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# The effects of protective legislation on occupational segregation in the United States and Australia

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**THE UNIVERSITY OF WOLLONGONG  
DEPARTMENT OF ECONOMICS**

**THE EFFECTS OF PROTECTIVE LEGISLATION  
ON OCCUPATIONAL SEGREGATION  
IN THE UNITED STATES AND AUSTRALIA**

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## **ABSTRACT**

Gender-specific protective labour laws are considered unacceptable by many analysts because it is presumed they must necessarily adversely affect employment opportunities for women. This paper reviews United States research which has sought to assess the validity of this assumption; and reports on the impact of these laws within Australia. The assumption that gender-specific labour laws adversely affect female employment opportunities is not supported by United States research or Australian data. It is concluded that a reform strategy centred on simple abolition may involve loss of employee protection without necessarily producing any compensating increase in opportunities for women.

## INTRODUCTION

Most industrial societies have, at one time or another, introduced sex-specific legislation designed to protect female employees against work hazards and overwork. Such laws have included restrictions on the working hours of women, prohibitions on the employment of females in certain occupations considered especially hazardous, and restrictions on the maximum weights an employer may order women employees to lift. Over the last two decades, retention of this form of labour market regulation has been increasingly challenged. One of the major arguments advanced by those who advocate the abolition of these laws is that, while they may provide a degree of protection for women employees, they also cause job segregation and limit women's ability to obtain employment (Commission of the European Communities, 1987; Connell, 1980; Coyle, 1980; Goldin, 1990; Heitlinger, 1979; Hutchins & Harrison, 1966; Nakanishi, 1983; Nielsen, 1980). Lehrer (1985: 187) puts this view forcefully:

At this point in time, "protective labor legislation" for women seems to be a contradiction in terms (an oxymoron, linguistically, somewhat like "clean bomb"). Labor laws that limit or circumscribe women's work force participation or otherwise distinguish on the basis of sex are not only presumptively illegitimate...but are considered to discriminate against women by limiting their "competition" with male workers for relatively skilled or better-paid jobs, and consigning them to a sex-segregated job market.

This paper reviews American empirical research on sex-specific protective legislation, which has focussed on the impact of restrictive hours legislation for women, in order to determine whether it is necessarily the case that sex-specific laws invariably retard the employment opportunities of women. In Australia, the controversy over protective legislation

has focussed on the effects of sex-specific weight lifting limits on the employment opportunities of women (New South Wales Anti-Discrimination Board, 1984; Refshauge, 1982). Australian data are therefore examined here in order to determine the extent to which the assumption that such weight limits restrict employment opportunities for women conforms with experience. The purpose of the paper is not necessarily to argue for the retention of these laws, but rather to initiate a factual basis for debate regarding the impact of these laws, and the likely benefits and costs of their abolition.

The manner in which sex-specific labour laws have been modified or abolished in the last two decades has varied greatly between nations. In some societies, the changes have involved a “levelling up” of protective standards, in others, a “levelling down”. The former approach extends to men the protection previously applying only to women, while the latter removes legal protection from women, thus leaving both sexes nominally equal in terms of their vulnerability. In some cases, a mixture of levelling up and levelling down of protective standards has been introduced. In these instances, protection for women has been weakened, and the same level of protection has been applied to men who were either previously unprotected or subject to lower levels of protection than the new standard.

In the United States, revamping of sex-specific labour legislation has clearly involved a levelling down. Critical developments inducing this process were the enactment of the Equal Pay Act of 1963, which forbade unequal payment for substantially equal work; and Title VII of the Civil Rights Act in 1964, which prohibited discrimination on the basis of race, colour, religion, sex, or national origin. Sex-specific protective labour laws were subsequently challenged in the courts, and all such legislation was eventually abolished. The abrogation of these laws produced a marked decrease in the degree of legal protection enjoyed by female

employees (Hill, 1979). Many of those who supported the abolition of the laws apparently did so because they assume that all workers now enjoy safe and comfortable conditions of employment. Baer (1978: 217), for example, argues that protective legislation is unnecessary because the industrialisation process has carried society to a stage where physical demands are no longer made of employees:

In a society in which workers have a considerable degree of choice of occupation, in which no one is forced to take dangerous jobs, and in which the physical characteristics of females do not produce burdensome disabilities, the only plausible justification which remains for this kind of treatment is the assignment of the domestic role to women as their primary task in society.

By contrast, the nations of Western Europe have generally adopted a less radical approach. Changes to the relevant laws have been monitored by the Commission of the European Communities. While recognising the need for the abolition of sex-specific legislation where the concern for protection which originally inspired these laws is no longer well-founded, the Commission has permitted member states to retain sex-specific laws in cases where it could be shown that there is a clear justification for differential treatment. Moreover, the Commission has argued that the obligation to ensure equal treatment for men and women must be seen within the context of the need to improve working conditions set out in Article 117 of the European Treaty. Hence, it has advised:

Equality should not be made the occasion for a disimprovement of working conditions for one sex, and it would be insufficient to simply take away necessary protections which are presently limited to one sex (Commission of the European Communities, 1987).

While most member nations of the EEC have sought to adopt reforms that accord with the guidelines, two member countries — Britain and Belgium — have ignored the

Commission's recommendations, and instead have opted for a levelling down of protective laws. This levelling down was introduced in the face of explicit opposition by the trade unions which represent the women employees most directly involved. In both Europe and the United States, unions have supported the process of reforming labour laws which discriminate against women. However, they have insisted that the elimination of the discriminatory content of these laws should not be purchased at the cost of their protective content. They have therefore opposed all policies which seek to achieve equality of opportunity by the levelling down process (Ashe, 1986; Bacchi, 1990; Commission of the European Communities, 1987; Deakin, 1990; Nakanishi, 1983).

A similar situation exists in Australia. Many employers, academics and professionals have been willing to support the abolition of sex-specific labour laws, even where this has involved a levelling down in the degree of protection enjoyed by women employees. Conversely, the Australian Council of Trade Unions and pro-labour feminists have supported the reform rather than the abolition of the old laws. Their argument is that a policy of levelling up is the only acceptable means of achieving equality between the sexes, given the danger to women that would be involved in lowering the legal protection they have traditionally enjoyed (Australian Council of Trade Unions, 1987; Bacchi, 1990; Bennett, 1984; Nyland and Kelly, 1992).

