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**A comparison of the labour market participation
of married women in three countries:
Australia, Canada and the United States of America**

by

Vera Brusentsev

**Submitted in partial fulfillment of the requirements
for the degree of Ph.D**

at

**Dalhousie University
Halifax, Nova Scotia
Canada**

December 1999

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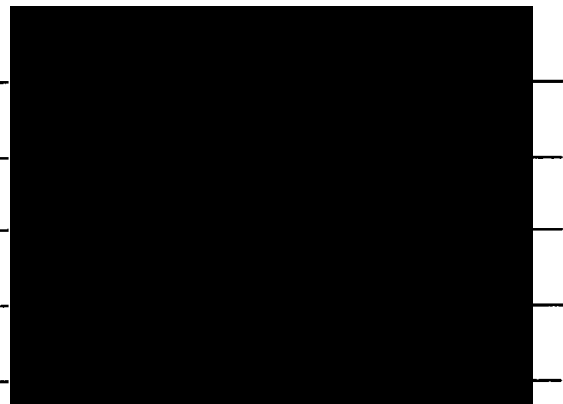
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in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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DEDICATION

To my family

and

to the memory of Professor Victor Argy.

TABLE OF CONTENTS

	Page
Table of contents	v
List of illustrations	ix
List of tables	x
Abstract	xi
Acknowledgement	xii
1 Introduction	1
1.1 Selection of countries	5
1.2 Organisation of the study	7
2 Labour force participation	
2.0 Introduction	11
2.1 Participation rates by age and gender	13
2.2 Determinants of labour force participation	15
2.2.1 Methodology	18
2.2.2 Literature review	22
2.2.3 Specification	28
2.3 The data	29
2.3.1 Sample selection	30
2.4 The basic model for married women	32
2.4.1 Descriptive statistics	33
2.4.2 Probit results for married women	35
2.4.3 Simulation results for married women	38
2.4.4 Decomposition of the differential	39
2.5 Summary of findings	42

TABLE OF CONTENTS

(continued)

3	Unemployment compensation and female labour force participation	
3.0	Introduction	58
3.1	Unemployment compensation programs	59
3.1.1	Development of programs	60
3.1.2	General trends	61
3.1.3	Initial national legislation	64
3.1.4	Amendments to the original legislation	68
3.1.5	Concluding remarks	71
3.2	Structure of programs in 1991	73
3.2.1	Administration	73
3.2.2	Benefit provisions	75
3.2.3	Coverage	76
3.2.4	Duration	77
3.2.5	Eligibility	78
3.2.6	Financing	80
3.2.7	Waiting periods	81
3.3	Summary of findings	81
4	The effect of the basis of entitlement to an unemployment compensation program on female labour force participation: an empirical analysis	
4.0	Introduction	96
4.1	Methodology	98
4.1.1	Labour market effects in Australia prior to 1995	99
4.1.2	Labour market effects in Canada in 1991	103
4.1.3	Labour market effects in the USA in 1991	106

TABLE OF CONTENTS

(continued)

4.2	Specification of the extended model	109
4.2.1	The pooled sample of married women	110
4.2.2	Additional descriptive statistics	111
4.3	Results for the estimation	113
4.3.1	Never married women	113
4.3.2	Married women using three separate samples	114
4.3.3	Decomposition of the differential	115
4.3.4	Comparison of the extended model with the basic model	116
4.3.5	Pooled sample of married women	117
4.3.6	Discussion of other interaction effects	118
4.4	Summary of results	119
5	Preferences of women for paid employment	
5.0	Introduction	139
5.1	Data	143
5.1.1	Construction of the value scales	147
5.2	Methodology	150
5.2.1	Explanatory variables	152
5.3	Results of the estimation	155
5.3.1	The relationship between values concerning the family and preferences for paid employment	155
5.3.2	The effect of values and preferences on labour force participation	156
5.3.3	Decomposition of the differential	158
5.3.4	Exogeneity tests	159
5.4	Summary of results	160

TABLE OF CONTENTS

(continued)

6	Concluding comments	180
	Appendix A: Construction of variables from the Luxembourg Income Study (LIS) database	188
	Appendix B: Construction of variables from the International Social Survey Programme (ISSP)	192
	Bibliography	195

LIST OF ILLUSTRATIONS

	Page	
Figure 2-1	Labour force participation rates for working age women and men, 1946 - 1998	46
Figure 2-2a	Age-participation profiles of women in Australia	47
Figure 2-2b	Age-participation profiles of women in Canada	48
Figure 2-2c	Age-participation profiles of women in the USA	49
Figure 4-1	Budget constraint for Australia	123
Figure 4-2	Budget constraint for Canada	124
Figure 4-3	Budget constraint for the state of New York	125

LIST OF TABLES

	Page	
Table 1-1	Labour force participation for women aged between 21 and 54 years using the third wave of Luxembourg Income Study (LIS) data	10
Table 2-1	Labour force participation rates by gender and age, 1998	50
Table 2-2	Sample size and selection criteria	51
Table 2-3	Descriptive statistics for married women aged between 21 and 54 years	52
Table 2-4	Basic model of labour force participation: Probit parameter estimates of labour force participation for married women aged between 21 and 54 years	53
Table 2-5	Predicted changes in the probability of labour force participation of married women in response to variation in characteristics	55
Table 2-6	Simulation of the probability of labour force participation for married women aged between 21 and 54 years, 1989-91	56
Table 2-7	Decomposition of cross-national labour force participation into characteristics and responses	57
Table 3-1a	Summary of legislative changes to the UA program in Australia	83
Table 3-1b	Summary of legislative changes to the UI program in Canada	84
Table 3-1c	Summary of legislative changes to the UI program in the USA	85
Table 3-2	Administrative organisation in 1991	86
Table 3-3	Benefit provisions in 1991	87
Table 3-4	Coverage in 1991	88
Table 3-5a	Duration in 1991	89
Table 3-5b	Benefit duration schedule for Canada in 1991	90
Table 3-6a	Eligibility conditions in 1991	92
Table 3-6b	Variable entrance requirement for Canada in 1991	93
Table 3-7	Financing arrangements in 1991	94

LIST OF TABLES

(continued)

Table 4-1	Factors affecting the labour force participation of married women	126
Table 4-2	Additional descriptive statistics for married women	127
Table 4-3	Probit parameter estimates of the labour force participation of never married women aged between 21 and 54 years	128
Table 4-4	Extended model of labour force participation: Probit parameter estimates using three separate country samples of married women aged between 21 and 54 years	131
Table 4-5	Decomposition of cross-national labour force participation into characteristics and responses	131
Table 4-6a	Model tests of significance for the inclusion of additional variables	134
Table 4-7	Extended model of labour force participation: Probit parameter estimates using a pooled sample of married women	135
Table 5-1	Change in sample size	163
Table 5-2	Descriptive statistics for married women aged between 21 and 54 years	164
Table 5-3	Probit parameter estimates of female labour force participation: Comparison of a common model for married women aged between 21 and 54 years	165
Table 5-4a	Statements relating to the construction of the scales	167
Table 5-4b	Comparison of responses for the 'strongly agree' category	168
Table 5-5	Comparison of the overall distribution of responses	169
Table 5-6	Descriptive statistics of married women aged between 21 and 54 years using the International Social Survey Programme (ISSP) data	170

LIST OF TABLES

(continued)

Table 5-7	Probit estimates of the preferences of married women aged between 21 and 54 years for paid employment	172
Table 5-8	Probit estimates of labour force participation for married women aged between 21 and 54 years	174
Table 5-9	Decomposition of cross-national labour force participation into characteristics and responses	178
Table 5-10	Test of weak exogeneity (endogeneity): Preferences on labour force participation	179

ABSTRACT

This study examines cross-national variation in the labour force participation of married women in Australia, Canada and the United States of America (USA), three countries of similar socio-economic development, in order to offer an explanation for the observed differences in their labour market behaviour. While cross-national variation in labour force participation may be explained by a number of factors, two are explored in this study: different labour market effects attributable to the structure of unemployment compensation (UC) programs; and different preferences for paid employment.

Initially, a basic model of female labour force participation is presented using data from the Luxembourg Income Study (LIS). Following a decomposition of variation, the study addresses some of the differences in the structural parameters of UC programs. Until July 1995, the basis of entitlement to the unemployment assistance (UA) program in Australia was the family. The empirical study assesses the indirect effect of the means test on family income on the labour force participation of married women in Australia compared to North America. The results are consistent with the hypothesis that differences in labour market effects are an important factor in explaining cross-national variation in the labour force participation. Moreover, married women in Australia are more responsive to the unemployment experience of partners than married women in either Canada or the USA.

Female preferences for labour market employment are explored using data from the International Social Survey Programme (ISSP). While married women with more traditional values concerning the family are not likely to participate in the labour market in all three countries, there are more of these women in Australia. The results are consistent with the hypothesis that differences in values concerning the family and preferences for paid employment are significant factors in explaining cross-national variation in female labour force participation.

All in all, the results of this study show that both different labour market effects and different preferences for paid employment helped to account for cross-national differences in female labour force participation rates in the reference year: 1989-90 for Australia; 1991 for both Canada and the USA.

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CHAPTER 1

Introduction

Whatever be the 'explanations' of [economic phenomena] we prefer, it is not to be forgotten that they are all our own artificial inventions in search for an understanding of real life; they are not hidden truths to be 'discovered'.

Trygve Haavelmo (1944: 6)

1.0 Introduction

This study examines cross-national variation in the labour force participation of married women in three countries that are similar in terms of their socio-economic development: Australia, Canada and the United States of America (USA). During the course of the twentieth century, women have entered the labour market in unprecedented numbers. As an illustration, one can take the historical trend in female labour force participation in the USA. In 1870, for instance, 14 percent of all working age women were employed outside the home and most of these women were not married.¹ By 1950, the increased participation of married women in the labour market was noticeable.² By 1970, approximately 43 percent of all women over the age of sixteen were in paid employment.³ Of the 106 million women age sixteen and over in 1998, 64 million were in the civilian labour force, either employed in the market or looking for market work.⁴ Of these women in the civilian labour force, 61 million women were employed in the labour market in 1998: 74 percent (45 million) employed full time; 26 percent (16 million) part time.

¹ See Fisher (1999: 23).

² Fisher (1999: 23).

³ See Bergmann (1986).

⁴ Facts relating to women in the USA in 1998, are accessible to remote users through the Internet site at http://www.dol.gov/wb/public/wb_pubs/fact98.htm.

This historic trend toward the increased labour market participation of women, particularly married women, is by no means unique to the USA; it is an international phenomenon.⁵ Between 1970 and 1990, large numbers of women entered the labour markets of the economies that comprise the Organisation of Economic Cooperation and Development (OECD).⁶ Blau *et al.* (1998: 81) note that the growth in female labour force participation has been accompanied by pronounced changes in the patterns of employment of women over the life cycle: younger cohorts of women tend to remain in the labour force throughout their adult life, even if and when they have children. Jallinoja (1989) found that mothers with young children have increased their labour force participation the most and that the number of families in which both parents are employed in the labour market is growing. While the observed trends are common to all three countries, there are noticeable differences in Australia, Canada and the USA.

One of the striking features concerning female labour force participation in the three countries selected for this study is the difference between them in age-participation profiles over time.⁷ In comparing age-participation profiles for Australia, Canada and the USA, the Australian experience is intriguing. The age-participation profiles show that female participation rates have changed dramatically with each successive decade, especially for women in their thirties and forties. An examination of these profiles reveals that women in Australia continue to leave the labour force for marriage, child-bearing and child-raising responsibilities. In North America, on the other hand, there has been a tendency for most women to remain labour force participants during these years of the family life cycle.

Cross-sectional estimates from the Luxembourg Income Study (LIS) are presented in Table 1-1 and show female labour force participation rates for two categories of women based on marital status using the third wave of the LIS database: 1989-90 for Australia; 1991

⁵ For instance, see Blau *et al.* (1998); Gregory *et al.* (1985); Gunderson (1998); Killingsworth and Heckman (1986); OECD (1996); and U.S. Department of Labor Women's Bureau (1999).

⁶ See, for instance, Fisher (1999: 273).

⁷ See Figures 2.2a, 2.2b and 2.2c in the following chapter of this study.

for both Canada and the USA.⁸ The labour market participation rates of women classified in the LIS data as never married were relatively similar: 78 percent in Australia, and 80 percent in both Canada and the USA. On the other hand, there was a significant difference in the participation rates of women classified in the LIS data as married: 71 percent in Australia, 79 percent in Canada and 75 percent in the USA.

This cross-national variation may be explained by a number of factors. One set of factors focuses on the demand side of the labour market: differences in the structural transformation of the economy and the sectoral composition of employment; differences in the timing and severity of business cycles; and regional variation in labour demand⁹

An alternative set of factors focuses on the supply side of the labour market. There may be different institutional and legal arrangements across countries. For instance, legislation pertaining to anti-discrimination, equal employment opportunities, maternity leave policies and parental leave policies seek to improve the labour market conditions for women and their employment opportunities. Furthermore, the structure of the social security system may also have important implications for women.¹⁰ The assumptions concerning gender relations in the structure of social security systems can either encourage the participation of women in the labour market or discourage such participation by reinforcing the decision to remain in the home. Laslett and Brenner (1989: 382) state that gender constitutes one of the

⁸ The Luxembourg Income Study is a set of internationally comparable unit record data files, housed in Differdange, Luxembourg. These data sets are accessible to remote users through the Internet site at <http://lissy.ceps.lu>.

⁹ See, for instance, Bradbury (1995); Bryson (1992: 117-9); Jones (1983); U.S. Department of Labor Women's Bureau (1999); Maassen van den Brink (1994: 2-4); and the historical statistics available from the U.S. Bureau of Labor Statistics (1999).

¹⁰ According to Orloff (1993: 303), using the term 'welfare state' to describe modern state social provision may be misleading because it assumes what must be proved: that a state promotes the welfare of its citizens through social policy. Hence, the term 'social security system' is used to describe the provision of social services in a modern state throughout this study. It refers to the collection of social insurance and social assistance programs that offer income protection and social services to individuals and households.

most basic dimensions of all social organisations.¹¹ A number of relatively recent analyses have recognised that modern states influence gender relations in the family, the labour market, and elsewhere.¹²

Female-centred research has focused on the way in which institutional structures have operated within, and helped to sustain, a particular ideological model of family life.¹³ According to Stacy (1990) and Weston (1990), while changing gender norms help proliferate new family forms and make the family wage model less attractive, economic independence remains identified with wage labour in democratic industrialised countries.¹⁴

In addition, there may be variation in social conventions across countries, conventions that adhere more closely to the ideology of the family wage in which the role of the breadwinner is perceived as a male preserve and the paid employment of women, particularly married women with children, is discouraged.¹⁵ More traditional conventions may emphasise the importance of mothers with young children remaining at home with them. It is possible that women with small children do not wish to participate in the labour market

¹¹ Acker (1989: 238) defines gender as the relational, structural and symbolic differentiation between women and men. Laslett and Brenner (1989) refer to gender as a concept of socially constructed and historically viable relationships, cultural meanings and identities through which biological sex differences become socially significant. As Jennings (1993: 125) notes, these social constructions change in response to both evolving circumstances and to social struggles to reinterpret reality.

¹² For instance, see Bussemaker and van Kersbergen (1994); Bryson (1995); Cass (1995); Daly (1994); Gordon (1990b); Laslett and Brenner (1989); Lewis (1992); Mink (1990); O'Conner (1993); Orloff (1991, 1993); Sainsbury (1994, 1996); Sapiro (1986, 1990); Shaver (1991, 1995); Siaroff (1994); Skocpol and Ritter (1991).

¹³ See, for instance, Abramovitz (1988); Boris and Bardaglio (1983, 1987); Bryson (1995); Edwards and Magarey (1995); Gordon (1985); Nelson (1989, 1990); Sapiro (1986); Shaver (1995); and Skocpol (1992).

¹⁴ It is assumed that individuals can be labelled as 'economically independent' if their labour income is in principle sufficient to meet their own costs of living (Maassen van den Brink 1994: 2). According to this definition, individuals without their own labour income are economically dependent, as are those who earn only small sums of money.

¹⁵ For a discussion of the ideology pertaining to the family, see Sainsbury (1994, 1996) and references noted therein.

because they prefer to care for their children personally and not delegate these responsibilities to others.

While a number of potential explanations have been posited in the literature to explain cross-national variation in the labour force behaviour of women, the difficulties of observing and measuring the independent variation in all these factors has meant that the empirical research has largely been inconclusive. This study is concerned with two possible explanations of cross-national variation in the labour force behaviour of married women. First, there may be different labour market effects attributable to the structure of UC programs across the countries. Second, women in the three countries may have inherently different preferences for paid employment.

1.1 Selection of countries

One of the important reasons for selecting these three countries for comparison is the belief that, in many respects, Australia, Canada and the USA broadly share elements of a common culture, history, legal and political structure. As a result, the political and jurisprudence systems are similar because of the cultural transmission of ideas that shaped institutional arrangements.¹⁶ All three countries owe a large part of their national identity to settlement by migrants from Europe, particularly from the United Kingdom. During the course of development, the population in each country has expanded and become more ethnically diverse.

Another important reason for selecting these three countries for a comparative study, is the conviction that Australia, Canada and the USA broadly share a common approach toward their social security systems.¹⁷ This conviction is supported by a number of analysts who have shown how diverse policy instruments contribute to the development of distinctive

¹⁶ There are two legal systems in Canada: Common Law in English-speaking Canada, Romanistic Law in Quebec. The latter is also important in the hybrid system of the state of Louisiana. in otherwise Common Law USA.

¹⁷ While specific programs included in the social security system of the three countries vary considerably, for instance, the health care system and the system of taxation, these relatively different policy instruments lead to a common approach toward social security in general.

'welfare state regimes'.¹⁸ Esping-Andersen (1990), for instance, classifies Australia, Canada and the USA as belonging to the world of liberal welfare capitalism. The ideology of the liberal world of welfare capitalism is self-reliant individualism together with the influence of liberal work ethics.¹⁹ Briefly, this liberal world of welfare capitalism is characterised by a heavy reliance on means tested programs, modest benefits, and market solutions in the form of occupational welfare and private insurance (Sainsbury 1996: 12). Moreover, the liberal world of welfare capitalism limits the social rights of individuals by conditioning social security benefits on the administration of a means test or on contributions based on employment in the labour market.²⁰

In addition, the three countries examined in this study are characterised by a number of common features: they are all democratic, industrialised and modern nations that share similar economic and social characteristics.²¹ Australia, Canada and the USA share certain demographic trends that are common among the OECD.²² For instance, fertility rates have been declining over the course of the twentieth century, to the point where they are below replacement level (2.1 births per woman) in most industrialised countries. These lower fertility rates have led to a declining proportion of younger persons and an increasing proportion of older people in the population. In the countries that comprise the OECD,

¹⁸ See, for instance, Castles and Mitchell (1990, 1992, 1993); Esping-Andersen (1985, 1989, 1990); Esping-Andersen and Korpi (1987); Korpi (1989); Mitchell (1991b); Palme (1990); and Ware and Goodwin (1990).

¹⁹ See Esping-Andersen (1985: 233); and Bussemaker and van Kersbergen (1994: 12).

²⁰ Esping-Andersen (1990), Esping-Andersen and Korpi (1987), and Korpi (1989).

²¹ Economic and social indicators for Australia, Canada and the USA are available from the Statistics Division of the United Nations Secretariat (1999). Indicators such as adult economic activity rates, employment-to-population ratios, fertility rates, life expectancy at birth, per capita incomes, percentage of the population under 15 years of age, and the percentage of the population over age 60 in 1998 are of a relatively similar magnitude for the three countries.

²² See Sorrentino (1990) who compares ten countries including Canada and the USA, but excluding Australia. While the demographic trends are based on the ten countries selected for analysis, they are likely to have a more general application to the OECD countries.

marriage rates have declined and median ages at first marriage have risen.²³ This means that women have more premarital years to support themselves through participation in the labour market. Women are also living longer, extending the number of years they will be able to participate in the labour market.²⁴ Furthermore, these countries have experienced increased divorce rates. Due to both decreased marriage rates and increased divorce rates, the share of households that comprise married couples is decreasing, mainly in the category of married couples with children.

Thus, Australia, Canada and the USA share elements of a common culture, history, legal and political structure, as well as a common approach toward their social security systems. In addition, there are common trends in all three countries: demographic trends; economic and social characteristics; a historic trend toward the greater involvement of women in the labour force; and pronounced changes in the patterns of employment of women over the family life cycle. Given these common elements, it is interesting to note that there are substantial differences among the three countries in the labour market participation rates of married women. This intriguing divergence is the subject of this study.

1.2 Organisation of the study

Chapter two investigates female labour force participation in Australia, Canada and the USA using both aggregate time series data and cross-sectional data. First, the chapter discusses aggregate time series data on labour force participation for all women and assesses the extent of variation in 1998. In addition, the probability of female labour force participation of married women between the ages of 21 and 54 years in the three countries is examined using cross-sectional data from the third wave of the LIS database. This 'window' for viewing the observable world is termed the basic model in this study.²⁵

²³ For instance, Coontz (1992); and Furstenberg (1996:34)

²⁴ See Fisher (1999: 25 and 255).

²⁵ Poirier (1988) introduced the metaphor 'window' for a likelihood function because it captures the essential role played by the likelihood, namely, as a parametric medium for viewing the observable world.

Chapter three examines the development of unemployment compensation (UC) programs over time in Australia, Canada and the USA and the structure of these programs at a particular point in time.²⁶ To maintain a close correspondence with the available data, the reference year of 1991 is selected for illustration. International comparisons are particularly difficult to make because of the different institutional and legal arrangements across countries. Furthermore, a considerable gap can exist between what is stated in the law and what is followed in practice. A comprehensive discussion of the legislation and practice in each country is beyond the scope of this study. Rather the emphasis is on illustrating some of the ways in which one particular institution may influence the labour force participation decisions of married women.

The empirical study of chapter four is an extension of the basic model discussed in chapter two of this study. It represents an expansion to a nearby larger window from which to view the observable world. The extended model investigates the indirect role of the means test on family income in the Australian unemployment assistance (UA) program. In particular, it examines whether married women in Australia were more, or less, likely to participate in the labour market compared with married women in North America. One would expect different labour market outcomes for married women given the bases of entitlement to UC programs in the three countries are different. Again, data from LIS are used to assess the role of labour market incentives in the three countries.

Since chapters three and four examined the role of labour market incentives that women face, chapter five investigates the preferences of married women for employment in

²⁶ In cross national comparisons, the generic term used for income maintenance programs for unemployed individuals is unemployment compensation (UC). In most countries that comprise the Organisation of Economic Cooperation and Development (OECD), a two tier system of UC exists: unemployment assistance (UA); and unemployment insurance (UI). Generally, UA programs are means tested programs that specifically serve unemployed individuals who are active in the labour market, but fail to qualify for UI or who have exhausted their benefits. UI programs are contributory programs that operate on insurance principles and provide benefits to replace some portion of previous wages for a limited period of time. According to Gornick (1999), Australia relies exclusively on UA, while Canada and the USA rely exclusively on UI as there are no UA programs in North America. Of course, after UI benefits have been exhausted, it is possible for claimants in North America to apply for other forms of income maintenance through social assistance programs. This terminology is used throughout the study.

the labour market. While there has been a global change in attitudes that have accompanied economic development such that married women increasingly hold values conducive to careers outside the home, the extent to which married women in Australia, Canada and the USA have rejected more traditional values that restrict them to the home and family may be different. It is possible that the traditional ideology of the family is stronger in Australia and that this may explain their lower labour force participation. Moreover, it is possible that Australian women place a higher value on family life and a lower value on employment outside the home than married women in Canada and the USA.

One database that provides direct evidence of the preferences expressed by the residents of the three countries is the International Social Survey Programme (ISSP). The ISSP data set concerned with family and changing gender roles is utilised in this study to provide an insight into these issues.²⁷ The model presented and estimated in chapter five represents a broader perspective of the world than either the basic model or the extended model of female labour force participation.

Chapter six, the final chapter provides concluding comments.

²⁷ This is data set Zentralarchiv No. 2620: Family and Changing Gender Roles II.

Table 1-1

**Labour force participation for women aged between 21 and 54 years
using the third wave of the Luxembourg Income Study (LIS) data.**

Variable	Australia 1989-90	Canada 1991	USA 1991	Pair-wise t-statistics: Australia/ Canada	Pair-wise t-statistics: Australia/ USA	Pair-wise t-statistics: Canada/ USA
Never married women	0.78 (0.0236)	0.80 (0.0149)	0.80 (0.0157)	-1.56	-1.26	0.28
Married women	0.71 (0.0061)	0.79 (0.0048)	0.75 (0.0064)	-11.14*	-4.81*	3.38*

Source: Estimates from the Luxembourg Income Study (LIS).

Note 1: The statistics in the first three columns are weighted means with standard errors shown in parentheses.

Note 2: The statistics in the last three columns are pair-wise *t*-statistics to test the null hypothesis that the overall means of the samples are equal. The means of the samples are statistically different at the 0.05 level of significance when their *t*-statistics are greater than 1.96.

Note 3: While Statistics Canada and the various national statistical agencies in the USA use the calendar year in the construction of their surveys, the Australian Bureau of Statistics (ABS) uses a different construct. This is the financial year that commences on July 1 in one calendar year and ends on June 30 of the following calendar year.

Note 4: Given the point-in-time nature of cross-national analysis, the above statistics do not give a clear picture of the differences in the phase of the business cycle across the countries. While the years selected for analysis were chosen to be as similar as possible, the three economies were located at a different phase of the business cycle in the early 1990s.²⁸ Australia had reached a cycle peak in late 1989 and the economy was experiencing a contraction in early 1990. By 1991, Canada and the USA were still experiencing the contractionary effects of the recession. For Canada, the recession ended in the second quarter of 1991; output increased in the fourth quarter of 1991 in the USA.

²⁸ See OECD Economic Outlook (1991: 86; 1992: 63 and 97).

CHAPTER 2

Labour force participation

What makes a piece of mathematical economics not only mathematics but also economics is, I believe, this: When we set up a system of theoretical relationships and use economic names for the otherwise purely theoretical variables involved, we have in mind some actual experiment, or some design of an experiment, which we could at least imagine arranging, in order to measure those quantities in real economic life that we think might obey the laws imposed on their theoretical namesakes.

Trygve Haavelmo (1944: 6)

2.0 Introduction

This study is concerned with cross-national differences in the labour market participation of women in three countries: Australia, Canada and the USA. The first section of this chapter examines aggregate time series data for labour force participation and assesses the extent of the variation. An examination of the probability of female labour force participation using cross-sectional data from the Luxembourg Income Study (LIS) follows the assessment of the time series data.²⁹

As the subject of this study is the divergence in labour force participation rates of married women in Australia, Canada and the USA, it is important to establish the degree of variation. In addition, it is essential to determine what a conventional model of female labour force participation can offer by way of an explanation for cross-national variation. With this in mind, the initial window, termed the basic model of female labour force participation, is presented in this chapter and estimated using cross-sectional data.³⁰

²⁹ The reference years of the third wave of the Luxembourg Income Study (LIS) data are 1989-90 for Australia and 1991 for both Canada and the USA. The data sets are accessible to remote users through the Internet site at <http://lissy.ceps.lu>.

³⁰ As noted in the introductory chapter of this study, Poirier (1988) introduced the metaphor 'window' for a likelihood function because it captures the essential role played as a parametric medium for viewing the observable world.

According to Klerman and Leibowitz (1994: 279), the labour force behaviour of women has traditionally been measured by using labour force participation rates. In keeping with this tradition, Figure 2-1 presents labour force participation rates for women and men of working force age in the period from 1946 to 1998.³¹ An inspection of the information presented in the graph shows that labour force participation rates have changed substantially over the last few decades, particularly for women. Generally, female and male participation rates have moved closer together in all three countries with the overall trend showing an increase in the participation rate of women and a steady decline for men. As a consequence of these opposing trends, the gender difference in participation has declined sharply. For Australia, the decline in the gender difference in participation is from 51.5 percent in 1964 to 19.1 percent in 1998 while for Canada and the USA, the decline is from 52.7 to 14.3 percent, and from 45.6 to 15.1 percent, respectively in the same period.

As illustrated in Figure 2-1, the participation rates of men in Australia, Canada and the USA had more or less converged by the mid-1970s. This trend continued until the recession of the early 1990s when the participation rate for men in Canada fell slightly below both the participation rates of men in Australia and the USA. Generally, by 1998 the participation rates of men in Australia and Canada was approximately the same.

For women, there was a marked difference in their participation rates at the beginning of the period. For instance, there was a difference of 9.2 percent between Canada and the USA in 1948. Fifty years later, the difference is 1.7 percent due to a steady and larger rate of increase in Canada. While there was a narrowing of the gap between Australia and the USA in the early 1970s, the rate of increase in the female participation rate in Australia slowed after 1975. The gap that emerged between the participation rates of women in Australia and those in North America after 1975 remains, although it has narrowed. For instance, in 1998 the difference between Australia and Canada is 3 percent while a difference of 4.7 percent exists between Australia and the USA.

³¹ Standardised labour force participation rates for women and men in Australia are available from the U. S. Bureau of Labor from 1964. These data sets are accessible to remote users through the Internet site at <http://stats.bls.gov/flshome/htm>.

2.1 Participation rates by gender and age

While all three countries collect data on the number of economically active women and men in the adult population, the information must be interpreted with caution as a number of factors can produce differing results. First, when two otherwise similar countries include populations with a different minimum working age, the one that uses a higher cutoff will appear to have a higher labour force participation rate, because younger individuals are more likely to be in school. Second, the number of years younger people generally spend in education and the average retirement age of older people will influence the proportion of those who are economically active.

Table 2-1 indicates how the labour force participation of women and men in 1998 and the ratio of female-to-male participation in that year differs by age in Australia, Canada and the USA. Generally, labour force participation rates for both women and men in all three countries tend to rise relatively quickly through the early adult years, fall slightly after 55 years of age and plunge after 65 years.

By making these broad generalisations, however, a clear picture of the differences across the three countries is obscured. Between younger women and men participation rates are similar, especially in the 15-to-19 age group where the female rate is relatively close to the male rate: the ratio of female-to-male participation is 1.02 in Australia, 1.11 in Canada and 0.98 in the USA. For the 20-to-24 age group, the participation rate rises substantially to 87.1 percent for males and to 77.7 percent for females in Australia. Thus, the ratio of female-to-male participation is 0.89 in that age group. A similar pattern emerges in both Canada and the USA.

A difference among the three countries is evident in the following age category. For the 25-to-34 age group, the participation rate further rises to 92.8 percent for males, but falls to 68.9 percent for females in Australia. Thus, the ratio of female-to-male participation is 0.74 in that age group, lower than the ratio in the previous age category. On the other hand, labour force participation rates for both males and females in Canada and the USA continue to increase for the 25-to-34 age group, although the ratio of female-to-male participation is lower than the previous age category: 0.85 in Canada and 0.82 in the USA. This is possibly

due to the fact that some women in this age group left the labour force for marriage, child-bearing and child-raising responsibilities. The ratio of female-to-male participation in North America is, however, higher than that for Australia.

The labour force participation for women increases in the 35-to-44 age groups, more than likely reflecting the return of mothers to the labour force after periods of child-rearing. In the subsequent age groups, however, the ratio of female-to-male participation is lower. This may be because older cohorts of women were less likely to have participated in the labour market when they were younger.

As Figures 2-2a, 2-2b, and 2-2c show, female participation rates have changed dramatically over time with each successive decade, especially for women in their thirties and forties.³² The decline in participation for women over the age of 50 years reflects the fact that many of these women may never have participated in the labour force. Again, the differences across the three countries for female labour force participation are quite noticeable, particularly in the 25-to-34 age group. Consider three points in time between two age categories of women: the 20-to-24 age group and the 25-to-34 age group in 1979, 1989 and 1998. In 1979, there was a decrease in female labour force participation in all three countries from the younger age group to the older: 26.4 percent in Australia; 14.6 percent in Canada and 7.4 percent in the USA. In 1989, there was a decrease in female labour force participation in Australia and Canada of 16.9 percent and 1.4 percent, respectively, but the USA showed an increase from the younger to the older age group of 1.5 percent. On the other hand, in 1998, there was an increase in female labour force participation in Canada and the USA of 8.2 percent and 4.5 percent, respectively, but Australia continues to show a decrease from the younger age group to the older of 11 percent. This indicates that younger cohorts of women tend to remain in the labour force throughout their adult life in North America, even if and when they have children. In contrast, the decrease in labour force participation in Australia demonstrates that, on average, more women continue to withdraw

³² A comparison of the female and male participation rates over time shows that the labour force participation rates of women have climbed steadily toward the rates of men.

from the labour market during the child-bearing and child-rearing years of the family life cycle.

2.2 Determinants of labour force participation

The discussion in the previous section focused on how labour force participation rates of women varied by age. While this is informative, it does not highlight the influence of a number of different factors that are the underlying determinants of female labour force participation. In multiple regression analysis, the estimated regression coefficients indicate the separate and independent impact of each of the explanatory variables while controlling for the effect of the other variables in the regression equation.

The objective of a labour force participation model is to represent an individual's choice of paid employment in the market given her labour market opportunities and the value she places on her non-market time. Labour force participation decisions are one aspect of a more general problem of the allocation of time between competing market and all other non-market activities, such as child care, education, household activities and leisure.³³ Following neoclassical economic theory, the model assumes that the goal of an individual is to maximise utility.³⁴ The labour force participation model is actually an extension of neoclassical microeconomic consumer theory, which is about rational behaviour on the part of an individual who interacts with other rational agents through competitive markets.³⁵

Individuals are viewed as deriving utility from the consumption of commodities (goods and services) that are produced using inputs of market goods and non-market time. Following Blau *et al.* (1998: 86-88) two additional assumptions are made in order to simplify

³³ All non-market uses of time is referred to as 'leisure' in the labour supply literature. The term 'leisure' is somewhat of a misnomer since it includes all uses of non-market time whether it is spent in household production, caring for a child or recreation.

³⁴ The term 'neoclassical' was coined by Thorstein Veblen in 1900. According to Deaton and Muellbauer (1985), such models assume that constraints are based on fixed, known prices.

³⁵ The major underpinnings of neoclassical labour supply analysis are derived from the work of Becker (1965) and Mincer (1962).

the analysis.³⁶ First, it is assumed that all income earned in the labour market is spent on market goods thereby avoiding the need to consider the determinants of saving.³⁷ Second, the focus is on the individual woman rather than on the family unit. While this is quite realistic when the individual is the only adult in the family, when a two-adult couple is present, the division of labour between them is reasonably expected to be a joint decision. Accordingly, the labour supply decision of each adult is also expected to be a family decision. The complexities of the family decision-making process are not introduced into the analysis. The woman is viewed in a family context, however, by taking into account the impact of the earnings of her partner on her labour supply decision. On the other hand, the labour supply of her partner is taken as given and is assumed not to be influenced by the woman's own choice. According to Blau *et al.* (1998: 88), this assumption is not too unreasonable when one considers women's labour supply decisions since male partners are likely to remain in the labour market full-time full-year in any case.³⁸

One can divide the decision-making problem into two parts: what an individual would prefer to do (preferences); and the choices available to her (constraints). Neoclassical theory assumes that individual preferences can be distilled into preferences over two

³⁶ It is important to note that neoclassical theory implicitly assumes that labour operates in a spot market even though this is not the situation (Nakamura and Walker 1994: 283).

³⁷ It is acknowledged, however, that not all money earned in the labour market is at the disposal of the individual, some of it is paid out in taxes. Because earnings are taxed and the value of home production is not, the labour force participation of married women may be discouraged. The effect will be increased by the progressive nature of the taxation system. If the taxation unit is the family, rather than the individual, then the family may face relatively higher tax rates on the first dollar of the labour market earnings of the married woman. In general, one would expect that the higher the tax rate, the more likely a woman will decide not to participate in the labour force. In both Australia and the USA, it is possible to file either an individual or a joint income taxation file for assessment purposes, while the unit of assessment in Canada is the individual. Hence, it is likely that the effect of income taxation on female labour force participation would be relatively similar in Australia and the USA, but different in Canada.

