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A TALE OF TWO COUNTRIES:
EQUAL PAY FOR WOMEN IN AUSTRALIA AND BRITAIN*

R.G. Gregory, A. Daly and V. Ho

DISCUSSION PAPER NO. 147

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SUMMARY

At the end of the 1960s full-time women workers in Australia and Britain received 62.7 and 53.7 per cent respectively of the weekly earnings of the average male. There was an earnings gap between the countries of 9 percentage points. By the end of the 1970s the average weekly earnings of women employed full time had increased - relative to male pay - to about 80 per cent in Australia and 64 per cent in Britain. The earnings gap had increased to 15.1 percentage points.

The paper examines the two major questions posed by the different experiences in the two countries: Why is the pay ratio more advantageous to women in Australia?, and Why is it that during the 1970s the female pay ratio increased less in Britain than in Australia?

It is found that relative to their male counterparts at 1981, Australian women who work in the labour market full time possess better and more human capital endowments than British women. They also work relatively longer hours. These factors explain about 40 per cent of the differences in the pay ratio of women across the two countries but by far the largest source of the pay differential appears to be residual "discrimination". Over the 1970s the increase in the pay of women, relative to men, and the widening of the pay gap between the countries seems to have occurred in response to the differential effectiveness of official initiatives to change what women are paid for their capital endowments. Changes in human capital have played very much a minor role.

This finding poses the further question as to why the Australian initiatives to change the pay of women had a larger effect than the British counterpart.

Part of the answer would seem to lie in the differing concepts of "comparable worth" embodied in the equal pay legislation of each country. In Australia, men who work in female occupations possess similar endowments and are paid similar rates of pay as males in male occupations. In Britain men who work in female occupations are among the lowest paid men in the country. In Britain these men received on average 82 per cent of the average male wage both before and after the large pay changes for women. In Australia at 1981, men who worked in female occupations earned 98 per cent of the average male wage. It appears to us that the low pay of men in women's occupations in Britain placed a ceiling on the pay increase that could accrue to women with the results that both the pay increase and the resultant pay ratio in Britain is less than in Australia.

This finding raises the important issue of the relevant norm for comparable worth comparisons. Should female wages be compared to the average male wage or just male wages in female occupations?

Part 1. Introduction.

The 1970's was a remarkable decade for women. Not only did labour force participation rates increase markedly throughout the OECD (Mincer(1985)) but in a number of countries there were also significant increases in the pay of women relative to that of men. Two of the largest changes in the pay ratio occurred in Australia and Britain (Figure 1).

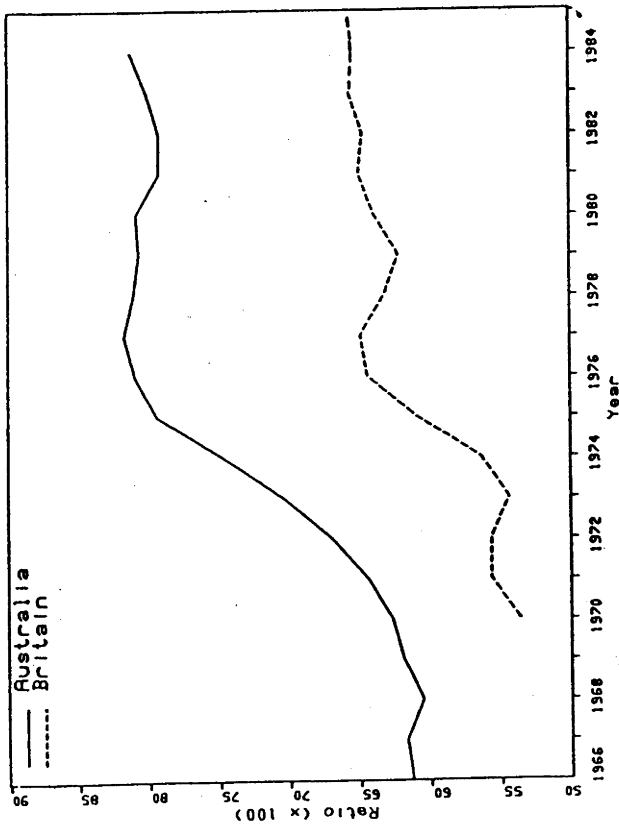
In Australia, after at least two decades of constancy, the ratio of female to male average weekly earnings of full time employees begins to increase from 1969 and peaks in 1976, 30 percent higher than seven years earlier. After 1976 there is a slight falling back in the ratio but it recovers and essentially remains constant at around 80 percent. In Britain the significant increases begin a little later, around 1974, and the ratio peaks in 1977. Again there is a slight falling away, but there is a recovery, and the pay ratio remains constant at around 64 percent.

One is impressed, in Figure 1, by the remarkable similarity of experiences of these two countries. One is also impressed by the differences. The pay ratio was lower in Britain before 1970 and, despite the large increase that occurred there, the gap between the two countries has widened from around 16 per cent in 1971 to about 22 per cent in 1981.

There are two obvious sets of questions prompted by the experiences of these two countries. The first set of questions, analysed with the aid of cross section data of 1981, are posed to discover why the pay ratio is more advantageous to women in Australia. Is this a reflection of better human capital endowments or the greater effectiveness of Australian institutions to respond to political initiatives to remove the perceived pay discrimination against women? We find that both factors contribute to the higher earnings of women in Australia but that less residual pay discrimination is the more important influence. The method of analysis and the way in which we define discrimination is described in Part 2. The results are presented in Part 3.

The second set of questions are posed in Part 4 to discover why it is that during the 1970's the female pay ratio increased less in Britain than in Australia. We show that there has been no

Figure 1:
Female/Male Average Weekly Earnings



Notes: Australia: Average Weekly Earnings for full-time adult non-managerial employees in the public and private sectors. Only private sector data are available before 1973. The pre-1973 data are adjusted up according to the ratio of economy-wide female/male pay ratios to private sector pay ratios in 1973 and 1974. Full-time workers are those working 30 hours or more per week.
Source: Earnings and Hours of Employees, ABS (6304.0)

Britain: Average earnings for full-time workers in all sectors of Britain. Males 21 years and above, females 18 years and over (excluding those whose pay was affected by absence). Full-time workers are those working 30 hours or more per week. Source: New Earnings Survey Dept. of Employment.

significant change in relative human capital endowments across the countries and that the principal source of the different outcomes is the different impact of official initiatives to remove discrimination. Just before the large changes in the pay ratio both countries adopted legally enforceable equal pay provisions to remove the perceived pay discrimination against women and, in retrospect, it appears that both countries possessed labour market institutional structures that were especially suited to implement changes in women's pay. In the UK the initiating factor was the Equal Pay Act of 1970 and in Australia there were two important decisions by the Australian Conciliation and Arbitration Commission (the Arbitration Commission); the 1969 decision to fully implement equal pay for equal work and the 1972 decision to implement "equal pay for work of equal value," what might loosely be called comparable worth.