If serious debate regarding sex-specific protective labour law is to be conducted, it is imperative that systematic research into the impact of these laws be undertaken. Indeed, it should be considered unacceptable that laws designed to protect the health of employees can be abolished without undertaking such studies. This is particularly the case given the results of studies which indicate that a cavalier approach to labour law, which ignores the issue of

sex differences, can result in women experiencing a disproportionate level of occupational injuries (Larsson, 1988). Finally, such research is needed because the victories won by the anti-protectionist alliance internationally have been challenged by those who accept that employees should have a legal right to safe and reasonable terms of employment. As Deakin observed:

A tendency towards “re-regulation” is apparent within the I.L.O., where calls for flexibilisation of Convention No. 89 on women’s night work have been combined with an insistence that any loosening of the general ban must be accompanied by new regulations aimed at protecting the health and safety of nightworkers and ensuring that any necessary derogations are the subject of consultation and agreement through collective procedures (Deakin, 1990: 17).

As a contribution to this debate, research conducted in the United States regarding the impact of sex-specific labour laws on women’s opportunities in the labour market will be reviewed. Evidence relating to the effects of manual handling legislation on the employment opportunities of Australian women will then be examined. The object is to determine whether it is the case that sex-specific labour laws necessarily disadvantage women employees. The effective reform of these laws requires substantive knowledge of the likely benefits and costs of reform. Given the danger involved in undermining the protection enjoyed by employees, economic rationalism alone must be considered an unacceptable basis upon which to found occupational health and safety policies.

## **EMPIRICAL EVIDENCE FROM THE USA**

In *Muller v Oregon* 1908, the Supreme Court of the United States established the constitutional validity of maximum hours restrictions for female employees. States could pass



legislation restricting the working hours of women but were limited in their power to regulate the hours of men. The case was a turning point in three ways: it presented a factual case for maximum hours restrictions; it provided the first precedent for labour legislation in the United States; and it singled out women for coverage (Kirkby, 1987; Goldin, 1990).

Proponents of the legislation argued that long hours of work injured the health of women, the health and productivity of their offspring, and the quality of family life. Women and children were believed less capable of defending themselves from employers than were males, and therefore were seen to be in need of special protection to prevent their exploitation. Opponents of protective legislation, on the other hand, claimed such laws were discriminatory and undermined the attainment of true equality between men and women (c.f. Goldin, 1990). Moreover, it was asserted that the unions and the social feminists who supported sex-specific protective legislation did so merely in order to increase employment opportunities for men (c.f. Wilson & Sapiro, 1985).

While there is disagreement as to whether or not exclusion of women from industry was an important motive for the introduction of the protective legislation, it is commonly assumed by historians that the laws had an exclusionary effect (c.f. Kirkby, 1987; Landes, 1980; Wilson & Sapiro, 1985). Recent studies have cast doubt on this assumption, and have tended to support research undertaken in the 1920s, which concluded that women were not disadvantaged by these laws (Breen, 1988; Goldin, 1988, 1990). Several analytic approaches have been employed to study the question. The Women's Bureau Report (U.S. Department of Labor, 1928) relied on interviews supplemented by descriptive statistics. Landes (1980) and Goldin (1988) employed *ad hoc* single equation models using aggregate cross-sectional data; while Breen (1988) analysed regional time series data. We now review and evaluate studies

which identify the effects of American sex-specific protective labour legislation starting with the research of the 1920s.

### **United States Department of Labor Women's Bureau Report (1928)**

The 1928 investigation into the effects of protective laws on women's employment opportunities followed a controversy at the Second Conference on Women in Industry called by the Women's Bureau of the United States Department of Labor in January 1926. At the conference, legislative regulation of the labour market was opposed by the National Woman's Party and the National Association of Manufacturers (Lemons, 1973: 192-193). As a consequence, the Women's Bureau undertook a nine-month investigation into the impact of sex-specific labour laws on the job opportunities of women. Work schedules were obtained from 1,661 establishments employing 665,561 employees in eleven states. Personal interviews were held with more than 1,200 working women who had experienced a change in the law, or who were employed under conditions or in occupations prohibited for women in some other state. Investigators also attempted to identify the impact of the laws by studying plant payroll records. The data were to be supplemented with interviews with employers and workers. Due to poor company record keeping, the statistical data collected were incomplete, forcing greater reliance on the use of interview data (U.S. Department of Labor Women's Bureau, 1928).

Protective legislation covered only one third of the 8.5 million females in the U.S. workforce. The laws were oriented toward the control of conditions in industrial, mercantile and factory occupations. Business, professional women, and those in supervisory positions were generally not covered by labour laws, and it was primarily these women who demanded

the abolition of the legislation (Goldin, 1990; Lemons, 1973). In general, the report concluded that protective labour laws as applied to women engaged in manufacturing processes did not handicap them, but rather served “to regulate employment and to establish the accepted standards of modern efficient industrial management” (U.S. Department of Labor Women’s Bureau, 1928: 54). In almost every kind of employment, it was concluded, the forces influencing women’s job opportunities were far removed from legislative restrictions on their conditions of work.

The investigation did uncover a small number of cases where men had been substituted for women as a result of restrictive hours laws, but concluded that the legislation had little adverse affect overall on the employment opportunities of women in the industries studied. The essence of the report’s conclusion has been well captured by Lemons.

[T]he major conclusion was that “labor legislation was not a handicap to women...it did not reduce their opportunities, and...it raised standards not only for women but for thousands of men too.” ...Limiting women’s hours was the one means of equalizing the position of men and women, and women were not handicapped by hours laws because men’s hours were shortened also. Far from being displaced, the states with the most advanced laws seemed to have the greatest opportunities for women to work. Instead of reducing the number of jobs, the reverse seemed to be true. In the final analysis, women’s job opportunities did not depend on legal regulation of the conditions of employment, but upon the employer’s idea of what were “women’s jobs” (Lemons, 1973: 195).