³⁸ The empirical evidence regarding the dependence of male partners' labour supply decisions and earnings on the decisions of women is mixed. For example, a study by Mroz (1987) found no evidence of such dependence. On the other hand, Lundberg (1988) finds that the presence of children is a significant variable: each spouse acted independently of the decision taken by the other except when young children are present.

commodities: consumption of goods and services, represented as a Hicksian composite commodity, and non-market activities. Moreover, neoclassical theory assumes that the preferences of an individual are well-defined over all conceivable combinations of consumption and non-market activities. Hence, one can graphically represent individual preferences with a map of indifference curves.³⁹

The assumption of rationality yields a unique characterisation of individual choice as a function of preferences and labour market constraints.⁴⁰ A rational individual will reach the highest indifference curve possible, constrained by the economic opportunities provided by the labour market. While preferences determine how much utility is provided by different combinations of consumption and non-market activities, Blau *et al.* (1998: 91) note that economists do not typically analyse the determinants of preferences. Rather individual preferences for income (market goods) versus non-market time are regarded as exogenous. If preferences do not vary appreciably among individuals (an issue to be examined in chapter five of this study), then it is variation in constraints and incentives that explain differences in individual behaviour.⁴¹

It is important to point out, however, that individuals do not live in a social vacuum. Their preferences and behaviour are undoubtedly influenced by social attitudes and norms of behaviour.⁴² For example, the social acceptability of market-provided day care for children will undoubtedly influence the willingness of a woman to substitute market services for her own time in child care. It is probably true, on the other hand, that attitudes follow

³⁹ By invoking the standard regularity assumptions concerning preferences: completeness, reflexivity, and transitivity, the slope of the indifference curve will exhibit a diminishing marginal rate of substitution between the consumption of the Hicksian composite commodity and non-market activities.

⁴⁰ Rational behaviour refers to selecting the means that will lead to the ends one prefers because they provide 'utility' and this is termed 'optimisation' or 'maximisation' (Hirshleifer 1984: 12).

⁴¹ For instance, Becker (1981: pp. ix-x); and Stigler and Becker (1977: 76).

⁴² The importance of social attitudes is particularly emphasised by Brown (1985). The separate spheres model developed by Lundberg and Pollak (1993, 1996, 1997) and the gender-specific economies model developed by Carter and Katz (1997) also highlight the importance of social attitudes and gender roles.

behaviour to some extent as well. Hence, it is likely that it has become acceptable for mothers of small children to work outside the home in part because it has become a more common phenomenon.

The relative preferences of a woman for income (market goods) versus non-market activities also reflects a variety of other factors not generally emphasised by economists. For instance, Blau *et al.* (1998: 92) note that

women may value earning their own income for the economic independence it brings and to enhance their relative power position in the family. An increasing number of women value career success in much the same way their male counterparts do which also affects the shape of their indifference curve

Although such considerations do not invalidate the use of this neoclassical model in analysing the labour force participation decision of women, they do serve to make one aware that the term 'preference' is quite broad in what is included in its definition.

2.2.1 Methodology

While the initial window chosen is sufficiently broad so that anticipated minor alterations seem unlikely, economic researchers are a long way from agreeing on what constitutes a reasonable initial window (Hendry *et al.* 1990: 237-8, 242, 252-3). The time horizon used in this analysis is the annual (short run) cycle of 52 weeks in which a woman is assumed to choose the same combination of consumption and non-market activities and to face the same constraints in each period of time.⁴³ This, of course, ignores the life-cycle dimension of female labour force participation decisions, but is used in the model as a simplification.⁴⁴

Assume that a woman chooses a combination of market work and non-market activities in order to maximise a well-behaved, twice differentiable utility function:⁴⁵

$$U(x, T-t; V^*)$$

⁴³ According to Sargent (1995: 19), the assumption that the time horizon is fixed at 52 weeks, is tantamount to assuming that all jobs must begin at the same time each year. In North America, additional weeks of employment yield additional UI benefits (Sargent 1995: 24).

⁴⁴ See Phipps (1990: 125).

⁴⁵ This section follows Nakamura *et al.* (1979); and Nakamura and Nakamura (1985b: 69-82).

where

- x = annual consumption of a Hicksian composite commodity
- T = total time available (52 weeks)
- t = weeks worked in the labour market
- V^* = a vector of constraints representing previous choices or chance events.

What is meant by 'choice' in the model, is the selection of a combination of commodities and non-market activities that yields the most utility at the highest possible indifference curve given the income and time constraints

$$(2.1) \quad px = NEI + wt$$

$$(2.2) \quad T = l + t \quad (0 \leq t \leq T)$$

where

- p = the price of the Hicksian composite commodity
- NEI = non-earned income
- w = wage offered in the labour market
- l = non-market time available, ($l = T - t$).

With respect to the assumption of choice underlying this model, it should be noted that voluntary non-labour market participants cannot be distinguished from involuntary ones. Neither is it known whether the observed number of weeks supplied to the market over the reference year is optimal nor, alternatively, that women are restricted in their choice of the number of weeks worked due to the demand side of the labour market. According to this model, labour force participation, together with the number of weeks worked in the labour market, is assumed to be a voluntary decision. Therefore, this model does not include the situation where the number of weeks worked in the labour market is rationed.⁴⁶

⁴⁶ The discussion assumes that in the allocation of her time an individual woman freely chooses to participate in the labour market according to her own preferences. In reality, employment necessarily involves not only the willingness to engage in market work, but also the ability to find a position of employment. Thus, at any given point in time there are some individuals who are searching for market work, but are unemployed. While the unemployment experiences of women are not explored in this study, one needs to be aware of this constraint in the labour market.

Assuming that t is strictly less than T , the Lagrangean for this problem, for any given vector V^* , is

$$L = U(x, T - t; V^*) + \lambda(NEI + wt - px) + \gamma t$$

where λ and γ are, respectively, an unconstrained and a non-negative dual variable. The Kuhn-Tucker conditions for optimality of this problem are (2.1), (2.2.), $\gamma \geq 0$,

$$(2.3) \quad U_x - \lambda p = 0$$

$$(2.4) \quad -U_l + \lambda w + \gamma = 0$$

$$(2.5) \quad \gamma t = 0$$

where

$$U_x = \delta U(x, T - t; V^*)/\delta x, \text{ and}$$

$$U_l = \delta U(x, T - t; V^*)/\delta l.$$

Rearranging equation (2.1) and (2.3), the following expressions are obtained:

$$(2.6) \quad x = (NEI + wt)/p$$

$$(2.7) \quad \lambda = U_x/p = [\delta U(x, T - t; V^*)/\delta x]/p$$

From these last two equations, it can be seen that $\lambda > 0$ and $U_x > 0$. Given any offered market wage w , in equilibrium λ is a function of t , p , NEI , wt , and V^* . From equation (2.4), $\lambda = (U_l - \gamma)/w$ in equilibrium. Thus, it follows that

$$w = (U_l/\lambda) - (\gamma/\lambda) = w^* - (\gamma/\lambda)$$

where the value a woman places on her time at t , the shadow price of time, is defined by

$$(2.8) \quad w^* = U_l/\lambda$$

It can be seen that the shadow price of time, or the reservation wage, depends on t , p , NEI , wt , and V^* when $t > 0$ and on p , NEI , and V^* when $t = 0$.⁴⁷

The decision of whether, or not, to participate in the labour force is assumed to depend on a comparison of the marginal benefit and marginal cost of being employed in the market. The marginal benefit of market work is measured by the exogenous wage offered in the market, w , which measures the ability of the individual to exchange non-market time for income. The marginal cost of the first unit of time spent in market work is measured by

⁴⁷ U_l is taken to be the left derivative of U with respect to l at $l = T$ (or at $t = 0$) since U_l is not defined for $l > T$. Refer to Heckman (1974, Appendix 1).

the reservation wage, w^* evaluated at zero weeks.⁴⁸ Stated differently, w^* is equal to the subjective marginal rate of substitution and measures the willingness of the individual to exchange non-market time with income, or preferences.

By equation (2.7), $\lambda > 0$. Since equation (2.5) implies that $\gamma = 0$ if $t > 0$ and $\gamma \geq 0$ if $t = 0$, a woman will choose to participate in the labour market only if $w \geq w^*$ at $t = 0$. If a woman is not employed in the market, then it is because no offered market wage will match her reservation wage, but time cannot become negative. Actual time spent in the labour market is truncated at zero.

Following Heckman (1974), assume that there exists a suitable monotonic transformation of the dependent variables and let $\ln(\cdot)$ be that transformation. Equation (2.8) can be rewritten as the reservation wage for the i th observation as

$$(2.9) \quad \ln(w_i^*) \quad = \quad \beta_0 + V_i^* \beta_1 + \beta_2 NEI_i + \beta_3 l(w_i) + \beta_4 t_i + \varepsilon_i \quad \text{if } t_i > 0$$

$$\quad = \quad \beta_0 + V_i^* \beta_1 + \beta_2 NEI_i + \varepsilon_i \quad \text{if } t_i = 0$$

where ε_i denotes the disturbance term, assumed to be independently and identically normally distributed with zero mean over observations. The variable p does not appear in equation (2.9) because it is assumed to be the same for all individuals. The market wage, however, is a price variable that differs systematically from one woman to another. It is assumed to be explained by

$$(2.10) \quad \ln(w_i) = \alpha_0 + V_i \alpha_1 + W_i \alpha_2 + \mu_i$$

where

- V = vector of individual-specific characteristics
- W = vector of macroeconomic variables
- μ_i = disturbance term assumed to be independently and identically normally distributed with zero mean over observations.

It is not possible in this model to uniquely determine the coefficients of the shadow price in equation (2.9). One can estimate, however, the following expression for the equilibrium time spent in market work

⁴⁸ The concepts of the market wage and the reservation wage run through much of the labour supply literature. For a detailed discussion, see Devine and Kiefer (1991) and Mortensen (1986).

$$(2.11) \quad t_i = 1/\beta_4 [(1 - \beta_3) \ln w_i - \beta_0 - V^* \beta_1 - \beta_2 NEI_i - \varepsilon_i] \quad \text{at } t_i > 0.$$

In summary, the labour supply decision rule is stated in two parts. First, a woman is assumed to participate in the labour market in a designated time period if her offered wage is greater than or equal to her reservation wage at zero weeks of market work. Second, the time she works in the labour market, if she is employed, is assumed to be determined so as to equate her reservation wage, treated as an increasing function of time spent in market work, and her market wage.

2.2.2 Literature review

In analysing labour force participation, neoclassical theory points to the relationships between the labour supply of women and a number of observable individual-specific characteristics. The variables included in early empirical studies of female labour force behaviour, measured by labour force participation or the number of hours worked, were usually limited to those that were attributed a value by the market, such as wages and household income (Killingsworth and Heckman 1986: 186-88).⁴⁹ According to Humphrey and Rubery (1986: 86), it is an uncontroversial fact that the 'fundamental supply-side characteristic' that distinguishes women in the labour market, namely their primary responsibility for social reproduction, generates a distinctive pattern in their entry to and exit from labour force participation. As the link between the role of women in both paid production and reproduction received greater acknowledgment in the literature, empirical studies introduced other variables in the specification of labour force participation models such as the number of children and the ages of these children.⁵⁰

Heckman (1993: 116) asserts that the main advance in the study of labour supply in the past twenty years has come in recognising and interpreting the variety of different labour supply functions that coexist in the empirical literature. The author maintains that a crucial theoretical distinction is that between labour force participation, or employment choices, (that is, labour supply choices at the extensive margin) and choices about hours of work for

⁴⁹ Major early empirical work on this topic include Cain (1966); and Bowen and Finegan (1969).

⁵⁰ See, for example, Blau and Ferber (1986); Killingsworth (1983); Killingsworth and Heckman (1986); and Sorrentino (1983).

labour force participants (that is, choices at the intensive margin). Further, the author finds that participation (employment) decisions generally manifest greater responsiveness to wage and income variation than do hours-of-work equations for workers.

Neoclassical theory posits that an individual is more likely to participate in the labour market if the expected market wage exceeds the reservation wage.⁵¹ The reservation wage is a convenient way of analysing how different variables influence the decision of whether, or not, to participate in the labour force. A variable is likely to increase labour force participation if it raises the expected market wage; it is likely to reduce participation in the labour market if it raises the reservation wage. While the value of non-market time is influenced by preferences, it also depends on the demands placed on the non-market time of an individual. For instance, the presence of small children, especially pre-school age children, is likely to augment the value of household time and discourage female labour force participation.⁵² Thus, women with pre-school age children in the family and relatively expensive day care opportunities are likely to have higher reservation wages than single, career-oriented women without any children. *Ceteris paribus*, the latter may be expected to have higher labour force participation rates. The causation, of course, could be in the opposite direction: women who are more committed to the labour market or face more attractive labour market opportunities may decide to have fewer children. A woman who is strongly attached to the labour force prior to the birth of her first child, however, is likely to remain in the labour force after bearing children.⁵³ Hence, it is difficult to distinguish between these two possible explanations for the association between the presence of children in the family and the labour force participation of women.⁵⁴

⁵¹ Explanations of the neoclassical model of labour supply are given in Blau and Ferber (1986); Deaton and Muellbauer (1985); and Killingsworth (1983).

⁵² Blau and Robins (1988); Connelly (1992); and the U. S. Department of Labour Women's Bureau. Remote access to information from this organisation is available through the Internet on http://www.dol.gov/wb/public/wb_pubs/fact98.htm.

⁵³ For instance, Maassen van den Brink (1994); and Nakamura and Shaw (1994).

⁵⁴ See, for example, Browning (1992); and Willis (1987).

Higher non-earned income may afford an individual the choice of not having to work in the labour market. Thus, there is a negative association between the non-earned income and the labour force participation of women.⁵⁵ Juhn and Murphy (1997) find that the participation decisions of married women have become less sensitive to the income of partners in recent years and more sensitive to their own market opportunities.

Education and training appear to increase market productivity and, hence, labour market earnings. This would lead one to expect that education would be positively associated with labour force participation.⁵⁶ According to Blau *et al.* (1998: 98), the positive effect of education on the labour force participation of women may be reduced to the extent that higher educational attainment also raises the productivity of their non-market time. For example, if the time that more educated women spend with their children contributed more to the achievement levels of these children than time spent by less educated women, then the productivity of non-market time would be raised.

Econometric studies of the determinants of labour force participation generally confirm these theoretical expectations.⁵⁷ According to Cleveland *et al.* (1996: 133), in the extensive literature on female labour supply the presence of pre-school children has been identified as a crucial determinant of that supply. Nakamura and Nakamura (1994: 304) assert that child status variables are responsible for the largest share of the explained variation in most empirical models of female labour supply.

The greatest potential strains between market work and family commitments occur when there are young children in the home (Bielby 1992). The presence of children in the family, especially young children, is expected to increase the reservation wage and lower the

⁵⁵ Nakamura and Nakamura (1986b: 152) note that the observed relationship between the current income of the partner and labour force behaviour of married women could be attributed to marital sorting. Perhaps young women with strong preferences for home-oriented activities are more successful in finding partners with high permanent incomes.

⁵⁶ According to the U. S. Department of Labour Women's Bureau, educational attainment is a reliable predictor of labour force participation. Remote users can access information from this organisation through the Internet site at http://www.dol.gov/wb/public/wb_pubs/fact98.htm.

⁵⁷ See, for instance, Cleveland *et al.* (1996); Nakamura and Nakamura (1983, 1985a, 1992, 1994).

probability of participation. This may be because child care costs would be incurred if the mother participated in the labour market, or because of the increased productivity of the mother in home production (Connelly 1992: 83). Generally, women are less likely to participate in the labour market while their children are young.⁵⁸ It is possible that women with small children wish to participate in the labour market, but are restricted in doing so by the unavailability of suitable child care services or by the prohibitive costs of these services, costs that cancel out the financial benefits of paid employment.

The presence of small children in the family has been, and continues to be, a deterrent to the labour force participation of women in Australia.⁵⁹ Evans (1988) found that having a child under the age of three reduced labour force participation by 25-39 percentage points in the mid-1980s in Australia. In their survey of econometric studies on the labour market behaviour of Canadian women, Nakamura and Nakamura (1985a: 178) found that the most important determinant of the probability that a married woman would work in the labour market were typically child status variables. In the USA, Leibowitz and Klerman (1995) find that the labour force participation of mothers with children under age six rose from 30 percent in 1970 to 59 percent in 1990; the decomposition suggests that only about half of this increase can be explained by demographic and socioeconomic factors, with the rest demanding further research. According to the U. S. Department of Labor Women's Bureau, mothers with children between the ages of 14 to 17 years, none younger, participated in the labour force at a rate of 79.4 percent in 1998; mothers with children between the ages of six to 13 years, none younger, 77.9 percent; with children less than six years of age, 65.2 percent; and with children under the age of three, 62.2 percent.

The collective approach of the household posits that the participation of women in the labour market depends not only on social attitudes and gender roles, but on household commitments as well. According to the separate spheres model developed by Lundberg and Pollak (1993, 1996, 1997) and the gender-specific economies model developed by Carter and

⁵⁸ See Beggs and Chapman (1988); Evans (1988, 1996); Leibowitz and Klerman (1995); Rexroat and Shehan (1984) and Waite (1980).

⁵⁹ For instance, Beggs and Chapman (1988); Evans (1984, 1988, 1996); and Young (1990).

Katz (1997), it is generally the case that a woman has a major responsibility for the care of the house and the children. The most notable characteristic of the current division of household labour is that, whether employed in the labour market or not, women continue to do the majority of housework.⁶⁰

The responsibility for the care of the home and the children imposes constraints on the decisions of a woman regarding market work and reduces her total amount of disposable time. According to Maassen van den Brink (1994: 3), the problem of combining paid employment with the care of children and with family life is seen as a major cause of the low labour force participation rates of women. Moreover, such low rates are often attributed to the limited availability and high cost of child care arrangements.⁶¹

According to Nakamura and Nakamura (1985a: 179) the second most important determinants of the probability of labour force participation of married women are typically non-earned income variables. Economic theory posits a negative correlation between male earnings and female propensities to be engaged in market work for married women.⁶² This implies that the loss of the earnings of her partner encourages the labour force participation of a married woman. This negative correlation between male earnings and female labour force participation has been called the 'added worker effect' and has been found in a number of empirical studies.⁶³

In her review of recent research findings of the labour force participation of women in Australia, Evans (1996) asserts that while non-earned income should have a negative effect on female labour force participation, the empirical evidence for it is mixed. The author notes that while a few aggregate-level results support the hypothesis, individual level studies

⁶⁰ See, for example, Marini and Shelton (1993); Presser (1994); and Shelton and John (1996).

⁶¹ A number of studies indicate that substantial numbers of women report that they would enter the labour market if suitable child care were available at reasonable cost. For instance, Bloom and Steen (1990); Cattan (1990); Cleveland *et al.* (1996); and O'Connell and Bloom (1987).

⁶² For instance, see Lundberg (1985) for a discussion of the theory.

⁶³ See Cooke (1987); Layard, Barton and Zabalza (1980); and Nakamura and Nakamura (1981, 1983, 1985a).

that control for age or cohorts are uniformly against a non-earned income effect in both direct studies of labour force participation (Evans 1988) and of fertility (Miller 1988).

Rising female participation rates over the last few decades can be accounted for by the improved educational attainment of women from generation to generation.⁶⁴ In his assessment of the empirical literature on the effect of education on labour supply, Borjas (1996: 23) finds that there is a strong positive correlation between education and labour supply for both women and men.

Evans (1988) shows that the effect of education is to encourage the labour market participation of women in Australia; Nakamura and Nakamura (1985a) find that the probability of working in the labour market in Canada is positively related to the educational level of women; England and Farkas (1986) find similar effects for education in a number of other countries. The impact of education on labour force participation has been interpreted as a 'wage pull' effect: highly educated women command higher wages and so forego more earnings if they do not participate in the labour market. Consequently, as England and Farkas (1986) and Miller (1988) find, a rise in female earnings is likely to draw women into the labour force.

A study conducted by the Australian Bureau of Statistics (1990) found an inverse relationship between marriage and the time that women spend in paid labour market activity. At the same time, marriage had little observable impact on the time men spent in paid employment. Similar to these findings, Shelton (1992: 57) cites empirical research confirming that marital status has a different meaning for men than for women with respect to time spent in the labour market. Married men, especially those with children, have a higher probability of labour market participation than never married men; for women, on the other hand, marriage is associated with a lower probability of labour market participation. In her study of the trends in the economic well-being of women in the USA from 1970 to 1995, Blau (1998) finds that the challenges of combining market work with family responsibilities pose serious obstacles for women, but do not affect men to the same extent.

⁶⁴ See Killingsworth and Heckman (1986: 120-23).

In addition to these microeconomic variables, current labour market conditions are important in determining labour force participation. For instance, when the macroeconomic climate is declining or the economy is experiencing a recession, individuals may fail to receive any wage offers that make it worthwhile to participate in the labour market. As Nakamura and Nakamura (1985a: 180-1) state, the same set of macroeconomic conditions may have a differential impact on the labour force participation of individuals in different demographic groups, such as married women.

2.2.3 Specification of the model

This study is concerned with female labour force participation, that is, labour supply choices at the extensive margin. Assume that a woman will participate in the labour market if the utility from participation, u_i^p , exceeds the utility from non-participation, u_i^{np} . That is, a woman will participate in the labour market if the difference between the utility in the two states is positive

$$(2.12) \quad u_i^p - u_i^{np} = \Delta u_i$$

From the discussion in the previous section, one can assume that the difference in utility between the two states will depend on the individual-specific characteristics of a person, X_i , and ϵ_i , which is a stochastic component assumed to be independently and identically normally distributed with zero mean over observations:

$$(2.13) \quad \Delta u_i = \beta' X_i + \epsilon_i$$

where β is a vector of parameters to be estimated. In the data used for the estimation, there is only one observation for each woman. Hence, ϵ_i incorporates both persistent unobserved differences among women and individual-specific transitory shocks.

One does not observe utilities, however, only the decision of whether, or not, to participate in the labour market. Labour force participation, lfp , is a dichotomous variable

$$(2.14) \quad lfp = 1 \text{ if } \Delta u_i > 0$$

$$lfp = 0 \text{ if otherwise.}$$

The probability of labour force participation can be expressed as

$$(2.15) \quad \begin{aligned} \text{Prob}(lfp = 1) &= \text{Prob}(\epsilon_i > -\beta' X_i) \\ &= 1 - F(-\beta' X_i) \end{aligned}$$

where F is the cumulative normal distribution function. The parameter vector, β can be estimated by maximising the likelihood function

$$(2.16) \quad L = \prod_{I_{fp} = 0} F(-\beta' X_i) \prod_{I_{fp} = 1} [1 - F(-\beta' X_i)]$$

The set of parameters β reflects the impact of changes in x on the probability of female labour force participation. The estimating equations are bivariate probits on the probability of engaging in paid employment in the labour market.

2.3 The data

Cross-sectional data from the Luxembourg Income Study (LIS) database are used to examine the probability of female labour force participation in the three countries. One of the major advantages of using this database is the cross-national comparability that is inherent in the data files because the statistical information has been standardised. Each year, the Australian Bureau of Statistics (ABS), Statistics Canada and the U.S. Bureau of the Census conduct a number of surveys. Selected official national surveys are sent to LIS for standardisation to form a database of variables that are comparable for the entire sample. The unit record data files available from the LIS database, however, limit the choice of survey years for the empirical analysis: the 1989-90 Income and Housing Cost and Amenities administered by the ABS⁶⁵; the 1991 Survey of Consumer Finances conducted by Statistics Canada in April as the annual supplement to the Labour Force Survey; and the 1991 Work Experience Survey, which is a supplement to the Current Population Survey conducted in March by the U.S. Bureau of Labor Statistics.

The surveys contain a series of questions pertaining to the labour force participation of women in the reference year. Hence, they are retrospective and contain information on the labour force participation of the aggregate population aged 15 years and over.⁶⁶ Each survey identifies demographic characteristics such as age and the state (province) of

⁶⁵ These income distribution surveys have been conducted at approximately five year intervals for several decades. Since 1994-95, the surveys have been conducted biannually. The different surveys, however, are not fully comparable.

⁶⁶ In the USA, the information pertains to the aggregate population aged 16 years and over.

residence; household characteristics such as the family type and the number of dependent children; individual-specific characteristics such as educational attainment and marital status; and labour-market characteristics such as the number of weeks worked and the number of weeks unemployed in the reference year. With cross-sectional data, it is possible to take account of the available characteristics of each individual woman in the database, and to relate the differences in the observable characteristics of these women to differences in their observed labour market behaviour. Thus, one can compare the probabilities of labour force participation of married women in the three economies and examine the differences in the determinants of participation.

Despite the large advantage of comparability that is inherent in the LIS data files because of the process of standardisation, one needs to be aware of two major problems. One of the major problems associated with cross-sectional and panel data is the inability to control for unobserved individual-specific characteristics that may affect the labour force behaviour of women. Examples of such characteristics are ability, individual preferences for household activities over labour market activities, and motivation. Second, year-to-year correlation in the labour force participation of women is an important factor: the best predictor of a woman's participation in the labour market in the current year is her labour force behaviour in the previous year.⁶⁷ A point-in-time database, such as the cross-sectional data provided by LIS, does not allow the researcher to test the importance of continuity in labour force participation. In order to test such a hypothesis, one would need longitudinal panel data.⁶⁸

2.3.1 Sample selection

Selection criteria are imposed to create the required samples for the analysis in this study. The sample selected comprises women, with or without dependent children, who

⁶⁷ See Nakamura and Nakamura (1985a, 1985b, 1994). Nakamura and Nakamura (1994) find that after controlling for weeks of market work in the previous year, the probability of current employment rises, rather than falls.

⁶⁸ Nakamura and Nakamura (1985a: 177) note that even when panel data are used, estimation problems still exist.

choose whether, or not, to participate in the labour market. Table 2-2 provides information regarding the number of observations in the original data set and the number of observations for each sample after the selection criteria are imposed. Using the third wave of the LIS database, the pooled data file of all households in the three countries has 39,018 observations: 11,991 for Australia, 15,720 for Canada and 11,307 for the USA.

Age is the first selection criterion. Under the unemployment assistance (UA) program in Australia, individuals need to be older than 18 years of age to be eligible, but under pension age. The level of benefit for individuals aged 18-20 years differs from those 21 years of age and over, the rate of payment in the latter category being standard for all individuals. Because this differential treatment may lead to different labour market behaviour, individuals under the age of 21 years are excluded.

Individuals who are eligible for an age pension or are close to retirement age are also excluded from the sample since they are expected to behave differently from younger people. Until recently, the retirement age to be eligible for a pension in Australia was 60 years for women and 65 years for men. It is possible for women in Australia to withdraw from the labour force and receive income from superannuation funds at 55 years of age and for men to receive a superannuation payment at the age of 60 years. As older women will be looking toward claiming superannuation entitlement in Australia, and could be expected to behave differently from those individuals who are younger, they are also excluded from the sample.

As the focus of the analysis is on women who are less likely to be in the process of acquiring an education or retiring from the labour market, women aged 21 to 54 years are included in the sample. The size of the pooled sample is reduced to approximately 62 percent of the original number of observations when the criterion of age is imposed.

The second sample selection criterion is the type of household.⁶⁹ Nuclear families consist of parents and their children, which may be extended vertically (for example, including grandparents in addition to parents and their children) or horizontally (for example,

⁶⁹ The household is seen as a composite of individuals, held together by some common bond such as family ties, friendship, and economic consideration. Thus, family units are a subset of all households.

including siblings of the household head or spouse, perhaps with their children). In this study, single family households are selected. Thus, some women who are recorded as not living in a single family household are omitted from the sample. For example, an unmarried, adult daughter living with her parents is not included.⁷⁰ The size of the pooled sample is reduced to approximately 90 percent of the sample of women aged 21 - 54 years when the criterion of membership to a single family household is imposed.

Thus, the final sample includes women who are aged 21 - 54 years and living in a single family situation. The number of observations for the pooled sample of women who are aged 21 - 54 years and living in single family households are 21,970 observations: 6,703 for Australia; 8,976 for Canada; and 6,291 for the USA. Of this sample, 17,426 observations are married women: 5,614 for Australia (84 percent); 7,219 for Canada (80 percent); and 4,593 for the USA (73 percent).⁷¹ Of course, depending on the order that is used in applying the selection criteria, the actual number of observations at each interim step will vary, although the final sample will be the same.

2.4 The basic model for married women

In keeping with the experiment that Haavelmo (1949) had in mind, the explanatory variables upon which the analysis is conditioned are: the number of children in the family, the square of the number of children, non-earned income, educational attainment of the woman under observation, her age, and the square of her age.⁷² Further, two strategies are used in the study: simulation and a decomposition of the variation in cross-national labour force participation.

⁷⁰ Approximately 91 percent of all women in the relevant age group lived in a single family household in the reference year: 1989-90 for Australia; 1991 for both Canada and the USA.

⁷¹ One possible explanation for the difference in the proportion of married women in each country sample is that in both Australia and Canada a woman is classified by the respective national statistical agencies as 'married' whether the marital relationship is *de facto* or *de jure*, while in the USA only a legal arrangement is recognised as marriage. See LIS (1998).

⁷² The presentation in Appendix A discusses how the variables used in the estimation of this study are constructed from the original variables of the LIS database.

Except for age, the other explanatory variables were discussed in section 2.2.2 above. According to Nakamura and Nakamura (1986b: 101), age does not directly affect labour force participation, except to the extent that very young people are prohibited by legislation from engaging in paid employment and older persons are discouraged by collective agreements from participating in the market. Age is entered into the basic model as a proxy for other explanatory factors on which the researcher does not have data. For instance, this could include attitudes toward paid employment at various stages of the family life cycle, cumulative employment experience, depreciation of job skills and health status. Hence, a finding that age is a significant predictor of the probability of female labour force participation amounts to a finding that factors for which age is serving as a proxy have important effects on labour market behaviour.

This initial window on the world is termed the basic model of female labour force participation in this study. It is estimated and analysed in order to determine what a conventional model can offer by way of an explanation for cross-national differences in female labour force participation. In chapter four of this study, the initial window on the world will be compared with an expanded window on the world, termed the extended model of female labour force participation. As the term implies, the extended model will include additional explanatory variables to capture the effect of labour market incentives on the probability of participation in each country.

2.4.1 Descriptive statistics

Table 2-3 provides descriptive statistics for the factors associated with female labour force participation for each of the three samples of married women. An examination of the table reveals the notable statistically significant differences among the three countries. Particularly noticeable are the differences in the proportion of married women in each educational category in the three countries. These statistically significant differences in the characteristics among the three countries are confirmed by the pair-wise *t*-statistics comparing the average means for country-specific characteristics that influence female labour force participation. There are, however, three exceptions: no statistically significant

difference is found for age, nor the non-earned income variable between Australia and Canada; nor for the number of children in the family between Canada and the USA.

Consider the differences between Australia and Canada in terms of country-specific characteristics for married women aged between 21 and 54 years. Note, that as education is a categorical variable, the mean values represent the proportion of individual observations in each category. In Australia, a higher proportion of married women had less than a high school education (45 percent in Australia and 22 percent in Canada). On the other hand, a higher proportion of married women in Canada had attained a higher level of education in Canada: 27 percent had completed high school only compared with 12 percent in Australia; 38 percent had attended a post secondary educational institution compared with 34 percent in Australia; and 13 percent had university education compared with 9 percent in Australia. On average, married women in Australia had more children under the age of 18 years than similarly classified women in Canada (1.44 in Australia and 1.3 in Canada).

Similarly, consider the differences between Australia and the USA in terms of country-specific characteristics. On average, married women in Australia were significantly younger than those in the USA. For two categories of education, the average level of education in the USA was higher compared to the same category of women in Australia: a higher proportion had completed high school (39 percent in the USA and 12 percent in Australia); and a higher proportion had university education (22 percent in the USA and 9 percent in Australia). On the other hand, a higher proportion of married women in Australia had attended a post secondary educational institution (34 percent in Australia and 27 percent in the USA); and a higher proportion had less than a high school education (45 percent in Australia and 9 percent in the USA). In addition, the non-earned income variable for married women in Australia was significantly lower than in the USA. Moreover, Australian women had more children under the age of 18 years, on average, than women in the USA.

As a broad generalisation, the average level of education for married women in North America was higher compared to the same category of women in Australia. Married women in Australia had more children under the age of 18 years, on average, than married women in North America. While there was no statistically significant difference in the average age

of married women in Australia and Canada, married women in Australia were significantly younger than those in the USA.

2.4.2 Estimation results for married women

Table 2-4 reports probit parameter estimates for the determinants of the probability of labour force participation of married women. In addition, model test statistics for the predictor set are shown. A word of caution is given by Aldrich and Nelson (1984: 56-9) and Demaris (1992: 56) that it may not be prudent to rely on only one measure for assessing predictive efficacy in maximum likelihood estimation, particularly in view of the lack of a consensus on which measure is most appropriate. Heeding this advice, the strategy adopted here is to report a number of different measures in Table 2-4 for the analysis.⁷³ If the model has predictive power, then this should be reflected in some degree by all of the measures discussed below.

According to Amemiya (1981: 1502), the most common measure is the likelihood ratio χ^2 -test. It evaluates the null hypothesis that all the coefficients in the model, except the constant, are zero against the alternative hypothesis that at least one coefficient is not zero. The likelihood ratio χ^2 -test is based on evaluating the likelihood function under each hypothesis. Under the null hypothesis, the only parameter in the model is the intercept term, and the likelihood function evaluated at the maximum likelihood estimate for the constant is denoted L_0 . The likelihood function evaluated under the alternative hypothesis, denoted L_1 , is the function evaluated at the maximum likelihood estimates for all the parameters in the model. The model χ^2 -statistic is then $-2 \log(L_0) - [-2 \log(L_1)]$, which, if the null hypothesis is true, has a χ^2 distribution with degrees of freedom equal to the number of parameters in the model, not counting the intercept (Hosmer and Lemeshow 1989). On the basis of the likelihood statistics shown in Table 2-4, one can reject the null hypothesis that all the coefficients in the model are zero and conclude that the explanatory variables do have a significant effect in explaining the probability of female labour force participation.

⁷³ Amemiya (1981: 1502-7) summarises existing goodness-of-fit measures for logit and probit estimation.

Inspection of Table 2-4 highlights the non-zero coefficients (indicated by an asterisk) in each of the equations.

It should be emphasised that the model χ^2 -test is not a goodness-of-fit measure: it tests only whether any of the predictors are related to the probability of the occurrence of the event in interest (Demaris 1992: 47). Such a test is, however, available. It is calculated by grouping all of the covariate patterns in the data into ten categories, based upon deciles of the model-generated predicted probabilities of event occurrence. This statistic, termed the Hosmer and Lemeshow goodness-of-fit statistic has a χ^2 distribution with 8 degrees of freedom under the null hypothesis that the model is correct. The goodness-of-fit statistics shown in Table 2-4 indicate that one would accept the null hypothesis and conclude that the model of the probability of female labour force participation is correct.

According to Demaris (1992: 47), the Hosmer and Lemeshow goodness-of-fit test tends to confirm almost any model and is, therefore, not as useful as other measures of predictive efficacy. Two are presented in Table 2-4: R^2_L -statistic and the Gamma test statistic. In maximum likelihood estimation, Agresti (1990) argues that $-2 \log(L_0)$ is analogous to the total sum of squares, and $-2 \log(L_1)$ is analogous to the residual sum of squares. This gives rise to a R^2 -type measure for maximum likelihood estimation:

$$R^2_L = \frac{-2 \log(L_1) - [-2 \log(L_0)]}{-2 \log(L_0)}.$$

Although one might be tempted to think of this quantity as the proportion of the variance explained by the model, it is not quite correct to do so. Demaris (1992: 54) asserts that perhaps the best that can be said of this measure is that it is a rough approximation for assessing predictive efficacy. The values of R^2_L that are reported in Table 2-4 appear to be rather low. Aldrich and Nelson (1984: 55-58) point out that in dichotomous dependent models, R^2_L as a measure of goodness-of-fit is of questionable value and suggest that alternative measures be used.

One approach is to measure of the association between the binary outcome of interest and the estimated conditional probabilities of event occurrence and non-occurrence in the model (Agresti 1990). The closer the association between the predicted probabilities and the occurrence of the event, the higher the absolute value of the measure. One such measure is

Gamma, which is routinely printed in the output of SAS. As indicated in Table 2-4, these statistics suggest a modest level of prediction attributable to the model. Demaris (1992: 55) notes that a problem with Gamma, is that it tends to overestimate the strength of the relationship between probabilities and status on the dependent variables.