The key question therefore becomes why did the UK Equal Pay Act have a smaller effect on women's pay than the decisions of the Australian Arbitration Commission. The most promising conjecture seems to be an institutional one and to turn on the nature of the male pay distributions in each country. In Britain, both before and after the large pay changes, men who work in female occupations, those where women comprise more than 70 percent of the workers, were paid much less than other men. In Australia a man's pay was not significantly affected by the femininity of the occupation. It appears, on the basis of aggregate data, as though in both countries the pay of men in female occupations was used both explicitly and implicitly as a norm for establishing the appropriate pay for women. Because these men are paid relatively less in Britain the increase in female pay also tended to be relatively less. The pay levels of men in female occupations provided a ceiling for the increase in women's pay. The next question therefore is why are men who work in female occupations paid differently in each country? In this paper we only make a start on providing an answer to this question.

In Part 4 we also discuss some of the implications for the distribution of earnings in Britain if the female to male pay ratios had changed to the same extent as in Australia. It is shown that if Britain could have changed female pay to the same extent as Australia then the resultant pay distribution

would be more egalitarian. Furthermore, if Britain paid males working in female occupations similar rates of pay either as other males in Britain or according to the Australian pay structure then there would be very large changes to the pay of low paid men in Britain.

One final introductory remark: To explain female to male pay ratios across countries is a very difficult task and it is not clear what is the best framework. We have adopted a fairly eclectic approach in this paper. We begin in Part 2 and Part 3 with a human capital framework that focuses on the average pay differential between men and women. This framework is the predominant paradigm in the literature. Then, in Part 4 we place more emphasis upon institutional factors and a disaggregated approach. No attempt is made to fully integrate these different approaches to the problem. We draw some of the major conclusions together in Part 5.

Part 2. A Method of Analysis to Explain the Pay Relativities of 1981: The Human Capital Model

There are many reasons why men and women receive different pay rates within a country. These reasons include differences in the quality of workers, the distribution of workers across industries and occupations, the degree of pay discrimination against women and the relative demand and supplies of labour. The usual way to measure the contribution of these factors is to fit earnings equations to the data for each sex. The most common earnings equations adopt a human capital framework and hypothesise that the differences in the earnings of men and women can be explained primarily in terms of differences in human capital as measured by years of schooling, work experience, marital status and so on. (Oaxaca(1973) , Mincer (1974)).

For simplicity we can add together the male and female earnings equations that are derived from human capital theory and form one equation which can be written as:

$$(1) E_i = \sum_{j=1}^n B_j^{MM} X_{ij}^{MM} + \sum_{j=1}^n B_j^{FF} X_{ij}^{FF} + U_i$$

where E_i is the log of earnings of the i th person and X_j are human capital and experience variables. The superscripts, M and F, refer to whether the individual is male or female. U_i is an error term.

Once equation (1) is fitted to the data the earnings gap between males and females is usually decomposed into two components, that part attributable to (a) the difference in human capital endowments of men and women, the X variables, and (b) the difference in estimated coefficients for men and women, the $\hat{B}$'s. The ratio of women's earnings to that of men's can be written as:

$$(2) \quad \bar{E}^F - \bar{E}^M = \sum_{j=1}^n \hat{B}_j^M (\bar{X}_j^F - \bar{X}_j^M) + \sum_{j=1}^n \bar{X}_j^F (\hat{B}_j^F - \hat{B}_j^M)$$

where the first term on the right hand side captures the contribution to the earnings gap of the difference in endowments and the second term captures the contribution of the difference in coefficients.

As a general rule both differences in endowments and differences in coefficients are important contributors to the pay gap. The differences in coefficients are usually referred to either as pay discrimination, to be explained by non economic factors, or, within the human capital framework, to a measure of our ignorance of the factors that cause the pay gap. This ignorance is usually assumed to stem primarily from lack of knowledge as to the effect on the estimated regression coefficients of human capital variables that are either mismeasured or omitted from the regression equation.

Over the last decade considerable work has been done, particularly in the US, to extend the list of variables that may be included in the regression equation to explain earnings and to refine the data so that the contribution to the earnings gap of the differences in coefficients, the unexplained contribution, is reduced. At this stage, however, progress has been slow so that the contribution of the differences in coefficients to the earnings gap is still usually around fifty per cent (Daymont and Andrisavi (1984). In Britain and Australia the difference in coefficients also contributes at least half of the earnings gap (Chapman and Mulvey (1985), Greenhalgh (1980)), although the size of the gap is very different.

For a number of reasons the large contribution of differences of coefficients to the earnings gap is an unsatisfactory state of affairs. First, the human capital theory is not a theory of differences in coefficients. To have something like fifty percent of the pay gap unexplained is an undesirable outcome. Second, the policy response to the pay gap may depend on the reasons for the difference in coefficients between men and women and, as already indicated, this difference is not explained. Third, and this is particularly important, within a country there seems to be no simple way of allocating the difference of coefficients to mismeasurement and mispecification of the equation, on the one hand, or to genuine sex discrimination of pay rates, on the other.

In terms of this framework the official attempts to change women's pay in Britain and Australia can be thought of as responding to the judgement that if these earnings equations were fitted to the data in the early 1970's then a major part of the difference in coefficients between men and women can be attributed to discrimination. Hence follows the decisions to use the legal process to attempt to remove the perceived discrimination and to change the coefficients, and in that way, to bring much closer together the rewards to human capital for each sex.

The human capital approach to explaining the pay ratio within a country may also be used to explain the differences in the pay ratio across countries (Gregory and Ho (1985)). For example, compared to Australia, women in Britain may be paid much less than men because they are relatively less well endowed with human capital attributes than their Australian counterparts. Alternatively, the different pay gap between men and women in each country may be accounted for by the different coefficients, that is, the same relative stock of human capital endowments of men and women in both countries may be rewarded differently.

To use the human capital model to explain the different pay ratios across the countries the analysis would proceed in the following steps:

- (1) fit earnings equations for men and women in Britain and Australia. (See equation (1))
- (2) calculate the relative average earnings of men and women from the earnings equation and derive the difference between the two countries. This is the earnings gap to be explained.

(3) calculate the contribution of differences in relative endowments of men and women to the pay gap across the countries. This is done by substituting the average endowments of male and female workers in Britain into the Australian equation to derive the earnings of British workers *if* they were paid according to the Australian pay structure. From a comparison of this *derived* British pay ratio with the Australian pay ratio calculated from the regression (that is, both calculations use identical coefficients) we can measure the contribution of relative endowments to the differences in the pay gap.

(4) finally, the difference between the original British pay ratio calculated from the British equation and the *derived* British pay ratio using Australian coefficients is attributed to the difference in estimated coefficients across the countries. This residual, calculated from identical endowments but different coefficients, might be interpreted a number of ways; as the difference in discrimination between the two countries, or as the outcome of biases from omitted variables and differences in the way variables included in the regressions are measured. We will spend some time in attempting to make a judgement as to the reasons for this residual in Part 4. For the moment we will adopt the usual terminology and refer to this difference as additional "discrimination," but note that the term refers to the difference in the calculated pay ratios across countries rather than the difference in calculated pay ratios between men and women within a country.

The description of the technique for allocating the earnings gap across the countries can be described algebraically as:

$$(3) \quad E^A - E^B = \sum \hat{B}^A (X^A - X^B) + \sum X^B (\hat{B}^A - \hat{B}^B)$$

where E is the log of the female to male earnings ratio in each country and the term on the left hand side is the earnings gap to be explained. The first term on the right hand side measures the contribution to the earnings gap between Australia (A) and Britain (B) of the difference in relative endowments of men and women, and the second term measures the contribution of the difference in coefficients.

