



Centre of Full Employment and Equity

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**The impact of changing labour force composition on the national
unemployment rate**

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1. Introduction

When unemployment rates started to rise in the 1970s in advanced nations, a range of hypotheses emerged. In Australia, the persistently high unemployment that occurred in the late 1970s continued into the 1980s despite fairly favourable employment growth in the middle of that decade. Various explanations were offered to explain that disturbing paradox.

The debate divided between those who considered that demand-deficiency remained the problem and those who considered that structural changes in the labour market during the 1970s meant that the unemployment rate would be higher for any given level of aggregate demand.

Demand deficient unemployment occurs when the number of people wanting gainful employment exceeds the number of vacancies being offered. The composition of the unemployed relative to the skills demanded is not the binding constraint.

Alternatively, the classification of unemployment as structural describes unemployment that results from imbalances in the supply of, and demand for, labour in a disaggregated context. A simple case arises which highlights the difference as to which constraint is promoting the unemployment. If at the aggregate level the number of unemployed is equal to the number of vacancies then (abstracting from seasonal and frictional influences) this unemployment would be termed structural.

Structuralists suggest that structural imbalances can originate from both the demand and supply sides of the economy. Technological changes, changes in the pattern of consumption, compositional movements in the labour force and welfare programme distortions are among the pot-pourri of influences listed as promoting the structural shifts.

The distinction between demand deficient and structural unemployment is usually considered important at the policy level. Macro policy will alleviate demand deficient unemployment, while micro policies are needed to redress the demand and supply mismatching characteristic of structural unemployment. In the latter case, macro expansion may be futile and inflationary.

In the 1980s, some economists argued that structural changes may be cyclical in nature (the hysteresis effect). A prolonged recession may create conditions in the labour market which mimic structural imbalance but which can be redressed through aggregate policy without fuelling inflation (Mitchell, 1987a).

Perry (1970) popularised the idea that the full employment unemployment rate had risen because the share of groups with higher than average unemployment rates in the labour force had increased.

Perry's claims were in the context of the dramatic rise in labour force participation of married woman as a result of the social changes that had occurred in the 1970s.

At the time, Mitchell (1984: 137) considered this hypothesis in relation to Australia and concluded "... if demographic factors are to blame for the upward shift in Australia's unemployment rate, then the groups experiencing high unemployment rates must have grown drastically as a proportion of the work force. This has not been the case in Australia, where conflicting tendencies have been at work".

Mitchell (1987b) analysed the argument in detail and concluded that:

Consequently, we reject the view that compositional changes in the labour force have been responsible for anything but the smallest increase in the aggregate unemployment rate (based on age-sex participation adjustments).

Further analysis led to the conclusion that the level of and movements in unemployment rates in Australia between 1967 and 1987 for a variety of age groups (both males and females) were predominantly a function of cyclical factors. Structural changes played on a small role in these shifts.

The measurement of the full employment unemployment rate where demand-deficiency is absent is important for policy makers intending to use fiscal policy to create jobs. At any given current level of unemployment the question is how many jobs are required, taking into account the mix between full-time and part-time employment and their respective average hours of work, to reach full employment.

There are three components of that shift: (a) the reduction of unemployment to reach the target; (b) the elimination of cyclical labour participation effects to eliminate the hidden unemployment; and (b) the elimination of underemployment.

In this paper we consider only part of that puzzle and focus on the impact of the changes in labour force composition have had on the aggregate unemployment rate.

The aim of this paper is to explore what effect, if any, these compositional changes in the labour force have had on our estimates of the aggregate unemployment rate.

2. Shifts in labour force composition

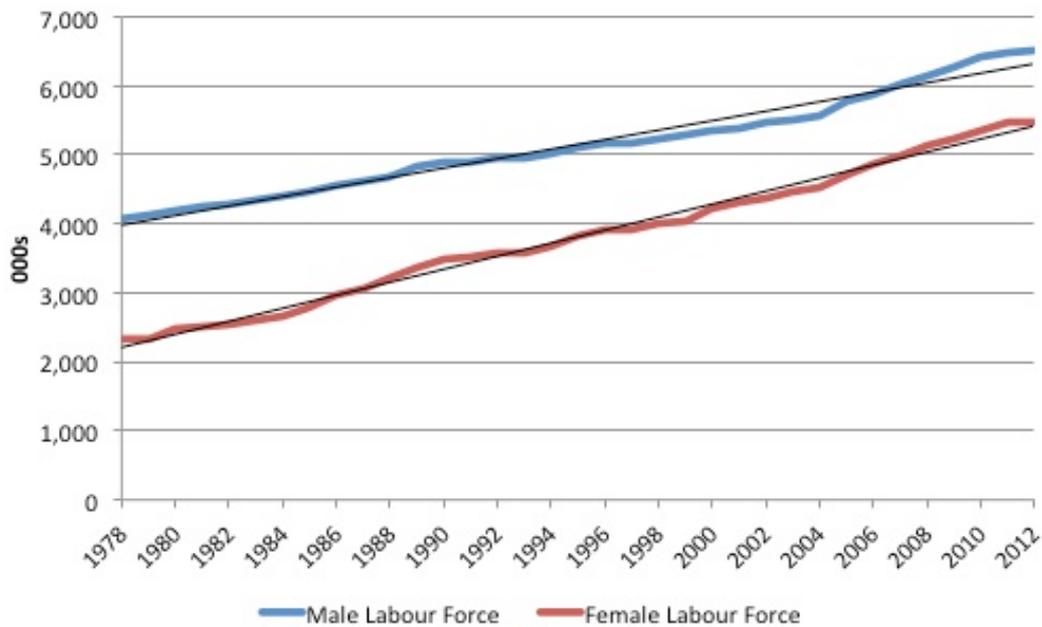
Consider the following facts:

- In August 1970, there were 3684.3 thousand males in the labour force (67.3 per cent of the total) and 1789.5 thousand females (32.7 per cent) making a total labour force of 5473.8 thousand.
- By August 1978, there were 4073.1 thousand males in the labour force (63.6 per cent of the total) and 2330.5 thousand females (36.4 per cent of the total), making a total labour force of 6403.7 thousand.
- By August 2012, there were 6517.3 thousand males in the labour force (54.3 per cent of the total) and 5484.3 thousand females (45.7 per cent of the total), making a total labour force of 12,001.6 thousand.

These are dramatic demographic shifts.

Figure 1 shows the evolution of the male and female labour forces in Australia from August 1978 to August 2012. The black lines are the simple linear OLS trend. It is quite obvious that the female participation in the labour market has significantly changed over this period.

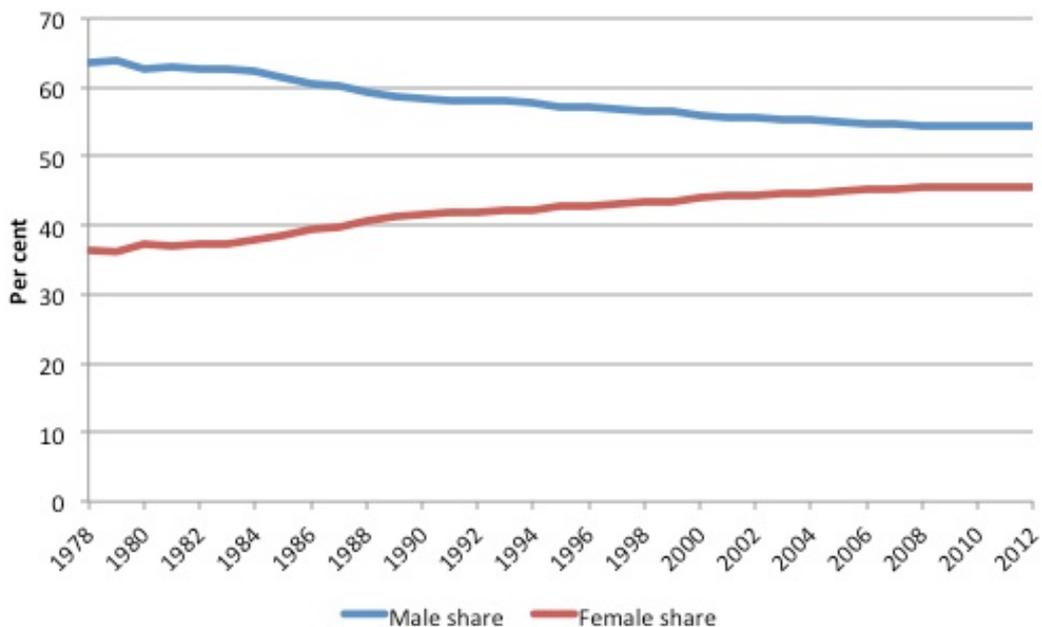
Figure 1 Changing male and female labour forces, Australia, 1978-2012, 000s



Source: ABS, The Labour Force, Australia.

Figure 2 expresses this evolution in terms of the changing male-female share in the labour force from 1978 to 2012 (as measured at August each year).

Figure 2 Male and female labour force proportions, August 1978-2012, per cent



Source: ABS, The Labour Force, Australia.

3. Analysis

Table 1 reports the results of the calculations aimed at establishing what the aggregate unemployment rate would be in August 2012 had the labour force composition (between females and males) remained at the August 1968 weights.

Table 1 Comparison between August 2012 unemployment rates by Age and Sex using current and August 1968 Labour Force weights.