The Bureau’s report has been subjected to much criticism. Breen (1988) argues that many women in the forefront of jobs not traditionally open to women were disadvantaged, and that therefore their significance was far greater than the numbers involved. Similar arguments can be found in Berch (1975), Milkman (1980) and Kessler-Harris (1982). Lemons (1973), conversely, has observed that the laws studied by the Bureau usually forced upon the whole of industry only what the most advanced firms had adopted voluntarily. Lemons also reported that the Bureau was

insistent that where the law was unfair to women, exemptions should be allowed. Further, he argues that the most celebrated of those incidences where women were dismissed were not in fact the result of the enactment of protective laws.

### **The Landes and Goldin Studies**

Landes (1980) and Goldin (1988) conducted econometric studies into the impact of protective legislation on the employment opportunities of American women in the early years of this century. Both studies adopt an *ad hoc* single equation model, employed essentially the same data, but reached highly divergent conclusions. While Goldin attempted to separate the impact of hours legislation on male and female employees, Landes studied only the effect on women. Goldin estimated an identity in which mean scheduled weekly hours in 1919 (Hours19) for all manufacturing workers in each state (and the District of Columbia) were regressed on variables causing hours to vary across states, such as a South dummy (South), and the percentage urban in the state (%Urban). She also included the percentage female in manufacturing employment (%Female), a dummy variable (LawDum) equal to one if the state passed a maximum hours law by 1914, and finally, an interaction between the last two terms (%Female x LawDum). Landes' approach excludes the LawDum variable on its own as an independent variable, resulting in the impact of hours laws being constrained to fall entirely on female employees (see Appendix for a fuller explanation). The Landes model is therefore subject to specification errors.

The crucial results from Goldin's and Landes' estimated equations are reproduced here as Table 1. Landes' results, using the more restrictive equation, suggest that protective legislation decreased scheduled hours of women by eight per week, one full weekday of work, or 15 per cent of mean scheduled hours. The coefficient on %Female indicates that women worked a full

11 hours more per week than men did in states without maximum hours legislation. These conclusions, however, are not supported when Goldin's more general equation is estimated.

Goldin's coefficients reverse Landes' findings and suggest a very different interpretation of the impact of protective legislation. Goldin finds that the legislation led to a reduction of about 1.8 hours per week for *both* male and female manufacturing workers, and no discernible difference in the reduction for male and female workers separately was apparent. Goldin interprets this result as reflecting a general desire by employees in states which introduced such legislation for a general decline in hours.

Criticisms over possible model misspecification were tackled by Goldin by using disaggregated data by industry for 1914 and 1919, using the 1920 Census of Manufactures, and estimating across states for industries in which there were virtually no female employees. The reduction in scheduled hours of foundry workers in states with maximum hours legislation covering only women was virtually identical to that derived from the full estimation. Such disaggregated data by industry was further employed to test the proposition that protective legislation was passed in states in which male labour lobbied vigorously for general hours reduction.

The results suggested that labour in male-intensive industries lobbied effectively for hours limits for females in states in which male labourers were ultimately successful at lowering their own hours. Organised labour in male-intensive industries appear to have supported lower female hours of work because the more employees working shorter hours, the greater the likelihood it would become the norm for all.

**TABLE 1. IMPACT OF HOURS LEGISLATION ON SCHEDULED WEEKLY HOURS BY STATE, 1920**

<b>Independent Variables</b>	<b>Landes (1980)</b>	<b>Goldin (1988)</b>
Constant	53.30 (69.1)	54.700 (55.7)
South	1.72 (3.43)	1.730 (3.01)
%Urban	-0.05 (3.72)	-0.059 (3.87)
%Female	0.11 (1.93)	0.041 (0.48)
%Female × LawDum	-0.08 (1.81)	0.035 (0.35)
LawDum	—	-1.820 (1.56)
R <sup>2</sup>	0.67	0.63
No. of Observations	49	49

**Notes:**

**Dependent Variables**

- Hours19 = Mean scheduled hours in manufacturing in 1919  
 South = Dummy variable for southern states  
 %Urban = Percentage of state's population that was urban in 1920  
 %Female = Percentage of the manufacturing labour force that was female  
 LawDum = 1 if the state passed its first enforceable maximum hours law by 1914

Absolute values of t statistics are in parentheses

Neither of the equations were weighted to account for heteroscedasticity, see Goldin (1988) for a justification of this

**Sources:** Landes (1980, 480); Goldin (1988, 193)

While protective legislation may have been associated with a decline in the hours of all workers, male and female, it may also have contributed to a decline in female employment. Upon examining this possibility for the manufacturing sector, Landes and Goldin reached opposite conclusions. Landes concluded that hours legislation reduced female employment in manufacturing. The employment equation estimated had as the dependent variable the percentage of the total manufacturing labour force that was female in 1920 (%Female), and the key independent variable accounted for the degree of restrictiveness of the state's maximum hours legislation (Rest). To account for differences in the demand for or supply of female workers, additional variables were included — %Urban, Southern dummy and a lagged employment share in manufacturing capturing other relevant factors (EMP<sub>-1</sub>). The Rest variable measured the percentage of the state's manufacturing labour force in 1909 that worked over the legal maximum in effect in 1914. The variable accounts for prior conditions and gives the proportion of the labour force in 1909 that would be constrained by the hours legislation passed by 1914. Also included in Landes' equation is a dummy variable (here Dum1905-1914) if a state passed its first enforceable maximum hours law between 1905 and 1914.

Column 1 in Table 2 shows the estimated regression results from Landes. It indicates that states with more restrictive legislation had a lower female employment share in manufacturing. Further estimations by Landes (not shown here) suggest that most of the decline in employment share occurred for daughters of the foreign-born and for foreign born women. Landes concluded that hours legislation had been passed under the guise of humanitarian concern through the efforts of labour groups and others that stood to gain the most from restricting the employment of immigrant women and their daughters.

The regression conducted by Goldin (column 2, Table 2) indicates a very different pattern. The difference arises primarily from the computation of the restrictiveness variable (termed WKRest by Goldin). The Rest variable computed by Landes used a weekly restriction that was always six times the daily restriction, even for states with lower weekly limits, despite the fact that the 1909 data used to create Rest was based on weekly scheduled hours. That procedure produced estimates that differ from those using the weekly legislation in twelve states. The WKRest variable differs from the Rest variable, on average, by a factor of 10 across the twelve states.

