to be efficiently adopted, as a result of firms organising their production to best meet consumer needs and profitability. Where possible, firms adjust working hours and arrangements in response to changes in their markets. Mandating or imposing limits on hours worked and worktime flexibility (for males and females) in the cause of greater equity in earnings, because long/inflexible hours are viewed as a male phenomenon responsible for the gender wage gap, would have adverse consequences for earnings and the economy overall, particularly in view of the employment gains women have made in the labour force relative to men.

Enormous changes have taken place in the economy which have had significant impacts on the demand for labour with respect to industry, occupation and the way work is organised. Most of these changes have been particularly positive for women. The growth in service sector jobs and relative decline in manufacturing, the need for interactive skills and falling demand for manual labour and growth in part-time work, have all benefitted women. For women working part-time, most (75 percent) report being happy with their hours while only half of men working part-time are happy with their hours (Lewis 2015).

On the supply-side educational attainment has increased enormously, but particularly for women who are more likely to complete Year 12 and tertiary education than males. This provides greater access to highly paid jobs and more career choice in growth areas of the economy. Households/couples make, as they have always done, rational choices about the distribution of paid work and

unpaid work. Women are already attaining a larger share of jobs in the market place and increasingly as women's share of skill levels and higher status jobs rise, these choices are changing.

The changes in the Australian labour market resulting from adjustments to changes in economic activity, technology, globalisation, demographic shifts, and consumer preferences have been reflected in these changes in the gender composition of the workforce. The decline in lower skilled occupations, the emergence of professional occupations as the largest occupational group; and women increasing their share of most occupations (a 54 percent share of professional jobs, ABS 2016b), are the consequence of changes in market supply and demand.

This has been accompanied by a huge expansion in post-compulsory education, particularly for women. The market appears have adjusted to these changes with the major exception being men in traditional 'male' manual occupations and young workers without the education and work skills required for the new service-based economy.

Employers adjust their working arrangements in response to the demands of their markets. Jobs on offer, the hours to be worked and when they are worked will ultimately be determined by what needs to be done to remain profitable and to stay in business - the employment model adopted will be driven by this. To the extent that policy prescriptions on hours, flexibility and other employment practices interfere with these adjustments, there will be negative impacts on the firm's ability to respond to economic and technological change and, consequently, on its ability to employ.

Is intervention possible or desirable?

In order to reduce or eliminate gender inequality it is necessary to identify its existence, nature and its cause. Far more difficult is the question of what to do when pay differentials are merely observed without clear evidence that they actually represent discrimination by employers. A difference in pay rates between men and women is not in itself a cause for intervention, as there is a myriad of possible reasons, outlined above, why pay rates may differ. The primary difficulty is that education and years of experience used in analysis are very poor proxies for skill and compensating differentials, and the assumption that these are otherwise identical workers.

Although the elimination of discrimination is a desirable goal it is important that it is properly defined and correctly identified and the benefits of any remedial action exceed the costs. If changes are made based on poor information or inappropriate models, then it is likely that suboptimal outcomes will result. The most likely outcome is a distortion in the distribution of employment.

Attempts to impose wages above the market rate rely on the proposition that somehow market wages do not reflect value of work done. More particularly, holders of this view propose that there is an “undervaluation” of women’s work relative to traditional male jobs. The implications of this are that there is a disconnect from the value of work to the employer and from the market for the output of employees which determines employers’ capacity to pay. To paraphrase an example, parents aren’t prepared to pay a high enough price for childcare so female childcare workers’ work is undervalued.

Whereas market determination of values (prices and wages) is well-understood and is the basis of how goods, services and factors of production are allocated in market economies, institutionalised determination of prices and wages on the basis of subjective evaluation is fraught with difficulty and most likely to lead to misallocation of resources. Even when what appear to be sound measures of determining the value of work are used such as productivity, skills,

experience etc, this totally misses the point. Value has little to do with “usefulness” or “worth”. Diamonds are almost useless but their market value is high, water is the most useful thing in the world but has little market value. Some might regard the work of a test cricketer, with no tertiary education, as not very useful compared to a nurse but each receives the pay commensurate with the value they create in terms of the revenue they generate – much higher for the cricketer than for the nurse.

We would not expect two people with the same level of education and experience to have the same pay. In fact we might be surprised if they do. We know from the rate of return to degrees for instance, that rewards are quite different for graduates of different disciplines. Although we know, on average, more education results in higher pay, we do not necessarily expect everyone who is more qualified to receive higher pay than those less qualified. This will depend on job requirements, output and market value.

Institutionalised adjustment of wages is concerned with redistribution. The ‘equal pay for work of equal value’ proposition is concerned with changing the wages distribution according to someone’s perceived value of jobs. Adopting wages that deviate from the market rate will result in a redistribution of jobs.