As in previous econometric studies, the results reported in Table 2-4 generally confirm the theoretical expectations of the determinants of labour force participation.⁷⁴ The results in Table 2-4 show the inhibiting effect of children on the labour force participation of married women, indicated by the large negative coefficients. In North America, the signs of the coefficients for the non-earned income variable are negative. This shows that, *ceteris paribus*, women with greater financial resources other than their own labour market earnings are less likely to participate in the labour market.

Ceteris paribus, the probability of married women participating in the labour market is directly associated with education in all three countries: the regression coefficients show that higher education is associated with a higher probability of labour force participation. Likewise, labour market participation is directly associated with age for younger age groups.

Since probit parameter estimates from the maximum likelihood estimation have a non-linear relationship with the probability of female labour force participation, it is important to understand the relative quantitative impact of the explanatory variables. This can be achieved by simulating the probability of labour force participation for a representative woman in each country.

2.4.3 Simulation results for married women

Results of the simulation exercise conducted on the basic model of female labour force participation are reported in Table 2-5. The baseline scenario is for a married woman aged 21 years, has less than a complete high school education, has one child, and no source of income other than her own earnings. Using the probit equations, the probability of labour force participation for this representative woman is calculated for each country. The first row of Table 2-5 reports the results of this simulation exercise for the baseline representative

⁷⁴ For instance, Cleveland *et al.* (1996); and Nakamura and Nakamura (1992, 1994).

woman. Notice that this representative woman has a different probability of labour force participation in each country. For example, the representative married woman is estimated to have a 63.4 percent chance of being a labour market participant in Canada compared with a 52 percent chance in Australia. This difference is larger than the actual difference in labour force participation rates between these two countries (79 percent for Canada; 71 percent for Australia). In the USA, the representative married woman is estimated to have a 64.2 percent chance of being a labour market participant (75 percent is the observed labour force participation rate). This suggests that differences in country-specific characteristics may have a substantial contribution to make in explaining cross-national differences in female labour force participation.

Next, characteristics are varied, one at a time, and the change in the probability of female labour force participation is calculated. Such a simulation highlights the effect of differences in behavioural responses among the three countries. First consider the differences in the responses in each of the three countries to the child variables, but holding all other characteristics of the representative woman constant. For example, if the representative woman did not have any children, rather than one child, then the probability of labour force participation for married women in Australia increases by 8.5 percent; in Canada by 7.3 percent; and by 6.3 percent in the USA. On the other hand, if the representative woman had three children (rather than the baseline case of a married woman with one child), then her probability of labour market participation decreases by 12.4 percent in Australia; 13.2 percent in Canada; and 11.7 percent in the USA.

In general, there are substantial differences between Australia and North America. The differences in the magnitude of the responses in the probability of female labour force participation to child variables lend some support to the hypothesis that cross-national differences in attitudes toward the paid employment of mothers may be an important factor in explaining the variation in participation rates.⁷⁵

⁷⁵ It is also possible that differences in child care arrangements may be an important factor in explaining cross-national variation in female labour force participation rates.

Second, consider a change in the level of educational attainment. If the representative woman had completed a high school education, then her probability of participation in the labour market increases by 7.1 percent in Australia, 10.1 percent in Canada and 10.7 percent in the USA. On the other hand, if the representative woman had a university education instead of less than high school, then her probability of labour force participation increases by 15.4 percent in Australia, 20.1 percent in Canada and 18.7 percent in the USA. These simulation results highlight the important effect of the cross-national differences attributable to the responses of higher education.

2.4.4 Decomposition of the differential

One way to explore the differential in cross-national female labour force participation is to decompose it into the effect of country-specific characteristics and the effect of behavioural responses (as shown by the probit parameter estimates of the model). Assume that labour force participation for individual i in country 1 at time t can be written as:

$$(2.17) \text{ lfp}_{1it} = \beta_{1t} X_{1it} + \mu_{1it}$$

and labour force participation for individual i in country 2 at time t can be written as:

$$(2.18) \text{ lfp}_{2it} = \beta_{2t} X_{2it} + \mu_{2it}$$

where β_{1t} and β_{2t} are defined so that $E(\mu_{1it} | X_{1it}) = 0$ and $E(\mu_{2it} | X_{2it}) = 0$. The difference in mean labour force participation rates for year t can be written as:⁷⁶

$$(2.19) \text{ lfp}_{1mt} - \text{ lfp}_{2mt} = (X_{1mt} - X_{2mt}) \beta_{1t} + (\beta_{1t} - \beta_{2t}) X_{2mt}$$

where lfp_{mt} and X_{mt} denote the mean labour force participation rates and country-specific characteristics for all individuals in a given country. In equation (2.19), the first term on the right-hand side is the component of the differential that can be attributed to differences in average country-specific characteristics that influence labour force participation. The second term in the equation represents differences in the estimated coefficients and is associated with cross-national differences in the impacts of those characteristics on the probability of labour force participation. The decomposition in equation (2.19) is, however, for a linear

⁷⁶ This follows the Oaxaca (1973) decomposition cited in Doiron and Riddell (1994: 508).

ordinary least squares (OLS) model and utilises the fact that the OLS regression line passes through the sample means of the data.

The decomposition presented by Even and Macpherson (1993) is an extension of the one proposed by Oaxaca (1973) for the linear regression model to a non-linear regression model.⁷⁷ In applying this method, one calculates the predicted probability of the dependent variable under review for each individual observation in the sample and then averages over all the observations. The decomposition of the differential is calculated by computing the average probability when the explanatory variables are held constant. Hence, the decomposition of average predicted probabilities is linear. Moreover, the decomposition involves averaging estimated probabilities or predicted values over all individuals in the sample (Doiron and Riddell 1994: 510).

Following this method, one calculates the probability of labour force participation for each individual in each country. Second, one predicts the labour force participation density if each individual in the reference country retained their own characteristics, but the impacts of those characteristics on the probability of labour force participation were those of the country with which the comparison is made. The difference in female labour force participation rates can be written as:

$$(2.20) \quad lfp_1 - lfp_2 = (lfp_1 - lfp_0) + (lfp_0 - lfp_2)$$

where lfp_1 and lfp_2 are the labour force participation density if each individual in each country retained her own characteristics and the impacts of these characteristics on the probability of labour force participation were those of her own country of residence; lfp_0 is the labour force participation density if each individual in the reference country retained the own characteristics, but the impacts of each characteristic on the probability of labour force participation were those of the country with which the comparison is made.

The first term on the right-hand side of equation (2.20) represents the portion of the gap associated with differences in country-specific characteristics that influence labour force participation. The second term is associated with differences in the impacts of those

⁷⁷ An alternative method based on a Taylor series approximation is outlined by Doiron and Riddell (1994).

characteristics on the probability of labour force participation. As an illustration, consider the difference in labour force participation between Canada ($lfp_1 = 78.59$ percent) and Australia ($lfp_2 = 70.63$ percent), a difference of 7.96 percent. With lfp_0 equal to 74.18 in this example, the gap associated with differences in country-specific characteristics that influence labour force participation is 4.41 while the gap associated with differences in the impacts of those characteristics on the probability of labour force participation is 3.55.

Table 2-6 shows the results for labour market participation after one predicts the probability of labour force participation for each individual observation in the sample and then takes the average over all these observations. The results indicate that if the responses of married women in Canada are imposed on the characteristics of married women in Australia, then female labour force participation is higher than using own-country behavioural responses. The predicted labour force participation rate for married women in Australia, given their own country-specific characteristics and responses is 70.6 percent. If female labour force participants in Australia had the characteristics of married women in Canada, then their labour force participation rate would be 73.8 percent.

On the other hand, if the characteristics for either Canada or the USA are applied to the probit coefficients of Australia, then female labour force participation is also higher. If female labour force participants in Australia had the characteristics of married women in Canada, then their labour force participation rate would be 74.2 percent. If labour market participants in Australia had the characteristics of married women in the USA, then their labour market participation rate would be 75.8 percent. This finding confirms the outcome obtained from the simulation exercise presented above in section 2.4.3. Thus, differences in country-specific characteristics have a substantial contribution to make in explaining cross-national differences in female labour force participation.

The upper panel in Table 2-7 shows the results of the decomposition of the differential in predicted probabilities of labour force participation into characteristics and in behavioural responses (or coefficients). The decomposition is based on equation (2.20), the method suggested by Even and Macpherson (1993). These results indicate that the more important explanation in accounting for variation between Australia and Canada is the

impact of characteristics on the probability of labour force participation: 55.5 percent of the total difference. On the other hand, it is the difference attributable to characteristics that are extremely important in explaining variation in the female labour force participation between Australia and the USA: 130 percent of the total difference. Further information about these differences can be obtained by examining the role of individual explanatory variables.

The lower panel in Table 2-7 reports the contribution that each explanatory variable makes to the 'differences in characteristics' component of the total variation. These decompositions are based on factor shares, the linear approximation method suggested by Even and Macpherson (1993). The authors attribute to each factor a share of the gap ascribed to characteristics equal to the share of this factor in the total impact on labour force participation. Doiron and Riddell (1994: 511) note that this method is a linear, exact decomposition of the gap in the average predicted probabilities.⁷⁸

In comparing Australia with North America generally, the contribution of the number of children and educational attainment are the most consequential factors contributing to cross-national variation in labour force participation. The more important characteristic of the two is the contribution of educational attainment, particularly the role of a university education. For instance, 87 percent of the difference in labour force participation between married women in Australia and Canada is attributable to the effect of a university education while 52 percent of the differential between Australia and the USA is attributable to this characteristic. The differential between Australia and the USA can be further explained by a number of additional factors: 52 percent to the negative impact of age, 46 percent by the completion of a high school education, and 22 percent to the number of children.

2.5 Summary of findings

This chapter examined cross-national variation in the labour market participation of women in Australia, Canada and the USA. The time series data reveal two common patterns

⁷⁸ Doiron and Riddell (1994: 519) apply both a linear decomposition and a first order Taylor series approximation in their analysis of the impact of unionisation on male-female earnings differences in Canada. The authors find that the results are qualitatively and quantitatively similar.

in the three countries: increased participation of women in the labour market over time; and younger cohorts of women tending to remain in the labour force throughout their adult life. While the observed trends are similar in all three countries, observable differences are noticed in the labour market outcomes of women in Australia, Canada and the USA. An examination of age-participation profiles over time revealed that women in Australia continue to leave the labour force at the age associated with marriage, child-bearing and child-raising responsibilities. In North America, on the other hand, there has been a tendency for most women to remain labour force participants during these years of the family life cycle.

The 'window' for viewing the observable world was termed the basic model of female labour force participation in this section of the study, a window on the world maintained by other empirical researchers. An examination of the cross-sectional data using the third wave of the LIS database revealed that average labour force participation rates for married women aged between 21 and 54 years were different in Australia, Canada and the USA. In particular, it was noted that married women in Australia had more children under the age of 18 years, on average, than those in North America; and that there was a greater proportion of married women in Australia with less than a high school education.

In general, the results of the basic model confirms *a priori* theoretical expectations and indicate that it is theoretically consistent. In addition, the analysis indicates that the explanatory variables of the basic model are relevant in explaining the probability of female labour force participation. The results of the basic model showed that the probability of married women participating in the labour market in all three countries was inversely associated with the number of children under the age of 18 years, while higher education and age at younger ages were associated with a higher probability. The signs of the parameter estimates for the non-earned income variables were negative in North America.

The simulation exercise established that variation in cross-national female labour force participation rates could be explained by both country-specific characteristics and the measured differences in the responses to those characteristics. Participation rates were lower in Australia compared with North America both because married women in Australia had

more children and because Australian women were less likely to participate in the labour market when children were present. For instance, if the married women did not have any children, then the probability of labour force participation would increase by 8.5 percent in Australia, 7.3 percent in Canada, and by 6.3 percent in the USA. Moreover, participation rates were lower in Australia compared with Canada and the USA both because the proportion of married women in Australia with less than a high school education was higher and because the responses to higher levels of education were lower in Australia.

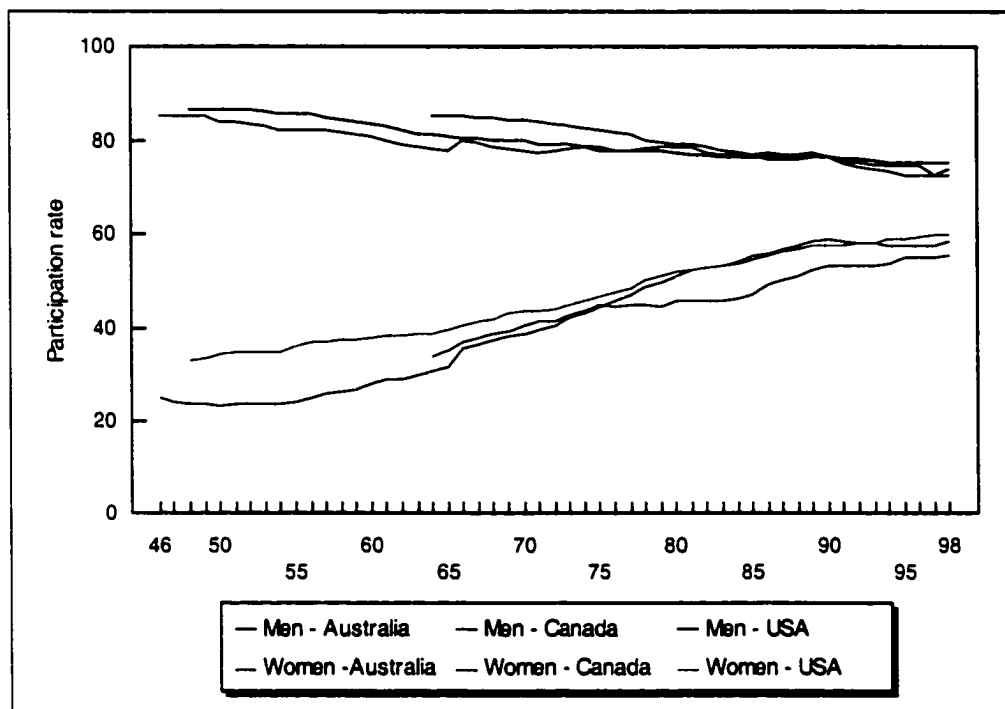
The decomposition of the differential in labour force participation into the effect of country-specific characteristics and the effect of responses showed that if the responses of married women in Canada were imposed on the characteristics of Australian women, then participation was higher: 73.8 percent compared with 70.6 percent. On the other hand, if the characteristics for either Canada or the USA were applied to the behavioural responses in Australia, then female labour force participation was also higher: 74.2 percent if the characteristics of married women in Canada were imposed; 75.8 percent if the characteristics of the USA were imposed. This confirms that differences in country-specific characteristics have a substantial contribution to make in explaining cross-national variation. Generally, two characteristics were of particular consequence in explaining the differential between Australia and North America: the number of children in the family; and educational attainment. In addition, age was important in explaining the differential between Australia and the USA.

The results of the basic model of female labour force participation indicate that there is significant cross-country variation, much of which remains to be explained. The results of the simulation exercise and the decomposition suggest that an important explanation for the differences in child variables could be attributed to cross-national variation in attitudes toward the paid employment of mothers or the costs associated with child care. It is possible that more traditional conventions in Australia may emphasise the importance of mothers with young children remaining at home with them. On the other hand, it is possible that women with small children do not wish to participate in the labour market because they prefer to care for their children personally and not delegate these responsibilities to others. This is

examined in chapter five when the preference of married women for employment in the labour market is analysed.

Chapter four explores the role of the structural parameters of UC programs on the labour market participation of married women by extending the basic model. While the effect of this structure is indirect in that it changes the constraints that impinge on the decisions of individuals, it may alter labour market behaviour. Before presenting the extended model, the following chapter provides a discussion of the development of UC programs in the three countries over time.

Figure 2-1
Labour force participation rates for working age women and men
1946 - 1998

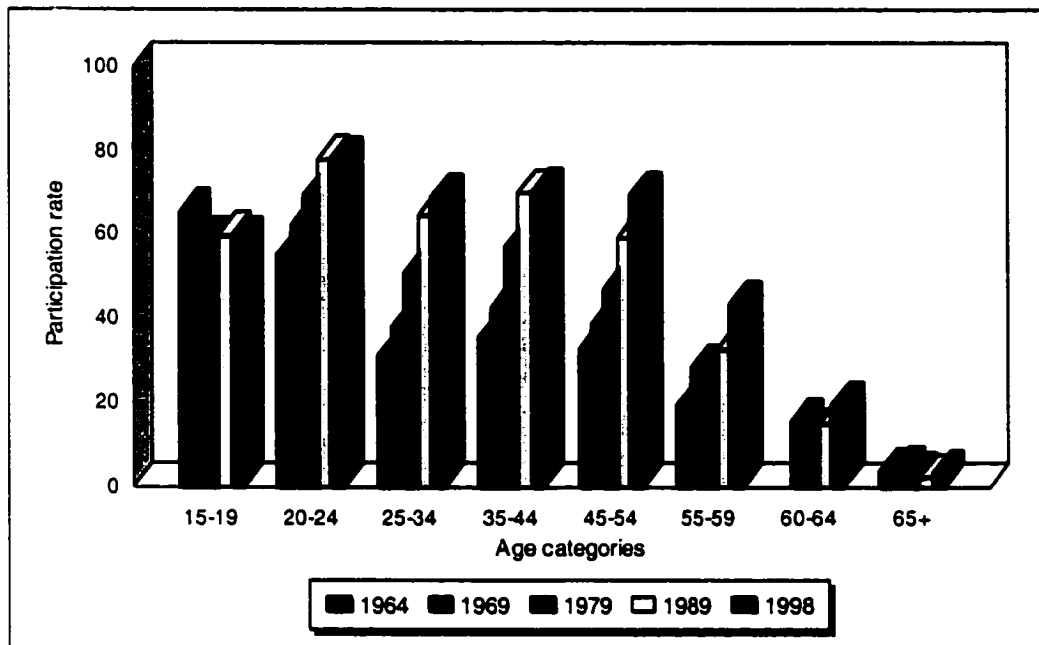


Source: U.S. Bureau of Labor Statistics (1999).⁷⁹

⁷⁹ These data sets are accessible to remote users through the Internet site at <http://www.bls.gov>.

Figure 2-2a

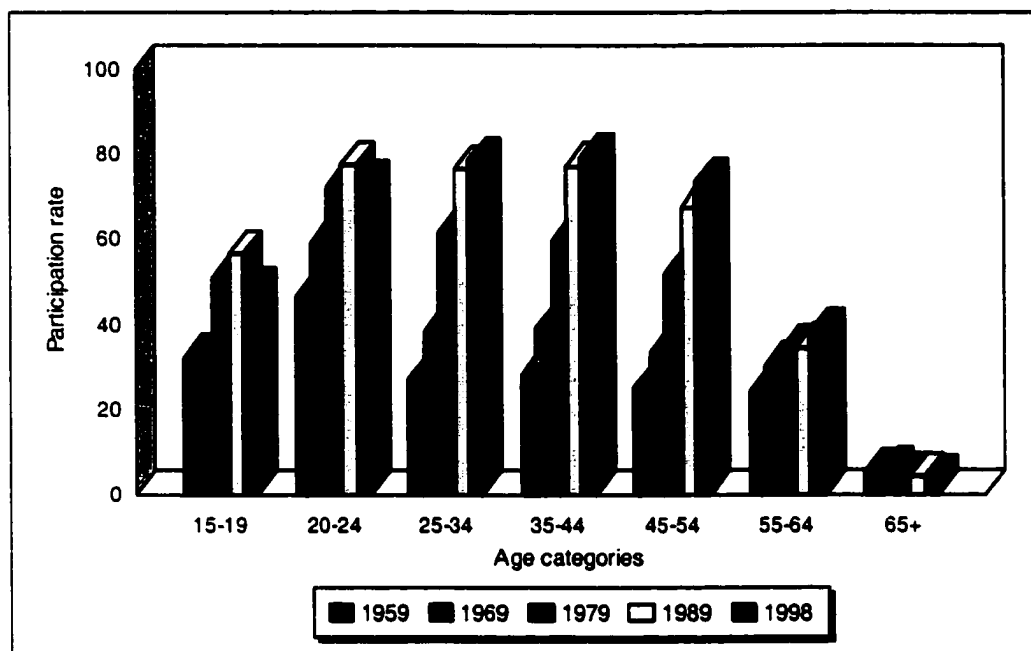
Age-participation profiles of women in Australia



Source: Compiled from Australian Bureau of Statistics (ABS) publications: various issues of *Employment and Unemployment*; *Labour Force 1978-95* (1996), ABS Catalogue No. 6204.0; and *Labour Force Survey* (1998), ABS Catalogue No. 6203.

Figure 2-2b

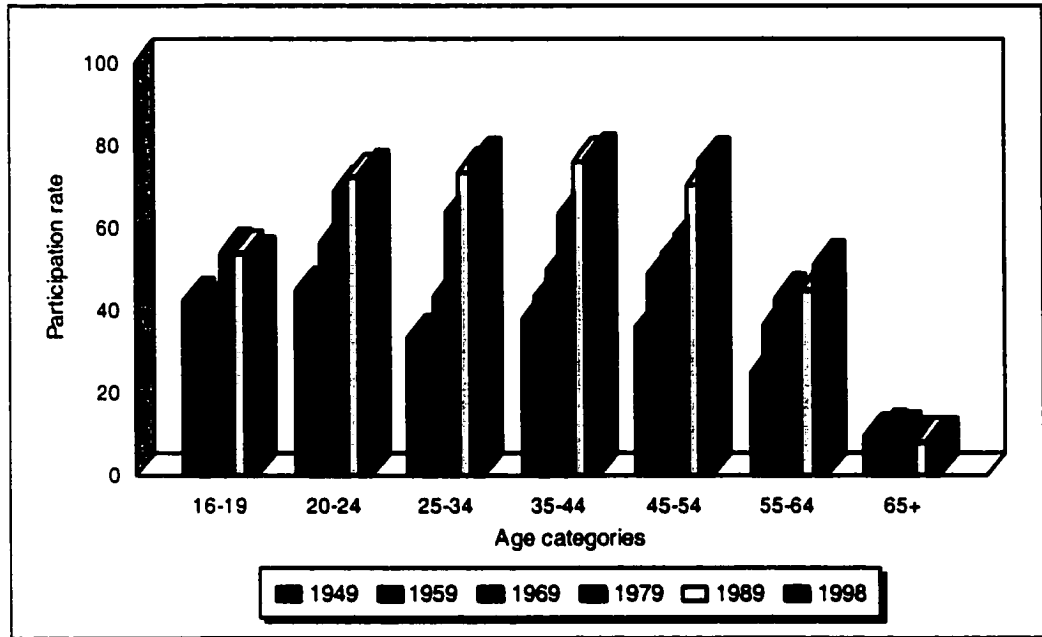
Age-participation profiles of women in Canada



Source: Compiled from Statistics Canada publications: *Seasonally Adjusted Labour Force Statistics: January 1953- December 1972*, (1973) Catalogue No. 8007-524; *Historical Labour Force Statistics*, (1998a) Catalogue No. 71-201-XPB; and *Labour Force Survey* (1998b).

Figure 2-2c

Age-participation profiles of women in the USA



Source: U. S. Bureau of Labor Statistics (BLS) (1999) accessible through the Internet on <http://stats.bls.gov/datahome/htm>.

Table 2-1**Labour force participation rates by gender and age, 1998**

Age	Australia			Canada			USA		
	Male	Female	Ratio	Male	Female	Ratio	Male	Female	Ratio
15-19	57.5	58.4	1.02	43.3	47.9	1.11	53.3*	52.3*	0.98
20-24	87.1	77.7	0.89	79	72.9	0.92	82	73	0.89
25-34	92.8	68.9	0.74	92.2	78.5	0.85	93.2	76.3	0.82
35-44	91.3	70.1	0.77	92.6	79.1	0.85	92.6	77.1	0.83
45-54	87.1	69.3	0.8	88.6	73.7	0.83	89.2	76.2	0.85
55-59	73.5	43.4	0.59	77.9	59.3	0.76	78.4	51.3	0.78
60-64	45.9	19.4	0.42	50.7	29.3	0.58	55.4	39.1	0.71
65+	9.7	3	0.31	10.6	3.4	0.32	16.5	8.6	0.52
Total	73.8	55.1	0.75	72.4	58.1	0.8	74.9	59.8	0.8

* Population 16+ years for the USA.

Source: *Labour Force Survey (1998) ABS Catalogue No. 6203; Labour Force Survey (1998), Statistics Canada, Household Surveys Division, Catalogue No. 71-201-XPB; BLS (1999).*

Table 2-2**Sample size and sample selection criteria**

Criterion/ Number of observations	Australia 1989-90	Canada 1991	USA 1991
Full sample 39 018	11 991	15 720	11 307
Women aged 21 to 54 24 289	7 594	9 780	6 915
Single family households 21 970	6 703	8 976	6 291
Never married women 1 767	391	732	644
Married women 17 152	5 516	7 164	4 472
Other marital status women 3 051	796	1 080	1 175

Source: Estimates from LIS.

Table 2-3

Descriptive statistics for married women aged between 21 and 54 years

Variable	Australia 1989-90	Canada 1991	USA 1991	Pair-wise t-statistics: Australia/ Canada	Pair-wise t-statistics: Australia/ USA	Pair-wise t-statistics: Canada/ USA
lfp rate	0.71 (0.0061)	0.79 (0.0048)	0.75 (0.0064)	-11.14*	-4.81*	3.38*
Number of children	1.44 (0.0169)	1.30 (0.0136)	1.31 (0.0176)	5.25*	3.84*	-0.85
Non-earned income ¹	29071.92 (0.2778)	31190.67 (0.2301)	35559.14 (0.3738)	-1.23	-12.94*	-14.03*
Age	35.51 (0.0952)	35.74 (0.1115)	36.13 (0.1309)	-1.15	-2.61*	-3.85*
Education						
Less than high school	0.45 (0.0066)	0.22 (0.0049)	0.12 (0.0048)	25.62*	38.75*	16.37*
Completed high school	0.12 (0.0043)	0.27 (0.0052)	0.39 (0.0072)	-21.16*	-32.84*	-13.34*
Post secondary	0.34 (0.0063)	0.38 (0.0057)	0.27 (0.0065)	-5.47*	7.35*	12.84*
University	0.09 (0.0039)	0.13 (0.0040)	0.22 (0.0062)	-2.84*	-19.15*	-17.79*
Number	5 614	7 219	4 593			

Source: Estimates from LIS.

¹ Non-earned income is expressed in 1991 U.S. dollars.

Note 1: All variables in the table are continuous, except for education which is categorical. The mean values for the categorical educational variables represent the proportion of individual observations in each category.

Note 2: The statistics in the first three columns are weighted means with standard errors shown in parentheses.

Note 3: The statistics in the last three columns are pair-wise *t*-statistics to test the null hypothesis that the means of the three sample are equal. The sample means are statistically different at the 0.05 level of significance when their *t*-statistics are greater than 1.96, the critical value applicable in a large sample.

Table 2-4

Basic model of labour force participation:**Probit parameter estimates for married women aged between 21 and 54 years**

The dependent variable is labour force participation (= 1 if the sum of weeks of full time employment, weeks of part time employment and weeks of unemployment in the reference year is positive; = 0 otherwise) ¹

Variable	Australia 1989-90	Canada 1991	USA 1991
Intercept	-2.5032* (0.5426)	-1.5200* (0.5218)	0.1123 (0.1616)
Number of children	-0.3791* (0.0608)	-0.3483* (0.0587)	-0.3380* (0.0171)
Number of children squared	0.0322* (0.0141)	0.0195* (0.0143)	0.0239* (0.0038)
Non-earned income (1991 U.S. dollars)	0.0019 (0.0015)	-0.0195* (0.0143)	-0.0080* (0.0003)
Education: less than high school			
Completed high school	0.2872* (0.0921)	0.4681* (0.0684)	0.5103* (0.0258)
Post secondary education	0.4538* (0.0642)	0.8135* (0.0676)	0.7325* (0.0284)
University education	0.6450* (0.1143)	1.0699* (0.1027)	0.9930* (0.0313)
Age	0.2004* (0.0319)	0.1666* (0.0301)	0.0626* (0.0092)
Age squared	-0.0029* (0.0004)	-0.0025* (0.0004)	-0.0012* (0.0001)

Continued on next page

Table 2-4 continued

Variable	Australia 1989-90	Canada 1991	USA 1991
Model statistics			
-2 Log likelihood	217.096	430.484	3106.302
Hosmer Lemeshow Goodness-of-fit-statistic	9.645	17.631	7.82
R ² _L -statistic	0.094	0.149	0.492
Gamma	0.362	0.441	0.426
Number of observations	5 614	7 219	4 593

Source: Estimates from LIS.

¹ Three variables in the LIS data identify the extent of labour force attachment for each respondent in the reference year:

- 1) weeks worked full time (the Canadian file for reference year 1991 does not differentiate between full-time weeks and part-time weeks of market work);
- 2) weeks worked part time
- 3) weeks unemployed.

These three variables range from zero to 52 weeks. For the purpose of this study, one dichotomous variable, termed labour force participation, is constructed from these three. This takes the value of one if the sum of weeks of full time employment, weeks of part time employment and weeks of unemployment in the reference year is positive; zero otherwise.

Note: The numbers presented in each column are probit parameter estimates with standard errors shown in parentheses.

Table 2-5
Predicted changes in the probability of labour force participation
of married women in response to variation in characteristics

Characteristic	Australia	Canada	USA
Baseline case	0.52	0.634	0.642
Variation in the number of children			
Number of children = 0	0.085	0.073	0.063
Number of children = 2	-0.07	-0.069	-0.117
Number of children = 3	-0.124	-0.132	-0.043
Variation in non-earned income (expressed in 1991 U.S. dollars)			
Family income less own earnings = 15, 000	*	-0.037	-0.028
Family income less own earnings = 30, 000	*	-0.075	-0.057
Family income less own earnings = 45, 000	*	-0.114	-0.086
Variation in education			
High school education	0.071	0.101	0.107
Post secondary education	0.108	0.162	0.147
University education	0.154	0.201	0.187
Variation in age			
Age = 30 years	0.115	0.077	-0.013
Age = 40 years	0.109	0.06	-0.047
Age = 50 years	-0.04	-0.076	-0.16

Source: Calculations based on estimates from LIS.

Note 1: The baseline case is a married woman aged 21 years who has less than complete high school education, has one child, and no source of income other than her own earnings.

Note 2: An asterisk indicates an insignificant result.

Table 2-6
Simulation of the probability labour force participation
for married women aged between 21 and 54 years, 1989-90

Probit coefficients	Characteristics		
	Australia (1)	Canada (2)	USA (3)
Australia (1)	70.63	74.18	75.83
Canada (2)	73.84	78.59	79.09
USA (3)	68.28	73.52	74.64

Source: Calculations based on estimates from LIS.

Note 1: The numbers in each column are predicted labour force participation rates for married women aged between 21 and 54 years in 1989-1991. To calculate these, one predicts the probability of labour market participation for each individual observation in the sample and then averages over all the observations.

Note 2: The predicted labour force participation rate is calculated as $X_i\beta_i$, where i represents either Australia, Canada or the USA; β_i are vectors of country-specific coefficients and X_i are vectors of country-specific characteristics. Row 1 is calculated by using country-specific characteristics and applying the estimated probit coefficients for Australia; row 2 by using country-specific characteristics and the estimated coefficients of Canada; and row 3 by using country-specific characteristics and the coefficients of the USA.

Table 2-7
Decomposition of cross-national labour force participation
into characteristics and responses

	Australia/Canada	Australia/USA	Canada/USA
Total difference	0.0796	0.0741	0.0395
Characteristics	0.0354	0.052	-0.0112
(percent)	44.47	130	-28
Responses (coefficients)	0.0442	-0.012	0.0507
(percent)	55.53	-30	128
Contribution of individual characteristics to the difference ¹			
Number of children	0.0592	0.2125	0.0071
Number of children squared	-0.02	-0.0623	-0.0033
Non-earned income (1991 U.S. dollars)	0.0011	0.0674	0.0479
Completed high school	0.0596	0.4586	-0.0651
Post secondary education	0.0294	-0.1831	0.0915
University education	0.865	0.5198	0.9063
Age	-0.047	0.5199	-0.0413
Age squared	0.0527	-0.5328	0.0569

Source: Calculations based on estimates from LIS.

¹ The method used to determine the contribution of individual characteristics to variation in cross-national labour force participation is based on factor shares. It is the approach used by Even and Macpherson (1993); shown as equation (2.20) in this study.

Note: Those characteristics that contribute more to the explanation of differences between countries are presented in bold type.

CHAPTER 3

Unemployment compensation and female labour force participation

It seems to me that an economic interpretation of history is an indispensable element in the study of society, but it is only one element. In layers below it lie geography, biology and psychology, and in layers above it the investigation of social and political relationships and the history of culture, law and religion.

Joan Robinson (1970: 5)

3.0 Introduction

This chapter addresses some of the differences in the labour market constraints that women face by examining the structure of unemployment compensation (UC) programs, particularly how this structure may affect the decision of whether, or not, to participate in the labour market. It is possible that differences in the structure of UC programs in the three countries could be a factor in explaining cross-national variation in female labour force participation. For instance, the basis of entitlement to the UC program in Australia in the early 1990s, the period of reference in this study, was different from that in North America. While the effect of this was indirect in that it changed the constraints that impinged on the decisions of individuals, it may have altered labour market behaviour.

A review of the development of UC programs since their inception is first presented in this chapter. No attempt is made in the review, however, to discuss whether a particular program is successful. For completeness, the legislative changes after the period of time selected for this study, are presented. Again, no attempt is made to discuss the implications of these more recent changes to UC programs in the three countries. This review is followed by a presentation of the structure of the programs that were available in Australia, Canada and the USA in 1991 with the aim of highlighting the differences at that point in time. The reason for selecting this particular year is twofold. First, the basis of entitlement to the UA program in Australia was the family unit until July 1995 and any year prior to that one would

be appropriate for comparison. More important, the choice is dictated by the unit record data files available from the LIS database on which the empirical analysis of the following chapter is based.

Prior to the changes introduced by the Department of Social Security (DSS) in Australia in July 1995, the program for unemployed individuals reflected the structure introduced in the early 1940s.⁸⁰ It was not until July 1995 that each marital partner became eligible for benefits independently of the other. Hence, the family basis of entitlement may have provided a strong disincentive for married women in Australia from participating in the labour market.

In both Canada and the USA, entitlement to UI in 1991 was individual and based on the employment history of that person. While there was variation in the design of the employment history requirement in these two countries, each individual, irrespective of marital status, established eligibility in his or her own right. The enactment of the Social Security Act in 1935 in the USA and the Unemployment Insurance (UI) Act in Canada in 1940 introduced the principle of social insurance founded on the social right of an individual to income maintenance based on labour market status. The specific terms and conditions of the program apply to both women and men who had labour market attachment. Thus, the individual basis of entitlement may have provided a stronger incentive for women in North America to enter the labour market.

3.1 Unemployment compensation programs

As noted in the introductory chapter, the term 'social security system' refers to programs established by legislation to support individuals against interruption or loss of earnings, and certain other expenditures. Measures providing cash benefits to replace the loss of income are usually referred to as 'income maintenance' programs, while measures that finance or provide direct services are referred to as 'benefits-in-kind' (SSA 1997). Generally, there are three broad approaches to entitlement under income maintenance

⁸⁰ From the speech presented by the Prime Minister, The Honourable P. J. Keating, M. P. to the House of Representatives on May 4, 1994.

programs: universal, employment-related, and means-tested. Under the first two approaches, the insured, dependants, and survivors can claim benefits as a matter of right; means-tested benefits are based on a comparison of the income or resources of an individual or family against a standard measure.

This section discusses one particular income maintenance program: unemployment compensation (UC). The context in which UC operates in Australia, Canada and the USA differs in terms of the availability of other social security programs. Although research on the significance of the interactions of the various social security programs is limited, recognition of these other sources of income support needs to be acknowledged when comparing UC programs in one country with those in another.⁸¹ For instance, in addition to UI in Canada, there is some form of social assistance for those who do not qualify for UI benefits or for those who exhaust their entitlement. According to Gornick (1999), in the USA there is no means-tested safety-net for anyone in need and it is possible that the unemployed without UI benefits would receive no income support.