Goldin's results indicate that the WKRest coefficient is positive, but non-significant, and that on the hours legislation dummy variable is negative and barely significant. These results proved robust to restricting the sample to the forty states (and District of Columbia) that were used by Landes (eight mountain states which had few manufacturing workers were excluded); to weighting the regression by the square root of manufacturing employment in the state; and to estimating a (weighted) logistic transformation of the dependent variable. The evidence presented by Goldin therefore suggests that the employment share of women in manufacturing did not decrease with the restrictiveness of the legislation.

The results derived by Goldin using a regression equation in which the dependent variable is the percentage of sales (not clerical) labour force that was female in 1920, are provided in Column 3. Her results suggest that the female share of sales employment actually increased in states having more restrictive hours legislation. The coefficient on WKRest suggests that maximum hours legislation, by reducing daily hours in the sales sector, may have increased employment opportunities for women. Hence the restrictiveness of maximum



hours legislation may have had little or no effect on female employment in manufacturing, and may have had a positive effect upon female employment in the sales sector.

**TABLE 2. EFFECT OF HOURS LEGISLATION ON THE EMPLOYMENT SHARE OF WOMEN IN MANUFACTURING 1920**

<b>Independent Variables</b>	<b>Landes (1)</b>	<b>Goldin (2)</b>	<b>Goldin-Sales (3)</b>
Constant	-0.00168 (1.11)	-0.013 (1.28)	0.150 (6.14)
EMP-1	0.79 (9.66)	0.753 (11.4)	0.772 (8.26)
South	0.0005 (0.06)	0.010 (1.16)	-0.006 (0.56)
%Urban	0.0005 (2.26)	0.0003 (1.44)	-0.0005 (2.52)
Dum1905-14	-0.0012 (0.14)	-0.0157 (1.83)	-0.0072 (0.82)
Rest	-0.0253 (1.49)	—	—
WKRest	—	0.0181 (1.39)	0.0215 (1.63)
R <sup>2</sup>	0.83	0.86	0.79
No. of Observations	41	49	41

**Note:** Absolute values of t statistics are in parentheses

**Source:** Goldin (1988, 200)

In summary, Goldin's results regarding the causes and consequences of maximum hours legislation differ substantially from those presented in Landes. By using a less restrictive estimation equation, Goldin found that hours worked declined for both men and women in states with sex-specific protective legislation; while the employment share of women in manufacturing did not decrease with the restrictiveness of the legislation. Indeed, the employment share of women in sales rose with increasing restrictiveness.

The contrasting results of the Landes and Goldin studies appear to be due to two sources. First, the more restrictive nature of the estimated equation regarding the effects on hours worked by females used by Landes. It was implicitly assumed that such legislation affected only female hours, suggesting that her model is subject to specification errors and is best viewed as a special case to that of Goldin. Second, the data series compiled by Goldin for the restrictiveness variable is more accurately calculated. Given the deficiencies in Landes' method, the results and conclusions derived by Goldin about the consequences of maximum hours limitations must be accepted as having greater validity.

### **Breen (1988)**

Breen developed a model to test for the effects of the 1911 California maximum hours law upon the wages and employment share of women and men in San Francisco over the period 1884-1922. The California maximum hours law restricted employers' use of women's labour to a maximum of eight hours daily and 48 hours weekly. Piece-wise regression was used to test whether passage of hours legislation affected jobs targeted by it. The model tested consisted of the following equation:

$$Y_t = a + b_1 \text{Trend}_t + b_2 \text{Unemployment}_t + c_i D_i(\text{Time} - \text{Time}_{0i}) + u_t$$

where  $Y_t$  is the dependent variable standing for measures of wages or employment. Secular movements in the dependent variable, independent of the dummy variables, was measured by the coefficient of the time trend variable, whilst the unemployment rate variable captures changes in the dependent variable attributable to cyclical changes in the economy unrelated to legislation or to World War I (WWI).  $D_i$  is a dummy variable where  $i$  (0,1) represents the presence or absence of the 1911 maximum hours law or WWI and where  $c_i$  tests for slope changes as a result of structural change due to the event.

The hours law took effect in 1911, hence observations from 1884 to 1910 take a dummy variable value on  $D_i$  of zero and from 1912 to 1922 take a value of one. United States' preparation for WWI commenced in 1915, so that observations from 1884 to 1914 take a value on  $D_i$  of zero and from 1916 to 1922 take a value of one. Breen's analysis groups employment and wage data by the sex category of an industry (industries where the proportion of females is greater than or equal to 23 per cent — the proportion of women in the San Francisco labour force — are categorised as female over-represented, while those which have a female proportion less than 23 per cent are categorised as female under-represented); and whether it was unionised or unorganised (because San Francisco unions were strong and supported the hours law) in order to measure differential effects arising from passage of the law. Effects associated with the legislation, as compared with changes in wages and women's employment share arising from WWI, can then be compared independently of cyclical variations and secular trends in wages and employment.

In terms of employment effects, two hypotheses were tested. First, there would be a decline in the share of women in industries where women were under-represented, due to the exclusionary effects of the legislation. Second, legislation would increase the proportion of women working in industries where women were proportionately or over-represented. Exclusion of women from female under-represented industries would encourage the latter effect, as well as that identified by the Women's Bureau Report suggesting that wherever the number of hours women worked exceeded the legal limit the number of women employed increased with passage of a maximum hours law.

Table 3 summarises Breen's findings on the effect of the law and WWI on female employment. Her results did not confirm the hypothesised effects of maximum hours legislation. Only in female under-represented industries did women's employment share rise. Women's employment share increased with legislation only in unorganised female under-represented industries, while their share in unionised industries only increased with WWI. There was no significant increase in female employment in either unionised or unorganised industries where women predominated either with the passage of the law or WWI.

Breen's analysis suggests that the assertion that women lost jobs with the passage of protective legislation, especially in unionised female under-represented industries, has no statistically significant foundation in the context of San Francisco. In unorganised industries, women's relative employment share rose with legislation because employment requirements increased, whilst there was no employment increase in unionised industries when the hours law was passed, since eight hours was already the established standard workday in many industries. Such findings suggest that the California maximum hours law caused no decline in women's employment share in San Francisco manufacturing and laundry industries.