The aim of comparable worth style policies is to alter the price of one type of labour relative to another. An increase in the wage paid in female-dominated occupations can be expected to have one, some or all of the following effects:

- i. the substitution of capital for labour
- ii. the substitution of males for females
- iii. an increase in product prices, reducing demand and therefore employment; and/or
- iv. firms absorbing cost increases, and therefore reducing profits, an action that would ultimately result in reduced employment.

Such a policy would, therefore, result in a reduction in employment of females compared to that which would otherwise have occurred. Such a reduction

would also lead to an increase in labour supply to other occupations, or a reduction in the participation rate for females.

The impacts of increasing pay for occupations with a predominance of women are difficult to determine with accuracy. These impacts include changes to aggregate output, aggregate employment, inflation, government budgets, investment and trade as the economy adjusts to increased labour costs. In addition, there will be specific effects on particular industries, firms, occupations and workers as the economy adjusts to changes in relative prices. The emphasis here will be on the impact on labour demand.

When contemplating an increase in wages in real terms, and in excess of any productivity gains, the employment effect will be reduced in an economy which is relatively buoyant. It is important, however, to carefully consider the impact of such an increase in a less dynamic economy. Business cycles have been a notable feature of the economy in the past, and there is no reason to assume that the future will not bring less favourable economic conditions. In fact, Australia is currently experiencing a period of low growth by comparison with the last two decades. Any increase in award rates, for instance, needs to consider employment effects in such an economic environment.

Raising wages shifts employment from those whose wage has been raised to workers who are substitutes. The effect is to redistribute jobs and incomes. There is an overall reduction in employment due to a substitution of capital for labour. The overall employment effect is small since those gaining jobs largely balances those losing jobs. However, for those whose pay rates have increased the job losses may be large. The redistribution of jobs is determined by the *truncation* effect, the *substitution* effect and the *leakage* effect. The truncation effect relates to the extent to which the wage is increased above the 'market' rate. The substitution effect is the extent to which it is possible to substitute other workers for those whose pay has risen. The leakage effect is the extent to which employers can bypass the imposed minimum wages.

In addition, an increase in earnings will also have an *output* effect. This is the fall in employment resulting from an increase in total costs to employers. These costs will be passed on to consumers and hence demand for output will fall. Otherwise, in highly competitive markets, employers will need to cut costs by downsizing or by reducing recruitment.

Employers' costs are also increased by policies which govern workplace organisation, hours worked, leave entitlements, etc. and have similar effects to those of a wage rise.

The actual impacts of institutionalised wage increases are hard to judge given the multitude of relative price adjustments and consequent demand (and supply) responses which would be set in train. Nevertheless, it can be deduced that the impacts will be significant, will result in a loss in the employment of women and will lead to an overall fall in employment.

The historical experiences of successive Equal Pay Cases have been used to argue that employment effects of changing female wages are low. These Equal Pay Cases are commonly held to have resulted in the dramatic narrowing of the gender pay gap in Australia during the 1970s. This change is believed by some to have occurred with little or no negative employment effects. This view is usually associated with the work of Gregory and Duncan (1981). However, other research suggests that the employment effects of these decisions were far from trivial.

The Australian economy in the 1970s experienced a number of structural changes that resulted in increased female employment. This included the expansion of the service sector, the growth of part-time employment and changes in public sector employment rules. The labour market was also experiencing full employment, with unemployment rates dipping below two percent. The unemployment (and underemployment) rates in Australia today, are considerably higher, and increased wages in female-dominated industries are, therefore, more likely to result in negative employment effects due to demand deficiencies. Once it is accepted that increasing wages in female-

dominated industries would impose non-trivial costs, it is necessary to seek justification for these costs before moving to make such a change.

Wooden (1999) suggests that the change in relative wages due to the equal pay cases, based on a reinterpretation of the regression results of Gregory and Duncan, reduced the rate of growth of female employment relative to male employment by a third. It is therefore important to view the findings of the latter with some scepticism and, in particular, to consider whether the Equal Pay Cases experience is relevant to the economy and labour market of today.

Due to the high degree of structural and technological change which has impacted on the labour market since the introduction of Equal Pay it is difficult, or even impossible, from the time series data to determine with any accuracy the size of the employment effects with respect to relative wage changes. Thus, it is necessary to consider cross-section evidence from both Australia and overseas. Most empirical studies of individual labour markets point to the high degree of substitutability, with respect to demand, between types of labour (Lewis 2006).

Borland (1999) estimated that an increase in the wage paid to female-dominated occupations so that the gender composition of occupations has no effect on the earnings of individual employees, that is, the application of a comparable worth wages policy, would reduce the size of the gender pay differential from 12 to 8 percent if applied to all employees. This would also have the effect of increasing the number of workers prepared to work in these industries. In the face of falling demand due to increased wages, this increased labour supply would simply result in more unemployment.