3.1.1 Development of programs

This review of the development of unemployment compensation programs in Australia, Canada and the USA is influenced by feminist literature that notes and comments on the frequent exclusion of women and their experiences by neoclassical economists.⁸² In an effort to rectify this imbalance, feminist scholarship has added a number of contributions, two of which are relevant to this discussion.

First, the family has been placed centre stage and the role of the state in sustaining certain forms of family life and certain types of family relationships have been examined (Daly 1994: 104). This contribution has demonstrated that in order to better understand the

⁸¹ Green and Riddell (1993: S97) note that UC interacts with several other labour market programs and policies (such as social assistance, pensions, training, and advance notice of termination) and find that research on the nature and importance of these interactions is limited.

⁸² For instance, Daly (1994); Ferber and Nelson (1999); O'Conner (1993); Orloff (1993); Sainsbury (1994); Saraceno (1997); and Shaver (1995).

effects of the structure of the social security system, its connection to welfare within the family system and to women and men inside and outside the system needs to be clarified.

A second contribution of feminist scholarship has been an examination of the ideologies that underlie the structure of the social security system, especially how ideological constructs shape the lives of women. Contrary to neoclassical analysis, feminist scholarship has dealt extensively with the influence of familial ideology in the structure of the social security system in reproducing the social division of labour between the sexes (Sainsbury 1994: 151-52). Initially, the debate surrounding the construction of gender in the social security system of a number of countries identified an ideology of the family wage as a formative influence.⁸³ Generally, the argument posits that the maintenance of the traditional family form, in which the male is responsible for earning a living and providing for the family, was one of the long-term organising gender constructs. Eventually more attention was given to the ideological prescriptions concerning women and their role as care givers. These prescriptions stress the inherent domesticity of women and their duties in nurturing and caring for members of the family in the form of unpaid labour in exchange for the financial support of the male. Thus, feminist scholarship offers substantial evidence that the structure of the social security system has operated with and helped to sustain a particular ideological model of family life.

As highlighted by this scholarship, the institutional structure of the social security system embodies norms and values about appropriate activities and behaviour with respect to gender. An understanding of this enables one to explore the ideological constructions underlying the type of family that is favoured in different countries.

3.1.2 General trends

The history of UC programs in Australia spans approximately fifty years, longer for Canada and the USA. In connection with the development of these programs, it is possible to distinguish a number of phases that coincide with the major developments in world

⁸³ See, for instance, Abramovitz (1988); Boris and Bardaglio (1983, 1987); Bryson (1995); Edwards and Magarey (1995); Gordon (1985, 1990b); Nelson (1989, 1990); Sapiro (1986); Shaver (1995); and Skocpol (1992).

economic conditions. Until the Great Depression, unemployment was regarded by policy makers as a temporary and infrequent hazard.⁸⁴ Although there was a strong interest in unemployment compensation in all three countries within a limited circle in the early decades of the present century, it was not until the 1930s that public support for such a policy became widespread.⁸⁵

The economic and social problems of the Great Depression demonstrated that the traditional mechanisms of relief, essentially based on charitable and voluntary organisations, were insufficient as solutions to the vicissitudes of the capitalist market economy.⁸⁶ Furthermore, the massive and prolonged unemployment of the Great Depression made it clear that market forces could not be relied upon to provide employment or security for all citizens.⁸⁷ This gradually led to state (provincial) governments assuming the responsibility for emergency relief and, in turn, the federal government in each country. In addition, federal governments initiated public work's programs. Federal action became a necessity, as neither the states (provinces), local communities, nor privately owned charities had the financial resources to cope with the growing needs of unemployed individuals.⁸⁸

The original aim of UC programs was to promote economic and social security for all labour market participants by providing them with income protection against frictional and cyclical unemployment. In North America, the UI programs were also meant to reflect

⁸⁴ See Gordon (1988: 231-233) for a general discussion.

⁸⁵ The state of Queensland in Australia introduced legislation for compulsory unemployment insurance in 1922. In 1919, the Royal Commission on Industrial Relations in Canada proposed a program of social insurance for those unemployed through no fault of their own, a principle endorsed by a parliamentary committee in 1929. Bills for UI were introduced in a number of states in the USA, but it was not until 1932 that legislation was enacted in the state of Wisconsin. For a discussion of the early period in Australia, see, for instance, Jones (1980: 21) and Kewley (1973: 27); for Canada, Dingleline (1981: 5) and National Health and Welfare (1974: 10); and for the USA, Blaustein *et al.* (1993: 115-118), Gordon (1988: 229), and Rosbrow (1985: 21-22).

⁸⁶ Relief programs are covered by Blaustein *et al.* (1993: 121-24); Butlin *et al.* (1983: 181); MacKinnon (1988); May (1995: 200); and Rosbrow (1985: 21).

⁸⁷ See Butlin *et al.* (1982: 152); and Kewley (1972: 159).

⁸⁸ See, for instance, Schmulowitz (1993: 6) and SSA (1999).

social insurance principles and objectives.⁸⁹ Thus, labour force participants who expected to experience recurrent unemployment and those whose permanent jobs were assured were not covered in the original legislation.

The decade of the 1940s can be characterized as a period of adjustment for the newly created programs in Australia, Canada and the USA. If one takes a longer historical perspective, then it is possible to assert that the world economy performed exceptionally well under the Golden Age of capitalism, the period of post war reconstruction and the two decades of the 1950s and 1960s (Cornwall 1990: 7-8). Argy (1988: 3) comments that during this period, real growth rates were high, unemployment and inflation rates were low, and current account and fiscal imbalances were relatively modest.⁹⁰ The generally favourable economic climate in the two decades following the inception of programs led to the expansion of coverage and to the liberalisation of provisions.

Performance began to deteriorate from the late 1960s and in the decade of the 1970s as the world economy was exposed to a series of shocks (Argy 1988: 4-20). Economic growth slowed significantly and was accompanied by high unemployment and increased rates of inflation. In addition, there were significant increases in the costs of programs associated with the growth of unemployment. In all three countries, questions were raised about the impact of the UC program on the labour market incentives and on income stabilisation and redistribution. There were also concerns about the administration of the programs. Driven by the need to contain federal budget deficits, and by the public perceptions of claimant

⁸⁹ For instance, Dingleline (1981:8); *Employment and Immigration* (1981: 5); Green and Riddell (1993: S102); Perry (1988: 681); (Price 1985: 24-25); and U.S. Bureau of the Census (1960: 189).

⁹⁰ Argy (1988: 3-4) attributes this to the fact that under the essentially fixed exchange rate regime of the Bretton Woods system, the USA played a key role in the world economy. The US dollar was the reserve currency of the world and, by keeping its own rate of inflation at very modest levels, the USA acted as a stabilizing force in the world economy. Furthermore, current account imbalances were modest because there were no major shocks to the world economy, inflation differentials were small, cyclical fluctuations were moderate and financial policies were directed at correcting emerging imbalances.

abuse and lax administration, changes to the structure of UC programs were legislated.⁹¹ The OECD (1990) encouraged the shift from passive income replacement programs to active labour market policies in order to foster adjustment caused by changing labour market conditions.⁹²

Economic recovery and expansion occurred in the 1980s, employment grew steadily and unemployment rates declined, but concerns about the future remained, particularly the disincentive effects of UC programs and the lack of flexibility in labour markets. This led to a number of amendments designed to limit the perceived abuse of programs and to introduce employment programs to meet the challenges of technological change and increased international competition.

3.1.3 Initial national legislation

On his inauguration as President of the USA in 1933, Franklin D. Roosevelt initiated legislation that introduced corrective and regulatory mechanisms to the economy.⁹³ This legislation came to be known as the New Deal. In the following year, President Roosevelt established the Committee on Economic Security to frame social insurance legislation covering all major personal economic hazards.⁹⁴

National legislation in the form of the Social Security Act of 1935 established the basic framework of the social security system that has remained in place to the present.⁹⁵

⁹¹ In Canada, there were additional concerns about UI use rates, which had soared above those of the USA.

⁹² Active labour market policies include direct job creation schemes; employment subsidies for the unemployed and retraining for the unemployed.

⁹³ The principal legislation introduced was the Civil Works Administrative Act, the Federal Emergencies Relief Act (FERA), the National Industrial Recovery Act (NIRA), the National Labor Relief Act, and the Wagner Act. Refer to Altmeyer (1966); Brown (1972); and Bureau *et al.* (1985).

⁹⁴ See Altmeyer (1966); Brown (1972); Peterson and Rom (1990: 90-99); and Witte (1962).

⁹⁵ The Social Security Act was passed in the House of Representatives on April 19; by the Senate on June 6; and was signed into law by President Roosevelt on August 14, 1935. The various provisions of the Act were Title I: Grants to States for Old Age Insurance; Title II: Federal Old Age Benefits; Title III: Grants to States for Unemployment Compensation Administration; Title IV: Grants to States for Aid to Dependent Children; Title V: Grants to States for Maternal and Child

This law established two social insurance programs on a national scale to meet the risks associated with old age and unemployment: a federal system of contributory old-age insurance for retired workers who had been employed in commerce and industry; and a federal-state system of unemployment insurance. These programs introduced the social right of an individual to social insurance based on labour market status. The specific terms and conditions of the program applied to both women and men who had labour market attachment. The Act also provided federal grants to the states for the establishment of a number of means-tested social assistance programs.

Unemployment insurance (UI) was instituted in 1935 as a federal-state contributory insurance system in which the states were induced, but not mandated, to participate. All states were encouraged to establish programs, with each state given the major responsibility for the content and development of its program, as well as the amount of taxes to be collected from employees or employers or both. In general, each state decides the amount and duration of benefits, the contribution rates, the eligibility requirements and the disqualification provisions.⁹⁶ Federal legislation provided, and continues to provide, broad standards in order to ensure fair administration and the financial security of the program. All state tax funds were required to be deposited in the Federal Unemployment Trust Fund created by federal law. These deposits were to be credited to the individual accounts of each state and could be withdrawn only to pay unemployment benefits. Within two years after adoption of the Social Security Act of 1935, all 48 states, the then territories of Alaska and Hawaii, and the District of Columbia had legislated for unemployment compensation.⁹⁷

Welfare; Title VI: Public Health Work; Title VII: Social Security Board; Title VIII: Taxes with Respect to Employers (for Old Age Insurance); Title IX: Tax on Employers of Eight or More (for the administration of Unemployment Compensation; Title X: Grants to States for Aid to the Blind; Title XI: General Provisions (SSA 1999).

⁹⁶ The states also directly administer the programs: collecting contributions, maintaining wage records, taking claims, determining eligibility, and paying benefits to unemployed workers.

⁹⁷ The Social Security Act established a national system of old age insurance (now old age, survivors and disability insurance) and a federal-state system of unemployment insurance. It also provided federal grants-in-aid to the states for public assistance, child health and welfare services, general public health services, and vocational rehabilitation services (U.S. Bureau of the Census

In 1935, the Canadian Prime Minister R. B. Bennett drew inspiration from the New Deal that President Roosevelt had instigated in the USA. The Conservative government of Bennett presented a program that was embodied in six statutes, one of which was the Employment and Social Insurance Act providing for a national unemployment insurance plan. The courts, however, declared the Act to be outside the jurisdiction of the federal government arguing that the matters relating to the six statutes of the proposed program were the domains of the provincial legislatures (National Health and Welfare 1974: 10).

Later that year, the leader of the Liberal Party, William Lyon Mackenzie King, was elected as prime minister with a platform that included constitutional change for exclusive authority on social legislation. The constitutional amendment allowed the federal government to enact the Unemployment Insurance (UI) Act in 1940.⁹⁸ It introduced the social right of an individual to social insurance based on labour market status. The specific terms and conditions of the program applied to both women and men who had labour market attachment with contribution payments and benefit entitlement based on the number of days of insurable work.

Contrary to the trends established overseas, and to those outlined above for North America, Australia enacted legislation for a non-contributory social security system during the early 1940s (Jones 1980: 19). From 1941 to 1949 the community sought more radical liberal solutions to its economic problems from the Australian Labor Party (ALP) and during the Labor governments of Prime Minister John Curtin and subsequently Prime Minister Benjamin Chifley, social legislation was increasingly centralised in the federal sphere. In February 1943, a comprehensive system of social security was discussed with full

1989: 189).

⁹⁸ On August 7, 1940, the Unemployment Insurance (UI) Act was given Royal Assent. The Act created the Unemployment Insurance Commission (UIC) to administer the program. It was appointed by the Governor in Council and had full responsibility for the operation of the Act including the National Employment Service (NES). The Act also authorised an advisory committee to advise and assist the Commission, report on the condition of the UI Fund and make recommendations.

employment as the central goal.⁹⁹ The primary aim of policy in Australia was to ensure a high level of employment as it was seen to be fundamental to economic advancement, improved labour standards and social security. Associated with full employment was assistance to those who might nevertheless be unemployed. Such measures were perceived to be necessary to ensure a minimum social standard throughout the community.¹⁰⁰

As a result of the discussions, a number of initiatives were implemented. Arguably, the most important of these initiatives was the introduction of uniform taxation legislation in 1942; it is this power of revenue raising that assures the financial dominance of the Commonwealth government within the Australian federal system (May 1995: 200). The Unemployment and Sickness Benefits Act 1944 legislated for benefits to be paid to men between the ages of 16 and 65 years and to women between the ages of 16 and 60 years¹⁰¹

Another feature of the Australian program different to that established in North America was that the benefit was to be paid so long as unemployment lasted. While benefits were available to all who met the statutory qualifying requirements, they were means tested for income derived from all sources, including the income of the spouse of the claimant (Kewley 1972: 267). In applying the means test to the joint income of spouses, it was assumed that marital partners, whether *de facto* or *de jure*, were responsible for the support of one another and that they pooled their income in the conduct of economic life. Individuals who were in receipt of any pension were not eligible for unemployment and sickness benefits and neither was a married woman, unless she could show that it was not reasonable for her husband to maintain her.¹⁰²

⁹⁹ See Butlin *et al.* (1983: 192); Cass (1988: 9); and Kewley (1980: 31).

¹⁰⁰ For instance, see Cass (1988: 9); Kewley (1980: 32, 123); and Shaver (1995: 144).

¹⁰¹ The Act came into force in 1945 when the Commonwealth Employment Service (CES) was established within the Department of Labour and National Services. This legislation became the key symbol of the declared policy of the government to maintain a high and stable level of employment. See Cass (1988: 9); Kewley (1980: 32, 123); and Shaver (1995: 144).

¹⁰² See, for instance, Cass (1988: 230); and Kewley (1980: 121-122).

3.1.4 Amendments to the original legislation

In Australia, the Social Services Consolidation Act 1947 repealed and amalgamated into a single statute the legislation relating to age, child endowment, invalid and widows' pensions, maternity allowances, and unemployment and sickness benefits.¹⁰³ Thus, for the first time there existed a national social security system financed by taxation, administered by the federal government, and structured around an explicit vision to ensure a 'national minimum' of protection for all citizens against insufficient income (Kewley 1980: 33).

The provisions of the Social Services Consolidation Act reinforced the principle of gender difference. Women were eligible for social security support due to their status as wives, widows or mothers, termed by Bryson (1995: 68) as 'legitimate dependency'. On the other hand, social security support for men was premised on a construction of men as economically independent due to their status as labour market participants. For instance, unemployment and sickness benefits were established as a social right for labour market participants. Fundamental to eligibility for these benefits was a test of preparedness to undertake paid work. At the same time, the legislation extended social rights to married women through the provision of allowances, benefits and pensions with no test for preparedness for paid work applied to dependent wives.¹⁰⁴ Moreover, only wives qualified as dependent spouses.

Table 3-1a summarises the changes in the legislation relating to unemployment compensation in Australia. It needs to be noted that one important administrative change was the establishment of the Department of Social Security in 1972 during the government formed under the leadership of Prime Minister Gough Whitlam.¹⁰⁵ The Whitlam government

¹⁰³ The Old Age Pension was renamed the Age Pension under the 1947 Act.

¹⁰⁴ Bryson (1995: 68) suggests that the relevant criterion was preparedness to be dependent.

¹⁰⁵ According to Kewley (1980: 40), this department reflected the high priority attached by the government to programs within the ambit of social security: a universal health care system was created; fees for tertiary education were abolished and funding for tertiary, secondary and primary education was increased; pre-school education and child care services were expanded; a Supporting Parents Benefit replaced existing state-based provisions; and the means test on the Age Pension for individuals over 70 years of age was removed.

of 1972-75 promoted the principle of equality between women and men that was reflected across a wide range of areas. For example, the abolition of the family element in the wage rates of men in 1974, the move to 'equal pay' in wage determination, and federal support for child care. The process of more equal treatment of women in the labour market continued in the 1980s and the present decade. The aim was to offer women a more equal basis in their efforts to sell their labour in the market and was reflected in such policy areas as affirmative action, anti-discrimination legislation and equal employment opportunity initiatives.

As a result of the major review of the social security system in Australia in the 1980s, the Social Security Act 1947 was repealed and replaced with the Social Security Act 1991 (Castles 1994: 233). The 1991 Act introduced reform not only to the UA program but also to the whole social security system.¹⁰⁶ A gender neutral model of social security replaced the earlier provisions that were framed in terms of gender difference and social rights were revised to largely eliminate overt distinctions between women and men (Shaver: 1995: 147).

In 1994, measures were proposed that would enable individuals who were married to claim entitlement on the basis of their own situation.¹⁰⁷ For instance, each marital partner would have an individual social right based on labour market status and would be required to establish individual eligibility. Thus, it was proposed to change the basis of entitlement from the previous construction of the family unit as a married couple with dependent children. These proposals were implemented in July 1995.¹⁰⁸ Social security allowances for couples have been restructured to base eligibility and entitlement more on the individual.

¹⁰⁶ The 1991 Act replaced the unemployment benefit, which had been paid to all unemployed persons between the age of 18 and the age pension together with the job search allowance introduced in 1988 for unemployed persons aged 16 and 17, by a new two payment structure under the Newstart strategy (Castles 1994: 236-7). Job search allowance is now payable to individuals aged 18 years and older and who have been unemployed for less than 12 months and to unemployed people aged 16 and 17. Newstart allowance is payable to those who have been employed for a year or more and who are aged 18 years and older.

¹⁰⁷ See *Working Nation* (1994).

¹⁰⁸ The period since 1995 has seen the return of the Liberal-National party coalition to office under the leadership of Prime Minister John Howard.

With the introduction of individual income testing, there has been a movement toward a structure based on the individual as the unit of assessment.

The basis of entitlement for UA in Australia is now equally available to both women and men, as has been the case in both Canada and the USA since the establishment of their UI programs. This gives partners in a marriage greater flexibility in making choices and supports the normative expectations of increasing equality within marriage. As the rules and conditions of entitlement have come to treat women and men in a gender neutral way, so these programs can offer them the same structure of individual choices.

Table 3-2b summarises the changes in the legislation relating to unemployment compensation in Canada. With these changes over time there has been a clear departure from the traditional insurance principles that had been the original foundation of the program (McKillop 1994).¹⁰⁹ It needs to be noted that a new Employment Insurance (EI) program came into effect in 1996, replacing the previous UI program.¹¹⁰ The Employment Insurance Act has two parts: temporary income support that provides basic income protection coverage in the event of a job loss; and active employment measures that provide re-employment benefits and services of more direct assistance to unemployed individuals.¹¹¹

Table 3-1c summarises the legislative changes relating to unemployment compensation in the USA. It needs to be noted that while subject to federal requirements, each state has developed its own program to reflect perceived economic needs.¹¹² As a consequence, no two state laws are exactly alike in all respects and many differ widely across the states.¹¹³ According to Price (1985: 29), over the years certain aspects of the structure of

¹⁰⁹ For instance, see Dingleline (1981); Employment and Immigration (1981); Fortin (1985); Green and Riddell (1992); Kesselman (1983); McKillop (1994); National Health and Welfare (1974); Perry (1988); and Vaillancourt (1985).

¹¹⁰ Bill C-12 came into effect on July 1, 1996.

¹¹¹ A Family Supplement was introduced to provide basic protection for low-income claimants with children. This supplement is based on the Child Tax Benefit, varies with the number of children.

¹¹² For instance, see Blaustein *et al.* (1993); Price (1985); and Rosbrow (1985).

¹¹³ See Orloff (1988) and Weir *et al.* (1988).

state programs have tended to converge. For instance, legislative changes introduced by the states in the maximum potential duration of benefits saw this aspect of the UI program become more uniform. As Blaustein *et al.* (1993: 302-306) note, from the original maximum duration level of generally fifteen weeks, the states gradually raised the level to at least twenty-six weeks (except in Puerto Rico) by the end of the 1960s. The maximum duration level became uniform in the 1970s when the federal-state extended benefits program was legislated.¹¹⁴ Generally, the weekly benefit in all states replaces approximately half of the wage of the claimant. In fact, almost all the state statutory formulas call for this level of weekly benefit (Price 1985: 31).

3.1.5 Concluding remarks

By 1947 in Australia, a national social security system was created that was financed by taxation, administered by the federal government, and structured around an explicit vision to ensure a 'national minimum' of protection for all citizens against insufficient income. Cass (1995: 42) argues that the social security system in Australia, including the program for unemployed individuals, was predicated on contradictory assumptions about the position of women from its very inception as a social assistance, means-tested, flat-rate system of income support. With a flat-rate payment, women and men were entitled to receive the same level of benefit.¹¹⁵ Yet the market related dependency of women was reinforced by the constitution of the family wage. Thus, for most of its history, the structure assumed and reinforced the ideology of the family wage. As Shaver (1995: 142) states

(w)omen were doubly disadvantaged, for their commitment to home and family limited them to marginal roles in the labour market, while their inability to earn reinforced their economic dependence within marriage. Thus social policies were directed both to supporting the married couple household and to providing for women, mainly those with dependent children, outside it.

¹¹⁴ By 1985, it was 26 weeks in almost all states (Price 1985: 29).

¹¹⁵ The basic rates of payment were differentiated by age, marital status, and the presence of dependent children.

For approximately fifty years, the social security system in Australia reflected the structure introduced in the early 1940s.¹¹⁶ Rather than an employment history requirement, eligibility and entitlement to UA benefits in Australia was based on current need and subject to a means test on income. For a never married individual, this test was applied on the income of that individual. For a two-adult couple, on the other hand, the means test was applied to the joint income of the couple. This meant that each marital partner did not establish individual eligibility determined by his or her own income, but rather on the joint income of the family. The application of the test to the joint income of the family implied that the benefit would generally be reduced if other income was present. Thus, with a relatively high implicit marginal tax rate on the earnings of the family it was possible that it was less likely for married women to undertake paid work. This would imply a lower labour force participation rate for women in Australia.

In North America, on the other hand, the enactment of the Social Security Act in 1935 in the USA and the Unemployment Insurance (UI) Act in 1940 introduced the principle of social insurance founded on the payment of a contribution entitling an individual to a social right based on labour market status. The specific terms and conditions of the program applied to both women and men who had labour market attachment.

The following section presents the structure of the programs that were available in Australia, Canada and the USA in 1991 with the aim of highlighting the differences in the structure of the programs at that point in time. As stated in the introductory section of this chapter, the reason for selecting this particular year is twofold. First, the basis of entitlement to the UA program in Australia was the family unit until July 1995 and any year prior to that one would be appropriate for comparison. More important, the choice is dictated by the unit record data files available from the LIS database on which the empirical analysis of the following chapter is based.

¹¹⁶ From the speech presented by the Prime Minister, The Honourable P. J. Keating, M. P. to the House of Representatives on May 4, 1994.

3.2 Structure of programs in 1991

As this section describes, there were many common features, but also important differences in the structure of the programs in 1991. In all three countries, an unemployed individual was required to be available, capable and willing to work in suitable employment. Likewise, the unemployment benefit was subject to income tax. Similarly, in all three countries, there was a qualifying requirement to be satisfied. In North America, the qualifying requirement depended on the length of employment or the number of contributions paid. In the case of Australia, the qualifying requirement depended on the duration of residence in the country.

In order to highlight the differences, the structure of the existing unemployment compensation programs is described under a number of categories. Despite the broad generalisations that will be made, it needs to be noted that each state in the USA is free to frame its own program provisions. Likewise, the program in Australia differed considerably from those operative in North America in several crucial respects: it was non-contributory, eligibility was independent of employment history, it was paid without a limit on duration, but eligibility was subject to a test of means, both assets and income.

3.2.1 Administration ¹¹⁷

In all three countries, a claimant was required to register at an employment office and to report regularly in order to learn of any possible employment opportunities. While Australia and Canada administer the program through a national department, in the USA, each state has the responsibility for establishing and operating its own program. The Department of Labor is responsible for the administration of the program nationally through its Employment Training Administration, Unemployment Insurance Service.

Federal regulations do not specify the form of the organisation to administer the program nor its place in the state government of the USA. More than half of the agencies are within a department of the state government and the remainder is independent boards or commissions. According to Schmulowitz (1993: 28)

¹¹⁷ See Castles (1994); Jones (1980); National Health and Welfare (1991); Schmulowitz (1993); U.S. Department of Health and Human Services (1992); and references cited therein.

(t)wenty-eight States have placed their employment security agencies in the Department of Labor or under some other State agency. The others have independent departments, boards, or commissions to administer the program. Advisory councils have been established in all but 3 jurisdictions; 46 of them were mandated by law. The councils assist the employment security agencies in formulating policy and addressing any problems related to the administration of the Employment Security Act.

State employment security agencies are responsible for the administration of state programs through local employment offices which, in addition to providing cash benefits, also provide claimants with a wide range of employment development and placement services.¹¹⁸

In Canada, the program was administered by the Canada Employment and Immigration Commission within the Department of Human Resources Development (HRD), with Revenue Canada, Taxation being responsible for the collection of premiums, the determination of insurable employment and the benefit repayment (National Health and Welfare 1991: 180). Application for benefits was made at a local Canada Employment Centre (CEC). The province of Quebec also administered a supplementary plan for women whereby those who are eligible for maternity benefits in Quebec will receive the Quebec Maternity Allowance during the two week benefit waiting period.

From 1972, the Department of Social Security (DSS) was responsible for the overall administration of the program in Australia. This was achieved through 20 area and 216 regional offices (U.S. Department of Health and Human Services 1992: 15). After agents at the local offices of the Commonwealth Employment Service (CES) received claims and administered the work test, the claims were referred to DSS.

Table 3-2 presents the administrative organisation of programs in the three countries.

¹¹⁸ State employment offices were established by Congress in 1933 under the Wagner-Peyser Act (U.S. Department of Health and Human Services 1992: 28).

3.2.2 Benefit provisions ¹¹⁹

In Australia, the level of Job start and Newstart allowances received was dependent on income that was subject to a means test. This test limited the total income received so that no benefit was paid where total income exceeded a specified level. As the amount of benefit was based on family status, there were single and married rates and additional amounts for dependants.

In 1991, eligible labour market participants in Canada received the following types of benefits: regular unemployment, adoption, maternity and sickness benefit. Benefits were also payable to those attending approved training courses or participating in job creation projects or work-sharing agreements. Benefit rates were of two types: either flat-rate or graduated. Graduated rates were earnings-related benefits and replaced a given percentage of the salary or wages of the claimant.

In 1991, the benefit replacement rate in Canada was 60 percent of the average weekly insurable earnings of the claimant, to a maximum weekly benefit.¹²⁰ Average earnings were based on the last 10 to 20 weeks of insurable employment, or, for those people with less than 20 weeks of work, on all weeks worked in the qualifying period. The maximum weekly insurable earnings amount, from which the maximum weekly replacement benefit rate was determined, was adjusted annually on the basis of an eight-year moving average of salaries and wages paid in Canada. Claimants whose net yearly income, including UI benefits, was more than 1.5 times the annual maximum insurable earnings were required to pay back up to 30 percent of the benefits received when their income tax return was filed.

As there are no federal standards for benefit provisions in the USA, it is difficult to establish a common pattern. The states have developed complex and diverse formulas for determining regular benefit rights. Under all state laws in 1991, the weekly benefit amount

¹¹⁹ See Gordon (1988); Kesselman (1983); Pal (1988); National Health and Welfare (1991); Schmulowitz (1993); U.S. Department of Health and Human Services (1992); and references cited therein.

¹²⁰ Effective from January 1, 1979 with Bill C-14 to April 4, 1993 when Bill C-113 reduced the replacement rate for new claimants to 57 percent, the replacement rate in Canada was 60 percent.

was earnings related, but varied within certain minimum and maximum limits. In most of the states, a uniform percentage of base period earnings (50 percent in most states) were usually specified.¹²¹

As Table 3-3 shows, three quarters of the states used a formula that computed weekly benefits as a proportion of wages in one or more quarters of the base period. Generally, the proportion was taken of wages in the quarter where those wages were highest. The remaining states used a weighted schedule that gave a greater proportion of the high quarter earnings to lower paid claimants than to those earning more.

3.2.3 Coverage¹²²

Table 3-4 presents the coverage of the programs in the three countries in 1991. Coverage under the programs in all three countries was relatively broad. While there were no general industrial or occupational exclusions in Australia, there are some exclusions from coverage in Canada and the USA. In North America, many of the laws excluded casual labour market participants or those with low earnings, as well as family workers. Employees who were related to their employer were covered in Canada in 1991 as long as they worked under the same employment contract as those employees who were not related to the employer. Moreover, self-employed commercial fishermen in Canada who fished seasonally or year round and who were unable to qualify for regular benefits were subject to special rules. To be eligible, employees and employers in covered employment were required to make premium contributions to the Unemployment Insurance Account. Those individuals employed for less than 15 hours and with earnings less than 20 percent of maximum weekly insurable earnings were not considered to be in covered employment and, thus, were not covered by the program.

¹²¹ For ready reference, the Unemployment Insurance Service of the U.S. Department of Labor, Employment and Training Administration (1991) provides a summary of the relevant details of the significant provisions of state UI laws relating to benefit provisions.

¹²² See, for instance, Gordon (1988); Kesselman (1983); Pal (1988); National Health and Welfare (1991); U.S. Department of Health and Human Services (1992); and references cited therein.

Excluded from coverage in the USA were workers employed by their families and the self-employed largely because it was not easy to determine whether unemployment was involuntary in that particular group.

Generally, there was a lower limit in the programs that coincided with the school leaving age in these three countries. Although there was no upper limit in Australia, those individuals of retirement age were usually excluded on the basis of the receipt of an age pension. In order to comply with the equality provisions of the Charter of Rights and Freedoms in Canada, there was no upper age limitation that excluded individuals from participating in the program. The USA had no upper age limitations on coverage.

The fact that a benefit was not subject to any contribution conditions, and that it was paid for an indefinite duration, meant that the program in Australia may have had more extensive coverage in 1991 relative to North America. Yet, as a result of its means tested nature, coverage was not as complete as it fell short of all unemployed workers. In particular, as the income test included the income of the spouse, it effectively denied benefits to a married person whose spouse was fully employed in the labour market.

3.2.4 Duration ¹²³

Table 3-5a presents the duration of benefits in the three countries. As well as being non-contributory and unrelated to previous income, there was no limit on the duration of Job search and Newstart allowances in Australia. In contrast, both Canada and the USA set limits on the duration of benefits, after which an individual was required to undertake paid work for some period of time before eligibility to the program could be reestablished.

In 1991, the duration of regular UI benefits in Canada was variable, depending on previous employment, contributions and regional economic conditions. A single benefit schedule based on the number of weeks of insurable employment and the regional unemployment rate became effective in November 18, 1990 and replaced the previous three phased benefit structure. Hence, the potential duration was a maximum of 50 weeks of

¹²³ See Blank and Card (1993); Gordon (1988); Kesselman (1983); National Health and Welfare (1991); Pal (1988); Schmulowitz (1993); U.S. Department of Health and Human Services (1992); Vroman (1984, 1998); and references cited therein.

benefit on one claim in 1991.¹²⁴ This is shown in Table 3-5b. Special benefits up to 15 weeks were also available for maternity leave (up to 15 weeks for women plus an additional 10 weeks of parental leave that could be shared between the mother and father) and for sick leave. In addition, up to 10 weeks of parental benefits were available to adoptive parents and a further five weeks were available for natural or adoptive parents in situations where intensive care was needed on account of the health of a child.

The potential duration of regular benefits in the USA was uniform in a few states, but in most states it depended on the base period earnings and/or weeks of employment of the claimant. Generally, in most states the maximum potential duration of regular benefits was 26 weeks in 1991.

3.2.5 Eligibility¹²⁵

Table 3-6a presents the eligibility conditions for the three countries in 1991. In all three countries, claimants were eligible for benefits if they became involuntarily unemployed. In addition, a work requirement was imposed in all three countries, a requirement that continues to apply. This work requirement stipulated that a claimant needed to be actively seeking employment in the labour market, be able to work and be available for employment. Disqualification for a certain number of weeks would apply if a claimant had quit the job voluntarily without good cause or if the claimant had been discharged for misconduct. In addition, direct involvement in a strike also disqualified a claimant from receipt of benefits.

The difference in eligibility conditions for the three countries in 1991 was in the minimum periods of qualifying employment. Generally, all unemployed individuals in Australia were eligible for the Newstart allowance as long as they met certain criteria. In addition, young persons entering the labour force with no work experience were eligible for a Job search allowance as long as they met certain criteria. As no employment history was

¹²⁴ Although it was potentially possible for a claimant to receive the maximum of 50 weeks of benefit, most people lived in a region where the maximum duration of benefits was much lower.

¹²⁵ See, for instance, Castles (1993); Gordon (1988); National Health and Welfare (1991); Schmulowitz (1993); U.S. Department of Health and Human Services (1992); and references cited therein.

necessary to establish eligibility for this allowance, the provision allowed school leavers to claim unemployment benefits six weeks after they had left an educational institution.

Young persons entering the labour force without any work experience in North America were not eligible for unemployment benefits as both Canada and the USA require a period of attachment to the labour market before eligibility for unemployment benefits can be established. In order to qualify for UI in North America generally, an individual must have worked in covered employment for a certain period of time.

In Canada a certain number of weeks in covered employment must be earned during a qualifying period. This period in 1991 consisted of the 52 weeks immediately prior to the application for the claim, or the period since the start of a claimant's previous claim, whichever was more recent. Claimants were required to have worked in covered insurable employment of between 10 and 20 weeks in the qualifying period, depending on the regional unemployment rate.¹²⁶ The lower qualifying period of 10 weeks applied to persons whose regional unemployment rate was 15 percent or higher. The higher qualifying period of 20 weeks applied to persons whose regional unemployment rate was less than 6 percent. For individuals whose regional unemployment rate was nine to 10 percent, a rate that was typical in 1991, the qualifying period was 16 weeks of covered employment. The minimum weeks of insurable employment in Canada is shown in Table 3-6b.

In addition, special benefits applied to those individuals who ceased to participate in the labour market because of injury, pregnancy and birth of a child, adoption of a child, or sickness. Generally, a claimant was required to have 20 weeks of insurable earnings in order to be entitled to these special benefits.

To qualify for benefits in the USA in 1991, a claimant must have had substantial labour force attachment in the recent past as evidenced by at least a specified amount of covered employment or wages in a base period. The most common base period was one year, and a particularly frequent requirement is that the individual must have been employed

¹²⁶ For new entrants, the qualifying period in covered insurable employment was longer.

in covered employment for at least six months, or 26 weeks, during the year preceding the claim for benefits.

3.2.6 Financing¹²⁷

As Table 3-7 presents, all three countries had a different method of financing their programs in 1991, different methods that continue to apply in the present. The UA program in Australia is financed completely out of Commonwealth consolidated revenue.

The program in Canada was financed through employee and employer premiums that were paid to the Unemployment Insurance Account. The program was financed by a payroll tax with premiums of approximately 3 percent on employees and 4.3 percent on employers based on the weekly insurable earnings of the employees. The premium rate was set annually using a statutory premium rate as a reference point. It was determined by a formula in the Unemployment Insurance Act that calculated a three-year average of costs. Premiums were adjusted so that the system was self-financing since government funding ceased with the 1990 amendments of the Act.