Part 3. The Results of the Human Capital Model

The sample is restricted to full-time wage and salary earners. The Australian data, workers aged 15 to 54 years old, are drawn from the 1981 Households Sample File of the Australian Bureau of Statistics' Census of Population and Housing (Australian Census). The British data, workers aged 16 to 54 years, are drawn from the 1981 General Household Survey (GHS). There are 17,110 observations in the Australian data and 7018 in the British data.

The regression equations are as in equation (1) with the addition of a constant term. The dependent variable is the natural log of weekly earnings. We use weekly earnings because the Australian data do not provide good estimates of hourly earnings. In each country a full-time worker is employed 35 hours or more per week. The coefficients of equation (1) are interpreted as percent changes in earnings in response to a one-unit increase in the value of the independent variable.

The constant terms in the British and Australian equations measure the average log of weekly earnings of a male high school graduate, of urban residence, never married, working full time and during his first year in the labour market. The coefficient for the variables that measure male endowments estimate the additional payoff for men over and above the constant term. Thus, an estimate of the average earnings of a male university graduate, with all the other attributes included in the constant term, is given by the addition of the constant term to the estimated coefficient attached to the graduate dummy variable for males. The estimated earnings of a female university graduate, with all the other attributes of the constant term, is given by the addition of the constant term to the sum of the male and female university graduate coefficients. The definitions of the variables are given in Appendix 1.

The fit of the equations is similar for both countries (Table 1); the R^2 is .49 for Britain and .46 for Australia. This is a good finding as it provides support for the notion that the labour markets are

TABLE 1

Earnings Equations for Australia and Great Britain
(t-statistics appear in parentheses)

	Australia	Great Britain
R ²	.46	.49
Dependent Variable	lnW	
Constant	5.0126 (630.84)	4.1867 (248.76)
Education		
Drop out	-0.1463 (-17.11)	-0.1433 (-9.91)
High School		
Trade apprenticeship	0.0663 (7.30)	.0015 (0.09)
Post secondary qualification	0.2213 (17.03)	0.2106 (11.81)
University degree	0.4664 (38.63)	0.4368 (17.63)
Post graduate degree	0.6011 (27.32)	0.6382 (12.66)
Female x drop out	-0.0717 (-4.51)	-0.1135 (-4.51)
Female x high school	-0.0700 (-5.53)	-0.1192 (-4.82)
Female x trade apprenticeship	-0.1883 (-5.18)	-0.1448 (-3.29)
Female x post secondary qualification	-0.1616 (-8.09)	-0.0727 (-2.46)
Female x university degree	-0.0861 (-4.28)	-0.0381 (-0.73)
Female x post graduate	-0.0682 (-1.69)	-0.2443 (-1.41)
Experience		
Experience	0.0469 (36.65)	0.0484 (24.80)
Female x experience	0.0016 (0.74)	-0.0109 (-3.32)
Experience ²	-0.001 (-30.87)	-0.001 (-21.08)
Female x experience ²	-0.0001 (-2.53)	.0002 (2.22)
Area		
Rural	-0.1217 (-11.93)	-0.0122 (-1.25)
Female x rural	0.0307 (1.54)	-0.0239 (-1.34)
Urban		
Children	-0.0117 (-1.35)	-0.0165 (-1.30)
Female x children	-0.1691 (-10.99)	-0.0946 (-3.93)
Marital Status		
Spouse present	0.1577 (14.82)	0.2128 (13.37)
Female x spouse present	-0.1049 (-6.36)	-0.1588 (-6.44)
Other marital status	0.0852 (5.39)	0.1145 (4.06)
Female x other marital status	0.0123 (0.51)	-0.0576 (-1.38)
Single never married		

Sources: See Table 2.

sufficiently similar that a comparison is useful. It suggests that in each country the human capital model can explain earnings relativities across different men and women to a similar degree.

The individual coefficients from the earnings equations are mostly as expected and will not be discussed in any detail. Among full time workers, those with higher education and more experience earn more. In both countries women earn less than men in each education category and generally receive a lower pay off to experience. Other coefficients indicate that rural workers earn less than non rural workers, married females earn less than married males, and females with children earn less than those without children. The British sample is not as large as that for Australia and in some cells the sample size is quite small.¹ This may explain why in the higher education categories the female coefficients are not significantly different from those of men.

We now turn to an allocation of the earnings gap between the two countries. From the earnings equations we calculate that on the basis of the GHS full time female workers in Britain earn 64.2 percent of the average weekly earnings of males. In Australia the calculated ratio from the Australian Census is 79.3 percent. This produces an earnings gap across the countries of 24.0 percent or 15.1 percentage points². This gap is explained with the aid of Table 2.

Row 1 and row 2 of Table 2 list earnings calculations based on the British and Australian pay structure respectively. Proceeding across row 1, the first entry, 64.2, is the female to male earnings ratio in Britain, calculated from Table I using average British endowments and coefficients in the British equation. The second entry, 68.6, is the estimated earnings ratio if Australian workers were paid according to the British pay structure. That is, the Australian average human capital endowments are substituted into the British earnings equations (Australian endowments, British coefficients).

Turning to row 2, similar calculations are made on the basis of the Australian pay structure. The first entry, 76.3 per cent, is the earnings ratio British workers would receive if paid according to the Australian pay structure, that is, the British average human capital endowments are substituted into the Australian earnings equations. The second entry, 79.3 percent, is the pay ratio in Australia,

**Table 2. Explaining the Pay Gap between Britain and Australia:
The Ratio of Female to Male Full-Time Average Weekly
Earnings.**

	1981					
	(1)	(2)	(3)	(4)	(5)	(6)
	Britain	Australia	Pay Gap	Resource Endowments	Hours Worked	Additional Discrimination in Britain
(1) British Pay Structure	64.2	68.6	15.1 (100%)	4.4 (29%)	2.0 (13%)	8.7 (58%)
(2) Australian Pay Structure	76.3	79.3	15.1 (100%)	3.0 (20%)	2.4 (16%)	9.7 (64%)

Source: 1. Table 1

Australia: 1981 Census, Household Sample File, Full-time Wage and Salary Earners, ages 15-54.

Britain: 1981 General Household Survey, Full-time Wage and Salary Earners, ages 16-54.

2. Data on hours worked:

Australia: The Labour Force, Australia - June 1981, Table 13. (ABS 6203.0)

Britain: New Earnings Survey, Table A91, Department of Employment, London April 1981.

calculated from Australian endowments and coefficients. The entry in the third column of both rows, 15.1 percentage points, is the earnings gap to be explained. This is the difference between the entries in row 1, column 1 and row 2, column 2.

On the basis of the British pay structure, that is proceeding along row 1, and using the British earnings equation, the earnings gap is allocated as follows. In Col. 4. we measure the difference in resource endowments in the two countries. This accounts for 4.4 percentage points of the earnings gap. It is calculated as the difference between the British earnings ratio, 64.2, and the estimated ratio that Australian workers would receive, 68.6, if they were paid according to the British pay structure. It is clear that relative to males, female workers in Australia are better endowed with valuable labour market resources than their British sisters. This difference in endowments, valued by using the British earnings equation, explains about 29 percent of the earnings gap between the countries.