Also, enforcing pay increases would be expected to reduce the availability of many of the conditions of employment that many women value such as flexibility and choice in the allocation of work.

Conclusion

- The Australian labour market is highly segregated by gender although this is decreasing. This is also the case in every other industrialised country despite a wide range of policies aimed at reducing it.
- There is overwhelming support for the view that the major reason for differences in employment outcomes is due to women's role in the household, particularly as carer.
- Women are more likely to work in occupations with a high share of part-time employment and less likely to work longer hours.
- Women are more likely to have time out of the workforce.
- There are substantial differences between different groups of women. In particular mothers, wives and older women - women who are more likely to have caring responsibilities and be doing more unpaid work outside of employment – are especially likely to prefer the type of work done in those occupations that are more highly feminised.
- An individual's pay is determined by the labour market. The value placed on this work by the market varies according to a multitude of factors including inherent ability, tastes, education and experience as well as economic conditions and institutional factors.
- Identifying and measuring the factors contributing to occupational and wage differences between men and women; and attributing differences to discrimination validly and reliably between different occupations or industries, is extremely difficult.
- Various estimates have been made of what is alleged to be wage discrimination in Australia. Such discrimination is considered to have fallen since the 1970s. There is evidence of some persistent wage gap on average between men and women but no consensus as to the reasons for this or whether it is undesirable.
- The estimates of alleged wage discrimination do not consider the non-monetary rewards that accrue to workers in many occupations.
- Many women value these non-monetary factors and are willing to exchange these for lower pay – this is a legitimate supply response.

- Employers bear the cost of non-monetary workplace benefits and, therefore, would be expected to reduce firms' wage offers.
- The only objective measure of the value of work is the market determined wage since it reflects both the physical contribution of the worker, determined by their productivity, and the value to the economy as a whole, as measured by market prices, placed on the output of the firm employing the worker.
- Any concept of value which is not based on the market but instead is based on, say, "usefulness" or "worth" is subjective, fraught with difficulty and results in misallocation of resources.
- There are considerable differences between occupations and industries used as comparators and, even when these represent the best available, they make comparative studies of work value extremely difficult and therefore, of limited value.
- Even if wage discrimination could be identified, it may not be possible to correct for this via legislation or wage-setting methods such as the awards system.
- The impacts of increasing pay for occupations with a predominance of women are difficult to determine with accuracy.
- An increase in wages for female-dominated occupations would, however, result in a fall in employment, or at least a reduction in growth in employment, for those occupations.
- It is difficult to make a case for adjustments on alleged pay inequity grounds in the labour market. This is due to the existence or extent of wage discrimination being unclear, as is the plausibility of measures to correct for any such discrimination. In addition, there is considerable uncertainty regarding the impact of any remedy on employment.
- It has been argued that the lack of women in some traditionally male occupations, such as building trades, is a result of lack of information or misconceptions about these occupations.

- Whereas women need to be fully informed about careers available to them, it is important not to encourage women into occupations which are in relative decline and away from occupations for which demand is growing in the service-based economy.
- Increased flexibility creates opportunities for women as do “family-friendly” policies but they come at a cost to employers and the economy; and, it appears, women’s earnings.
- Research suggests family-friendly and other welfare state measures have actually increased the gender pay gap.
- New approaches to identifying the reasons for persistence of the gender wage gap focus on the structure of work within firms and suggest that work and work patterns where workers can be readily substitutable, could significantly reduce the pay gap.
- Changes to the structure of work organisation are most likely to be efficiently adopted as a result of firms organising their production to best meet consumer needs and profitability. Where possible, firms adjust working hours and arrangements in response to changes in their markets. Mandating or imposing limits on hours worked and worktime flexibility (for males and females) to achieve greater equity in earnings, because long /inflexible hours are viewed as a male phenomenon responsible for the gender wage gap, would have adverse consequences for earnings and the economy overall, particularly in view of the employment gains women have made in the labour force relative to men.
- Changes in occupational structure, hours worked and working patterns indicate that increased temporal flexibility is already taking place in the labour market.
- There is, generally, a greater need for flexibility in the labour market, particularly with a service-based economy which has provided greater demand for women workers. While perceiving a problem might suggest the need for intervention in the labour market this is the antithesis of increasing flexibility.

- International evidence suggests government measures to compel employers to offer flexibility over hours and parenting leave (for males and females) have not resulted in higher paying jobs for women.
- Restructuring of work is already taking place due to structural and technological change, but there are limits to the extent of possible change given our heavily regulated labour market and the constraints of the modern award system.

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