Age Group	August 2012 Unemployment rate Per cent	Labour Force Weight		Weighted Unemployment Rate Per cent		Contribution to Total August 2012 UN Rate Per cent	
		2012	1968	2012 Weight	1968 Weight	2012 Weight	1968 Weight
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Males							
15-19	17.6	0.06	0.09	1.05	1.59	20.64	27.62
20-24	9.2	0.10	0.13	0.95	1.19	18.73	20.78
25-34	4.7	0.23	0.22	1.09	1.04	21.53	18.17
35-44	3.4	0.22	0.22	0.76	0.75	14.96	13.09
45-54	3.1	0.20	0.19	0.64	0.60	12.65	10.37
55-59	4.1	0.08	0.09	0.35	0.37	6.82	6.49
60-64	4.0	0.06	0.05	0.24	0.20	4.66	3.48
Total		1.0	1.0	5.07	5.75	100.00	100.00
Females							
15-19	13.5	0.07	0.19	0.95	2.56	19.57	39.93
20-24	7.4	0.11	0.19	0.79	1.41	16.44	22.00
25-34	4.3	0.22	0.17	0.95	0.73	19.75	11.47
35-44	4.4	0.22	0.2	0.98	0.89	20.30	13.83
45-54	3.3	0.22	0.17	0.72	0.56	14.99	8.76
55-64	3.2	0.14	0.08	0.43	0.26	8.95	4.01
Total		1.0	1.0	4.83	6.40	100.00	100.00
Persons							
15-19	15.5	0.06	0.13	1.00	2.02	20.17	33.32
20-24	8.4	0.11	0.15	0.88	1.25	17.71	20.68
25-34	4.6	0.23	0.21	1.03	0.96	20.74	15.77
35-44	3.9	0.22	0.21	0.86	0.81	17.34	13.43
45-54	3.2	0.21	0.19	0.68	0.61	13.69	10.07
55-59	3.9	0.08	0.07	0.33	0.28	6.65	4.54
60-64	3.3	0.06	0.04	0.18	0.13	3.69	2.19
Total		1.0	1.0	4.96	6.06	100.00	100.00

All weights are calculated with respect to the relevant total labour force total.

Source: ABS, The Labour Force, Australia.

Column (2) is the specific unemployment rate for the gender-age group at August 2012. The Persons-unemployment rate for each age cohort is the weighted-average of these gender-age specific rates using the August 2012 labour force weights.

Columns (3) and (4) compare the labour force weights of each gender-age cohort, relative to the relevant labour force total. So in August 1968, teenage males (15-19

year olds) constitutes about 9 per cent of the male labour force but this had declined to 6 per cent by 2012. Similarly, teenage females in 1968 were around 19 per cent of the female labour force but now constitute around 7 per cent.

The shifts reflect the increasing participation in education over the period by younger Australians. They also reflect the rising importance of prime-age females (25-54 years). Whereas this group comprised 54 per cent of the female labour force in 1968, they now comprise 66 per cent.

So both the ageing of the population and the social shifts in relation to female participation are reflected in the changing weights.

Columns (5) and (6) calculate the weighted-components for each of the gender-age cohorts using 2012 weights (5) and 1968 weights (6). The respective totals for males, females and Persons are the weighted average aggregates for each gender and the economy as a whole, based on the two weighting systems (2012 and 1968).

Column (5), therefore, shows the situation as at August 2012 using the current labour force composition in terms of age and sex. Column (6) shows what the unemployment rate would have been in August 2012 if the composition of the labour force with respect to age and sex had been the same as it was in November 1968.

The difference between the two unemployment rates (for males, females and total) is due to the changing labour force composition in terms of age and gender.

Thus, if there had been no compositional shift in the labour force, then the male unemployment rate would have been higher by 0.68 percentage points, while the female rate would have been higher (by 1.6 percentage points). The aggregate (persons) rate would be 1.1 percentage points higher if the labour force composition in terms of age and sex had not changed.

Columns 7 and 8 show the changing percentage contributions of each specific age-sex group to the relevant aggregate August 2012 unemployment rate. For example, using current weights, teenage males contributed 20.6 per cent of the total male unemployment rate whereas using 1968 weights this contribution was 27.6 per cent.

The offsetting nature of the compositional changes is clearly shown. For example, the teenagers and youth in general (for persons) now contribute much less to the aggregate unemployment rate in weighted, relative terms.

On the other hand, the 25-44 prime-age group is now relatively more important in weighted terms as a consequence of the labour force changes.

Conclusion

The view that compositional changes in the labour force has been responsible for a major shift in the unemployment rate in Australia is not supported by the evidence, even given the massive age and gender shifts that have occurred since the full employment era of the 1960s.

At the most, these shifts would see the full employment unemployment rate rise from 1.8 per cent (1968 average) to 2.9 per cent in 2012, based on these calculations. However, there have been other changes, which would significantly offset that impact.

For example, the dramatic improvements in information systems would tend to reduce the frictions in the labour market and make the matching of job and worker more efficient and timely.

There is thus no reason to consider that the full employment unemployment rate lies between 4 to 5 per cent, as is the current orthodoxy in Australian policy circles.

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