The remaining 71 percent of the gap in the average weekly earnings ratio is due to the difference in coefficients between the two countries. This difference is assumed to arise from two sources; different degrees of "discrimination" in each country and the differences in the number of hours worked in a full time week. As indicated earlier the Australian data do not contain good information on the actual hours worked by full time workers and consequently the dependent variable for each country is average weekly earnings of men and women. As a result the difference in coefficients across the countries will automatically capture any variations in average hours worked. We can make allowance for this variation, however, by using other data sources (see footnote Table 2). These data suggest that in 1981 Australian females worked more hours relative to males than their British counterparts³. The difference in relative hours worked accounts for 2.0 percentage points of the pay gap⁴ (Row 5). The remaining gap of 8.7 percentage points is labelled as the contribution of pay "discrimination" in Britain that is over and above any residual pay "discrimination" in Australia.

To recapitulate, the 15.1 percentage point pay gap is explained as follows; 29 per cent arises

because Australian women are relatively better endowed with human capital resources, 13 per cent arises because among full time workers Australian women worked relatively longer hours per week and the remaining 58 per cent is the result of greater "discrimination" in Britain. The major contribution to the greater pay gap between women and men in Britain therefore is the greater degree of pay "discrimination" there.

Similar calculations may be made on the basis of the Australian pay structure. This is done along row 2. The difference in endowments accounts for 3.0 percentage points of the earnings gap and the difference in coefficients accounts for the remaining 12.1 percentage points. Of the difference in coefficients 2.4 percentage points arises in response to the variation in hours worked and 9.7 percentage points arises because of the greater degree of "discrimination" in Britain.

The broad pattern of results do not seem to depend upon the pay structure adopted for the comparisons. Differences in hours worked and labour market endowments depress the pay of British women and account for a little more than a third of the earnings gap across the countries. "Discrimination" in the British pay structure, over and above any residual "discrimination" in Australia, accounts for the remaining two thirds. Residual "discrimination" therefore is very important. From this source alone British female pay would be increased by thirteen to fifteen percent relative to British males if they were paid the same relativities as their Australian sisters.

Part 4. Explaining the Pay Changes Through Time

If we return to Figure 1 we are left with two broad questions:

Why, relative to Australia, was the female to male full time weekly earnings ratio so low in Britain at 1970?

In 1970 the difference between the two countries in the ratio of weekly earnings for full time workers is of the order of 9.0 percentage points. We attempt to allocate this gap in the same way as above; to differences in relative hours worked, and to differences in the rewards and endowments

of human capital. Ideally we would like to apply the regression analysis of the previous section but the Australian data are not available for this earlier year although we have been able to calculate rough estimates of average years of schooling and experience from the 1971 census (see Appendix II). For Britain, we utilize data from the 1973 General Household Survey to calculate human capital endowments. The technique we adopt is first to substitute estimates of the endowments of a decade earlier into the 1981 regression equations of each country to see whether a change in the relative endowments of men and women can explain the change in relative earnings. When this is done for Australia we find that the calculated pay ratio, on the basis of our estimates of the endowments of a decade earlier, would be 79.1 percent, a calculation very close to 79.3 percent which is the 1981 ratio. It appears, therefore, that changes in endowments have not contributed significantly to the increase in the relative pay of females in Australia. Similarly, we have calculated the average hours worked by men and women in Australia at 1971 and again there seems to be only a slight change in relativities between the sexes. If the relative hours of 1971 prevailed at 1981, then the earnings ratio would adjust to 78.1 percent. It follows therefore that the large changes in relative earnings that has occurred over the decade seems to be primarily focused on changes in the coefficients.

Similar calculations can be made for Britain. The substitution of human capital endowments of 1973 into the 1981 British equation gives a calculated pay ratio of 65.9 percent, a ratio very similar to the 64.2 percent which is derived from the 1981 endowments. This difference is small when compared to the increase in the pay ratio over the decade. With respect to the effect of a change in average hours worked the earnings ratio has not changed to any significant degree. On the basis of the 1981 regression the earnings would change from 64.2 percent to 62.1 percent if the relative hours worked by men and women had not changed. Again, we find the same result as in Australia. The increase in female hours worked relative to male hours makes some contribution to the increase in average weekly earnings, but the change in earnings in Britain has also been associated primarily with changes in coefficients and not changes in hours or endowments.

These results are particularly interesting because if the main reason for the change in the earnings ratios in each country is the change in coefficients then it appears that the extent of discrimination in both countries was closer before the large pay increase began. Consequently, although the reduction in discrimination over the 1970's in response to the Equal Pay Act has enabled British women to improve their position considerably relative to British men they have fallen behind their Australian counterparts. Across the countries there has been a large change in relative discrimination which must have occurred in response to the differential effectiveness of official initiatives in affecting what women are paid for their capital endowments.

Why was the Equal Pay Act in Britain not as effective as the Australian counterpart?

In this section we consider three of a large number of possible answers to this question.⁵

(1) Demand and Supply.

In principle we could develop a formally specified model of labour demand and supply to explain the pay changes of women and incorporate the effects of the Equal Pay Act and the Australian Arbitration Commission decisions. We do not follow this procedure, partly because of lack of space, but more importantly because it does not appear that the changing demands and supplies of male and female labour were an important factor determining the timing or the pattern of the changes in relative pay of men and women over this time period. (see Gregory and Duncan (1981) for Australia and Zabalza and Tzannatos (1985) for the UK⁵). Rather, it appears to be more likely that the aggregate pay ratio is largely institutionally determined. That is, in both countries, the large changes in the pay ratios were associated with changes in the coefficients of the human capital model in response to official intervention into the pay structure and not associated with changes in the endowments of human capital as measured.

Before we proceed to attempt to explain why the coefficients have changed so much the reader may feel a little more comfortable with our emphasis on the institutional frameworks in each country if we briefly outline the extent of the shifts in the demand and supply of labour in both countries

over the last few decades and show, at a fairly simple level of analysis, that there is no obvious and strong relationship between the pay changes and the relative employment growth of men and women.

In both countries, despite large changes in female employment relative to male employment, the female to male pay ratio was approximately constant for the twenty years before 1970 (See Gregory and Duncan (1981) and Zabalza and Tsannatos (1985)). Over these twenty years the employment of women in Britain increased from 51 percent of male employment to 61 percent. In Australia the increase was even larger, from 37 percent to 50 percent. If the aggregate demand and supply of male and female labour is important in determining the wage relativity then it is rather remarkable that in the face of such large changes in relative employment that the wage ratio stayed approximately constant for so long.