The USA based, and continues to base, its program exclusively on employer contributions. All states financed their programs almost completely through an employer payroll tax. There was no federal tax on employees, and only three states provided for an employee contribution. All taxes collected by the states were deposited in the federal Unemployment Trust Fund in the Department of the Treasury. A separate reserve account was maintained for each state. State reserve balances were invested in federal obligations, and the interest earned was credited to these reserves. There were also three Federal accounts for administration, extended benefits, and loans to the States.

Most states had a standard tax rate of 5.4 percent of taxable payroll. The actual tax paid by an employer, however, generally depended on the employer record of employment stability. Except for Puerto Rico, all jurisdictions provided for experience rating of employer taxes. The provisions of experience rating systems varied widely among the jurisdictions.

¹²⁷ For instance, see Gordon (1988); Pal (1988); National Health and Welfare (1991); Schmulowitz (1993); U.S. Department of Health and Human Services (1992); Vroman (1984, 1998); and references cited therein.

For instance, the survey of experience rating presented in the *Social Security Bulletin* (1995: 27) found that in 1991, the national average employer contribution rate was 2.2 percent of taxable payroll, or 0.8 percent of total wages in covered employment. The range for the states was, however, from 0.6 to 5.4 percent for a taxable payroll and from 0.3 to 2.9 percent of total wages in covered wages.

3.2.7 Waiting periods¹²⁸

The practice of imposing a waiting period from the onset of unemployment until the claimant is entitled to benefits was common to all three countries in 1991. In Australia, the waiting period was generally one week. The waiting period for young persons entering the labour force with no work experience was six weeks after they had left an educational institution. In the USA, there is also a waiting period of one week of total unemployment before payment of benefits could begin. In Canada, the waiting period was two weeks.

3.3 Summary of findings

It can be concluded that three major features differentiate the Australian UA program. These provide a firm basis for cross-national comparisons of female labour force participation. First, no qualifying period of employment is necessary for eligibility. Under the UI programs in North America, an individual is required to establish a right to benefits by initiating a history of labour market employment. Second, benefits are paid at a flat rate (adjusted for age and family responsibilities) and may be paid for an unlimited period of time. This is in contrast to the UI programs in north America where benefits tend to be earnings-related and exhaustible in whole or in part. After UI benefits have been exhausted in Canada and the USA, claimants need to rely on other forms of income maintenance through social assistance programs. Third, the eligibility of married women in Australia is subject to a means test of family income, which rules out the vast majority (Miller and Volker 1985: 224).

¹²⁸ See Blank and Card (1993: 1163); Gordon (1988: 243); Schmulowitz (1993: 21); and U.S. Department of Health and Human Services (1992).

It is possible that these three features of the UA program in Australia could lead to different labour market behaviour from that which might prevail in either Canada or the USA. For instance, the typical structure of the UI program in North America may alter the income-leisure locus of an individual, inducing the consumption of additional non-market activities. In addition, the structure of the UI program may induce individuals to participate in the labour market, to work for the necessary qualifying period in order to establish eligibility rights to UI benefits, then draw the benefit for the remainder of the year. On the other hand, the distinguishing features of the UA program in Australia highlighted above generate quite different predictions concerning female labour force participation. Given the structure of the program, it is likely that the labour force participation of married women will be less than in North America.

An interesting empirical question with respect to the structure of unemployment compensation programs is to investigate whether it was less likely for married women in Australia to participate in the labour market as a result of the application of the means test on joint income compared with North America in the period prior to the administrative changes introduced to the UA program in Australia in July 1995. This is addressed in the following chapter.

Table 3-1a**Summary of legislative changes to the UA program in Australia**

Year	Legislation	Change
1944	Unemployment and Sickness Benefit Act	Benefits paid to men between 16-65 years and to women between 16-60 years who had resided in Australia for at least twelve months
1947	Social Services Consolidation Act	Repealed and amalgamated into a single statute the previous legislation related to social service benefits
1948 1954 1958	Amendments to legislation	Reimbursements of dental, hospital, medical and similar expenses exempted from the definition of income
1952 1957 1962	Amendments	UA benefit rates increased
1972	Amendment	UA benefit rates increased; federal government provided additional grants to states
1973	Amendment	Common benefit to all claimants; UA benefit rates brought into line with other social service benefit rates
1976	Amendment	UA benefits became taxable
1977	Amendment	Six week waiting period for UA benefits introduced for school leavers
1988	Amendment	Job search allowance for youth introduced
1991	Social Security Act	Reform of legislation; Newstart strategy and Plan and Activity Agreement introduced; active labour market approach endorsed.
1995	Amendment	Basis of entitlement became individual

Table 3-1b

Summary of legislative changes to the UI program in Canada

Year	Legislation	Change
1940	Unemployment Insurance Act	Partly financed by employee and employer premiums to provide income support during temporary unemployment
1955	Consolidated UI Act	
1971	Revised Unemployment Insurance Act	Scope broadened to cover most employees; benefits increased. New benefits offered for job loss due to disability, maternity or sickness. Rules varied from region to region.
1976	Amendment Bill C-69	Revision of threshold financing formula; disqualification for voluntary quits; replacement rate reduced from 75 percent to 66.67 percent for claimants with dependents.
1977	The Employment and Immigration Reorganization Act.	Three major changes introduced including developmental use of UI funds; variable entrance requirement (VER) established based on 16 regions; 3-phase benefit structure replaced former 5-phase benefit structure.
1978	Amendment Bill C-14	Benefit rate reduced from 66.67 percent to 60 percent; benefit claw-back introduced.
1988	Amendment	Adoption and paternity benefits introduced.
1990	Amendment Bill C-21	Development uses of UI expanded; parental benefits replace adoption and paternity benefits; VER rose from 10-14 weeks to 10-20 weeks; single benefit schedule introduced.
1993	Amendment Bill C-113	Replacement rate reduced to 57.5 percent; new restrictions on qualification for benefits; complete disqualification for workers who leave their jobs without just cause or lose their employment by reason of misconduct.
1994	Revision Bill C-17	Two-level benefit scheme introduced: 55 percent for most claimants and 60 percent for claimants with low insured earnings and dependants; duration of entitlement reduced; VER raised to 12-20 weeks.
1996	Employment Insurance Act Bill C-12	Two-tier scheme introduced: temporary income protection coverage in the event of a job loss; and active employment measures.

Table 3-1c

Summary of legislative changes to the UI program in the USA

Year	Legislation	Change
1935	Social Security Act	Framework for federal-state UC system established for employers of eight or more workers
1939	Amendment	Restrictions imposed on coverage to exclude classes of workers
1948	Amendment	Further restrictions on coverage
1954	Federal Unemployment Tax Act New title XV of Social Security Act	Expansion of coverage to employers of four workers or more with 1-20 weeks of employment. Separate cover for federal employees.
1958	Temporary Unemployment Compensation Act	Extension of benefits to exhaustees in states electing to participate
1961	Temporary Extended Unemployment Compensation Act	Extension of benefits to exhaustees in all states
1970	Amendment to Social Security Act. Extended Unemployment Compensation Act	Expansion of coverage to employers of one worker or more with 20 weeks of employment; new federal rules governing state disqualification provisions. Permanent program of federal-state for periods of high unemployment: Extended Benefit (EB) program.
1976	Unemployment Compensation Amendments	Expansion of coverage to state and local governments and certain agricultural employers; increased federal tax rate and wage base; revision of EB triggers.
1981	Amendment to Extended Unemployment Compensation Act	Eligibility rules tightened; revision of EB triggers.
1982-85	Federal Supplemental Compensation	Payments to exhaustees of regular and extended benefits; increases to tax and wage base; eligibility rules tightened.
1983	Amendment	Benefits become taxable.
1991-93	Five Emergency Unemployment Compensation laws	Payments to meet the needs of the long term unemployed.

Table 3-2**Administrative organisation in 1991**

Australia	Canada	USA
<p>Administration of the program through Department of Social Security through area and regional offices. Local offices of Department of Employment Education and Training and local agents receive claims.</p>	<p>General supervision of the program with Department of Human Resources Development. Canada Employment and Immigration Commission, with tripartite membership administers the program through regional and local offices.</p>	<p>Administration of the program nationally through the Employment Training Administration, Unemployment Insurance Service, Department of Labor,</p> <p>Administration of individual state programs through local employment offices state employment security agencies. More than half of the agencies are within a department of the state government; the remainder is independent boards or commissions.</p>

Source: Adapted from U.S. Department of Health and Human Services (1992: 14-15; 60-61; 346-347).

Table 3-3
Benefit provisions in 1991

Australia	Canada	USA
<p>Up to AUD\$260.30 a week if married with a dependant spouse; AUD\$140.95 a week if single, aged 21 and no dependants; AUD\$78.05 a week if aged 18-20 and no dependants; up to AUD\$64.90 a week if single and less than 18 with no dependants, AUD\$156.05 a week if single with dependants.</p> <p>Benefits for children paid under a family allowance scheme.</p> <p>UA allowances adjusted in March and September according to Consumer Price Index.</p>	<p>Regular benefits: 60 percent of previous average insured earnings for up to 50 weeks.</p> <p>Maximum weekly insured earnings: C\$780.</p> <p>Special benefits payable up to 15 weeks for loss of earnings due to maternity or sickness, or 10 weeks for parental care.</p>	<p>About 50 percent of earnings for up to 26 weeks according to diverse state formulas.</p> <p>Minimum basic weekly benefit: \$5-69 (60 percent of states, \$30 or more).</p> <p>Maximum \$154-\$468 (2/3 of states, \$225 or more).</p> <p>About one quarter of the states provide \$1-\$95 a week per child and sometimes for other dependants.</p> <p>Assistance in some states to workers with insufficient covered employment and to unemployed exhausting benefits under federal-state programs.</p>

Source: Adapted from U.S. Department of Health and Human Services (1992: 14-15; 60-61; 346-347).

Table 3-4
Coverage in 1991

Australia	Canada	USA
Gainfully employed persons and to those not previously gainfully employed who meet qualifying conditions.	<p>All wage and salary earners, including federal government employees; also, self-employed fishermen.</p> <p>Voluntary coverage for provincial government employees with consent of provincial government.</p> <p>Exclusions: All other self-employed persons, and workers earning less than C\$156 per week and working less than 15 hours per week for the same employer; casual workers.</p>	<p>Federal law: Employees of firms in industry and commerce; Nonprofit organizations with four or more employees during 20 weeks in a year; almost all state and local government workers, domestics and two fifths of farm workers.</p> <p>State programs: Employees covered by federal law.</p> <p>Exclusions: Some agricultural employees, employees of religious organizations, casual employees, family labour, and self-employed.</p> <p>Special federal programs for railway employees, federal employees and ex-service personnel.</p>

Source: Adapted from U.S. Department of Health and Human Services (1992: 14-15; 60-61; 346-347).

Table 3-5a
Duration in 1991

Australia	Canada	USA
<p>Means tested allowances to resident persons from age 16 to pensionable age.</p> <p>Allowance payable after one week waiting period for as long as qualified.</p>	<p>Benefits payable after two weeks waiting period for up to 50 weeks depending on claimants' employment history and regional unemployment rates.</p> <p>Special benefits payable for up to 15 weeks for loss of earnings due to maternity or sickness, or 10 weeks for parental care.</p>	<p>Benefits payable after one week waiting period for up to 26 weeks according to diverse state formulas.</p> <p>Federal law provides for up to 13 additional weeks in states with high unemployment.</p>

Source: Adapted from U.S. Department of Health and Human Services (1992: 14-15; 60-61; 346-347).

Table 3-5b

Benefit duration schedule for Canada in 1991

Weeks of work	Regional unemployment rate (percentage)											
	> 6	3631 7	3634 8	3638 0	3641 2	3644 3	3647 5	3650 6	3653 8	14-15	15-16	16+
10											37	39
11										36	38	40
12									35	37	39	41
13								34	36	38	40	42
14							33	35	37	39	41	43
15						30	34	36	38	40	42	44
16					27	31	35	37	39	41	43	45
17				24	28	32	36	38	40	42	44	46
18			21	25	29	33	37	39	41	43	45	47
19		19	22	26	30	34	38	40	42	44	46	48
20	17	20	23	27	31	35	39	41	43	45	47	49
21	18	21	24	28	32	36	40	42	44	46	48	50
22	19	22	25	29	33	37	41	43	45	47	49	
23	20	23	26	30	34	38	42	44	46	48	50	
24	21	24	27	31	35	39	43	45	47	49		
25	22	25	28	32	36	40	44	46	48	50		
26	22	25	28	32	36	40	44	46	48			
27	23	26	29	33	37	41	45	47	49			
28	23	26	29	33	37	41	45	47	49			
29	24	27	30	34	38	42	46	48	50			
30	24	27	30	34	38	42	46	48				
31	25	28	31	35	39	43	47	49				
32	25	28	31	35	39	43	47	49				

Continued on next page

Table 3-5b continued

Weeks of work	Regional unemployment rate (percentage)											
33	26	29	32	36	40	44	48	50				
34	26	29	32	36	40	44	48					
35	27	30	33	37	41	45	49					
36	27	30	33	37	41	45	49					
37	28	31	34	38	42	46	50					
38	28	31	34	38	42	46						
39	29	32	35	39	43	47						
40	29	32	35	39	43	47						
41	30	33	36	40	44	48						
42	30	33	36	40	44	48						
43	31	34	37	41	45	49						
44	31	34	37	41	45	49						
45	32	35	38	42	46	50						
46	32	35	38	42	46							
47	33	36	39	43	47							
48	33	36	39	43	47							
49	34	37	40	44	48							
50	34	37	40	44	48							

Source: Statistics Canada (1994).

Table 3-6a

Eligibility conditions in 1991

Australia	Canada	USA
<p>Means tested unemployment allowance to resident persons age 16 to pensionable age.</p> <p>If unemployment is due to voluntary act, misconduct, labour dispute, or refusal of a suitable offer, then allowance denied.</p>	<p>Benefit varies depending on unemployment rate of the region, from 10-20 weeks in covered employment during last year.</p> <p>If unemployment due to voluntary leaving without just cause or due to misconduct, then disqualification applies until the worker re-qualifies for benefit.</p> <p>Refusal of suitable offer or failure to undergo training, results in disqualification from seven to 12 weeks.</p> <p>If unemployment due to labour dispute, imprisonment, or residence outside Canada, then benefit is denied for as long as the condition exists.</p>	<p>About three quarters of states require minimum earnings in preceding base year equal to specified multiple of weekly benefit or high quarter wages, or to specified total; eight states require specified number of weeks of employment.</p> <p>If unemployment due to voluntary leaving, misconduct, labour dispute or refusal of a suitable offer, then a period of disqualification applies with length varying among states.</p>

Source: Adapted from U.S. Department of Health and Human Services (1992: 14-15; 60-61; 346-347).

Table 3-6b

Variable entrance requirement for Canada in 1991 ¹

Regional unemployment rate	Minimum weeks of insurable employment
less than 6	20
6 - 7	19
7 - 8	18
8 - 9	17
9 - 10	16
10 - 11	15
11 - 12	14
12 - 13	13
13 - 14	12
14 - 15	11
15+	10

¹ Effective November 18, 1990 with the introduction of Bill C-21.

Table 3-7

Financing arrangements in 1991

Australia	Canada	USA
<p>Insured person: None</p> <p>Employer: None</p> <p>Government: Entire cost from general revenues</p>	<p>Insured person: 3 percent of insured earnings</p> <p>Employer: 1.4 times the rate of the insured person.</p> <p>Government: None</p> <p>Maximum insured earnings: C\$780 per week.</p> <p>Minimum: C\$156 per week in or less if employed 15 hours per week for the same employer</p>	<p>Insured person: None (except in Alaska, New Jersey and Pennsylvania).</p> <p>Employer: Federal tax, 0.8 percent of taxable payroll (6.2 percent basic rate less basic rate up to 5.4 percent state contributions; includes temporary basic rate of 0.2 percent).</p> <p>State programs: basic rate, in most states 5.4 percent; actual rates vary from 0-10 percent according to employment experience of individual employer; average rate about 2.0 percent.</p> <p>Government: Federal government pays for administration of state programs from federal tax(balance used for loans to states or to finance extended benefit program).</p> <p>Maximum earnings for contribution and benefit purposes: \$7 000 per year under federal tax and 13 state programs; higher in other 42 jurisdictions.</p>

Source: Adapted from U.S. Department of Health and Human Services (1992: 14-15; 60-61; 346-347).

CHAPTER 4

The effect of the basis of entitlement to an unemployment compensation program

on female labour force participation: an empirical analysis

It is the model itself, as a more or less suitable approximation to reality, which is of primary interest. The problems of estimation of its parameters or testing of its features have a derived interest only.

T. C. Koopmans (1949: 89-90)

4.0 Introduction

The subject of this study is the divergence in labour force participation rates of married women in Australia, Canada and the USA. The 'window' for viewing the observable world in chapter two of this study was termed the basic model of female labour force participation. The econometric study of this chapter is an extension of the basic model and represents an expansion to a nearby larger window from which to view the observable world. The extended model of female labour force participation provides an indirect test of the role of the means test in the unemployment assistance (UA) program of Australia to determine whether the labour market participation of married women in Australia was less likely compared with married women in North America.

As discussed in the previous chapter, unemployment compensation (UC) programs confer entitlement to women as participants in the labour market. The structure of these programs, however, may either encourage women to enter the labour market or implicitly discourage such participation by affirming and supporting the decision to remain at home. The discussion of the structure of these programs in section 3.2 of chapter three was for a particular point in time: 1991. This year was selected so that it would correspond with the unit record data files from the Luxembourg Income Study (LIS) database on which the empirical analysis of this chapter is based. Given the fact that the basis of entitlement to the

UA program in Australia was the family unit until July 1995, any year prior to that one would be appropriate for comparative purposes.

Until July 1995, the basis of entitlement to the UA program in Australia was the family.¹²⁹ This can considerably influence the probability of paid employment of married women. For instance, consider a family comprising two married adults where both partners are over 20 years of age and are without dependent children. Further, assume that the male is unemployed and the female is not employed in the labour market (either unemployed or not in the labour force because of family responsibilities). In 1989 for example, the maximum benefit payment that this married couple could receive was AUD\$414.20 per fortnight (pf) because the unemployed male had a dependent spouse.¹³⁰ A single individual of the same age and without any children, on the other hand, could receive AUD\$232 pf. This example illustrates how the UA program treated a two-adult couple as one unit, making the social right to an unemployment benefit conditional upon the personal circumstances and resources of one another.

Further, eligibility to the UA program was conditioned on the joint income of marital partners through the application of a means test. Again, consider the same family as previously discussed. Let the male be unemployed and eligible for a Newstart Allowance (NSA) and let the female be employed part time in the labour market. Assume that the woman receives AUD\$460 pf in earnings and that this is the only source of family income. Thus, the joint income of the family is AUD\$514.20 pf comprising AUD\$460 from the earnings of female partner and AUD\$54.20 from the benefit payment received by the unemployed male. With the application of the income test in July 1989, for example, joint family income precluded this couple from receiving the maximum benefit payment of AUD\$414.20 pf. An amount of AUD\$360 was deducted from the benefit payment: for each

¹²⁹ In section 3.1.4 of the previous chapter it was noted that from 1944 to July 1995, the basis of entitlement to the unemployment assistance (UA) program in Australia was the family unit. This was changed in July 1995 to individual entitlement so that each marital partner became eligible for benefits independently of the other.

¹³⁰ Two weeks of time is termed 'fortnight.'

dollar of income between AUD\$60 and AUD\$140 pf, the payment was reduced by 50 percent; for each dollar of income over AUD\$140 pf, the benefit was reduced by 100 percent. Consider, for instance, a married women who earned a wage of AUD\$6.84 per hour.¹³¹ This meant that after approximately nine hours of market work, a reduction of 50 percent would have applied to the full benefit; after approximately 20 hours, the benefit would have been reduced by one dollar for every dollar earned in the market.

The probability of female labour force participation, particularly for those whose partners were dependent on income maintenance payments, may have been less likely given the family basis of entitlement. As a consequence, single women and married women faced different constraints and had a different probability of participating in the labour market in Australia prior to the legislative changes in July 1995.

In both Canada and the USA, on the other hand, entitlement to the unemployment insurance (UI) program was, and continues to be, based on the employment history of an individual.¹³² Each individual, irrespective of marital status, establishes eligibility determined by her or his own labour market attachment. While there is considerable variation in the design of the UI programs in these two countries, each individual claimant establishes eligibility in his or her own right.¹³³

¹³¹ Estimate obtained from the LIS data file for Australia, 1989-90.

¹³² The taxation system, however, may apply differently to women and men. For instance, in the USA it may be possible for a married couple to choose between individual and joint taxation. According to Bergmann (1986: 218-20), during most of the postwar period in the USA, the taxation system has encouraged joint taxation of spouses; the sole earner family has received the same tax exemptions as the two earner family, which virtually amounts to deduction for a dependent spouse; and single parent families have not enjoyed the same advantage as a sole provider with a spouse. These three features of the taxation system in the USA have been described by the author as the two earner marriage penalty; the housewife bonus; and the single parent penalty. This is supported by Scholz (1993-94) who asserts that the Earned Income Tax Credit in the USA, which subsidises the earnings of low-income families, also tends to penalise two-earner as compared to one-earner couples.

¹³³ With the introduction of the Family Income Supplement in Canada, it is possible that there may be different labour market incentives.

The hypothesis to be tested in this study is that differences in the bases of entitlement to UC programs are important in explaining cross-national variation in female labour force participation. If there is any validity to this hypothesis, then one should find that, *ceteris paribus*, the state of being married in Australia will be associated with a lower probability of labour force participation of women compared to women in North America.¹³⁴ It is reasonable to expect that the labour force participation of married women would be less likely when they are married to unemployed men given the effect of the family basis of entitlement to the Australian UA program.

4.1 Methodology

The model of labour force participation in this section is an extension of the basic model presented in section 2.4 of this study. The choice of an individual of whether, or not, to participate in the labour market, is subject to the income and time constraints outlined in chapter two, but augmented by the incorporation of the structural parameters of the UC program in each country. The inclusion of these structural parameters makes the constraint in each country non-linear.

Figures 4-1, 4-2 and 4-3 illustrate the budget constraint that incorporates the structure of the UC program in each country into the analysis. The conventional trade-off between income from employment in the labour market and non-market activities remains relevant to the analysis. The relevant period for the analysis is a fortnight in Australia with hours as the unit of measurement on the non-market time axis and yearly for North America with weeks as the unit. Along the non-market time axis, one would find an individual who has been unemployed for the reference period at the extreme right. On the other hand, one would find a full-time labour market participant at the opposite pole. A labour force participant who is employed in the labour market for more than 51 weeks in the USA is not affected by

¹³⁴ For instance, Bradbury (1995) and King *et al.* (1995) find that the effect of an unemployed partner is to depress the labour force participation of married women in Australia.

the UI program since a one-week waiting period is imposed before she is eligible to receive benefits.¹³⁵ In Canada, a two-week waiting period is imposed.

While the structure of the three programs as at 1991 is discussed in greater detail in section 3.2 of the previous chapter, and illustrated in the section that follows, three features of the UA program in Australia are highlighted here. First, no qualifying period of employment was necessary for eligibility. Second, benefits were paid at a flat rate and it was possible to claim a benefit for an unlimited period of time.¹³⁶ Third, the eligibility of married women in Australia in 1991 was subject to a means test of family income, which, as Miller and Volker (1985: 224) assert, ruled out the vast majority.

4.1.1 Labour market effects in Australia prior to 1995

Rather than an employment history requirement, eligibility and entitlement to UA benefits in Australia are based on current need and subject to a means test on income. For a single person, this test is applied on the income of that individual. Prior to July 1995, the means test for a two-adult couple was applied to the joint income of the family. This meant that each marital partner did not establish individual eligibility.

Given the nature of the means test on family income, it is possible that its application on joint income would reduce the probability of women with an unemployed partner to seek paid employment on a part time basis because it involves a high implicit marginal tax rate on the earnings of the family. If the implicit marginal tax rate is high where the receipt of an unemployment benefit is targeted according to family income, then it is possible that there would be only a small incentive to participate in part time market work, since any increase in her earnings would lead to a reduction in the benefit level of her partner.

In Figure 4-1, the features of the UA program for both a single and a married woman in Australia are incorporated: a basic allowance, an earnings exemption, and a two-phase

¹³⁵ If one extrapolates the budget constraint in Figure 4-1 to an annual cycle, then a labour force participant who is employed for 51 weeks in Australia is not affected by the UA program since a one-week waiting period is imposed before she is eligible to receive benefits.

¹³⁶ This flat rate benefit of the UA program in Australia was, and continues to be, adjusted for age and family responsibilities.

reduction on earned income in excess of exempt earnings.¹³⁷ Assume that the exogenous market wage is constant for all women. Excluding the structure of the program, the constraint is given by the line AT which describes the usual trade-off between income from employment in the labour market and non-market activities, given the exogenous market wage. In Figure 4-1, the constraint augmented by the structure of the UA program is given by the line segment ABCDET. The line segment from E to D in Figure 4-1 captures the permissible earnings component of the UA program.¹³⁸ The permissible earnings component of the income test is the distance indicated by OZ' on the vertical axis. The line segment from D to C shows the first reduction in the benefit allowance in excess of the exempt earnings: a 50 percent reduction of any income that exceeds AUD\$60 per fortnight (pf) up to AUD\$140 pf; and the line segment from C to B captures the second reduction of 100 percent. The distance indicated by OZ on the vertical axis is the ceiling point of the income test. Finally, the line segment from B to A shows the non-UA portion of the budget constraint in Australia.

Women, irrespective of marital status, whose preferences (indifference curves are not shown) are such that they locate on segment BA, will not participate in the UA program and will supply positive hours of market work. Those who maximise utility by locating at point E will participate in the UA program, but supply zero hours of market work. Single women who locate on segment EDCB will not only be program participants, but they will also supply positive hours of market work.

For married women, however, the impact of the UA program on her budget constraint also depends on the earnings of her partner. First, consider the two polar cases: her partner earns zero income; and her partner earns an income level equal to or greater than the ceiling income permissible by the means test of the UA program, the ceiling point indicated by Z. In this case, the impact of the UA program for a married woman is similar to that described

¹³⁷ Information relating to the structure of the program in Australia was kindly supplied by Anthony Krieg of the Labour Market Analysis Section of the Department of Social Security, Canberra.

¹³⁸ The line segment from D to E is drawn parallel to AT on the presumption that the wage rate available to those either participating or not in the UA program is the same.

above for a single woman.¹³⁹ For the other extreme case, no effect would be attributable to the UA program because the means test on the joint income of the family of these women would have excluded them.

Now consider a case somewhere in between these two polar extremes: a married woman whose partner is employed in the labour market, but is earning less than the ceiling income of the means test. In the first case, there is an effect attributable to the UA program. This depends on the difference between the earnings of her partner and the ceiling income. As a result of the UA program, the budget constraint of this woman can be described by AB'C'D'ET. As the earnings of her partner increases to approach the ceiling income, the constraint augmented by the structure of the UA program would move closer toward line AT, the constraint excluding the structure of the program. Note that as the earnings of the partner increase, the segment on the line AT where no effect is attributable to the UA program will extend accordingly.

Labour market effects attributable to the UA program in Australia in 1991 depended, of course, on where the individual would have been located in the absence of the program and also on their marital status. Consider two categories of women based on marital status: a single woman, and a married woman. First, consider the case of a single woman who participated in the labour market at a point shown as *a* on the line AT in Figure 4-1. In this case, the means test on her own income for the fortnight would exclude her from eligibility to the UA program and there would be no labour market effects.

For a single woman, such as one originally located at point *b* on budget line AT in Figure 4-1, the UA program potentially decreases labour market incentives (moving her to some point on the line segment from B to C, or very likely to D). In this case, the means test on her income would reduce her UA benefit, but she would continue to participate in the labour market although there would be a reduction in the number of hours supplied. If on the other hand, her total income from the UA program and market work did not exceed the potential UA benefit, then she would withdraw from the labour market.

¹³⁹ In this case, of course, the benefit level would be higher for the two-adult couple than for the single woman and would be higher still if dependent children are present in the family.

The third possibility illustrated in Figure 4-1 applies to single women who would be outside the labour force in the absence of a UA program. These women were originally located at point T, reflecting the high value of their time devoted to non-market activities. Some of these women would choose to remain outside the labour force and neither participate in the labour market nor collect UA benefits. Other women would enter the labour market by locating somewhere on the line segment from E to D in Figure 4-1, but not to qualify for UA benefits as would be the case in North America.

Assuming that the preferences of single women and married women are the same, then Figure 4-1 shows that the labour market effects of the UA program in Australia for married woman with an unemployed partner are the same as those discussed for single women. For a married woman with a partner whose income is above the ceiling income, there are also no labour market effects from the program. In the range between B and B' of the budget constraint, there is a disincentive for single women to enter the labour market, shown as a movement to a higher indifference curve that lies on the budget constraint incorporating the UA program. For married women, on the other hand, there will be no impact in this range. There will, however, be a labour market effect if a married woman is located on the line segment from B' to T.

For married women, the crucial issue is the presence of income other than own earned income, that is joint family income. The effect of the income of her partner, however, is important. This is one critical structural difference between the UA program in Australia and the UI programs in North America. In addition, the unemployment of the male partner is important. If the implicit marginal tax rate is high, then it is possible that there would be only a small incentive to participate in the market since any increase in the earnings of a woman would lead to a reduction in the benefit level of her partner. The family basis of entitlement to the UA program in Australia may have discouraged women from participating in the labour market when married to unemployed men.

4.1.2 Labour market effects in Canada in 1991¹⁴⁰

In order to make a comparison with the Australian program, the same three features presented above are highlighted. The first feature is the qualifying period for benefit eligibility: individuals in Canada were required to work in covered employment for a minimum number of weeks for entitlement to the UI program. This entrance requirement ranged from 10 to 20 weeks in 1991 and varied across the provinces according to the regional unemployment rate; high unemployment rate regions required fewer weeks of market work for benefit eligibility.¹⁴¹ For instance, a woman residing in Newfoundland, with the highest female average annual unemployment rate of 17.5 percent in 1991, would have qualified for benefits after 10 weeks of work in covered employment while a resident of Saskatchewan, a province that experienced the lowest female average annual rate of unemployment of 6.9 percent in that same year, would have qualified for benefits after 19 weeks. While individuals in Canada were required to meet an entrance requirement for eligibility, there was no entrance requirement for eligibility to the UA program in Australia based on a specific qualifying period of attachment in the labour market.¹⁴²

The second feature is the replacement rate and the potential duration of benefits. In Canada, the replacement rate was 60 percent of average previous earnings in 1991, with the potential benefit duration depending on the regional unemployment rate.¹⁴³ For instance, assume an individual was a resident of a high unemployment region, such as Newfoundland, and became unemployed on January 1 of the reference year. Further, assume that the

¹⁴⁰ The discussion of labour market incentives for individuals in Canada utilises the structure of the UI program in 1991 with the aim of highlighting the differences with Australian UA program at the same point in time. Of course, a number of legislative revisions were introduced to the UI program in Canada since 1991, including a major legislative change to Employment Insurance (EI) in 1996. This is discussed in section 3.1.4 and summarised in Table 3-1b of the previous chapter.

¹⁴¹ See Table 3-5b in the previous chapter. This presents a schedule of the variable entrance requirement for Canada in 1991.

¹⁴² While there have been major legislative changes to the UC programs in both countries, this parameter continues to apply.

¹⁴³ See Table 3-6b in the previous chapter, which presents a schedule of the potential duration of benefits for Canada in 1991.

minimum entrance requirement of 10 weeks had been satisfied. In 1991, it was possible for this individual to collect UI benefits for 39 weeks after a two-week waiting period. On the other hand, if a resident of Newfoundland had accumulated insurable earnings of 21 weeks, then the potential duration of benefits was 50 weeks. Note that the maximum weeks of benefits available to a woman who was employed in the labour market for only the minimum required were not the same as those available to a woman who participated in the labour market for more than the minimum. Additional weeks of covered employment yielded additional weeks of benefit entitlement (up to 50 weeks in 1991).

Third, the basis of entitlement to the UI program in Canada was individual rather than family in the reference year, 1991.¹⁴⁴ Hence, the constraint incorporating the structural parameters of the UI program was the same for both women and men, irrespective of marital status; the same for single women and married women, irrespective of the employment status of partners of married women.

The theoretical impact of the UI program in Canada for reference year 1991 are represented in Figure 4-2: a replacement rate of 60 percent of previous earnings for a maximum period depending on the regional unemployment rate; and a minimum entrance requirement to qualify for benefits, again depending on the regional unemployment rate. These features are illustrated in Figure 4-2 using a time horizon of one year where an annually-repeating pattern of labour force participation is assumed. In the absence of the UI program, the potential income constraint is indicated by the line AT in the diagram.¹⁴⁵ The constraint incorporating the structural parameters of the UI program is the line ABCDET in Figure 4-2. If a woman worked less than the minimum number of weeks, MIN on the diagram, in the labour market during the year, then she did not qualify for UI benefits and her income constraint is the line segment from T to E. If a woman was employed in the labour market for more than the maximum number of weeks, MAX on the diagram, then she was eligible for benefits for an additional k number of weeks.

¹⁴⁴ A modification to this feature was made with the introduction of the Family Income Supplement.

¹⁴⁵ This section follows Phipps (1990).

As a woman worked additional weeks in the labour market, she could have earned her weekly wage as well as her unemployment insurance before reaching a point where working one week in the labour market would have 'cost' her a week of collecting UI benefits. For example, if she worked 48 weeks, she could only collect UI benefits for the two remaining weeks of the year. Any week worked that reduced her weeks of eligible UI collection thus had an additional opportunity cost. As long as the woman did not reduce her entitlement to collect UI benefits, she could collect her full UI benefit, as well as earn the weekly wage rate in the labour market. The effect of the waiting period is indicated by the line segment from A to B.

Labour market effects attributable to the UI program in Canada in 1991 depended, of course, on where an individual woman would have been located in the absence of the program. Three different possibilities are shown in Figure 4-2. For women working more than the minimum entrance requirement, such as at a point *a* on the line AT, the income and substitution effects work in the same direction to potentially decrease weeks worked in the labour market (moving to point *b* on the line segment BC). For women, such as those originally located at point *c* on line AT, the UI program also constitutes an income effect and substitution effect, again potentially decreasing labour market incentives (moving to point *d* on the line segment CD, or in segment ET).

The third possibility illustrated in Figure 4-2 applies to women who would be outside the labour force in the absence of a UI program. These women were originally located at point T, reflecting the high value of their time devoted to non-market activities. Some women would choose to remain outside the labour force and neither participate in the labour market nor collect UI benefits. Others would enter the labour market, however, and work the sufficient number of weeks in order to qualify for UI benefits locating at point D in Figure 4-2. In this case, the UI program would increase labour market incentives by making it attractive for these women to enter the labour force for a relatively brief period of time. A similar argument would apply to those women who would work fewer than the minimum entrance requirement in the absence of a UI program, that is, those who would be located on the line segment from E to T.

Contrary to the situation of women in Australia originally located at point T, there is a definite incentive for women in Canada to enter the labour force in order to establish eligibility to the UI program. As this applies to all women, irrespective of marital status, one would not expect a different incentive for labour force participation of single or married women in Canada. Compared to Australia, however, there would be an incentive for both single and married women to participate in the labour market. Nor would one expect an effect that could be attributed to the presence of income other than own earned income, that is, joint family income. The program in Canada operates primarily as a social insurance program for which an individual, rather than the family unit, is entitled to benefits as a result of premiums contributed. This is one critical structural difference between the UI program in Canada and the UA program in Australia where the income of the male partner will more than likely influence the labour force participation of married women in Australia.

In addition, the unemployment experience of the male partner is not directly linked to labour market effects that could be attributable to the UI program in Canada. As was the situation in Australia prior to July 1995, the receipt of an unemployment benefit in Canada is not targeted according to family income. Hence, one would not expect a change in the labour market behaviour of a woman married to an unemployed man as eligibility to the UI program in Canada is conditioned on the labour force attachment of an individual, not the income of the family.

4.1.3 Labour market effects in the USA in 1991

The same three features presented above for Australia and Canada are highlighted in this section. To qualify for benefits in the USA in 1991, a claimant must have had substantial labour force attachment in the recent past as evidenced by at least a specified amount of covered employment or wages in a base period. All states have a base period. The usual requirement is that an individual should have earnings above a specific dollar threshold in the base year in addition to earnings above a specific dollar threshold in the highest quarter. Frequently, the base earnings are 1.5 times the high quarter earnings in terms of the minimum. While each state in the USA is free to frame its own program provisions, the structural parameters of the UI program for the reference year of 1991 in the

state of New York are used as an illustrative device.¹⁴⁶ In order to qualify for benefits, individuals in the state of New York were required to have 20 weeks of covered employment at a minimum average of \$80 per week or more.