**TABLE 3. EMPLOYMENT SHARE OF WOMEN IN UNIONISED AND UNORGANISED INDUSTRIES IN SAN FRANCISCO 1890-1922**

	Unionised		Unorganised	
	LT23%	GE23%	LT23%	GE23%
Time Trend	3.79 (2.26)	2.34*** (0.55)	1.65 (1.34)	-0.01 (0.75)
Unemployment	-0.13 (0.13)	-0.26 (1.47)	-0.23 (0.17)	1.84 (1.53)
Law	-0.21 (0.12)	3.32 (4.88)	1.09*** (0.13)	1.19* (0.61)
WW1	1.35*** (0.33)	-2.86 (4.19)	-0.06 (0.09)	-1.95 (2.77)
R <sup>2</sup>	0.61	0.70	0.92	0.48
Durbin-Watson	1.42	1.30	2.05	1.86
$\rho$	0.95***	n.s.	0.90***	n.s.

**Notes:** Standard errors in parentheses

Results are weighted least squares, or, where  $\rho$  is significant, Cochrane-Orcutt weighted least squares

\* significant with 10% probability of error  
 \*\* significant with 5% probability of error  
 \*\*\* significant with 1% probability of error  
 n.s. not significant

LT23% = Less than 23% women employed  
 GE23% = Greater than or equal to 23% women employed  
 Law = California 1911 maximum hours law in effect  
 WW1 = Preparation for World War 1

**Source:** Breen (1988, Table 4.2, 153)

Finally, two wage hypotheses were tested by Breen: the first, that women's wages increased in industries targeted by protective legislation where women were under-represented; the second, that wages also increased for women in industries where women were over-represented, but less than in the first case. Table 4 summarises Breen's conclusions in regard to developments in wages. It shows the estimated change in women's wages attributable to the 1911 hours law and to WWI. The results indicate that, in all groups, women's weekly real wages in San Francisco industries targeted by the California hours law rose above the 1910 base. Women's wages in unionised industries rose fifteen and thirteen per cent where women were under or over-represented respectively. In unorganised industries women's wages rose 16 and 14 per cent respectively. There were no significant wage increases for women associated with WWI. As hypothesised, protective legislation increased wages for all women and such increases were similar in percentage terms with the passage of the law. Women in all groups of industries gained from legislation, though they made no significant wage gains from WWI in any group of industries.

In conclusion, Breen argues that, despite the restrictiveness of the law, and, because of the strength of the union movement, the strong likelihood that it was enforced, the evidence does not support the conclusion that women targeted by the law lost employment share to men when it came into effect in San Francisco. However, differential employment effects were found between unionised and unorganised workers, rather than according to sex category. In industries where workers were unorganised, segregation was significantly reduced; in unionised industries, daily hours already averaged eight or less. Breen also found evidence to suggest that women's proportional wage gains averaged more than men's, hence the legislation may have reduced wage differentials between women and men.

**TABLE 4. REAL WAGES OF WOMEN IN UNIONISED AND UNORGANISED INDUSTRIES IN SAN FRANCISCO 1890-1922**

	Unionised		Unorganised	
	LT23%	GE23%	LT23%	GE23%
Time Trend	0.35*** (0.08)	0.30*** (0.08)	0.20*** (0.04)	0.12 (0.06)
Unemployment	-0.03 (0.09)	-0.19 (0.15)	0.04 (0.05)	-0.002 (0.07)
Law	1.68*** (0.33)	1.59*** (0.27)	1.54*** (0.23)	1.49** (0.40)
WW1	-0.53 (0.35)	-0.34 (0.26)	-0.45 (0.23)	-0.39 (0.38)
R <sup>2</sup>	0.89	0.84	0.93	0.94
Durbin-Watson	0.54 <sup>#</sup>	1.33	1.31	2.66
$\rho$	n.s.	n.s.	n.s.	n.s.

**Notes:** Results are weighted least squares, or, where  $\rho$  is significant, Cochrane-Orcutt weighted least squares

- \* significant with 10% probability of error
- \*\* significant with 5% probability of error
- \*\*\* significant with 1% probability of error
- n.s. not significant at  $p < .10$
- <sup>#</sup> further correction for serial correlation needed

**Source:** Breen (1988, Table 4.4, 162)

The review of the empirical evidence from the United States leads us to conclude that sex-specific labour legislation did not significantly reduce hours of work or employment share of female workers in manufacturing. There is evidence to suggest that such legislation may, in fact, have expanded employment for women in manufacturing, as well as other industries covered. Evidence from the San Francisco labour market suggests that it may also have increased women's real wages and helped to reduce wage differentials between men and women.

It should be noted that the *ad hoc* single equation models employed by Landes, Goldin and Breen have limitations. Firstly, it would have been preferable to develop a simultaneous equation model containing both demand and supply features of the labour market. Secondly, their approach pays insufficient attention to important dynamic factors affecting labour market adjustments, such as those arising from technology and industrialisation. Thirdly, developments in wage bargaining arrangements and strategies are not allowed for. Such criticisms suggest that the results reviewed above should be treated with some caution. Whilst on balance the studies suggest that legislation did *not* adversely affect female employment and hours of work, and may have decreased wage differentials between sexes, more empirical work is required before more conclusive results can be presented. However, what can clearly be concluded from this research is that, on balance, the evidence to date does not support the assumption of the abolitionists that sex-specific protective legislation must necessarily adversely affect the employment opportunities of women.

In the next section of this paper, we undertake an exploratory investigation to determine to what extent the Australian experience accords with these results. Given the importance the sex-specific manual handling limits have played in the Australian debate on



sex-specific labour laws, we will examine the impact of these weight laws on women's employment opportunities.

## MANUAL HANDLING LAW IN AUSTRALIA

The issue of sex-specific protective legislation has been the subject of much controversy in Australia, especially in relation to maximum weight limits in state Factory and Shop Acts for adult and junior female and junior male employees. Some analysts claim that sex-specific labour laws disadvantage work opportunities for women, citing case studies of specific incidents of discrimination. The best known example is that involving female applicants for employment at the Port Kembla steelworks (New South Wales Anti-Discrimination Board, 1984). Despite the opposition of the Australian Council of Trade Unions, the weight limits have been progressively rescinded by the states (Ashe, 1986). No statistical studies examining the effect of the laws on occupational segregation or on occupational health and safety was undertaken prior to their abolition.