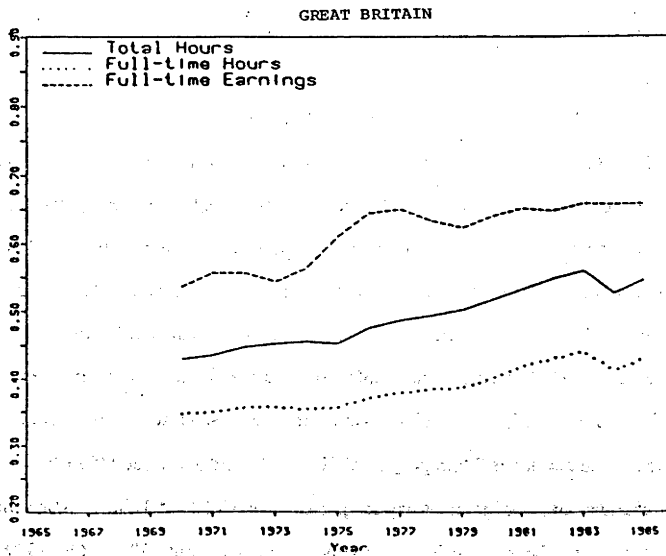
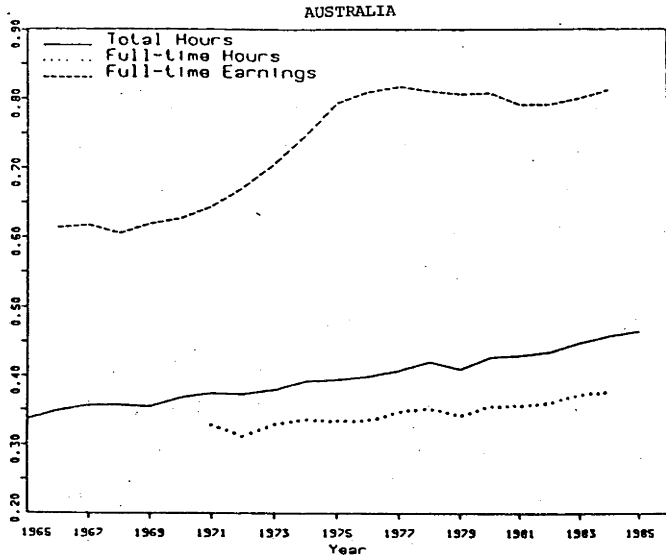
Since 1970, and during the period of the large pay changes, the strong upward trend towards female employment has continued in both countries, apparently without interruption (Figure 2). At this level of analysis the lack of a clear association between the pay change and relative employment, and the concentration of the pay changes within such a short period, suggest that aggregate demand and supply factors were relatively unimportant in explaining the extent of the pay changes. A knowledge of the institutional framework in each country and the changes that were introduced would enable one to predict that the changes in the pay ratio would be largely concentrated in the 1972 - 1975 period although the extent of the change could not be easily foreseen.

(2) Covered and Non Covered Sectors..

The institutional background.

In both countries it seems as though official and legal involvement in pay outcomes made an important contribution to the large changes that occurred (Zabalza and Tzannatos (1984), (1985), Gregory and Duncan (1981), Gregory and Ho (1985)). To demonstrate this it is first necessary to provide some background as to the institutional structure of the labour market in each country.

FIGURE 2: Ratio of Female to Male Aggregate Hours Worked and Earnings



Source: Earnings - See Figure 1

Hours - for definition of full-time see Figure 1.

Australia - The Labour Force, ABS 6203.0, August of each year

Britain - The New Earnings Survey, Department of Employment, April

In Australia pay relativities are vitally affected by a network of Federal and State tribunals. This complex system, which has a long history, can be roughly described as follows. The tribunals set minimum rates of pay, referred to as awards, for each occupation. The pay of university professors is fixed along with that of bus drivers, labourers, fitters and turners, storemen and so on. Before 1975 award rates of pay for women were adjusted downwards relative to the pay of men.

Occupations were categorized as to whether they were filled predominantly by males or females--blacksmith was a male occupation, for example, while milliner was a female occupation. When an occupation was determined to be male, the tribunal calculated the man's wage--"that which was necessary to support a man, his wife and children living in a civilized community"--and then added a margin for the work value of the occupation. When an occupation was determined to be female the tribunals undertook the calculations *as though it were a male occupation* and then adjusted the notional rate of pay downwards. From 1950 to 1969 the mark down in pay for a female was usually to 75 percent of the notional male wage for each occupation. Because women work less hours, are disproportionately represented in low paying occupations and men often earned significantly more than the minimum rates of pay, the 75 percent rate produced an aggregate weekly earnings ratio of full-time workers of around 60 percent.

At June 19, 1969, the Federal tribunal, following the lead of four of the six State tribunals, introduced "equal pay for equal work" to be fully effective by January 1, 1972. From this date sex was not to be used as a wage criterion in those jobs which were neither predominantly male nor predominantly female. Women working in female occupations were to be excluded from "equal pay for equal work" provisions. Then in 1972 the Federal tribunal decided that "equal pay for work of equal value" or in U.S. terms "comparable worth" was to be introduced in three uniform steps over the period to June 1975. After 1975 "award rates for all work would be considered without regard to the sex of the employee." (Gregory et. al (1983), Niland and Isaac (1975))

The changes in award rates of pay are presented in Col 1 of Table 3. After almost two decades of constancy the relative awards begin to increase from about 1970 and by 1977 are 29.6 per cent

Table 3. Female to Male Awards and Earnings Ratios.

	Australian Ratios			British Ratios		
	1 Awards	2 Earnings Private Sector	3 Awards/ Earnings 1976=100	4 Awards Manual Workers	5 Earnings Manual Workers	6 Awards/ Earnings 1976=100
1964	72.0	59.2	98.6	83.1	59.8	101.0
1969	72.0	58.4	97.2	83.3	59.5	100.1
1970	73.2	59.1	96.8	82.6	60.1	102.1
1971	74.6	60.7	97.6	84.9	60.6	100.1
1972	77.4	63.2	99.6	85.6	60.7	99.4
1973	79.4	65.9	99.5	87.4	62.5	100.3
1974	85.2	70.9	99.7	92.1	67.0	102.1
1975	90.8	75.7	100.0	95.1	68.0	100.3
1976	92.4	77.1	100.0	100.0	71.3	100.0
1977	93.2	76.6	98.6	100.0	71.8	100.2
1979	92.1	74.1	96.5	100.0	70.7	99.2

Source:

Australia - Awards - Adult average minimum award rates for a full weeks work, all industry groups, average of four quarters to Dec 31st each year. Source; Gregory et. al. (1985).

Earnings - Adult average weekly earnings for full time (more than 30 hours) non managerial employees in the private sector. Source; Gregory et. al. (1985).

Britain - Awards - Weighted average of minimum rates laid down in collective agreements. Source: Tzannatos and Zabalza, (1984).

Earnings - Relative hourly earnings full time manual workers. Source: Tzannatos and Zabalza, (1984).

higher than nine years earlier⁶. The Arbitration system directly determines minimum awards for jobs and not the earnings that are paid. Therefore there is no reason why relative award rate changes should necessarily be reflected in changes in relative earnings. The impact of the award rate decisions on earnings is given in Col. 2 and Col. 3. It is evident from Col. 3, (1976=100) that there was remarkably little slippage from the tribunals decisions and men did not restore the old wage relativities by increasing the margin of pay over and above the award rates. Over the same period, 1969 to 1977, earnings increased by 31 per cent. The decisions as to awards therefore appear to have been fully translated into earnings.

In Britain the initiating stimulus for the pay change was The Equal Pay Act of 1970 which was to become effective by December 1975. The Act sought to establish equal pay for equal work within establishments, remove any provisions of pay agreements which referred specifically to men or women only, and to introduce equal pay where a female job had been given equal value to a different male job by means of job evaluations. The Act therefore provides for comparable worth although there is no legal requirement to undertake job evaluations. There is one other provision which may have been important. Where a female pay rate is included in an agreement, with no male equivalent, the Act provided that the female pay rate be increased to the lowest level of male pay provision in the agreement.