The second feature is the replacement rate and the potential duration of benefits. As there are no federal standards for benefit provisions in the USA, it is difficult to establish a common pattern. The states have developed complex and diverse formulas for determining regular benefit rights. Under all state laws in 1991, the weekly benefit amount was related to earnings, but varied within certain minimum and maximum limits. In many states, a uniform percentage of high quarter earnings (50 percent in many states) was specified. Three quarters of the states used a formula that computed weekly benefits as a proportion of wages in one or more quarters of the base period. Generally, the proportion was taken of wages in the quarter where those wages were highest. The remaining states used a weighted schedule that gave a greater proportion of the high quarter earnings to lower paid claimants than to those earning more.

In New York, the replacement rate was 50 percent of the claimant's average weekly earnings for the reference year of 1991. In the computation of the benefit payment, it needs to be noted there is a considerable gap between the base period, the earliest four of the past five completed quarters, and the benefit year. In fact, this gap is between three and six months depending on when a job separation occurred. For instance, assume a resident of the state of New York became unemployed on February 1 of the reference year. Because the job separation occurred in the first quarter of the year, that quarter is not included as part of the base period. Rather, the three calendar quarters of the previous year, together with the final quarter of the year prior to that would be the base period to be used in the computation of the claimant's UI benefit.

¹⁴⁶ The significant provisions of the state UI laws in 1991 are available from the Unemployment Insurance Service of the U.S. Department of Labor, Employment and Training Administration. While this analysis describes the structural parameters of the UI program for the USA, and illustrates this with the case of New York, for the reference year of 1991, it needs to be noted that there have been no major changes to the program since that period of time. Much of the discussion would be currently applicable. This is not the case for either Australia or Canada where major legislative changes have been introduced.

The duration of regular benefits in the USA was uniform in a few states, but in most it depended on the base period earnings and/or weeks of employment of the claimant. In most states the maximum potential duration of regular benefits was 26 weeks. The potential duration in New York was a uniform 26 weeks in the 52-week period.

Third, while the eligibility of married women in Australia in 1991 was subject to a means test of family income, the basis of entitlement to the UI program in the USA, was, and continues to be, individual rather than family. Hence, the constraint incorporating the structural parameters of the UI program was the same for both women and men, irrespective of marital status; the same for single women and married women, irrespective of the employment status of partners.

In order to simplify the complexities of the UI program in New York, assume a constant wage rate for all women. In addition, assume that women choose a repeated annual cycle of labour force participation. The structural parameters of the UI program in the state of New York in 1991 are shown in Figure 4-3 and summarised as follows: a qualifying period of 20 weeks of employment; a waiting period of 0.8 weeks before a claimant is entitled to receive benefits whilst unemployed; a potential maximum duration of 26 weeks in the 52-week period; and a replacement rate of 50 percent.¹⁴⁷

As a generalisation, the UI program provided an incentive for women in the USA who participated in the labour market less than the minimum entrance requirement to increase labour supply in order to qualify for the program and receive benefits. On the other hand, women choosing an annually-repeating pattern with more than fifty-one weeks of market work were unaffected by the program since a one-week waiting period was imposed before she was eligible to receive benefits.

Like the situation in Canada, there was a definite incentive for women in the USA to enter the labour force in order to establish eligibility to the UI program. As argued above for married women in Canada, one would expect a difference in the labour force participation

¹⁴⁷ For New York, the waiting period in 1991 was four effective days accumulated in 1-4 weeks, assuming that an individual collected at least four weeks of benefits. While the potential duration of benefits was a maximum of 26 weeks in 1991, the state average in New York was 20 weeks.

of married women in Australia compared to those in the USA because of the effect attributable to the income of the partner and, in addition, to the unemployment experience of the male partner. Because the receipt of an unemployment benefit in Australia is conditioned on family income, married women may be less likely to participate in market work, since any increase in earnings by the unemployed individual or his partner will lead to a reduction in the benefit level. In North America, on the other hand, UI benefit entitlement is based on the employment history of the individual.

4.2 Specification of the model

The model specified in this section of the study is an extension of the basic female labour force participation model. Essentially, women jointly choose annual weeks of participation in the labour market and annual weeks of non-market activity in order to maximise utility: individual utility for single women; and household utility for married women.¹⁴⁸ The focus of the model is on how the decision to participate in the labour market is affected by conventional determinants, such as the ones specified in the basic model, but also additional variables to capture labour market conditions and incentives. One variable included in the extended model of female labour force participation is designed to capture the demand-side constraint of the labour market in the reference year: the female rate of unemployment in the state (province) in which a woman resided.¹⁴⁹ The labour market of each economy is characterised by significant regional disparities in the level of unemployment and in employment opportunities. To control for these disparities in local labour market conditions and the business cycle, the average annual state (provincial) unemployment rate for women in the reference year is included as a variable in the analysis.

The key point of the extended model presented in this chapter of the study is to test whether differences in the bases of entitlement to UC programs may be important in explaining cross-national variation in female labour force participation. Hence, the extended

¹⁴⁸ Lundberg (1988) supports the notion that household labour supply decisions are jointly made by various members of the family in order to maximise household utility.

¹⁴⁹ It is acknowledged that this is a weak demand side control variable.

model also introduces an additional explanatory variable to capture labour market effects attributable to the structure of UC programs. Labour market effects are examples of variables used in a model that have no directly observable counterpart. As such, an indicator variable is used as a proxy, the difference being that the true variable in the model is latent. Given a window through which to view the world, the major task is to conduct sensitivity analysis for the variable of interest. Alternative specifications in a model are indicative of the sensitivity of the model to changes in the specification of the variable used as a proxy.

Two alternative specifications of the proxy variable are used in the extended model to capture the effect of labour market incentives. The first is a categorical variable, the unemployment experience of the partner: this takes the value of one to indicate that he experienced unemployment in the reference year, zero otherwise. The second is the duration of unemployment. Each variable is included to test the hypothesis that the family basis of entitlement to the UA program in Australia discourages women from participating in the labour market when they married to unemployed men. If the implicit tax rate is high where the receipt of an unemployment benefit is targeted according to family income, then there will often be only a small incentive to engage in part time market work, since any increase in earnings by the unemployed individual or his partner will lead to a reduction in the benefit level. Hence, it is expected that the sign of the coefficient for this proxy variable, irrespective of the specification used, will be negative and statistically significant for Australia when one uses identically specified estimating equations and separate country samples of married women, but not for Canada or the USA.

Similar to the approach used for the basic model in chapter two of this study, separate probit equations to predict the probability of labour force of married women aged 21 - 54 years in Australia, Canada and the USA are estimated using the third wave of the LIS data: 1989-90 for Australia; 1991 for both Canada and the USA. By estimating identically specified equations, it is possible to directly compare the results for the three countries.

4.2.1 The pooled sample of married women

In addition to estimating identically specified equations, the extended model of female labour force participation utilises a pooled sample of married women. This is the

fundamental innovation introduced in this study of female labour force participation. For the pooled sample a further variable is introduced to capture the interaction possibilities between the male spouse's unemployment benefits and the female spouse's labour force participation decision. This is a set of interaction terms defined as the product of whether the male partner experienced unemployment in the reference year and whether he is a resident of Australia; and the product of whether the male partner experienced unemployment in the reference year and was a resident of Canada. It is expected that the sign of the coefficient of this variable will be negative and statistically significant for Australia. Given that the basis of entitlement to the UI program in Canada is the individual, the coefficient is not expected to be statistically significant for Canada. Women who are residents of the USA are the reference (omitted) category.

Again, two different specifications are used in the sensitivity analysis. The first specification is defined as the product of a dichotomous variable indicating whether the partner experienced unemployment in the reference year and whether he was a resident of Australia (Canada). In the second specification, this term is redefined as the product of the duration of unemployment of the partner and whether he was a resident of Australia (Canada). As discussed above, it is possible that the means test on the income of the family in Australia may discourage the labour market participation of married women. Thus, it is expected that the sign of the coefficient will be negative and statistically significant in Australia, but not for Canada given the structure of the UI program. Again, women who are residents of the USA are the reference (omitted) category.

4.2.2 Additional descriptive statistics

Table 4-1 shows the factors affecting the labour force participation of women used in the probit equations for the extended model. Table 4-2 presents descriptive statistics for the additional variables introduced for the model to be estimated in this section of the study. An examination of the table reveals the substantial differences among the three countries in regional unemployment, unemployment experience of the male partner and the duration of his unemployment. These statistically significant differences in the characteristics among the three countries are confirmed by the pair-wise *t*-statistics comparing the average means

for country-specific characteristics that influence female labour force participation. Recall that while the years selected for analysis were chosen to be as similar as possible, the three economies were located at a different phase of the business cycle in the early 1990s.¹⁵⁰

Consider the differences between Australia and Canada in terms of country-specific characteristics for the selected sample. On average, the annual average regional female unemployment rate in Canada (8.3 percent) was significantly higher than that in Australia (6.8 percent). As the dichotomous variable indicating the unemployment experience of the male partner is a categorical variable, the mean value represents the proportion of individual observations in this category. A higher proportion of married men experienced unemployment in the reference year, on average, in Canada (19.3 percent) compared with Australia (6.4 percent). In addition, the duration of this unemployment was longer, on average, in Canada (4.6 weeks) compared with Australia (1.2 weeks).

Similarly, consider the differences between Australia and the USA in terms of country-specific characteristics for the selected sample. On average, the annual average regional female unemployment rate in Australia (6.8 percent) was significantly higher than that in the USA (5.6 percent). A higher proportion of married men experienced unemployment in the reference year, on average, in the USA (12.3 percent) compared with Australia (6.4 percent). In addition, the duration of this unemployment was longer, on average, in the USA (2.3 weeks) compared with Australia (1.2 weeks).

As a broad generalisation, a higher proportion of married men experienced unemployment in the reference year, on average, in North America compared with Australia. Also, the duration of this unemployment was longer, on average, in North America. On the other hand, the annual average regional female unemployment rate was highest in Canada and lowest in the USA.

¹⁵⁰ See OECD Economic Outlook (1991: 86; 1992: 63 and 97). Australia had reached a peak in the business cycle in late 1989 and the economy was experiencing a contraction in early 1990. By 1991, Canada and the USA were still experiencing the contractionary effects of the recession. For Canada, the recession ended in the second quarter of 1991; output increased in the fourth quarter of 1991 in the USA.

4.3 Results of the estimation

Parameter estimates for the separate three country probit equations are shown in Table 4-3 for never married women and Table 4-4 for married women. The probit parameter estimates for the pooled sample of married women are presented in Table 4-7. Recall the salient results of the basic model presented in section 2.4 of this study: the inhibiting effect of children on the probability of female labour force participation in all three countries; an inverse relationship between the availability of financial resources other than own earnings and the probability of participation in North America; and a direct relationship with the probability of labour market participation for both the level of education and age.

The following discussion focuses on the results for two categories of women: those classified in the LIS database as never married women and those classified as married women. For the latter category of women, the results for the identically specified equations using separate three country samples and the pooled sample are presented separately.

4.3.1 Never married women

Table 4-3 shows the parameter estimates for the three separate probit equations of women who are classified in the LIS database as never married in the reference year. Generally, the probit coefficients for the explanatory variables shown in Table 4-3 have the anticipated patterns: *ceteris paribus*, there is a direct relationship between the level of education and the probability of female labour force participation; and, *ceteris paribus*, the availability of financial resources other than own earnings is associated with lower labour force participation. The inhibiting effect of children on the probability of labour force participation, however, is only statistically significant in the USA.

An examination of the information presented in columns (4) and (5) of Table 4-3 for the pooled probit equation indicates that the labour market behaviour of never married women in the three countries is relatively similar. The coefficients of the country indicator variables imply that there are no significant differences between the probability of female labour force behaviour of never married women in Australia compared to similarly classified women in the USA, the reference category. Neither are there any significant differences

between the probability of labour force participation of never married women in Canada compared with the USA.

Given these results, one can conclude that there are no statistically significant differences in the probability of labour force participation of never married women that could explain the cross-national variation in female labour force participation rates. While different labour market incentives are present for single women in Australia compared to their counterparts in North America, they do not appear to influence the probability of female labour force participation.

4.3.2 Married women using three separate samples

Table 4-4 shows the parameter estimates for the three separate probit equations of women who are classified in the LIS database as married in the reference year. In general, the model statistics for the predictor set show that a number of the non-zero coefficients have a statistically significant effect in explaining the probability of female labour force participation (-2 log likelihood test); that one would not reject the null hypothesis of the model being correct (Hosmer and Lemeshow goodness-of-fit statistic); and that the level of prediction attributable to the model is modest (R^2_L -statistic and the Gamma test statistic).¹⁵¹

Generally, the result of the extended model for the effect of children, non-earned income, education and age is similar to the basic model of female labour force participation. In North America the coefficient for the regional rate of unemployment, one variable introduced in the extended model, is negative and statistically significant in all three countries, irrespective of the specification used for the proxy variable to capture labour market incentives. In Australia, on the other hand, the regional rate of unemployment is not a statistically significant predictor of the probability of female labour market participation, irrespective of the specification used.

Now consider the explanatory variables linked to the hypothesis under investigation. The first variable is the unemployment experience of the partner of a married woman in the reference year. Recall that the hypothesis is that the family basis of entitlement in the

¹⁵¹ See section 2.4.2 in chapter two for more detail about model test statistics.

Australian UA program discourages a woman from participating in the labour market when she is married to an unemployed man. The results presented in Table 4-4 indicate that the experience of unemployment by the partner in the reference year is associated, *ceteris paribus*, with a lower probability of female labour force participation in Australia (column 1a in Table 4-4). Moreover, this explanatory variable is a statistically significant predictor of the probability of labour market participation. This result is indicative of the dominance of the subtracted worker effect in two-adult couples in Australia.¹⁵² On the other hand, the experience of unemployment by the partner of a married woman in the USA is associated with a higher probability of labour force participation (column 1c in Table 4-4). This result indicates that the added worker effect prevails in the USA.¹⁵³

An analogous result is obtained when one uses the duration of unemployment experienced by the male partner, instead of the former dichotomous specification. The duration of unemployment of the partner is associated, *ceteris paribus*, with a lower probability of labour force participation for married women in Australia (column 2a in Table 4-4) and with a higher probability of female participation for similarly classified women in the USA (column 2c in Table 4-4).

4.3.3 Decomposition of the differential

The upper panel in Table 4-5 shows the results of the decomposition of the differential in predicted probabilities of labour force participation into characteristics and in responses (or coefficients). The decomposition indicates that the more important explanation in accounting for variation between Australia and Canada is responses (coefficients) on the probability of labour force participation (109.2 percent of the total difference). Hence, when one controls for labour market conditions and labour market incentives, the impact of the

¹⁵² The subtracted worker effect relates to the impact of a rise in unemployment generally upon the perceived chance of obtaining employment and/or the low rewards of employment. As male unemployment rises, the probability that a woman will search for labour market work could be reduced as her perceived probability of finding employment may fall.

¹⁵³ The added worker effect occurs if the reduction in household living standards associated with the rise in male unemployment leads to an increase in the labour force participation of women, or to an increase in the hours worked in the labour market, in an attempt to maintain household living standards.

characteristics on the probability of participation is substantially greater between Australia and Canada. Similar to the results of the decomposition for the basic model, it is the difference attributable to characteristics that are extremely important in explaining variation in the female labour force participation between Australia and the USA (148.2 percent of the total difference). Further information about these differences can be obtained by examining the role of individual explanatory variables.

The lower panel in Table 4-5 shows that regional female unemployment rates make an important contribution to the 'differences in characteristics' component of the total variation in the probability of female labour force participation. The contribution of this characteristic is particularly important in explaining the difference between Australia and Canada (the same argument applies to Canada and the USA). On the other hand, unemployment experienced by the male partner during the reference year is not as prominent as an explanatory characteristic.

The contribution of the number of children is increased (reduced) in the comparison of Australia and Canada (Australia and the USA) when one includes the additional explanatory variables of the extended model. Likewise, the contribution of attaining a university education is increased (reduced) in the comparison of Australia and Canada (Australia and the USA) in the extended model. An inspection of the two tables reveals that a similar argument applies for the other characteristics.

4.3.4 Comparison of the extended model with the basic model

In order to establish whether the additional explanatory variables are predictive of female labour force participation, and whether the subset of the additional variables makes a significant contribution, one needs to estimate the model with and without them. This is equivalent to a simultaneous test of the null hypothesis that all of the coefficients are zero against the alternative that at least one is non-zero (Demaris 1992: 57).

According to Demaris (1992: 59) the test is the difference in model χ^2 ($\Delta\chi^2$) for Model 2 (the extended model) versus Model 1 (the basic model). If the null hypothesis is true, this difference has a χ^2 distribution with degrees of freedom equal to the difference in the number of parameters in the two models. Table 4-6 shows the results of the comparison

of the extended model with the basic model of female labour force participation, the critical value of the $\Delta\chi^2$ -test is 5.99 is 2 degrees of freedom. An examination of the table, shows that the $\Delta\chi^2$ -test is statistically significant for Australia and the USA, irrespective of the specification one uses for the variable to capture labour market incentive effects in the model, but not for Canada.

On the basis of these χ^2 statistics, one would not reject the null hypothesis that the subset of additional explanatory variables does make a significant contribution to the extended model for both Australia and the USA. It is apparent that at least one of the intervening explanatory variables has a significant impact on the probability of female labour force participation (indicated by an asterisk in Table 4-4). For these two countries, in fact, both of the intervening variables are statistically significant in the probability of female labour participation equation. An inspection of the results in Table 4-4 for Canada indicate that while the regional rate of female unemployment is significant as an explanatory variable in the model, the joint impact of the two additional variables is not significant.

4.3.5 Pooled sample of married women

Table 4-7 shows the parameter estimates for the probit equations using the pooled sample of women who are classified in the LIS database as married. The significance of the model statistics is analogous to that for the separate regressions presented above. Similarly, the explanatory variables are statistically significant in explaining the probability of female labour force participation. The results reported in Table 4-7 provide some support for the hypothesis that the family basis of entitlement to the UA program in Australia discourages a married woman from participating in the labour market when she is married to an unemployed man.

An examination of the information presented in Table 4-7 indicates that the labour market behaviour of married women in the three countries is still substantially different even with the inclusion of regional unemployment and the unemployment experience of the spouse, whether as a dichotomous variable or as duration of unemployment. The coefficients of the country indicator variables imply that there are statistically significant differences between the probability of female labour market participation in Australia compared to

similarly classified women in the USA, the reference category, when one controls for regional unemployment and labour market incentives. Likewise, there are statistically significant differences between the probability of married women participating in the labour market in Canada compared with similarly classified women in the USA after one controls for both regional unemployment and labour market incentives.

The coefficient of the regional rate of unemployment variable is negative and statistically significant in all equations shown in Table 4-7, irrespective of the specification used for the proxy variable to capture labour market incentives. The impact of this variable, however, is different. Irrespective of the specification used to proxy labour market incentives, the impact of regional female unemployment rates in the reference year on the probability of female participation in the market is positive and statistically significant in Canada compared with the USA (columns 1c and 2c), but insignificant in Australia compared with the USA, the reference country.

Now consider the explanatory variables linked to the hypothesis under investigation. Initially, the proxy variable to capture labour market incentives is a dichotomous variable indicating whether the partner of a married woman experienced unemployment in the reference year. As shown in Table 4-7, the effect of this variable on the probability of labour force participation is positive and significant in all equations (columns 1a, 1b and 1c).

The results of the first specification of the interaction terms are shown in column (1b) in Table 4-7. In the first specification, the interaction term is defined as the product of whether the male partner experienced unemployment in the reference year and whether he is a resident of Australia (Canada). Recall that the hypothesis is that the family basis of entitlement in Australia will tend to depress the labour force participation of married women. As expected, the sign of the coefficient of the interaction variable is negative and statistically significant for Australia. Likewise, as expected, the interaction variable is not statistically significant for Canada. This statistically significant result for Australia is consistent with the hypothesis that the family basis of entitlement to the UA program in the reference year did discourage a woman from participating in the labour market when she was married to an unemployed man relative to the USA, the reference country.

As shown in column (1c) in Table 4-7, the direction of the impact of the interaction variables is similar in both Australia and Canada: compared with the USA, the impact is negative and statistically significant. The magnitude of the impact is, however, different: the impact of unemployment experienced by the partner of married women is much higher in Australia than in Canada.

In the second specification, the proxy variable to capture labour market incentives is redefined as the duration of unemployment the partner of a married woman in the reference year. The results of second specification of the interaction terms are shown in column (2b) in Table 4-7. Here, the interaction term is defined as the product of the duration of unemployment in the reference year and whether he is a resident of Australia (Canada). As expected, the sign of the coefficient of the interaction variable is negative and statistically significant for Australia, but not significant for Canada. Analogous to the results obtained for the previous specification, these results are consistent with the hypothesis that the family basis of entitlement to the UA program in Australia did discourage a woman from participating in the labour market when she was married to an unemployed man relative to the USA, the reference country. As shown in column (2c) in Table 4-7, the impact of these interaction variables is different in the three countries. Compared with the USA, the impact is negative and statistically significant in Australia, but not significant in Canada.

The effect of variables designed to capture the interaction possibilities between the non-earned income of a married woman and the probability of her labour force participation decision are presented in columns (1c) and (2c) of the Table 4-7. The coefficients of these variables are positive and statistically significant in the equations for married women in Australia in comparison with this same category of women in the USA. On the other hand, the coefficients of these variables are negative and statistically significant in the equations for married women in Canada in comparison with the USA. On the basis of these results, it is difficult to assess whether the effect of targeting an unemployment benefit according to family income in Australia does lead to a significant difference in the probability of female labour market participation in the three countries.

Overall, the results for the pooled sample of married women provide substantial support for the hypothesis that the family basis of entitlement to the UA program in Australia discourages a woman from participating in the labour market when she is married to an unemployed man. Furthermore, variation in the bases of entitlement to an unemployment compensation program is an important factor in explaining the differences in the observed cross-national labour market participation rates of married women.

4.3.6 Discussion of other interaction effects

It is useful to discuss the interaction effects of the other variables in the extended model of female labour force participation in order to assess the impact of country-specific characteristics. These are shown in columns (1c) and (2c) in Table 4-7. The negative relationship of the number of children on the probability of labour force participation for married women is statistically significant in the USA. Compared with the USA, the impact of the child status variables on the probability of female labour market participation is not significantly different in either Australia or Canada.

In the USA, the reference country, married women in the educational category indicating completion of high school have a significantly higher probability of labour force participation compared to those married women who are in the category of less than high school education. The impact of this is significantly lower in both Australia and Canada compared with the USA. The magnitude of the impact, however, is stronger in Australia. Married women in the USA in the post secondary educational category have a significantly higher probability of labour force participation in comparison with the reference group: less than high school education. The impact of this is significantly lower in Australia, but not significant in Canada compared with the USA. An analogous argument applies to those women classified in the category of having completed a university education.

Finally, age is a significant predictor of the probability of female labour force participation in the USA. The impact of this is significantly higher in both Australia and Canada compared to the USA with the magnitude of the impact being stronger in Australia.

4.4 Summary of results

In this chapter, the view for watching the observable world was expanded to a nearby larger window. It was observed that there were substantial differences among the three countries in terms of female regional unemployment, unemployment experience of the male partner and the duration of his unemployment. Generally, the annual average regional female unemployment rate was highest in Canada and lowest in the USA. On the other hand, a higher proportion of married men experienced unemployment in the reference year, on average, in North America compared with Australia. Also, the duration of this unemployment was longer, on average, in North America.

The model statistics for the predictor set show that a number of the non-zero coefficients have a significant effect in explaining the probability of female labour force participation. In addition, there is an improvement in predictive efficacy in the extended model. The result of the extended model for the number of children, education, non-earned income and age is similar to the basic model of female labour force participation. For the regional rate of unemployment, one variable introduced in the extended model, the coefficient is negative and statistically significant in all three countries, irrespective of the specification used for the proxy variable to capture labour market incentive effects.

When one considers the results for the probability of labour market participation of never married women, it was shown that the behavioural responses in the three countries to different labour market incentives are relatively similar. Moreover, the results of the pooled sample indicate that there are no significant differences in the probability of labour market participation of never married women in the three countries under review. This argument applies not only to the probit estimation that includes only the intercept terms, but to the slope coefficients when a fully-interacted model is estimated.

The study directly addressed the impact of a family basis to entitlement on the probability of a married woman participating in the labour market in each country. This effect was evaluated by examining the impact of the means test on family income in Australia. In particular, the hypothesis that the basis of entitlement and the nature of the means test led to a reduced probability for married women to participate in the labour market

was examined. Here, the results are quite conclusive. The results of the analysis for the identically specified probit equations using three separate country samples of married women are consistent with the explanation that differences in labour market incentives can help to explain cross-national variation.

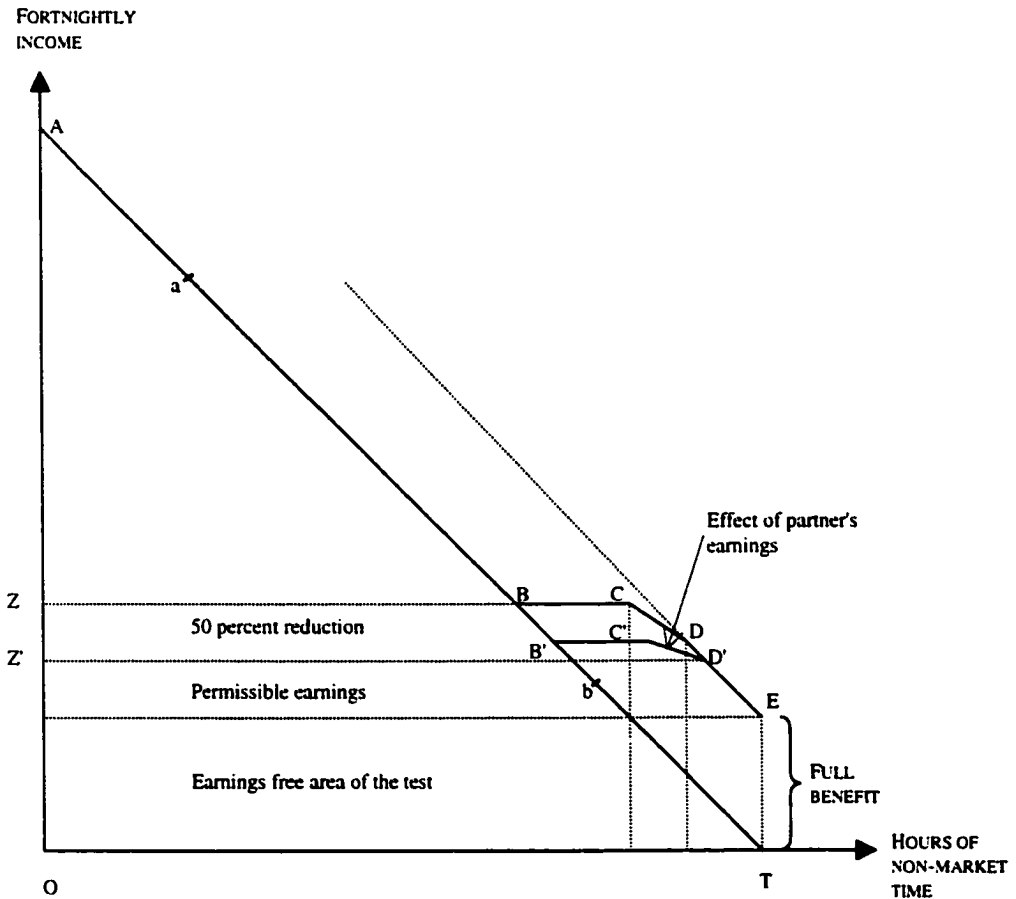
An analogous argument applies to the results of the analysis for the pooled sample of married women. Furthermore, married women in Australia are more responsive to the unemployment experience of the partner than similarly classified women in either Canada or the USA. Thus, it is likely that there were labour market effects in the UA program in Australia in the reference year that discouraged women being employed when they were married to unemployed men.

The decomposition of cross-national variation in female labour force participation indicates that the more important explanation in accounting for the differences between Australia and Canada is the impact of responses while country-specific characteristics are more important in accounting for the differences between Australia and the USA. Differences in regional female unemployment rates make an important contribution to the 'differences in characteristics' component of the total variation. The contribution of education, particularly university education, remains as the most factor.

While differences in the basis of entitlement to UC programs are important in explaining cross-national variation, they also indicate that substantial differences still remain even with the inclusion of additional explanatory variables. Much of the cross-country variation in female labour force participation remains to be explained. This is the challenge of the following chapter, which examines the effect of preferences for paid employment on the probability of female labour force participation. The model presented in the following chapter represents a view from a window with a broader perspective of the world.

Figure 4-1

Budget constraint for Australia

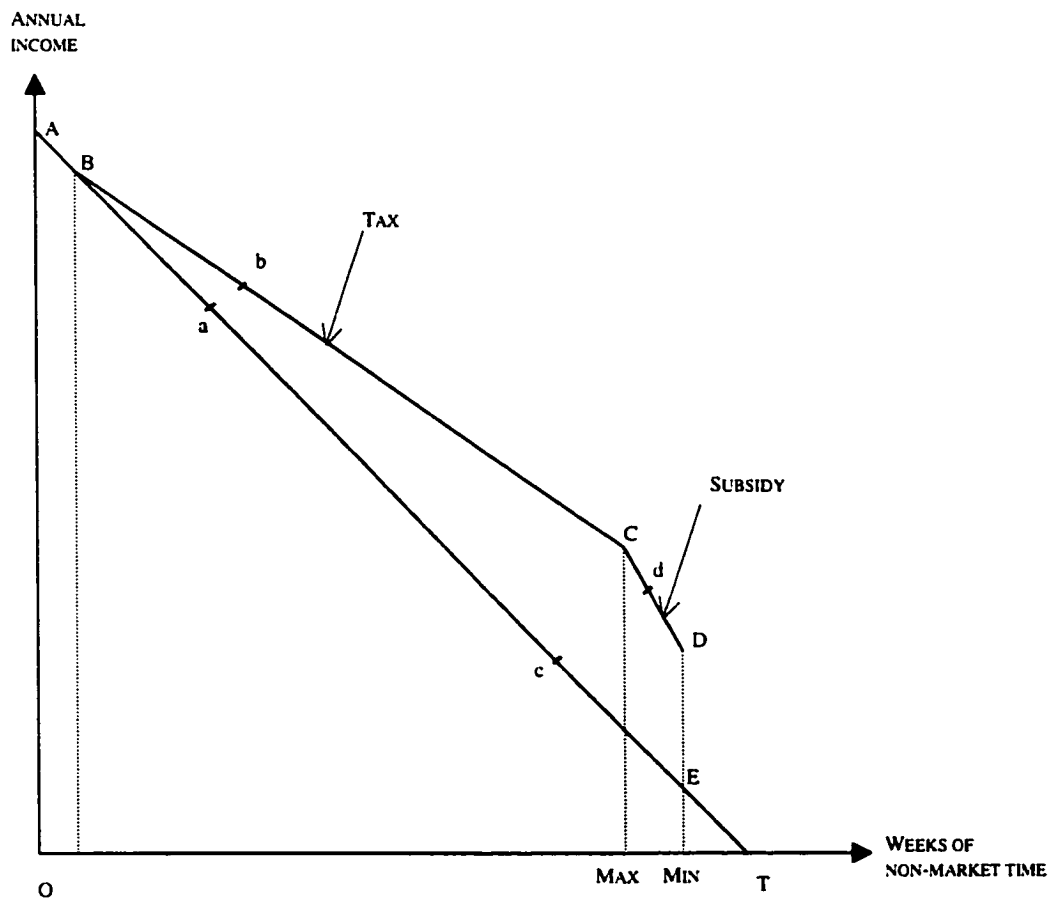


Note 1: The features of the unemployment assistance (UA) program in Australia are incorporated in the figure: a basic allowance, an earnings exemption, and a two-phase reduction on earned income in excess of exempt earnings.

Note 2: The constraint shown in the diagram is for a fortnight, the reference period of the UA program. If it is assumed that the constraint holds in each fortnight, and that all fortnights of the year are the same, then it is possible to extrapolate annual behaviour.

Figure 4-2

Budget constraint for Canada

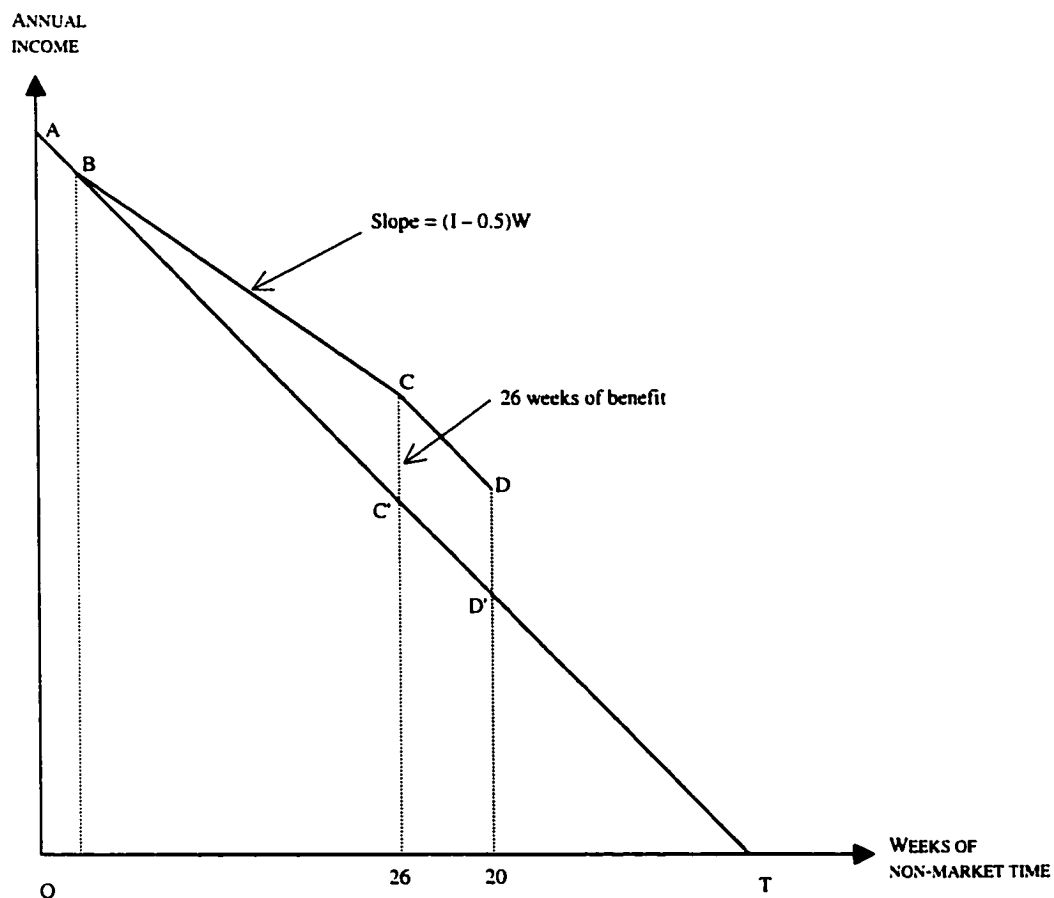


Note 1: The structural parameters of the UI program in Canada represented in the figure are: a minimum entrance requirement, depending on the rate of unemployment in the region, in order to qualify for benefits; a waiting period of two weeks before a claimant is entitled to receive benefits whilst unemployed; and a replacement rate of 60 percent of previous earnings for a maximum period, again depending on the unemployment rate of the region.

Note 2: Table 3-5b in the previous chapter presents a schedule of the variable entrance requirement for Canada in 1991.

Figure 4-3

Budget constraint for the USA



Note: The structural parameters of the UI program in the state of New York for the reference year of 1991 can be summarised as follows: a qualifying period of 20 weeks for employment; a waiting period of 0.8 weeks before a claimant is entitled to receive benefits whilst unemployed; a potential maximum duration of 26 weeks in the 52-week period; and a replacement rate of 50 percent.