Modifications to the relevant legislation have clearly involved a levelling down (Nyland and Kelly 1992). The former maximum weight which employers — in all states except Western Australia — could legally order an adult female shop or factory employee to lift was 16 kilograms. This provision has been replaced by a new “sex-neutral” standard, the most rigid provision of which decrees:

[G]enerally, no person should be required to lift, lower or carry loads above 55 kg unless mechanical assistance or team lifting arrangements are provided to lower the risk of injury (National Health and Safety Commission, 1990: 35).

This modification of Australian labour law has implications for both occupational health and safety and industrial efficiency, yet no empirical research has been undertaken to gauge the extent to which the former laws protected women employees or disadvantaged them in the labour market. The National Health and Medical Research Council reports that back pain is the greatest single cause of time loss attributable to work in Australia (National Occupational Health and Safety Commission, 1987). Of 93,829 workplace injuries in New South Wales in 1989/90, 15,538 were caused by lifting and carrying, while another 9,859 were caused by other forms of over exertion and physical stress. During the same period, 126 workers were permanently maimed and 20,930 injured as a result of back injuries, at a gross incurred cost of almost \$95 million (Workcover Authority, 1991: 28). Not surprisingly, there is a relationship between the risk of back injury and the lifting and carrying of heavy weights. According to the National Health and Safety Commission, there is evidence that the risk of back injury increases significantly with the lifting of objects above the range 16-20 kilograms, and “it is advisable to keep the load below or within this range” (National Health and Safety Commission, 1990: 35). It is likely, therefore, that one effect of enhancing the employer’s ability to order female employees to lift heavy weights will be an increase in the number of female workers injured through lifting accidents. Males, moreover, will also be disadvantaged by the change, as the former weight limits had encouraged employers to design job tasks to comply with the 16 kilogram parameter (New South Wales Anti-Discrimination Board, 1984: 83).

From one point of view, the risk of increased occupational injury might be an acceptable price to pay if the change also has the effect of increasing employment opportunities for women. Many of the individuals who campaigned for the abolition of sex-specific labour laws believe this latter effect would be one consequence of their abandonment.

These analysts tend to perceive such laws not as instruments which protect women employees, but rather as “a protectionist bulwark for male employment” (Connell, 1980: 209). Refshauge (1982: 501), for example, has argued:

In making amendments to the (New South Wales Factories and Shops) Act in 1912, the ‘weight limit’ was included and served as a convenient rationale for excluding women from some industries, for delaying the introduction of equal pay and for forcing women to remain in the female-typed sections of the labour market

Refshauge (1982: 501) traces the origin of the weight limit to pre-World War I fears that women were taking men’s jobs, and to an alleged shortage of women to act as domestics for the middle class. Major problems exist with this assertion. The weight limit for adult females was not in fact introduced in New South Wales until 1927 (Section 37, *Factories and Shops Amendment Act*, 1927). The law was enacted by the Lang government on the recommendation of the second Conference on Industrial Hygiene convened by the Commonwealth Health Department in August 1924 (*New South Wales Parliamentary Debates*, 1926, 107: 1083-84; *Report of the Second Conference on Industrial Hygiene*, 1924). The introduction of the weight limit in New South Wales was a response to the Industrial Hygiene movement of the 1920s, during which period much research was undertaken into employment-related hazards. This research demonstrated the deleterious effects of heavy manual labour, particularly on women and children (International Labour Office, 1934). Weight limits were not introduced for adult women until 1945 in Queensland (Section 19xi, *Factories and Shops Act*), 1953 in Victoria (Section 132 of the *Labour and Industry Act*), 1963 in South Australia (Section 347 of the *Industrial Code*) and 1964 in Tasmania (Regulation 80[4] to *Factories and Shops and Offices Act*). Weight limits for junior females were introduced in Victoria in

1912, and in South Australia in 1920. No legislative weight limit was ever introduced in Western Australia.

While the Western Australian Shop, Warehouse, Wholesale and Retail Establishment award imposes a 16 kilogram limit for female workers, no weight limits are specified in the major awards covering manufacturing workers in that state. The manufacturing sector therefore provides an ideal domain to test the effects of manual handling laws on the employment opportunities of women. If Refshauge (1982) is correct that such laws hinder the employment of women, it would be predicted that the unprotected women of Western Australia would have a relative advantage in gaining employment in the manufacturing sector, particularly in industries and occupations involving the manual handling of materials. To assess the labour market impact of the weight laws, data for each state relating to employment in the manufacturing sector were collected from the eight censuses taken in Australia by the Australian Bureau of Statistics (ABS) from 1911 to 1971 inclusive (this sector was called the industrial sector from 1911 to 1933). Results are provided in Table 5.

The figures provide no supporting evidence for the proposition that the introduction of sex-specific manual handling limits led to a decline in the demand for women employees in manufacturing. In no Australian state did the introduction of the 16 kilogram limit for adult women induce a reduction in the proportion of females employed in this sector. The experience of Western Australia reinforces this conclusion. Table 5 suggests that the absence of sex-specific weight limits in Western Australian manufacturing did not provide greater employment opportunities for women. Indeed, from 1954 onwards, the proportion of women in Western Australian manufacturing was the lowest of any state.

**TABLE 5. PERCENTAGE OF FEMALES IN WORKFORCE, CENSUSES 1911 TO 1971, INDUSTRIAL CATEGORIES (1911-1933), MANUFACTURING CATEGORIES (1947-1971)**

	1911	1921	1933	1947	1954	1961	1966	1971
NSW	17.35	14.33	<u>15.70</u>	<u>22.22</u>	<u>22.53</u>	<u>22.77</u>	<u>25.02</u>	<u>26.32</u>
Vic	24.74	<u>22.60</u>	<u>24.42</u>	<u>25.71</u>	<u>26.12</u>	<u>26.13</u>	<u>28.92</u>	<u>29.80</u>
Qld	16.57	12.34	13.60	<u>17.43</u>	<u>16.85</u>	<u>16.69</u>	<u>18.90</u>	<u>20.36</u>
SA	15.56	<u>12.25</u>	<u>12.70</u>	<u>17.46</u>	<u>16.71</u>	<u>16.75</u>	<u>19.40</u>	<u>20.20</u>
WA	14.22	13.03	11.91	18.22	15.11	14.01	16.99	18.40
Tas	14.81	10.54	14.69	18.29	17.29	17.81	<u>20.17</u>	<u>19.72</u>

**Notes:** Double Underlined Figures: Manual Handling limits for all females

Underlined Figures: Manual Handling limit:  
Vic - for females under 18  
SA - for females under 20

Normal Figures: No Manual Handling limits

**Source:** ABS Census Bulletins

Moreover, Western Australia had the second lowest growth rate in female employment in the manufacturing sector from 1921 to 1971, with a 41 per cent increase. Despite the handicap of weight limits, female employment in manufacturing increased by 87 per cent in Tasmania during the same period, 83 per cent in New South Wales and by 64 per cent in both Queensland and South Australia. Victoria recorded only a 31 per cent increase for the same

period, but started from a higher base and retained its position as the state with the largest proportion of women in manufacturing.