It might be expected that the provisions of the Act would be fairly easily carried into the labour market by the extensive set of wage agreements and the large degree of unionisation in Britain. National agreements set minimum rates of pay in a wide range of industries. A relatively small number of collective agreements determine the minimum rates of pay of a very large number of workers. The fifteen largest national wage agreements cover around one fourth of the workforce. The four largest agreements cover almost one-fifth of the workforce.

The network of wage agreements in Britain, however, is not as extensive as the coverage of Federal and State awards in Australia. In Australia 90 per cent of female workers are directly covered by the award wage system. In Britain the proportion of females directly covered by

agreements is 41 per cent. It is possible, therefore, that the Equal Pay Act in Britain has created a large pay gap in female pay between covered and uncovered workers which may explain the smaller increase in female pay that occurred there.

Col. 4 of Table 3 refers to the covered sector in Britain. It lists the average ratio of female to male minimum rates of weekly pay for full time manual employees covered by wage agreements. A similar story is evident as in the Australian data. After very little change over two decades the minimum rates of pay suddenly begin to increase around the early seventies and by 1977 the index is 21.6 percent greater than in 1969. In Col. 5 we list the actual earnings of manual workers for the economy as *a whole*, that is, the aggregation of the covered and uncovered sectors. It is evident from Col. 6, which for manual workers compares awards for the covered sector to earnings for the economy as a whole, that in Britain there was also no significant slippage between changes in minimum rates of pay for the covered sector and changes in average earnings for the economy as a whole. Over the period 1969 to 1977 average earnings of manual workers increased by about 24 per cent, marginally more than minimum rates of pay.

It appears that the principal difference in the history of the two countries lies in changes in awards and minimum rates of pay and not in a different relationship between changes in awards and changes in earnings. Consequently the reasons for the different earnings outcomes in the two countries do not appear to lie in the larger uncovered sector in Britain since the changes in awards in the covered sector (Col. 5) are fully reflected in changes in earnings for the whole labour market, covered and uncovered (Col 6.) (See also Zabalza and Tzannatos (1984)).

(3) Comparable Worth

In Britain the Equal Pay Act was not written to remove all pay discrimination.⁷ The question of comparable worth was not completely addressed. The Act provided for the recommendations of work value exercises to be implemented but there was no legal requirement for them to take place. It

is possible therefore that the pay increase in Britain could be very uneven with some women receiving large increases and others receiving small increases depending upon the ease at which pay relativities could be compared across the sexes. The major difficulty with the concept of comparable worth is the establishment of a norm against which to compare the pay of those occupations dominated by females. In Australia, this difficulty was fairly easily met because, by tradition, all male wages were related together and when establishing male awards no account was taken of the femininity of the occupation. When men worked in occupations which were either female or closely associated with female occupations, for example, tailors, cloth cutters, hair dressers and barmen *the male pay ratio was set so as to establish comparabililty with other male occupations* and not set to take into account possible job competition from women. If job competition was thought to be a problem the women's wage was increased. (Niland and Isaac (1975)). This, however, was a very rare event. Consequently, when comparable worth was established in Australia, the practice of setting male wages without regard to the femininity of the occupation, plus the 75 per cent rule mentioned above, made the establishment of the "*correct*" pay ratio for comparable worth occupations a relatively easy task. When comparable worth was determined, perhaps relative to the nearest male occupation, this ensured that the pay was set with respect to the criteria used for determining male pay in all occupations. These criteria did not include any consideration of whether the male job was closely associated with female occupations.

In Table 4 we have calculated earnings ratios for three different groups of occupations; those where 70 per cent or more of the workers are female, those where 30 per cent or less of the workers are female, and then the remaining (mixed) occupations. The GHS data used in Tables 1 and 2 do not contain detailed information on occupations. Table 4 therefore is calculated from data from the New Earnings Survey. The grouping of occupations is based on 396 occupations for Australia and 187 occupations for Britain.

A strong degree of job segregation between the sexes is evident in these classifications. In Britain, for example, among full time workers 82 percent of males and 3 per cent of females work in

**Table 4 Job Segregation and Earnings Ratios by Occupational Groups
Australia 1981, Britain 1982**

	Job Segregation Percent of Workforce				Weekly Earnings Ratios Female/Male		
	Britain M	F	Australia M	F	Britain	Australia	Difference
Female Occupations	5.0	62.8	7.8	55.3	73.5	74.2	.7
Male Occupations	82.0	3.1	73.0	8.8	80.3	87.9	7.6
Mixed Occupations	13.0	34.1	19.2	35.9	74.1	77.6	3.5
Total	100.0	100.0	100.0	100.0	62.9	75.3	12.4
As a ratio of average Male Earnings:							
Female Occupations Male Earnings					82.0	96.2	14.2
Female Earnings					60.3	71.4	11.1
Male Occupations Male Earnings					102.8	101.3	-1.5
Female Earnings					82.6	89.0	6.4

Notes.

Female Occupations: 70 percent or more workers are female.
Male Occupations: 30 percent or less workers are female.
Neither: >30 and <70 percent workers are female.

Source: Britain: New Earnings Survey - Males 21+ Females 18+.
Occupations are based on the Department of Employment's List of Key Occupations for Statistical Purposes (KOS) published in Vol. 1 of Classification of Occupations and Directory of Occupational Titles (HMSO, 1972)
Australia: 1981 Australian Census, Household Samples File ages 18-54.
Coding for occupations is broken down to the 3-digit level.

occupations where 30 percent or less of the workers are female. In Australia the proportions are 73 and 9 percent. At the other extreme, in Britain 5 percent of male workers and 63 per cent of female workers are employed in occupations where 70 percent of the work force is female. In Australia the proportions are 8 and 55 per cent respectively.

In both countries the earnings ratio in male occupations is much higher than the aggregate ratio and much higher than the earnings ratio in female and mixed occupations. However, there appears to be a noticeable difference in the British pattern of the earnings ratio. For each job classification the earnings ratio in Britain is well above the aggregate ratio and *much closer* to the Australian ratios. The aggregate pay gap on the basis of these data sources is of the order of 12.4 percentage points, but for each of the job classifications the earnings gap is much smaller, only .7 percentage points for female occupations and 7.6 and 3.5 percentage points for male and mixed occupations.

The reason why the earnings ratio in Britain is more favourable to women in female occupations, than for the economy as a whole, can be found in the male pay structure. If the male and female pay of each group of occupations is expressed as a ratio of the average male wage for the economy as a whole then it becomes evident that in Britain male and female pay in female occupations are both much lower than in Australia. In Australia the average male wage in female occupations is 96.2 percent of the average male wage for the economy as a whole whereas in Britain it is as low as 82.0 per cent. This very low male pay in female occupations makes the British pay ratio seem less disadvantageous to women workers there.