Table 4-1**Factors affecting female labour force participation**

Variable name	Description	Expected sign
1	State (Australia and the USA) or provincial (Canada) unemployment rate for women in the reference year	Negative
2a	Labour force status of partner (= 1 if partner experienced unemployment in the reference year; = 0 otherwise)	Negative for Australia Ambiguous in pooled sample
2b	Duration of unemployment experienced by the partner in the reference year	Negative for Australia Ambiguous in pooled sample
3	Number of children less than 18 years of age	Negative
4	Square of the number of children	Positive
5	Non-earned income (All monetary values are transformed to U.S. dollars using OECD purchasing power parities)	Negative
6	Education	Positive
7	Age	Positive
8	Age squared	Negative
Additional variables for the pooled sample		
9	Interaction term for Australia (This is redefined for each probit equation in the pooled sample of women)	Negative
10	Interaction term for Canada (As above)	
11	Interaction term for Australia (This is defined as the product of non-earned income and whether the respondent is a resident of Australia)	Negative
12	Interaction term for Canada (This is defined as the product of non-earned income and whether the respondent is a resident of Canada)	

Table 4-2

Additional descriptive statistics for married women

Variable	Australia 1989-90	Canada 1991	USA 1991	Pair-wise t-statistics: Australia/ Canada	Pair-wise t-statistics: Australia/ USA	Pair-wise t-statistics: Canada/ USA
Female regional rate of unemployment	6.78 (0.0119)	8.29 (0.0266)	5.62 (0.0131)	-46.14*	72.48*	74.37*
Unemployment of partner	0.0638 (0.0033)	0.1928 (0.0046)	0.1234 (0.0049)	-24.28*	-9.52*	13.53*
Duration of unemployment	1.15 (0.0742)	4.59 (0.1338)	2.29 (0.1146)	-23.23*	-7.76*	14.73*
Number	5 614	7 219	4 593			

Source: Estimates from LIS.

¹ Average annual female unemployment rates by state of residence in the reference year are published in *The Labour Force Survey* (1989-90) from the Australian Bureau of Statistics (ABS) Catalogue No. 6203; female unemployment rates for reference year 1991 can be accessed from Statistics Canada on Internet cite: <http://www.statcan.ca/english/CANSIM>; and female unemployment rates from the U.S. Bureau of Labor for reference year 1991 can be accessed through the Internet cite: <http://stats.bls.gov/datahome.htm>.

Note 1: The statistics in the first three columns are weighted means with standard errors shown in parentheses.

Note 2: The statistics in the last three columns are pair-wise *t*-statistics to test the null hypothesis that the means of the three sample are equal. The sample means are statistically different at the 0.05 level of significance when their *t*-statistics are greater than 1.96, the critical value applicable in a large sample.

Table 4-3

**Probit parameter estimates of the labour force participation
of never married women aged between 21 and 54 years**

The dependent variable is labour force participation (= 1 if the sum of weeks of full time employment, weeks of part time employment and weeks of unemployment in the reference year is positive; = 0 otherwise) ¹

Variable	Australia 1989-90 (1)	Canada 1991 (2)	USA 1991 (3)	Pooled Shift only (4)	Pooled Interacted (5)
Intercept	-2.6608 (2.4438)	-1.5249 (1.5847)	0.7741 (0.4782)	0.3880 (0.4343)	0.7741 (0.4782)
Country indicator for Australia (= 1 for Australia)				-0.2513 (0.1460)	-3.4348 (2.4901)
Country indicator for Canada (= 1 for Canada)				0.2083 (0.1446)	-2.2989 (1.6558)
Female regional rate of unemployment ²	0.0877 (0.1686)	-0.0551 (0.0913)	-0.0499 (0.0332)	-0.0341 (0.0269)	-0.0499 (0.0332)
Regional unemployment * AUS (= 1 for Australia)					0.1355 (0.1718)
Regional unemployment * CAN (= 1 for Canada)					-0.0072 (0.0613)
Background and demographic variables					
Non-earned income (1991 U.S. dollars)	-0.1489* (0.0358)	-0.0716* (0.0163)	-0.4407* (0.3970)	-0.0598* (0.0036)	-0.4407* (0.3970)
NEI * AUS (= 1 for Australia)					-0.0587 (0.0038)
NEI * CAN (= 1 for Canada)					-0.0902 (0.360)

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Table 4-3 continued

Variable	Australia 1989-90 (1)	Canada 1991 (2)	USA 1991 (3)	Pooled Shift only (4)	Pooled Interacted (5)
Age	0.1831 (0.1148)	0.1191 (0.0013)	0.0187 (0.0253)	0.0352 (0.0235)	0.0187 (0.0253)
Age * AUS (= 1 for Australia)					0.1644 (0.1174)
Age * CAN (= 1 for Canada)					0.1004 (0.0948)
Age squared	-0.0026 (0.0016)	-0.0011 (0.2707)	-0.0004 (0.0003)	-0.0006 (0.0003)	-0.0004 (0.0003)
Age squared * AUS (= 1 for Australia)					-0.0022 (0.0017)
Age squared * CAN (= 1 for Canada)					-0.0007 (0.0013)
Education 1 (= 1 if less than high school)					
Education 2 (= 1 if completed high school)	0.5465 (0.4451)	1.2151* (0.2707)	0.5893* (0.0671)	0.6162* (0.0633)	0.5893* (0.0671)
High school * AUS (= 1 for Australia)					-0.0429 (0.4502)
High school * CAN (= 1 for Canada)					0.6258* (0.2789)
Education 3 (= 1 if some post secondary)	0.6642* (0.6642)	1.3169* (0.2315)	0.9532* (0.0774)	0.9502* (0.0701)	0.9532* (0.0774)
Post secondary * AUS (= 1 for Australia)					-0.2890 (0.3209)
Post secondary * CAN (= 1 for Canada)					0.3637 (0.2441)
Education 4 (= 1 if university degree)	0.4922 (0.4399)	1.9294* (0.3844)	1.4887* (0.0992)	1.4539* (0.0923)	1.4887* (0.0992)
University * AUS (= 1 for Australia)					-0.9965 (0.4510)
University * CAN (= 1 for Canada)					0.6258* (0.2789)

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Table 4-3 continued

Variable	Australia 1989-90 (1)	Canada 1991 (2)	USA 1991 (3)	Pooled Shift only (4)	Pooled Interacted (5)
Number of children less than age 18 years	-0.7037 (0.4506)	0.1064 (0.2898)	-0.2840* (0.0410)	-0.3140* (0.0391)	-0.2840* (0.0410)
Children * AUS (= 1 for Australia)					-0.4196 (0.4524)
Children * CAN (= 1 for Canada)					0.3904 (0.2926)
Number of children squared	0.0418 (0.1931)	-0.1446 (0.0899)	0.0249* (0.0072)	0.0283* (0.0070)	0.0249* (0.0072)
Children squared * AUS (= 1 for Australia)					0.0168 (0.1932)
Children squared * CAN (= 1 for Canada)					-0.1696 (0.0902)
Log likelihood	-60.622	-115.915	-1485.23	-1685.46	-1661.767
Number of observations	391	732	644	1 767	1 767

Source: Estimates from LIS.

¹ Three variables in the LIS data identify the extent of labour force attachment for each respondent in the reference year:

- 1) weeks worked full time (the Canadian file for reference year 1991 does not differentiate between full-time weeks and part-time weeks of market work);
- 2) weeks worked part time
- 3) weeks unemployed.

These three variables range from zero to 52 weeks. For the purpose of this study, one dichotomous variable, termed labour force participation, is constructed from these three. This takes the value of one if the sum of weeks of full time employment, weeks of part time employment and weeks of unemployment in the reference year is positive; zero otherwise.

² Average annual female unemployment rates by state of residence in the reference year are published for Australia in *The Labour Force Survey (1989-90)* ABS Catalogue No. 6203; female unemployment rates in Canada for reference year 1991 can be accessed through the Internet on <http://www.statcan.ca/english/CANSIM>; and for the USA through the Internet on <http://stats.bls.gov/datahome.htm>.

Note: The numbers presented in each column are probit parameter estimates with standard errors shown in parentheses.

Table 4-4

Extended model of female labour force participation:**Probit parameter estimates using three separate county samples****of married women aged between 21 and 54 years**

The dependent variable is labour force participation (= 1 if the sum of weeks of full time employment, weeks of part time employment and weeks of unemployment in the reference year is positive; = 0 otherwise)

Variable	Australia 1989-90 (1a)	Canada 1991 (1b)	USA 1991 (1c)	Australia 1989-90 (2a)	Canada 1991 (2b)	USA 1991 (2c)
Intercept	-2.0930* (0.5857)	-1.3277* (0.05331)	0.4301* (0.1707)	-2.1042* (0.5860)	-1.3148* (0.5325)	0.4987* (0.1706)
Unemployment rate ¹	-0.0459 (0.0313)	-0.0268* (0.0112)	-0.0677* (0.0094)	-0.0440 (0.0313)	-0.0266* (0.0113)	-0.0664* (0.0094)
Unemployment of partner	-0.2708* (0.1112)	0.0383 (0.0695)	0.1597* (0.0272)			
Duration of unemployment				-0.0148* (0.0048)	0.0007 (0.0024)	0.0002 (0.0011)
Background and demographic variables						
Number of children	-0.3834* (0.0609)	-0.3466* (0.0587)	-0.3417* (0.0272)	-0.3823* (0.0609)	-0.3471* (0.0587)	-0.3816* (0.0172)
Square of number of children	0.0334* (0.0141)	0.0190* (0.0143)	0.0246 (0.0039)	0.0332* (0.0141)	0.0191* (0.0143)	0.0246* (0.0034)
Non-earned income ²	0.0015 (0.0015)	-0.0105* (0.0014)	-0.0077* (0.0004)	0.0014 (0.0015)	-0.0106* (0.0014)	-0.0080* (0.0004)

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Table 4-4 continued

Variable	Australia 1989-90 (1a)	Canada 1991 (1b)	USA 1991 (1c)	Australia 1989-90 (2a)	Canada 1991 (2b)	USA 1991 (2c)
Less than high school education						
Completed high school	0.2827* (0.0923)	0.4599* (0.0686)	0.5115* (0.0259)	0.2844* (0.0924)	0.4602* (0.0686)	0.5044* (0.0258)
Post secondary	0.4492* (0.0643)	0.8069* (0.0678)	0.7376* (0.0285)	0.4478* (0.0643)	0.8067* (0.0678)	0.7279* (0.0285)
University	0.6406* (0.1145)	1.0587* (0.1029)	0.9939* (0.0314)	0.6381* (0.1145)	1.0582* (0.1029)	0.9835* (0.0314)
Age	0.1975* (0.0320)	0.1680* (0.0302)	0.0645* (0.0093)	0.1974* (0.0320)	0.1677* (0.0302)	0.0626* (0.0093)
Age squared	-0.0029* (0.0004)	-0.0025* (0.0004)	-0.0012* (0.0001)	-0.0029* (0.0004)	-0.0025* (0.0004)	-0.0012* (0.0001)
Model statistics						
-2 Log likelihood	225.41	436.173	3191.147	228.765	435.963	3155.84
Hosmer Lemeshow statistic	4.919	12.832	4.066	6.1434	15.365	5.0814
R ² _L -statistic	0.0971	0.151	0.501	0.0985	0.151	0.497
Gamma	0.369	0.439	0.432	0.37	0.439	0.43
Number of observations	5 614	7 219	4 593	5 614	7 219	4 593

Source: Estimates from LIS.

¹ Average annual female unemployment rates by state of residence in the reference year are published for Australia in *The Labour Force Survey (1989-90)* ABS Catalogue No. 6203; female unemployment rates in Canada for reference year 1991 can be accessed through the Internet on <http://www.statcan.ca/english/CANSIM>; and for the USA through the Internet on <http://stats.bls.gov/datahome.htm>.

² Non-earned income is expressed in 1991 U.S. dollars.

Note: The numbers presented in each column are probit parameter estimates with standard errors shown in parentheses.

Table 4-5
Decomposition of cross-national labour force participation
into characteristics and responses

	Australia/Canada	Australia/USA	Canada/USA
Total difference	0.0796	0.0741	0.0359
Characteristics	-0.0073	0.0652	-0.0785
(percent)	-9.2	148.2	-22.52
Responses (coefficients)	0.0866	-0.0121	0.1139
(percent)	109.2	-48.2	122.52
Contribution of individual characteristics to the difference			
Regional rate of unemployment	-0.1478	0.3108	-0.1285
Unemployment of partner	-0.0699	-0.0685	-0.0243
Number of children	0.0733	0.1671	0.0385
Number of children squared	-0.0254	-0.0502	-0.011
Non-earned income (1991 U.S. dollars)	0.0011	0.0409	0.0028
Completed high school	0.0719	0.351	0.0767
Post secondary education	0.0357	-0.141	0.0346
University education	1.0538	0.4016	0.9637
Age	-0.0569	-0.3983	-0.0109
Age squared	0.064	0.41	0.0155

Source: Calculations based on estimates from LIS.

Note: Those characteristics that contribute more to the explanation of differences between countries are presented in bold type.

Table 4-6**Model tests of significance for the inclusion of additional variables**

Model	Australia 1989-90	Canada 1991	USA 1991
Specification 1: unemployment of partner	8.31	5.69	84.85
Specification 2: duration of unemployment	11.67	5.48	49.54

Source: Calculations based on estimates from LIS.

Note: The statistics shown are χ^2 -statistics. The critical value of the χ^2 -statistic with two degrees of freedom is 5.99.

Table 4-7

Extended model of female labour force participation:**Probit parameter estimates using a pooled sample of married women**

The dependent variable is labour force participation (= 1 if the sum of weeks of full time employment, weeks of part time employment and weeks of unemployment in the reference year is positive; = 0 otherwise)

Variable	Pooled Shift only (1a)	Pooled Interacted (1b)	Pooled Fully Interacted (1c)	Pooled Shift only (2a)	Pooled Interacted (2b)	Pooled Fully Interacted (2c)
Intercept	-0.0100 (0.1533)	-0.0152 (0.1534)	0.4301 (0.1707)	0.0469 (0.1531)	0.0508 (0.1532)	0.4987* (0.1706)
Country indicator (= 1 for Australia)	0.1226* (0.0318)	0.1605* (0.0329)	-2.5230* (0.6101)	0.1094* (0.0318)	0.1347* (0.0325)	-2.6029* (0.6103)
Country indicator (= 1 for Canada)	0.3122* (0.0332)	0.3257* (0.0349)	-1.7577 (0.5597)	0.3140* (0.0332)	0.3077* (0.0343)	-1.8135* (0.5591)
Regional unemployment rate (RUR) ¹	-0.0506* (0.0069)	-0.0500* (0.069)	-0.0677* (0.0094)	-0.0490* (0.0069)	-0.0492* (0.069)	-0.0664* (0.0094)
RUR * AUS (= 1 for Australia)			0.0218 (0.0327)			0.0224 (0.0327)
RUR * CAN (= 1 for Canada)			0.0409* (0.0146)			0.0397* (0.0147)
Unemployment of partner	0.1275* (0.0245)	0.1646* (0.0270)	0.1597* (0.0272)			
Unemployment of partner * AUS (= 1 for Australia)		-0.5422* (0.1146)	0.0218 (0.0327)			
Unemployment of partner * CAN		-0.0958 (0.0712)	0.0409* (0.0146)			

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Table 4-7 continued

Variable	Pooled Shift only (1a)	Pooled Interacted (1b)	Pooled Fully Interacted (1c)	Pooled Shift only (2a)	Pooled Interacted (2b)	Pooled Fully Interacted (2c)
Duration of unemployment				-0.0009 (0.0009)	0.0004 (0.0011)	0.0002 (0.0011)
Duration * AUS (= 1 for Australia)					-0.0195* (0.0050)	-0.0150* (0.0050)
Duration * CAN (= 1 for Canada)					0.0014 (0.0025)	0.0005 (0.0027)
Background and demographic variables						
Number of children	-0.3396* (0.0158)	-0.3399* (0.0158)	-0.3417* (0.0172)	-0.3395* (0.0158)	-0.3395* (0.0158)	-0.3816* (0.0172)
Children * AUS (= 1 for Australia)			-0.0416 (0.0633)			-0.0408 (0.0633)
Children * CAN (= 1 for Canada)			-0.0048 (0.0612)			-0.0055 (0.0612)
Square of number of children	0.0239* (0.0036)	0.0240* (0.0036)	0.0246* (0.0039)	0.0239* (0.0036)	0.0239* (0.0036)	0.0246* (0.0034)
Children squared * AUS (= 1 for Australia)			0.0088 (0.0146)			0.0086 (0.0146)
Children squared * CAN (= 1 for Canada)			-0.0056 (0.0148)			-0.0054 (0.0148)
Non-earned income in 1991 U.S. dollars (NEI)	-0.0074* (0.0003)	-0.0073* (0.0003)	-0.0077* (0.0004)	-0.0077* (0.0003)	-0.0077* (0.0003)	-0.0080* (0.0004)
NEI * AUS (= 1 for Australia)			0.0092* (0.0015)			0.0095* (0.0015)
NEI * CAN (= 1 for Canada)			-0.0029* (0.0014)			-0.0026 (0.0014)

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Table 4-7 continued

Variable	Pooled Shift only (1a)	Pooled Interacted (1b)	Pooled Fully Interacted (1c)	Pooled Shift only (2a)	Pooled Interacted (2b)	Pooled Fully Interacted (2c)
Less than high school education						
Completed high school	0.4714* (0.0229)	0.4717* (0.0228)	0.5115* (0.0259)	0.4666* (0.0227)	0.4670* (0.0227)	0.5044* (0.0258)
High school * AUS (= 1 for Australia)			-0.2288* (0.0959)			-0.2200* (0.0959)
High school * CAN (= 1 for Canada)			-0.0515 (0.0733)			-0.0443 (0.0733)
Post secondary	0.6966* (0.0242)	0.6973* (0.0242)	0.7376* (0.0285)	0.6899* (0.0242)	0.6902* (0.0242)	0.7279* (0.0285)
Post secondary * AUS (= 1 for Australia)			-0.2884* (0.0703)			-0.2801* (0.0704)
Post secondary * CAN (= 1 for Canada)			0.0693 (0.0735)			0.0788 (0.0736)
University	0.9468* (0.0281)	0.9487* (0.0281)	0.9939* (0.0314)	0.9395* (0.0281)	0.9403* (0.0281)	0.9835* (0.0314)
University * AUS (= 1 for Australia)			-0.3533* (0.1187)			-0.3455* (0.1188)
University * CAN (= 1 for Canada)			0.0647 (0.1076)			0.0747 (0.1076)
Age	0.0842* (0.0081)	0.0840* (0.0085)	0.645* (0.0093)	0.0825* (0.0085)	0.0823* (0.0085)	0.0626* (0.0093)
Age * AUS (= 1 for Australia)			0.1330* (0.0333)			0.1348* (0.0333)
Age * CAN (= 1 for Canada)			0.1036* (0.0316)			0.1050* (0.0316)

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Table 4-7 continued

Variable	Pooled Shift only (1a)	Pooled Interacted (1b)	Pooled Fully Interacted (1c)	Pooled Shift only (2a)	Pooled Interacted (2b)	Pooled Fully Interacted (2c)
Age squared	-0.0014* (0.0001)	-0.0014* (0.0001)	-0.0012* (0.0001)	-0.0014* (0.0001)	-0.0014* (0.0001)	-0.0012* (0.0001)
Age squared * AUS (= 1 for Australia)			-0.0017* (0.0005)			-0.0017* (0.0005)
Age squared * CAN (= 1 for Canada)			-0.0013* (0.0004)			-0.0014* (0.0004)
Model statistics						
-2 Log likelihood	3772.493	3795.618	3907.557	3745.005	3761.34	3875.395
Hosmer Lemeshow statistic	54.281	50.802	8.3218	55.037	49.731	8.521
R ² _L -statistic	0.217	0.278	0.2236	0.2152	0.2161	0.2219
Gamma	0.4	0.405	0.426	0.402	0.405	0.425
Number of observations	17 426	17 426	17 426	17 426	17 426	17 426

Source: Estimates from LIS.

¹ Average annual female unemployment rates by state of residence in the reference year are published for Australia in *The Labour Force Survey (1989-90)* ABS Catalogue No. 6203; female unemployment rates in Canada for reference year 1991 can be accessed through the Internet on <http://www.statcan.ca/english/CANSIM>; and for the USA through the Internet on <http://stats.bls.gov/datahome.htm>.

² Non-earned income is expressed in 1991 U.S. dollars.

Note: The numbers presented in each column are probit parameter estimates with standard errors shown in parentheses.

CHAPTER 5

Preferences of married women for paid employment

My impression is that the best and brightest in the profession proceed as if economics is the physics of society. There is a single universally valid model of the world. It only needs to be applied. ... We are socialized to the belief that there is one true model and that it can be discovered or imposed if only you will make the proper assumptions and impute validity to econometric results that are transparently lacking in power. Of course there are holdouts against this routine, bless their hearts.

Robert M. Solow (1985: 330)

5.0 Introduction

As stated previously, the 'window' for viewing the observable world in this study is a model of female labour force participation, which has as its objective the representation of the choice of an individual woman for paid employment given her opportunities in the labour market and the value she places on her non-market time. It was noted in section 2.2 that the decision-making problem could be divided into two parts: what a woman would prefer to do (preferences); and the choices available to her (constraints). In addition, it was established in section 2.4 that this window on the world, the basic model of female labour force participation, is one maintained by other empirical researchers.

The empirical study of chapter four is an extension of the basic model and represents an expansion to a nearby larger window from which to view the observable world. The results of this extended model are consistent with the hypothesis that different structural parameters of unemployment compensation (UC) programs in the three countries led to differentiated outcomes in the labour market for married women in the reference year. Both the basic model and the extended model examined the second part of the decision-making problem by applying conventional economic arguments to examine cross-national variation in female labour force participation and by utilising a standard microeconomic data set. While the explanatory power of the extended model was an improvement on the basic model,

the differential in female labour force participation in the three countries still remains and needs to be explained.

The focus of the model presented in this chapter is on how the decision to participate in the labour market is affected not only by conventional determinants, such as the ones explored in the previous chapter, but also the preferences of married women for paid employment. While preferences determine how much utility is provided by different combinations of consumption and non-market activities, Blau *et al.* (1998: 91) note that economists do not typically analyse the determinants of an individual's preferences. Rather, preferences are regarded as exogenous. In this chapter of the study, preferences are directly examined, a clear departure from the more conventional economic treatment of female labour force participation. This represents a view from a different window on the world, a fundamentally broader perspective.

Such a perspective involves investigating the relationship between the labour market behaviour of married women, their preferences for paid employment and their values concerning the family and gender roles.¹⁵⁴ According to Blau *et al.* (1998), the term 'preferences', as economists use it, is quite broad in what is included in its definition. Preferences for paid employment are undoubtedly influenced by social values.¹⁵⁵ At a societal level, values are the customs, ideals, and 'institutions of a society toward which the people of a group have affective regard' (Stein 1971: 1578). Preferences for paid employment are based on the underlying values of an individual, the term preference being

¹⁵⁴ Nakamura and Nakamura (1985a: 198-9) note that relatively little attention has been devoted to the labour market behaviour of either young women or men, or to the formation of their attitudes concerning paid employment. The authors suggest that most young women 'deliberately take courses of action or make a series of inadvertent choices which, together with circumstance, lead toward a lifestyle whether as primarily a wife and homemaker or in which work outside the home plays an important role.' Nakamura and Shaw (1994: 205) state that patterns of labour market behaviour tend to be initiated prior to marriage and to continue into married life.

¹⁵⁵ The importance of social attitudes is particularly emphasized by Brown (1985). The separate spheres model developed by Lundberg and Pollak (1993, 1996, 1997) and the gender-specific economies model developed by Carter and Katz (1997) also highlight the importance of social attitudes and gender roles.

defined as 'the act of preferring', which, in turn, is defined as 'to set or hold before or above other persons or things in estimation' (Stein 1971: 1134).

Value scales are constructed by employing individual responses to statements related to the role of women and used to examine the preferences of women for labour market employment. The hypothesis to be tested is that the lower level of female labour force participation in Australia is a consequence of a more conservative ideological model of family life, including:

- (i) a more traditional view about the conflict between a career and a family;
- (ii) a more optimistic view about the benefits of homemaking for women; and
- (iii) a more pessimistic view about the benefits of a career for women.

It is possible that the extent to which women in Australia, Canada and the USA have rejected more traditional values that restrict them to home and family may be different. Moreover, the traditional ideology of the family wage may be stronger in Australia and may explain the lower level of female labour force participation. Furthermore, it is possible that women in Australia place a higher value on family life and a lower value on paid employment than do women in North America.

The choice of whether, or not, to participate in the labour market has major implications not only for a woman herself, but also for her family. As Evans and Mason (1996: 275) state:

The choice between staying home and working for pay outside the family defines women's ties to the economy, with implications for their financial independence, sources of life satisfaction, self-concept, and role within the family.

While the participation of women in the labour market increases family income, with all the advantages associated with this, market work also competes with household activities and may consequently harm the well-being of children and other family members. In the ideology of the family wage that was dominant in the western industrialised economies during most of the nineteenth and twentieth centuries, the perception that the absence of mothers from the home for any appreciable period of the day would be detrimental to the

well-being of their children, especially young children, was a major reason for individuals to withhold their approval of the employment of married women in the labour market.¹⁵⁶

According to Sainsbury (1994: 152-3), the ideology of the family wage celebrates marriage and a strict division of labour between husband and wife. The husband is the head of the household, and it is his duty to provide for the members of his family, his wife and his children, through full time employment. The duties of the wife are to make a good home and to provide care for her husband and children. The contrasting ideal type in familial ideology is the individual model. This model prescribes that each spouse has an individual responsibility for his or her own maintenance. In addition, the marital partners share the tasks of financial support and care of their children.¹⁵⁷

Perhaps the ideology of family life is more traditional in Australia. If this is the case, then the social perception about the conflict between a career and a family may be more traditional. Furthermore, the conviction that a woman should devote her time to household duties and to her family and not attach any significant importance to a career outside the home may be stronger. It is possible that in the global sea-change in values accompanying economic development in western industrialised nations, the rate of change in societal values in Australia may be lower than that in North America. It is also possible that lower levels of educational attainment may imply more traditional values.¹⁵⁸ Moreover, the rate of change in values concerning the family and gender roles indicating that women prefer labour market activities over home production may also be lower.

In their review of race and gender in the labour market in the USA, Altonji and Blank (1999: 11) assert that there is little direct evidence, or little empirical research, on the question of how and why preferences evolve over time. For instance, the authors suggest that

¹⁵⁶ See, for instance, Abramovitz (1988); Baker (1990); Boris and Bardaglio (1983, 1987); Bryson (1995); Edwards and Magarey (1995); Fraser and Gordon (1994); Folbre (1991); Gordon (1985); Jennings (1994); Nelson (1989, 1990); Sapiro (1986, 1990); Shaver (1995); and Skocpol (1992).

¹⁵⁷ Sainsbury (1994, 1996) asserts that the division of labour in the ideology of the family wage shapes practice, and is codified in family law, social and labour legislation, and the taxation system.

¹⁵⁸ Based on evidence from longitudinal studies, Evans and Mason (1996) find that education tends to liberalise social attitudes.

variation in child-rearing practices or in the educational system may be a source of differences in preferences. On the other hand, the authors note that the differential treatment of female and male children may be a rational response by parents to market discrimination.

The conclusion that Altonji and Blank (1999: 11-12) draw is that

(h)owever, regardless of the source, it is easy to show that in a competitive labour market group differences in the preferences individuals bring to the labor market can lead to group differences in labor force participation.

The implication of this is that preferences for paid work influence labour market behaviour in a particular country. It is possible that preferences may be different among countries. If this is the case, then it is possible that cross-national variation in country-specific preferences may be an important factor in explaining the differences in female labour force participation across countries.

5.1 Data

One database that provides direct evidence of the values and preferences expressed by the residents of a number of countries on a variety of economic, political, and social issues pertaining to different aspects of society is the International Social Survey Programme (ISSP). The ISSP is an international consortium of mostly academic survey institutions that collect precisely comparable cross-national data (Davis and Jowell 1989). Each year the ISSP creates a module on a particular topic in which the questions asked use similar wording, the same response categories, and in the same sequence in all member countries (Evans, Kelley and Hayes 1999). This database is collated and standardised by the Zentralarchiv für Empirische Sozialforschung (Zentralarchiv), Universität zu Köln.¹⁵⁹ Data from the module, "Family and Changing Gender Role," is used in this study identify some of the key

¹⁵⁹ The International Social Survey Programme (ISSP) is a continuing annual program of cross-national collaboration on surveys for social science research. It brings together existing social science projects and coordinates research goals, thereby adding a cross-national, cross-cultural perspective to the individual national studies. Twenty six countries are members of the ISSP, including Australia, Canada and the USA. The merging of the data into a cross-national data set is undertaken by the Zentralarchiv für Empirische Sozialforschung, Universität zu Köln.

dimensions of preferences toward the paid employment of women (Zentralarchiv 1994).¹⁶⁰ The original data for the three countries are from: (1) the International Social Science Surveys/Australia (Kelley, Bean and Evans 1991); (2) the Women in Society Survey for Canada (Frizell and Pyman 1990); and (3) the National Opinion Center General Social Survey for the USA (Davis and Smith 1989).

Similar to the Luxembourg Income Study (LIS) data files, these surveys are retrospective and contain information on demographic characteristics such as age; household characteristics such as the family type; individual-specific characteristics such as educational attainment and marital status; and labour-market characteristics such current labour force status. Thus, one can compare the probabilities of labour force participation for women in the three economies and examine the differences in the determinants of participation. In addition, the ISSP data provides direct evidence of the preferences expressed by respondents about the paid employment of married women. One of the disadvantages of the ISSP data, however, is that size of the original survey is small in comparison with the LIS data; the total number of observations in the original ISSP database for the three countries is 4,446 observations: 1,779 for Australia; 1,440 for Canada; and 1,447 for the USA. Observations on both female and male respondents are included in this total. After applying the selection criteria of gender, marital status and age, the total sample of married women between the ages of 21 to 54 years is even smaller.

The total number of observations used in the analysis is 1,075: 392 observations for Australia; 416 for Canada; and 267 for the USA. Table 5-1 provides information regarding the number of observations in the original data set and the number of observations for each sample after the selection criteria are imposed to create the required samples for this analysis. It is important to note that the ISSP data correspond approximately to the same point in time as the Luxembourg Income Study (LIS) data used in the analysis of the previous chapters, the three years from 1989 to 1991 inclusive.¹⁶¹

¹⁶⁰ This is data set Zentralarchiv No. 2620: Family and Changing Gender Roles II.

¹⁶¹ The reference year for Australia is 1989-90 in the LIS data; and 1991 for both Canada and the USA. For the ISSP data, the year is 1991 for Australia; 1990 for Canada; and 1989 for the USA.

Before proceeding with the analysis of the relationship between preferences for paid employment and female labour force participation, the samples obtained from the LIS data and the ISSP data are compared. Table 5-2 provides descriptive statistics for married women aged 21 - 54 years in the three countries. The pattern of labour force participation is relatively similar in both samples: married women in Australia have the lowest rate, on average, while those in Canada have the highest rate: 69 percent (LIS sample) and 65 percent (ISSP sample) in Australia; 76 percent (LIS sample) and 81 percent (ISSP sample) in Canada. On average, the pooled sample of married women from the ISSP database are generally older. On the other hand, married women in Australia, on average, are the youngest group in the LIS sample while they are the oldest group in the ISSP sample.

There is a noticeable difference in educational attainment between the two databases. Despite the attempt to standardise educational attainment by creating three common categories, a higher proportion of married women are classified in the category of completed high school or more than a high school education in the ISSP sample compared with the LIS sample. Clearly, the data are coded differently in each database.¹⁶²

On the other hand, a similar pattern with respect to non-earned income is found in both samples: married women in the USA have access to greater financial resources other than their own earnings, on average, while those in Australia have the least.¹⁶³ Finally, a

¹⁶² Years of education are available for Australia and the USA, but not for Canada. Hence, the variable in the ISSP database recording educational categories is used instead. As with all the questions asked, the language used to ascertain educational attainment is appropriate to national circumstances. For instance, the question asked in Australia was: What is your highest qualification? In Canada, it was: How far did you go in school? In the USA, the question was: What is your highest degree? Construction of the various variables used in the analysis is presented in Appendix A.

¹⁶³ There is a large difference in the way family income and earnings, from which non-earned income is constructed, is measured in the two databases. In the LIS database, both household income and the earnings of the respondent are continuous variables. In the ISSP database, income for the household and the earnings of the respondent is a categorical variable with the midpoints of the range reported in national currency. In both samples for this analysis, however, the national currency is adjusted to U.S. dollars using OECD purchasing power parities for 1991.

higher proportion of married women in the ISSP sample have children present in the family compared to the LIS sample.

Keeping these differences in mind, a basic female labour force participation model is estimated using explanatory variables that are common to both data sets. This is an attempt to provide a basis of comparison given that the ISSP data is less frequently used in empirical studies of female labour force participation than the LIS data. Table 5-3 shows probit parameter estimates for a common model. In both samples, the inhibiting effect of children on the labour force participation of married women aged 21 - 54 years is indicated by the large negative coefficients. This is to be expected given the fact both the LIS and the ISSP samples indicate that the proportion of two-adult couples with children present in the family is relatively high. Similarly, the effect of non-earned income on the probability of female labour force participation is negative and statistically significant in both samples of married women. Furthermore, the effect of age on female labour force participation is statistically significant in both cases.

The regression coefficients indicate that higher education is associated with a higher probability of female labour force participation. The effect of education on the female labour force participation of married women is statistically significant when one uses the LIS sample. On the other hand, the effect of education is not statistically significant in the model using the ISSP sample. This is to be expected given the fact that there is a large difference in the proportion of observations in each of the educational categories between the two samples of married women.

It would be reassuring to have a similar initial window on the world as it is important to start from the same frame of reference in order to uncover more information about the differential in cross-national labour force participation. Unfortunately, these data sets are quite different and it is difficult to make valid comparisons. Despite this, the ISSP database, does offer a broader perspective on the observable world and it is used to establish whether different preferences for paid employment are an important factor in explaining variation in female labour force participation across countries.

5.1.1 Construction of the value scales

According to Evans, Kelley and Hayes (1999), the measurement of attitudes and values concerning the family is not straightforward. Moreover, there is little consensus in the literature about which concepts should be measured. Huber and Spitze (1981: 157-62) devise two scales to measure gender role attitudes of women and men in the USA. The first scale measures attitudes about the employment of women and is defined as the sum of responses to individual questions concerning the impact of female employment in the labour market on family life. The second scale is designed to capture normative pressures for women to work in the labour market at different stages of the family life cycle and is defined as the total positive responses to a set of individual questions regarding labour force participation at a particular stage of the family life cycle.

Vella (1994) constructs an index of attitudes by employing individual responses to a number of statements related to the role of women. Similar to Huber and Spitze (1981), the index is defined as the sum of responses to individual questions. The author uses this index to examine whether attitudes toward the employment of women in Australia are systematically developed during the youth of an individual, and whether they influence an individual's human capital investment, labour supply and offered wage rate.

The procedure of summing individual responses to form an index has a number of problems that need to be noted. First, the responses may not have the same meaning for each woman. Second, in constructing the index an equal weight is assigned to each individual question. Moreover, assigning values to the responses may have imposed an unrealistic numerical structure. Furthermore, there may be some doubt as to the accuracy of the responses. The individual may not have known the true response or may have given the answer she thought was correct. To ensure that the index reflected the views of women in the three countries, Vella (1994) examines the relationship of the index with the individual responses through statistical analysis and finds that it reflects the views of the individual answers to the statements.¹⁶⁴

¹⁶⁴ To explore whether the index reflects the views of the various individual statements, the correlation coefficients for the separate responses and the index is examined by Vella (1994). The

Instead of a composite index, a number of researchers use the individual statements in a survey to construct separate scales that measure the responses about the impact of female employment in the labour market on different aspects of family life.¹⁶⁵ For instance, Evans, Kelley and Hayes (1999), construct three value scales from the answers of respondents to seven individual items from the ISSP survey in their four country comparative study. By conducting factor analyses, the authors show that these seven items form reasonably reliable value scales.¹⁶⁶

It is possible to organise attitudes and values concerning the family and gender roles around at least two distinctive dimensions: a perceptual one concerned with the impact of female employment in the labour market on family life and a moral dimension concerned with the ideology of the family.¹⁶⁷ Following the empirical literature in this area, this analysis focuses on three issues: (1) the perception that the labour market employment of mothers is harmful to the well-being of their children and family life in general; (2) support for the employment of women in the labour market; and (3) support for the ideology of the family wage in which there is a division of labour based on gender: men are breadwinners and women are primary caretakers, domestic workers, and secondary wage earners.