It might be argued that the low proportion of women in Western Australia can be explained by differences in industry structure between states. If, for example, the state had a higher proportion than other states of workers in industries that have low female participation rates (for example, metal products and transport equipment), this may account for the lower overall female participation rate in Western Australia. This proposition was examined using data from the 1986-87 Census of Manufacturing Establishments. Overall, women made up 21.2 per cent of women in Western Australian manufacturing, compared with 27.1 per cent for the rest of Australia. If the proportions of workers in each of the twelve two-digit ASIC (Australian Standard Industrial Classification) manufacturing categories in Western Australia are adjusted to the proportions applying in the rest of Australia, females would comprise 24.6 per cent of the manufacturing workforce in Western Australia. A computation based on fifty ASIC categories was also performed, but did not substantially increase the proportion of females in Western Australia (24.8 per cent). Even when adjusted for industry structure, Western Australian females do not appear to have benefited from an absence of weight limits. Moreover, as is shown in Table 6, Western Australian women are under-represented in comparison with the rest of Australia in five of the six ASIC categories in which women are under-represented nationally (that is, below the 26.8 per cent they comprise nationally in the manufacturing industry).

**TABLE 6. PROPORTION OF WOMEN BY INDUSTRY SUB-DIVISION,  
MANUFACTURING INDUSTRY, WESTERN AUSTRALIA AND  
THE REST OF AUSTRALIA, 1986-87.**

ASIC Code	Description	%WA	%Rest of Australia	%WA *100/ %Rest
21	Food, Beverages & Tobacco	32.2	30.8	104.5
23	Textiles	39.4	39.2	100.5
24	Clothing & Footwear	79.8	75.5	105.7
25	Wood, Wood Products	14.4	15.9	90.57
26	Paper, Paper Products	36.7	31.5	116.5
27	Chemical, Petroleum & Coal	15.5	27.6	56.2
28	Non-metallic Mineral Prod.	9.1	11.5	79.1
29	Basic Metal Products	8.3	8.1	102.5
31	Fabricated Metal Products	12.6	18.2	69.2
32	Transport Equipment	6.2	13.9	44.6
33	Other Machinery & Equip.	15.8	24.4	64.8
34	Miscellaneous Manufacturing	24.5	31.7	77.3
	TOTAL	21.2	27.2	77.9

Source: ABS 8201.5, 8202.0

These five categories — Wood and Wood Products, Non-metallic Mineral Products, Fabricated Metal Products, Transport Equipment and Other Machinery and Equipment — are precisely the type of industries where Western Australian women might be expected to have a competitive advantage if weight limits did in fact restrict employment opportunities for females.

While the introduction of manual handling legislation does not appear to have adversely affected the proportion of women employed in the manufacturing sector, it is nevertheless still possible, as Scutt (1980: 143) asserts, that “women were eliminated from (some) factory (or shop) jobs” as a result of the legislation. This would presumably have been those jobs which require the manual handling of materials. To test this proposition, 1986 census data were examined to determine whether any such effect could be detected. Results are summarised in Table 7. The absence of the weight limit in Western Australia provided women with no additional opportunities in occupations commonly requiring manual handling skills (labourers, plant and machine operators, tradepersons). The state has the lowest proportion of female labourers in the manufacturing sector, 22 per cent compared with 31 per cent nationally. The state also has the second lowest proportion of female plant and machine operators and tradepersons. In the five occupational categories which do not commonly involve manual handling skills (1, 2, 3, 5 & 6) the proportion of women employed in Western Australia is close to the national average in four of the categories. Overall, only 21.64 per cent of the manufacturing workforce in Western Australia is female, compared with 26.83 nationally. Most of the difference is accounted for in occupations which involve manual handling.



**TABLE 7. PERCENTAGE OF WOMEN IN EACH MAJOR OCCUPATIONAL CATEGORY, MANUFACTURING INDUSTRY, 1986 CENSUS**

Occupations	NSW	Vic	Qld	SA	WA	Tas	Aust
1. Managers/Administrators	11.80	11.32	12.77	10.53	11.82	9.33	11.63
2. Professionals	21.68	19.38	21.64	15.09	20.14	15.87	20.24
3. Para-professionals	19.64	17.57	15.31	14.36	12.63	18.74	17.53
4. Tradepersons	6.24	7.59	5.73	6.54	5.93	7.10	6.63
5. Clerks	74.12	71.99	72.90	67.71	72.59	63.63	72.38
6. Sales/Personal Services	35.03	37.63	38.37	34.87	35.09	38.84	36.42
7. Plant & Machine Operators	30.16	39.65	23.42	27.48	18.46	17.40	31.73
8. Labourers	30.58	36.72	23.95	31.05	22.24	25.89	31.15
All occupations	27.01	30.21	23.24	24.30	21.64	20.95	26.83

Source: ABS 2490.0, 2491.0, 2492.0, 2493.0, 2494.0, 2495.0, 2498.0

It might be the case that these results have nothing to do with the existence of legal weight limits, and instead are caused by some socio-demographic characteristic of Western Australia. To test this possibility, an examination was made of the percentage of women involved in the major occupations in the Wholesale and Retail Trade. As stated above, in this industry sector, Western Australian women were subject to a 16 kilogram limit through their industrial award, and were thus on the same footing as their colleagues in the rest of Australia as regard weight limits. Results are tabulated in Table 8. In this industry sector with weight limits operative in all states, Western Australia ranks a close third in terms of female participation in labouring occupations, is third in female participation in plant and machine operating occupations, and fourth in female participation as tradepersons. In contrast with manufacturing, female participation for these

occupations in the wholesale and retail trade sector is within a per cent or two of the national average.