The similarity of the pay ratios in female occupations across the countries raises the question as to whether the UK Equal Pay Act can be regarded as a comparable worth success, or at least as being as successful as the Australian initiatives. In the first instance the answer turns on the choice of the pay norm against which women are to be compared. If the relevant comparison is the pay of male workers in jobs of a similar degree of femininity then the answer may be yes. It all depends on whether it is believed that a high proportion of female workers in an occupation depresses the male wage in these occupations. If the male wage in female occupations can be

regarded as exogeneous then Britain has gone a long way towards comparable worth defined in this way. The pay ratio in female occupations is only .7 percentage points less than in Australia. If, however, male pay is depressed because of the femininity of the occupation then a better pay norm for comparable worth would be the pay structure of all males. On this basis, the pay ratio in female occupations is 16 percent less than in Australia and Britain has a long way to go to establish comparable worth.

If we are correct in our description of the way in which female pay was changed then it suggests that for women as a whole to do better in Britain male wages in female occupations will also need to be increased. Comparable worth would then become a concept directly relevant for the male pay distribution. We can illustrate this point with respect to female occupations from the data of Table 4. If the British male pay structure is kept constant across these three groupings, and women were to receive the same pay relative to their male counterparts as in Australia, then on average female pay in female occupations would increase by only 1 percent. On the other hand, if the pay relativity between men and women were to stay fixed in Britain, but male wages in female occupations were increased to the same relativity with respect to the average male wage that prevailed in Australia, then female pay in female occupations would increase 17.3 percent. On the basis of this comparison it is the low male pay in female occupations that poses a problem for a strategy of increasing female pay by the adoption of comparable worth. *If female pay is to be significantly increased by the adoption of comparable worth then male pay in male occupations will need to be adopted as the norm.*

Finally, we briefly discuss the importance of women among the low paid and the very different outcomes for low paid workers in both countries. The pay distributions for full time adult workers in Britain at 1970 and 1985 and in Australia at 1985 are presented in Table 5. The data are from the New Earnings Survey (Britain) and an unpublished ABS table (Australia). Both sets of data are comparable in that they are collected from enterprises and refer to those who work a full week.

Table 5: Income Distribution

	Britain ¹			1985		
	MALES	FEMALES	PERSONS	MALES	FEMALES	PERSONS
% with < 60% of Mean Male Wage	10.9	67.4	20.0	14.1	48.1	24.6
% with < 70%	22.0	79.3	36.8	25.6	63.8	37.4
% with < 80%	35.3	86.9	48.7	38.1	75.0	49.5
% with < 90%	48.2	90.3	59.1	50.0	N.A	N.A
% with < 100%	61.1	93.8	69.6	61.0	N.A	N.A

Australia² 1985

	MALES	FEMALES	PERSONS
% with < 60% of Mean Male Wage	5.2	14.2	7.8
% with < 70%	17.7	40.9	24.4
% with < 80%	33.3	62.9	41.9
% with < 90%	47.4	76.7	56.0
% with < 100%	58.8	85.1	66.4

Notes:

1. Britain - Gross weekly earnings for full-time workers ages 21+ from the public and private sectors and whose pay for the survey period was not affected by absence. Full-time worker are defined as those employees with normal basic hours exceeding 30 hours per week, or described as full-time by the employer, and including teachers or academics working 25+ hours per week.
2. Australia - Gross weekly earnings for full-time adult employees ages 21+ for the public and private sectors and paid for a full week. Full-time workers are defined as those whose standard (or rostered) weekly hours of work were at least 30 hours. Some employees (aircrews, teachers, university lecturers), although paid for a weekly attendance of less than 30 hours, were classified as full-time.

Sources:

Britain: New Earnings Survey, April 1970, 1985, Department of Employment, London.

Australia: Unpublished ABS data, similar to data found in Distribution and Composition of Employee earnings and Hours ABS Cat No. 6306.0 May 1985, but including full-time managerial workers.

There are a number of points that are immediately apparent. First, low paid workers in aggregate do relatively badly in Britain. If the comparison is confined to data for 1985 we find that 24.6 percent of workers receive less than 60 per cent of the average male wage in Britain whereas in Australia the proportion is as low as 7.8 per cent.

Second, the low paid of both sexes do relatively badly in Britain. For example, the proportion of men that fall below the 60 per cent benchmark is 14.1 per cent in Britain and 5.2 per cent in Australia. For women the proportions are 48.1 per cent and 14.2 percent respectively.

Third, women predominate among the low paid in both countries. Obviously the benefits of any attempt to improve the economic conditions of those who receive low pay in either country would accrue largely to females.

Finally, we can see the impact of the Equal Pay Act by comparing the British distributions of 1970 and 1985. Among full time workers we find that in Britain in 1970, before the large pay changes in response to the Equal Pay Act, that 10.9 percent of men and 67.4 percent of women earned less than 60 per cent of the average male wage. After the Equal Pay Act, at 1985, we find that there has been a slight worsening in the male pay distribution, 14.1 per cent of males now receive less than 60 per cent of the average male wage but the situation for women has improved considerably. The number of women below this wage threshold has been reduced from 67.4 per cent to 48.1 percent, a 29 percent reduction. The pay position of women in Britain, however, is still very much worse than in Australia.

Part 5. Concluding Remarks

At the end of the 1960's women full time workers in Britain and Australia received 53.7 and 62.7 percent respectively of the weekly earnings of the average male (1970, Figure 1). There was an earnings gap between the countries of 9.0 percentage points. By the end of the 1970s, and relative to men, women's pay had increased about 30 per cent in Australia and 20 per cent in

Britain. The earnings gap had increased to 15.1 percentage points.

Over the decade of the 70's, it was the coefficients in the human capital model that changed in both countries rather than the relative endowments and hours worked. It appears as though in both countries these large changes can be attributed to official intervention into the pay structure. There was little change in pay relativities in the two decades before the equal pay initiative of the early 1970's and there has been little change in pay relativities since then. This constancy of the pay ratio outside of the period when official interventions were implemented suggests perhaps that in both countries no further large improvement in pay ratios to favour women might be expected without further government involvement. The political and economic climate for such involvement, however, now seems very different from the 1970's and new initiatives do not seem likely.

Why did the Australian initiatives to change the pay of women have a larger effect than the British counterpart? Further examination of the data provides a possible clue. In Australia, men who work in female occupations possess similar endowments and are paid similar rates of pay as males in male occupations. In Britain men who work in female occupations are among the lowest paid men in the country. In Britain these men received on average 82 per cent of the average male wage both before and after the large pay changes for women. In Australia at 1981 men who work in female occupations earned 98 per cent of the average male wage. It appears to us that the low pay of men in women's occupations in Britain placed a ceiling on the pay increase that could accrue to women with the result that both the pay increase and the resultant pay ratio in Britain is less than in Australia.

This finding raises the important issue of the relevant norm for comparable worth comparisons. Relative to the average male British women do not seem to be paid comparable worth, at least by Australian standards. On average they are paid 23 per cent less than Australian women and after correcting for the difference in hours and endowments they are paid about 14 percent less. Relative to men in female occupations, however, the British female pay structure is not that different from Australia.

Finally, it is very noticeable that the pay structure in Britain disadvantages low paid workers, particularly women. Despite the large upwards movement in women's relative pay during the mid 1970's they are paid very much less than their Australian counterparts. In Britain at 1985, 48.1 per cent of women full time workers received less than 60.0 percent of the average male wage . In Australia the ratio is 14.2 percent. For men the ratio is 14.1 percent in Britain and 5.2 percent in Australia.