The data, therefore, provide no support for the theory that weight limits create an overall restriction of employment opportunities. The pattern of results is quite different to that which would be expected if the assumption were true.

**TABLE 8. PERCENTAGE OF WOMEN IN EACH MAJOR OCCUPATIONAL CATEGORY, WHOLESALE AND RETAIL TRADE, 1986 CENSUS**

Occupations	NSW	Vic	Qld	SA	WA	Tas	Aust
1. Managers/Administrators	22.23	26.98	30.19	28.62	28.41	29.90	28.00
2. Professionals	29.54	28.11	29.34	27.75	28.72	25.83	28.92
3. Para-professionals	26.24	23.75	19.50	22.31	17.78	23.38	23.34
4. Tradepersons	6.23	7.69	7.26	8.02	7.36	8.67	7.13
5. Clerks	79.96	77.64	78.71	76.25	76.81	72.69	78.40
6. Sales/Personal Services	59.90	60.01	60.10	60.62	63.01	59.54	60.42
7. Plant & Machine Operators	17.32	26.57	13.80	19.52	18.02	11.99	19.68
8. Labourers	34.58	32.10	36.10	36.62	35.93	34.86	34.52
All occupations	43.50	43.09	44.18	43.76	44.91	43.00	43.69

Source: ABS 2490.0, 2491.0, 2492.0, 2493.0, 2494.0, 2495.0, 2498.0

If, as Connell (1980) and others have argued, sex-specific weight limits have provided a protectionist bulwark for male employment, it must be concluded the laws have not been very effective in this regard. Given that these legal limits have on occasions been used in a discriminatory fashion to exclude women from some manufacturing jobs, it would appear that the limits have also facilitated the entry of women into other manufacturing jobs. The introduction of the limits may have induced some employers to

employ women in jobs traditionally done by males so as to avail themselves of access to a larger employment pool in cases where the tasks did not exceed the limit, or where they could be easily redesigned to comply with it. Alternatively, or in addition, the introduction of the limits may have enhanced the attractiveness to women of jobs involving manual handling, by increasing confidence in their ability to perform the tasks without injury. It is thus suggested that the weight limits in a sense may have legitimised the employment of women in manual handling tasks, leading to a decrease in occupational segregation in traditionally female under-represented labouring occupations.

On the basis of the above results, it appears that a likely effect of the simple abolition of the weight limits is that employment opportunities for female workers will diminish. In a situation where an employee can be requested to lift weights of up to 55 kilograms, fewer women may be attracted to jobs involving manual handling.

## **CONCLUSION**

Sex-specific labour legislation has been widely recognised as an area of law which requires reform. These laws have sometimes been used to adversely affect the interests of women by reducing their opportunities in the labour market. This form of discrimination is unacceptable. However, for many analysts, the elimination of the discriminatory element in the laws has been rendered difficult by the fact that their simple abolition would reduce the degree of legal protection from excessive work demands enjoyed by female workers. For this reason, these analysts have argued that the extension

of the laws to cover men is the only acceptable reform strategy. The fundamental questions, according to Lewis and Lewis (1977: 868), are:

What is the better measure of equality — for women to die like men, or for men to live (a little bit) like women? Can we not have the benefits of sexual parity in terms of equal opportunities for personal achievement, as well as individual survival?

The observation that levelling up is the only acceptable reform strategy, however, has been challenged by those who believe that a reduction in the degree of protection enjoyed by women employees is an acceptable price to pay for the removal of laws which restrict women's job opportunities. These individuals have accepted uncritically that sex-specific labour laws must have increased occupational sex-segregation. Empirical evidence from the United States suggests that legislation limiting the hours of female workers did not reduce their employment share in manufacturing, and may have led to an increase in their real wages and a reduction in wage differentials. Similarly, an examination of Australian data produced no support for the proposition that protective weight laws restrict the overall employment opportunities of women in the manufacturing industry. Consequently, if the objective of abandoning or replacing these laws is the attainment of more jobs for women, it must be concluded that this would amount to the payment of a high price — a possible increase in workplace injuries — for a benefit which may be non-existent. Few people would disagree that the discriminatory content in the sex-specific labour laws needs to be eliminated. However, reform of these laws must be designed to both enhance employment opportunities for women, and to ensure that both sexes are provided with safe conditions of employment. Any other approach is simply irresponsible.

## APPENDIX

1. The general specification of the identity estimated is:

$$1a. \text{Hours19} = (\% \text{Female}) H_F + (1 - \% \text{Female}) H_M + (\% \text{Female} \times \text{LawDum}) \beta_F H_F + [(1 - \% \text{Female}) \times \text{LawDum}] \beta_M H_M$$

Where:

$H_F$  - Average scheduled hours for females in unconstrained states.

$H_M$  - Average scheduled hours for males in unconstrained states.

$\beta_F$  - Marginal impact of hours laws on mean female hours (expected to be negative).

$\beta_M$  - Marginal impact of hours laws on mean male hours.

Re-writing 1a yields the Goldin (1988) estimated equation:

$$1b. \text{Hours19} = H_M + (H_F - H_M)\% \text{Female} + (H_F \beta_F - H_M \beta_M)(\% \text{Female} \times \text{LawDum}) + H_M \beta_M \text{LawDum}$$

The coefficient on  $H_M$  is simply the average scheduled number of male hours in unconstrained states. The coefficient on  $\% \text{Female}$  is the difference between male and female hours in unconstrained states. The coefficient on  $(\% \text{Female} \times \text{LawDum})$  is the difference in the decline in hours, due to legislation, of women compared with men.

Finally, the coefficient on LawDum is the decrease in the number of hours worked by men in states with hours legislation.

The results reported by Landes (1980) assume that  $\beta_M = 0$ , with the impact of hours laws constrained to fall entirely on female employees. Hence, the estimated equation is more restrictive than 1b, being (see Table 1):

$$1c. \text{Hours}_{19} = H_M + (H_F - H_M)\% \text{Female} + H_F \beta_F (\% \text{Female} \times \text{LawDum})$$

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