If an important part of the process of determining women's wages involves either comparisons with the pay of men in womens occupations or comparisons of the pay of men in low paid occupations then a further improvement in women's pay in Britain may well require a large upward change in the pay of low paid men. For example, if Britain adopted the Australian pay structure for men and across broad occupational groups did not disturb the relativities between men and women then women's pay would increase by as much as 17.3 percent.

FOOTNOTES

1. The smallest cell in the British data is women post graduates, 4 persons. The next smallest is women university graduates, 57 persons.
2. This ratio is different from Figure 1 for two reasons. First, the ratios are calculated from the regression equations using mean values of independent variables. Second, the data source is different because of the need for individual observations and human capital endowments.
3. The average hours worked by these full-time workers in each country are: Australia: men 40.0, women 36.7. Britain: men 41.7, women 31.7. For both Australia and Britain the published data defined full-time workers as those working 30 or more hours per week. This data is still useful for our purposes because we are interested in differences in *relative* hours worked for males and females in Australia and Britain.
4. The contribution of hours worked is calculated as follows: For the British pay structure, Row 1, the effect of differences in the number of hours worked is calculated by subtracting 64.2 from the product of the British earnings ratio and the ratio of relative hours worked in each country.
5. Other factors, such as changes in the industry or occupational mix of women in the two countries do not seem to have affected the average pay relativities. (Zabalza and Tsannatos (1984)) Zabalza and Tsannatos conclude, "Neither the level of economic activity, nor incomes policies, nor changes in the industrial structure, nor changes in labour supply conditions alone can explain the remarkable increase in females' relative levels of pay and employment that has taken place during the seventies." They do suggest, however, that there was a small supply response after the pay increase. They go on to say, "Thus, these results cannot reject the hypothesis that, as a consequence of the legislation and of its implementation by collective agreements, employers were faced with a higher price for female labour and overall did not take any action to reduce female employment." p. 693.
6. In this section the data sources are different from those of Table 1 and Table 2. For Australia we use earnings in the private sector. The data are collected from enterprises. For Britain we use earnings for *manual* workers collected by the Department of Employment.

7. The Equal Pay Act of 1970 came into force on 29 December 1975. It seeks to eliminate pay discrimination by

(a) establishing the right of the individual woman to equal treatment in respect of terms of her contract of employment when she is employed on work of the same or a broadly similar nature to that of a man;

(b) in a job which although different from that of a man, has been given an equal value to the man's job under evaluation.

(c) removing any provisions of agreements which apply specifically to men only or to women only. the duplication will be eliminated by striking out the lower rate. If there is a rate for female workers in an agreement which makes no provision for men in the same category then the women's rate will be raised to the lowest classification applying to men.

The comparisons which a woman may draw with a man or with a man's job are limited to men employed by her employer or an associated employer. Such comparisons are normally limited to men employed at the same establishment. There is no requirement in the Act to undertake job evaluations. It is this category (c) which is likely to link women's pay in female occupations to those men who also work in similar occupations rather than to men in general.

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Appendix I.

The results relate to full-time workers, those working more than 35 hours per week in both countries. In Australia the sample was aged 15 to 54 and in Britain 16 to 54. The definitions are presented in the form of a table to make comparisons between the countries easier. It was not possible to match the samples from the two countries identically.

Definitions of variables used in the regression equations
 Australia Great Britain

Education Variables

Dropout - Age on leaving school was less than or equal to 15 with no further qualification.

High School - Age on leaving school was greater than or equal to 16 but the person had no post secondary qualification.

Trade apprenticeship - trade certificate

Post secondary qualification - other post

Dropout - Those with no qualifications or with ungraded or grades 2-5 of a Certificate of Secondary Education.

High School - The person had one of the following: a Certificate of Secondary Education grade 1, school certificate or matric, one or more GEC'O' levels or the Scottish equivalent (Scottish Leaving Certificate or Scottish Certificate of Education), or clerical and commercial qualifications.

Trade apprenticeship - one of the following: Completed a recognized trade apprenticeship, City and Guilds certificates (Part I and Part II), City and Guilds full technology certificate.

Post secondary qualification - One of the

secondary certificates.

University degree - bachelor degree level.

Post graduate degree - higher degree level

Experience

Age-years of schooling-six

Children

A dummy variable taking the value of 1 if children under the age of 18 were present in the household and were the responsibility of the head of the household or spouse.

Area

Rural - Those living in a community of less than 1,000 people.

Urban - Those living in a community of more than 1,000 people.

Marital Status

Spouse present - currently married and

following: ordinary national certificate or diploma, higher national certificate or diploma, university diploma, nursing qualifications, teaching qualifications, one or more GEC'A" level or higher school certificate, Scottish certificate of sixth year studies.

University degree - university or CNAA first degree.

Post graduate - university of CNAA higher degree.

Age - age on leaving full-time education.

A dummy variable taking the value of 1 if children under the age of 16 were present in the household and were the responsibility of the head household or spouse.

Rural - those living in rural local authority areas.

Urban - Those living in urban local authority areas in the conurbations (e.g., Greater London).

Spouse present - currently married and

living with spouse.

Other marital status - widowed, separated
and divorced individuals.

Single - never married.

living with spouse.

Other marital status - widowed, separated
and divorced.

Single - never married.

**Appendix II:
Estimates of Endowments of Human Capital
Australia 1971**

Because data from the 1971 Census was only made available in the form of matrix tapes and cross-tabulation tables, (as opposed to individual records) a number of assumptions had to be made to measure average endowments of workers in 1971. We believe that any errors in making the 1971 data comparable with the 1981 data are minor. And in any case, the mismeasurement is likely to be constant between the sexes, so that the computed female/male wage ratio may be largely unaffected by any mismeasurement.

Sample

The 1971 dataset did not provide information on hours worked. Therefore, average endowments are measured for all employed workers, full-time and part-time.

Education Dummy Variables

The 1971 data did not separate those without qualifications into 'high school' and 'dropout' categories. Therefore, those without qualifications were divided into these two categories in the same ratio as obtained from the 1981 Census data. In addition, those workers whose highest qualification obtained is a graduate diploma are reported under the college category in 1971, but under the graduate category in 1981.

Experience Variable

Neither average age nor average years of schooling are available in single years for 1971. A proxy for average age was obtained first by finding the average age by sex in the 1981 data for those age categories used in the 1971 census. The average age in each category was then weighted according to the number of people recorded in that category in 1971 to obtain a mean age for all males and females respectively.

A similar method was used for years of schooling; average years of schooling was calculated for each education dummy in the 1981 census, then weighted according to the distribution of workers

across the education categories in 1971.

The average years of schooling+6 was then subtracted of the mean age for each sex to obtain the experience measure. Experience squared was then obtained by squaring the experience proxy.

Child Dummy Variable

The 1971 Census did not provide a cross tabulation of employment vs. number of children. The average 1981 Census means were therefore used in 1971 also.

Rural Dummy Variable

The published data from the 1971 Census provide information on labor force participation rates of rural and urban workers by sex, but not the actual population of rural/urban residents by sex. The actual proportion of rural workers by sex was therefore computed by assuming that the population of rural/urban workers was equally divided between the sexes.

Information on rural/urban residence could not be separated into the age 15-54 category as for the 1981 data, and pertains to all workers 15+.

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