Following the procedure employed by Evans, Kelley and Hayes (1999), seven items from the ISSP survey are used in this study to construct three value scales. Individuals were asked to respond to seven statements, shown in Table 5-4, intended to capture their perceptions about their roles in homemaking and in the labour market. These perceptions

author finds that the results are highly correlated. These findings do not alter when an individual response is removed from the index leading to the conclusion that the index does accurately reflect the views of the individual responses and that no single response is dominant.

¹⁶⁵ Value scales using the set of ISSP items are constructed by Evans (1988, 1990, 1996); Evans and Mason (1996); and Evans, Kelley and Hayes (1999). According to the authors, the three scale measures suggest three key concepts relating to the employment of women: anti-career attitudes, pro-homemaking attitudes, and career costs.

¹⁶⁶ The four countries investigated by Evans, Kelley and Hayes (1999) are Australia, Great Britain, Ireland and the USA.

¹⁶⁷ See Evans (1988, 1990, 1996); Evans and Mason (1996); and Vella (1994).

produce three measurement scales that are termed cost to family life; the legitimacy of female employment; and support for the ideology of the family wage.

The cost to family life scale is based on three relatively straightforward agree/disagree items about the perceptions of conflict between career and family:

1. A working mother can establish just as warm and secure a relationship with her children as a mother who does not work.

Strongly agree
Agree
Neither agree nor disagree
Disagree
Strongly disagree

2. A pre-school child is likely to suffer if his or her mother works.
(Answer categories as above)
3. All in all, family life suffers when the woman has a full-time job.
(Answer categories as above)

The other two scales contain two items each, and mix norms and perceptions. The legitimacy of female employment scale is measured by two agree/disagree items:

1. Having a job is the best way for a woman to be an independent person.
(Answer categories as above)
2. Both the husband and wife should contribute to the household income.
(Answer categories as above)

The scale reflecting support of the ideology of the family wage is measured by another pair of agree/disagree items:

1. A job is all right, but what most women really want is a home and children.
(Answer categories as above)
2. Being a housewife is just as fulfilling as working for pay.
(Answer categories as above)

Table 5-4 shows the individual items used in the construction of the three scales, together with the percentage of married women who strongly agree with each statement and pair-wise *t*-statistics comparing the average means for this category in the three countries. An examination of Table 5-4 indicates that there are statistically significant differences between Australia, Canada and the USA in the responses to the individual items for the 'strongly

agree' category. There are no statistically significant differences between Australia and the USA for two of the three items used in the construction of the cost to family life scale, nor between Canada and the USA for one of the items. Similarly, there are no statistically significant differences between Canada and the USA in the two items that comprise the legitimacy of female employment scale.

In constructing the three value scales, the responses of women to the given statements were assigned a value of 1 if they strongly agreed; 2 if they agreed; 3 if they were undecided; 4 if they disagreed; and 5 if they strongly disagreed. The statistics shown in Table 4b are pair-wise *t*-statistics to test the null hypothesis that the means of the three samples for one category, the 'strongly agree' category, are equal. In addition, it is important to establish the degree of variation in the overall distribution of the responses for all five categories. The statistics in Table 5-5 show the χ^2 -statistics for the null hypothesis that the distribution of the five-category responses to the individual items are the same. An examination of this table indicates that, in all three countries, the distribution of responses is significantly different.

5.2 Methodology

Following Evans, Kelley and Hayes (1999), the model in this chapter first investigates the preferences of women for paid employment at different stages of the family life cycle in the three countries. In their investigation, the researchers estimate robust ordinary least square regressions on a pooled sample of individuals, both women and men. The model in this section of the study employs maximum likelihood probit estimation on a pooled sample of women aged 21 - 54 years in Australia (1991), Canada (1990) and the USA (1989), a similar point in time to the previous analysis using a similar sample of women from the LIS database.

The dependent variables in the first set of regressions are preferences of married women for employment in the labour market at different stages of the family life cycle, regardless of their own stage in the life cycle. The preferences of married women are measured in the ISSP data by a set of questions that captures these preferences at four different stages of the family life cycle:

Do you think that women should work outside the home full-time, part-time, or not at all under these circumstances:

1. After marrying and before there are children?

Work full-time
Work part-time
Stay home

2. When there is a child under school age?
(Answer categories as above)

3. After the youngest child starts school?
(Answer categories as above)

4. After the children leave home?
(Answer categories as above)

The answer categories recorded in the ISSP survey are recoded to form a dichotomous variable for the analysis of this chapter. This variable, termed labour force participation, takes the value of one if the respondent is employed; zero otherwise (Employment, either full time or part time = 1; Stay at home = 0).¹⁶⁸

The analysis of preferences is based on four parallel equations, one for each life-cycle stage. The four parallel equations of the model used in the analysis are defined by the following functions:

(5.1a) Preference for labour market employment after marriage and before children =

$$f(\beta_0 + \beta_1 * \text{Resident of Australia} + \beta_2 * \text{Resident of Canada} + \beta_3 * \text{Cost to family life scale} + \beta_4 * \text{Legitimacy of female employment scale} + \beta_5 * \text{Support for ideology of the family wage scale} + \beta_6 * \text{Religious affiliation} + \beta_7 * \text{Regularity of religious attendance} + \beta_8 * \text{Age} + \beta_9 * \text{Age squared} + \beta_{10} * \text{High school education} + \beta_{11} * \text{Higher education})$$

¹⁶⁸ The decision to use a dichotomous variable for labour force participation is based on consistency with the LIS data. By estimating identically specified equations, not only are direct cross-national comparisons possible, but it is also possible to compare the model presented in this chapter, a model that includes additional explanatory variables, with the basic model and the extended models of female labour force participation. It is recognised that even among married women who are employed in the labour market there are substantial differences in behaviour between those who are essentially employed on a full-time basis compared with those who are employed on a part-time basis throughout the year, or with those who are employed only part of the year.

- (5.1b) Preference for labour market employment with pre-school children =
 $f(\text{Explanatory variables as above})$
- (5.1c) Preference for labour market employment with school age children =
 $f(\text{Explanatory variables as above})$
- (5.1d) Preference for labour market employment after children have left home =
 $f(\text{Explanatory variables as above})$

Second, a labour force participation model is evaluated using maximum likelihood probit estimation. For the model of this section of the study, a labour force participant is defined as a woman whose current labour force status indicates that she is attached to the labour force. Labour force participation is a dichotomous variable (= 1 if labour force participant; = 0 otherwise).¹⁶⁹

5.2.1 Explanatory variables

Table 5-6 shows the means and standard deviations of the explanatory variables for each country and for the pooled data.¹⁷⁰ According to Evans and Mason (1996: 280), the empirical literature has found that most of these variables are significant and theoretically plausible predictors of preferences.¹⁷¹ Country-specific differences are captured by a set of dichotomous variables, one for each country, that takes the value of one if the respondent is a resident of that country, zero otherwise. In the estimation, the USA is the reference (omitted) category. In addition to the socioeconomic characteristics available from a data set that is more frequently used, such as LIS, the ISSP data contains information about values concerning the family. It is possible that these additional variables may present a different window on the world, one that may yield a better understanding of cross-national variation in female labour force participation.

¹⁶⁹ Appendix B provides details on the construction of this labour force participation variable.

¹⁷⁰ Unweighted data is used for the analysis in this section of the study because there is no weighting factor in the original data for either Australia or the USA.

¹⁷¹ See the references cited by Evans and Mason (1996).

The perception of women that the labour market employment of mothers is harmful to the well-being of their children and family life in general means that, *ceteris paribus*, one can expect that preferences will not be conducive to the paid employment of women for the two stages of the life cycle where children are present in the family. A similar prediction is expected for values that support the ideology of the family wage. This particular set of values has a more traditional outlook toward gender roles, one in which there is a division of labour based on gender, and more likely to perceive female employment as having a detrimental effect on family life. On the other hand, a positive association is expected between values that endorse the legitimacy of female employment and preferences regarding the employment of women in the labour market for each stage of the life cycle.

The religious affiliation of each respondent was asked in the questionnaire using language appropriate to national circumstances. For example, the version used in the Australian questionnaire was worded as:

“What is your religious denomination now?
Catholic/ Anglican/ Methodist/ Presbyterian/ ... /No religion.”

For this analysis, the various religious affiliation categories are recoded into a dichotomous variable (No religion = 1; Religious affiliation = 0). Likewise, the question for religious attendance was asked in a way that is appropriate in each country. In Australia, for instance, the question asked was:

“How often do you attend religious services now?
Never/ Less than once a year/ About once a year/ ... Every week/ Several times a week/ Every day.”

Again, for this analysis, the responses for the religious attendance variable were recoded so that the top category is ‘weekly or more often’ (scored as 5) and the bottom category is ‘never’ (scored as zero). The other categories are recoded at equal intervals between this range of zero and five. It is anticipated that women holding strong religious beliefs will be substantially less likely than those with a more secular world view to endorse the right of a woman to work outside the home. Evans and Mason (1996: 283) explain that while religious beliefs are in part a product of childhood and adolescent socialisation, the religious beliefs of adults

are enduring and provide global orientations that shape other, more specific attitudes and values, including gender role attitudes and perceptions.

Empirical studies have shown that strong religious beliefs reinforce a more traditional outlook toward gender roles.¹⁷² These studies have shown that strong adherence to religious beliefs reinforce traditional gender role attitudes where a higher priority is assigned to women's duties within the home and a lower priority to their paid work outside it.

Age is a continuous variable recorded as the actual age of the respondent in years. In their study of the structure and change in gender role attitudes during the 1980s in Australia, Evans and Mason (1996) find a curvilinear effect of age indicating that change seems to have been most rapid among the cohorts born early in this century. Evans (1996) suggests that while age differences in attitudes give a clue to past values, they probably understate the amount of change in attitudes because the transformed social climate has affected older individuals as well as younger. A difference among birth cohorts in preferences for employment of women in the labour market is expected. *Ceteris paribus*, younger individuals are more likely than older to view the employment of women in the labour market as legitimate.

Education is a categorical variable recorded as the highest level of education attained by the respondent.¹⁷³ Evans and Mason (1996) caution that one needs to be wary about educational attainment as an explanatory variable because liberal attitudes formed early in life might encourage girls to go further in education and to hold liberal attitudes as adults. Given this caution, the authors continue to explain that while such an effect should not hold for boys, it also seems dubious even for girls given the evidence from longitudinal studies that education tends to liberalise social attitudes. Moreover, Evans (1996: 79) states that it has been known for decades that education has a liberalising effect on many attitudes. This statement is substantiated by the findings of a number of researchers for Australia and the

¹⁷² Evans, Kelley and Hayes (1991) and Evans and Mason (1996) find that religion continues to reinforce traditional gender role attitudes in Australia.

¹⁷³ See Appendix B for the construction of educational categories of this study from the original ISSP data. As stated previously, years of education are available for Australia and the USA, but not for Canada. Hence, the ISSP variable recording educational categories is used in this study.

USA.¹⁷⁴ Thus, it is expected that educational attainment will have a positive association with attitudes toward the paid employment of women.

5.3 Results of the estimation

Two sets of regression results are presented in this section. First, probit parameter estimates examining the relationship between values concerning the family and the preferences of married women for paid employment at each stage of the family life cycle identified by the ISSP survey are presented. Following the discussion of preferences, maximum likelihood probit estimates examining the effect of both values and preferences on labour force participation is presented and discussed.

5.3.1 The relationship of values and preferences

Table 5-7 presents probit estimates for the pooled sample of married women showing their preferences for employment in the labour market. The coefficients of the country indicator variables do not show that the ideological model of family life is more traditional in Australia than in North America. The preferences for paid employment of married women at all four stages of the family life cycle in Australia are not significantly different from those in the USA for the same category of women. An analogous argument applies to married women in Canada.

Generally, the relationship between values concerning the family and preferences for paid employment are mixed. Married women who perceive a higher degree of conflict between career and family are significantly less likely to believe that it is appropriate for them to participate in the labour market when there are pre-school (column 2) or school age (column 3) children in the family. On the other hand, married women who discern the benefits associated with a career outside the home are more inclined to support the legitimacy of employment in the labour market when there are children in the family (columns 2 and 3). The most consistent results across the family life cycle are for married women who support

¹⁷⁴ For Australia, refer to Baxter and Kane (1995); Evans (1988, 1990, 1996); Evans, Kelley and Hayes (1991); and Evans and Mason (1996). For the USA, refer to Huber and Spitze (1981) and Morgan and Walker (1983).

the ideology of the family wage and enjoy the benefits of homemaking. Such women are less inclined to believe that married women ought to work outside the home (columns 1 to 4 in Table 5-7).

The coefficients of the two religious variables are not statistically significant in the four parallel equations. These results indicate that married women who have no religious affiliation, or who regularly attend a religious institution, are not significantly different from those who do not in their attitudes toward labour force participation.

To summarise the results of the estimation of values in explaining preferences for paid employment at different stages of the family life cycle, the information presented in Table 5.4a shows that Australian women seem to have distinctively more traditional values with respect to the family. The results of the analysis of the predictor set for preferences, however, indicate that there is no 'Australian effect' over and above the influence of values concerning the family. Given that the ideology of the family for a married woman is more traditional in Australia, there is no difference in labour force participation when one differentiates by country.

5.3.2 The effect of preferences and values on labour force participation

Before proceeding with a discussion of the results of the analysis of labour force participation using the ISSP data, consider the probit results of the basic model presented in section 2.4 of this study using LIS data. As shown in Table 5-4, the probability of female labour force participation of married women is directly associated with age; higher educational attainment is associated with a higher probability of labour force participation; non-earned income is inversely associated with the probability of female labour force participation; and the inhibiting effect of children on labour market participation is indicated by the large negative coefficients.

Table 5-8 presents probit parameter estimates of female labour force participation using a pooled sample for the three countries from the ISSP database. The impact of the measured differential effects of the explanatory variables on the probability of labour force participation are shown in the column (2) in Table 5-8, which includes both the intercept and the slope coefficients. Recall that in the pooled sample, the reference country (the omitted

category) is the USA. The coefficients of the country indicator variables show that there is no statistically significant difference in the probability of participation in Australia compared with the USA when one controls for both values concerning the family and preferences for paid employment. Similarly, when one controls for values and preferences, there is no statistically significant difference in the probability of participation in Canada compared with the USA. Once the effect of values concerning the family and preferences for labour market employment are incorporated into the labour force participation model, cross-national differences are not apparent.¹⁷⁵ Thus, while married women with more traditional values concerning the family are equally likely not to participate in the labour market, there are more such women in Australia.

The results shown in column (1) of Table 5-8 indicate that the probability of labour force participation is higher where preferences support the paid employment of married women before the birth of children and where pre-school age children are present. Married women who perceive a higher degree of conflict between career and family commitments are significantly less likely to participate in the labour market. On the other hand, for married women who discern the benefits associated with a career outside the home the probability of labour force participation is significantly higher.

For married women aged between 21 and 54 years, the effect of age at younger ages on the probability of labour force participation shows a significant positive association. Likewise, the effect of education for those married women who have completed high school only in comparison with those who have less than a high school education is analogous. Non-earned income is inversely associated with the probability of labour force participation; and the inhibiting effect of children is indicated by the large negative coefficients.

The results shown in column (2) of Table 5-8 indicate that the probability of participation is higher where preferences support the paid employment of married women before the birth of children. The impact of this preference variable is the same in all three countries as indicated by the statistically insignificant interaction variables.

¹⁷⁵ Of course, it is possible that sample size and colinearity may be a problem.

For married women who discern the benefits associated with a career outside the home, the probability of participation is significantly higher. The impact of values associated with the legitimacy of female employment in the labour market is statistically the same in all three countries as indicated by the interaction variables.

In the USA, married women who have completed high school or who have obtained a higher level of education have a statistically higher probability of labour force participation compared to those who have less than high school education. The impact of a completed high school education is significantly lower in Australia compared with the USA, but is insignificant in Canada. Analogous reasoning applies to the impact of more than a high school education.

In the pooled regression, the sign of the coefficient for the non-earned income variable is negative and statistically significant indicating that, *ceteris paribus*, married women with greater financial resources other than their own labour market earnings are less likely to participate in the labour market. In Australia, the impact of the non-earned income variable is positive and significant, but is negative and insignificant for Canada.

5.3.3 Decomposition of the differential

Table 5-9 shows the results of the decomposition of the differential in predicted probabilities of female labour force participation into characteristics and responses (or coefficients). The decomposition indicates that the more important explanation in accounting for variation in the probability of labour force participation between Australia and Canada is characteristics (64.7 percent of the total difference). Hence, when one controls for values relating to the family and the preferences of married women paid employment, then the effect of country-specific characteristics is substantially greater. This is contrary to the results of the decomposition for both the basic and the extended model for Australia and Canada.

Likewise, contrary to the results of the decomposition for both the basic and the extended model, it is the difference attributable to the impact of country-specific characteristics that are extremely important in explaining variation in the female labour force participation between Australia and the USA (207.9 percent of the total difference).

5.3.4 Exogeneity tests

The above analysis assumes that the preferences of women for employment in the labour market influences female labour force participation. In other words, the model exhibits a unilateral causal dependence. If this is the case, then it is possible to treat the preferences by women for employment in the labour market as exogenous variables in the estimation of actual labour force behaviour. On the other hand, if labour force participation influences the preferences of women for employment, then treating preferences as exogenous would be problematic. A vital issue is the direction of causality. Accordingly, it is important to account for this in any empirical investigation and to test for the direction of causation and establish whether the variables in question are endogenous or exogenous.

In their survey of diagnostic tests for models based on individual data, Pagan and Vella (1989) find that for limited information estimators there exists a latent model:

$$(5.2) \quad y_i^* = x_i' \beta + \mu_i$$

but observations $\{y_i\}$ are made on $\{y_i^*\}$ only if $y_i^* > 0$. For $y_i^* \leq 0$, $y_i = 0$ is observed.

Smith and Blundell (1986) were concerned with whether the regressors of the latent model were exogenous. They added to (5.3) a variable w_i that is related to other variables z_i in a linear fashion, making a two equation system:

$$(5.3a) \quad y_i^* = w_i' \gamma + x_i' \beta + \mu_i$$

$$(5.3b) \quad w_i = z_i' \pi + v_i$$

where the errors μ_i and v_i are bivariate normal.

When w_i is weakly exogenous $E(\mu_i, v_i) = 0$. For the simultaneous equation Tobit model, Smith and Blundell (1986: 683) propose an

... asymptotically optimal test for weak exogeneity ... as a test for the exclusion of the residual vector obtained from an auxiliary regression for the hypothesized weakly exogenous variables.

The authors find that the estimation procedure provides consistent estimators under the alternative and suggest that the test procedure can be quite easily adapted for probit,

truncated, and other limited dependent variable models. The *t*-test on the null hypothesis that the coefficient is equal to zero is a test of weak exogeneity.¹⁷⁶

Following Smith and Blundell (1986) and Rivers and Vuong (1988) a similar procedure is followed in this section of the study. The augmented regression test for exogeneity (endogeneity) included in Stata (1997) requires that one include the residuals in the preference equations as additional variables in the maximum likelihood estimation of labour force participation. If the probability of obtaining a value χ^2 is less than the critical value, then preferences are weakly exogenous to labour force participation. By extension, if the probability is greater than the critical value, then preferences are endogenous.

The residuals from the four parallel preference equations reported in Table 5-7 are included as an additional explanatory variable in the labour force participation equation for each stage of the family life cycle. The χ^2 -test and the probability of obtaining that value are reported in Table 5-10 for the three separate country samples and the pooled sample of married women.¹⁷⁷ Generally, the χ^2 -statistics show that the coefficients of the residuals are not statistically different from zero, indicating that one cannot reject the null hypothesis that preferences are weakly exogenous to labour participation. There are four exceptions, however: the χ^2 -statistics shown in columns (3) and (4) of Table 5-10 for Australia and for the pooled sample of married women. On the other hand, the χ^2 -test consistently indicates that in both Canada and the USA the causal direction is from preferences for paid employment to labour force participation.

5.4 Summary of findings

In the model presented in this chapter, the focus was on how the decision to participate in the labour market is affected not only by conventional determinants, such as the ones explored in previous chapters, but also preferences for paid employment in the

¹⁷⁶ See Pagan and Veilla (1986).

¹⁷⁷ The results for the three separate country samples are not presented in this study. The results of the exogeneity tests are, however, presented in Table 2-9 to show the causal direction of preferences and labour force participation in each country and in the pooled sample of married women.

labour market and values concerning the family. This is a clear departure from the more conventional economic treatment of female labour force participation. It represents a view from a different window on the world, a fundamentally broader perspective.

Value scales were constructed and used to examine the preferences of women for labour market employment. Table 5-4a shows that values concerning the family differ significantly in the three countries. In addition, the results of the probit estimation presented in Table 5-7 examining the relationship between values concerning the family and preferences for paid employment indicate that these values influence the preferences of married women. Values concerning the family are positively associated with the preferences of married women in each stage of the family life cycle identified by the ISSP data: after marrying and before there are children; when there is a child under school age; after the youngest child starts school; and after the children leave home. The most consistent results across the family life cycle are for married women who support the ideology of the family wage and enjoy the benefits of homemaking. In all three countries, home-oriented women are less inclined to believe that married women ought to work outside the home. As shown by the results presented in Table 5-7, married women who perceive a higher degree of conflict between career and family commitments are significantly less likely to believe that it is appropriate for them to participate in the labour market when there are pre-school or school age children in the family. On the other hand, women who discern the benefits associated with a career outside the home are more inclined to support career-oriented activities when there are young children in the family.

The results of the probit estimation examining the effect of both values concerning the family and preferences for labour market employment shown in Table 5-8 indicate that both values and preferences affect the labour market behaviour of married women in the three countries. One of the four preference variables is statistically significant as an explanatory variable of the labour force participation of married women: employment in the first stage of the family life cycle before the decision is made to have children. The differential impact of this preference variable is not, however, significantly different in the three countries. In addition, one of the three value scale variables is statistically significant

in explaining female labour force participation: the legitimacy of paid employment for women. Married women who discern the benefits associated with a career outside the home are more inclined to enter the labour market, thus increasing the probability of labour force participation. Again, the impact of this variable is not significantly different in the three countries. An 'Australian effect' over and above the influence of both values concerning the family and preferences for paid employment is not discernable.

The results of the decomposition indicate that the more important explanation in accounting for variation in the probability of labour force participation between Australia and Canada is the effect of country-specific characteristics. On the other hand, the results of the decomposition for Australia and the USA indicate that it is the difference attributable to the impact of country-specific characteristics that are extremely important in explaining variation in these two countries.

The results in this chapter of the study are consistent with the explanation that both values concerning the family and preferences for paid employment are important factors in explaining cross-national variation in the labour market participation of married women in Australia, Canada and the USA. Hence, both values and preferences offer an explanation for cross-national variation in female labour force participation rates.

Table 5-1
Change in sample sizes

Number of observations	Australia 1991	Canada 1990	USA 1989
Full sample 4 666	1 779	1 440	1 447
Full sample of women 2 416	758	830	828
Married women 1 399	552	465	382
Married women aged 21 to 54 years 1 075	392	416	267

Source: Estimates from the International Social Survey Programme (ISSP).

Table 5-2

Descriptive statistics for married women aged between 21 and 54 years

Luxembourg Income Study (LIS) data				International Social Survey (ISSP) data		
Variable	Australia 1989-90	Canada 1991	USA 1991	Australia 1991	Canada 1990	USA 1989
lfp rate	0.71 (0.4560)	0.79 (0.4071)	0.75 (0.4343)	0.65 (0.4790)	0.81 (0.3946)	0.72 (0.4521)
Age	35.82 (8.3212)	35.65 (8.2685)	36.25 (8.2695)	41.42 (7.3949)	38.20 (7.9610)	38.13 (8.3191)
Less than high school	0.45 (0.4978)	0.24 (0.4289)	0.12 (0.3270)	0.04 (0.1981)	0.05 (0.2090)	0.10 (0.2970)
Completed high school	0.12 (0.4988)	0.27 (0.4441)	0.39 (0.4869)	0.50 (0.5006)	0.35 (0.4778)	0.54 (0.4994)
More than high school	0.43 (0.3259)	0.49 (0.4999)	0.49 (0.4989)	0.46 (0.4992)	0.60 (0.4898)	0.36 (0.4819)
Non-earned income ¹	28861.04	29282.53	34729.92	32685.53	34619.85	41051.99
Presence of children	0.69 (0.4623)	0.67 (0.4716)	0.68 (0.4669)	0.79 (0.4109)	0.77 (0.4203)	0.71 (0.4556)
Number	5 614	7 219	4 593	392	416	267

Source: Estimates from the Luxembourg Income Study (LIS) and the International Social Survey Programme (ISSP).

¹ Non-earned income is expressed in 1991 U.S. dollars.

Note 1: The figures shown in the first three columns are weighted means with standard deviations in parentheses.

Note 2: The numbers in the last three columns are sample means with standard deviations shown in parentheses. As the value of the weighting factor in the ISSP data for Australia and the USA is one, the sample means presented in the table are unweighted.

Table 5-3

Probit parameter estimates of female labour force participation:**Comparison of a common model for married women aged between 21 and 54 years**

The dependent variable is labour force participation. Using the LIS data this takes the value of one if the sum of weeks of full time employment, weeks of part time employment and weeks of unemployment in the reference year is positive; = 0 otherwise.¹

For the model using ISSP data, the dependent variable is labour force participation defined as a woman whose current labour force status indicates that she is attached to the labour force (= 1 if labour force participant; = 0 otherwise).²

Variable name	LIS data 1989 - 1991	ISSP data 1989 - 1991
Intercept	0.9499* (0.1154)	-2.3809* (0.9327)
Country indicator variables		
Country indicator for Australia (= 1 for Australia; = 0 otherwise)	-0.1722* (0.274)	-0.2630* (0.1087)
Country indicator for Canada (= 1 for Canada; = 0 otherwise)	0.1692* (.0245)	0.2604* (0.1124)
Background and demographic variables		
Presence of children (1= if children in the household)	-0.5648* (0.0197)	-0.3415* (0.1077)
Non-earned income (in 1991 U.S. dollars)	-0.0072* (0.0003)	-0.0009* (0.0003)
Less than high school		
High school (= 1 if completed high school)	0.4893* (0.0225)	0.2696 (0.1802)
More than high school (= 1 if more than high school education)	0.8218* (0.0227)	0.3071 (0.1815)
Age	0.0632* (0.0083)	0.1482* (0.0498)
Age squared	-0.0012* (0.0001)	-0.0017 (0.0016)

Continued next page

Table 5-3 continued

Variable name	LIS data 1989 - 1991	ISSP data 1989 - 1991
Model statistics		
-2 Log likelihood	3146.501	60.65
R ² _L -statistic	0.1839	0.048
Number of observations	17 426	1 075

Source: Estimates based on LIS and ISSP data.

¹ Three variables in the LIS data identify the extent of labour force attachment for each respondent in the reference year:

- 1) weeks worked full time (the Canadian file for reference year 1991 does not differentiate between full-time weeks and part-time weeks of work);
- 2) weeks worked part time
- 3) weeks unemployed.

These three variables range from zero to 52 weeks. For the purpose of this study, one dichotomous variable, termed labour force participation, is constructed from these three. This takes the value of one if the sum of weeks of full time employment, weeks of part time employment and weeks of unemployment in the reference year is positive; zero otherwise.

² In the ISSP data, the current employment status of the respondent in the labour market is a categorical variable:

- 1 = Full-time employed
- 2 = Part-time employed (15 - 35 hours for Canada)
- 3 = Less than part-time (less than 15 hours in Canada, temporarily out of work; temporarily not working in Australia and the USA)
- 4 = Helping family member
- 5 = Unemployed
- 6 = Student, at school, in education, vocational training
- 7 = Retired
- 8 = Home duties
- 9 = Permanently disabled, sick
- 10 = Other, not in labour force, not working.

For this study, one dichotomous variable, termed labour force participation, is constructed from the original ISSP codes: the first three response categories, together with the fifth category, are combined into a single category that takes the value of one. The remaining six categories are combined into a single category that takes the value of zero.

Note: The figures in each column are maximum likelihood probit parameter estimates with standard errors shown in parentheses.

Table 5-4a

Statements relating to the construction of the scales

Item	Australia 1991	Canada 1990	USA 1989
Perceived costs to family life			
1. A working mother can establish just as warm and secure a relationship with her children as a mother who does not work.			
Percentage of women who strongly agree.	23	37	36
2. A pre-school child is likely to suffer if his or her mother works.			
Percentage of women who strongly agree.	8.7	4.6	9.3
3. All in all, family life suffers when the woman has a full-time job.			
Percentage of women who strongly agree.	11	4.6	9.7
Legitimacy of female employment			
4. Having a job is the best way for a woman to be an independent person.			
Percentage of women who strongly agree.	10.6	13.6	14.7
5. Both the man and woman should contribute to the household income.			
Percentage of women who strongly agree.	13.7	25.5	21.9
Support for the ideology of the family wage			
6. A job is all right, but what most women really want is a home and children			
Percentage of women who strongly agree.	5.3	1.7	7.4
7. Being a house wife is just as fulfilling as working for pay.			
Percentage of women who strongly agree.	14.6	12.7	19.2
Number of observations	758	830	828

Source: Estimates from ISSP.

Note: In constructing the scales, the responses of women to the given statements were assigned a value of 1 if they strongly agreed; 2 if they agreed; 3 if they were undecided; 4 if they disagreed; and 5 if they strongly disagreed. The values of the responses to the first question were reversed to ensure consistency in the ordering.

Table 5-4b

Comparison of responses for the 'strongly agree' category

Item	t-statistics: Australia/Canada	t-statistics: Australia/USA	t-statistics: Canada/USA
Perceived costs to family life			
1. A working mother can establish just as warm and secure a relationship with her children as a mother who does not work.	-5.39*	-5.39*	0
2. A pre-school child is likely to suffer if his or her mother works.	2.75*	-0.84	-3.57*
3. All in all, family life suffers when the woman has a full-time job.	4.18*	0.31	-3.88*
Legitimacy of female employment			
4. Having a job is the best way for a woman to be an independent person.	-2.38*	-2.96*	-0.59
5. Both the man and woman should contribute to the household income.	-6.12*	-4.58*	1.56
Support for the ideology of the family wage			
6. A job is all right, but what most women really want is a home and children	3.44*	-2.33*	-5.48*
7. Being a house wife is just as fulfilling as working for pay.	0.41	-2.93*	-3.33*

Source: Estimates from ISSP.

Note: The statistics shown are pair-wise *t*-statistics to test the null hypothesis that the means of the three samples for the 'strongly agree' category are equal. The sample means for this category are statistically different at the 0.05 level of significance when their *t*-statistics are greater than 1.96.

Table 5-5

Comparison of the overall distribution of responses

Item	χ^2 -statistics: Australia/Canada	χ^2 -statistics: Australia/USA	χ^2 -statistics: Canada/USA
Perceived costs to family life			
1. A working mother can establish just as warm and secure a relationship with her children as a mother who does not work.	114.75*	92.5*	18.23*
2. A pre-school child is likely to suffer if his or her mother works.	92.84*	27.39*	61.97*
3. All in all, family life suffers when the woman has a full-time job.	222.06*	64.46*	75.41*
Legitimacy of female employment			
4. Having a job is the best way for a woman to be an independent person.	56.45*	52.94*	12.96*
5. Both the man and woman should contribute to the household income.	138.52*	117.97*	13.54*
Support for the ideology of the family wage			
6. A job is all right, but what most women really want is a home and children	252.26*	19.66*	302.33*
7. Being a house wife is just as fulfilling as working for pay.	28.54*	39.71*	64.71*

Source: Estimates from ISSP.

Note: The distribution for each individual item is significantly different at the 0.05 level of significance in the two countries being compared if the calculated χ^2 -statistic is greater than 9.49 with four degrees of freedom.

Table 5-6

**Descriptive statistics of married women aged between 21 and 54 years
using the International Social Survey Programme (ISSP) data**

Variable	Australia 1991	Canada 1990	USA 1989	Pair-wise t-statistics: Australia/ Canada	Pair-wise t-statistics: Australia/ USA	Pair-wise t-statistics: Canada/ USA
lfp rate	0.65 (0.4790)	0.81 (0.3946)	0.72 (0.4521)	-3.44*	-2.95*	6.43*
Values concerning the family (Scale ranging from 1 to 5)						
Costs to family life ¹	2.76 (1.1356)	2.35 (0.9714)	2.49 (1.0338)	-1.32	5.75*	4.65*
Market work ²	3.15 (0.9205)	3.40 (0.9128)	3.29 (0.8446)	-1.84	-4.21*	6.00*
Family wage ³	2.96 (0.9241)	2.67 (0.8373)	3.03 (0.9132)	0.59	-4.44*	3.97*
Preferences for paid employment (1 = full-time or part-time employment; 0 = stay at home)						
Before children	1.80 (0.4185)	1.81 (0.3969)	1.78 (0.4221)	-0.91	4.92*	5.85*
Pre-school children	0.46 (0.5435)	0.80 (0.6483)	0.67 (0.6864)	-6.06*	-1.9	6.02*
School children	1.08 (0.4332)	1.32 (0.5685)	1.27 (0.5382)	-3.34*	2.61*	5.71*
Children left home	1.44 (0.5317)	1.64 (0.4942)	1.67 (0.4789)	-2.60*	-2.85*	-2.35*
Religiosity variables						
Affiliation	0.68 (0.4666)	0.61 (0.4877)	0.82 (0.3816)	0.53	2.13*	1.61*
Attendance	1.65 (1.7275)	1.92 (1.8343)	1.98 (1.8917)	-2.10*	-1.97*	0.05

Continued next page

Table 5-6 continued

Variable	Australia 1991	Canada 1990	USA 1989	Pair-wise t-statistics: Australia/ Canada	Pair-wise t-statistics: Australia/ USA	Pair-wise t-statistics: Canada/ USA
Background and demographic variables						
Age	41.42 (7.3949)	38.20 (7.9610)	38.13 (8.3191)	5.20*	5.86*	5.68*
Education						
Less than high school	0.04 (0.1981)	0.05 (0.2090)	0.10 (0.2970)	-0.51	-1.54	-1.04
High school	0.50 (0.5006)	0.35 (0.4778)	0.54 (0.4994)	2.66*	-2.78*	-1.05
More than high school	0.46 (0.4992)	0.60 (0.4898)	0.36 (0.4819)	-3.38*	5.10*	8.53*
Non-earned income in 1991 U.S. \$	32685.53	34619.85	61051.99	-2.43*	-6.16*	-2.05*
Children in household	0.79 (0.4109)	0.77 (0.4203)	0.71 (0.4556)	1.9	5.41*	5.94*
Number	392	416	267			

Source: Estimates from ISSP.

- ¹ Perceived costs to family life scale: a) costs to children
b) costs to pre-school children
c) costs to family
- ² Legitimacy of female employment scale: a) employment means independence
b) both contribute to household income
- ³ Support for ideology of family wage scale: a) women prefer home and children
b) home as fulfilling as employment

Note 1: The numbers in the first three columns are sample means with standard deviations shown in parentheses. As the value of the weighting factor in the ISSP data for Australia and the USA is one, the sample means presented in the table are unweighted.

Note 2: The statistics in the last three columns are pair-wise *t*-statistics to test the null hypothesis that the means of the three sample are equal. The sample means are statistically different at the 0.05 level of significance when their *t*-statistics are greater than 1.96.

Table 5-7

**Probit estimates of the preferences of married women
aged between 21 and 54 years for paid employment, 1989-1991**

The dependent variable in each of the four parallel equations is preference for paid employment. The preference for paid employment takes the value of one if the respondent states that women should participate in the labour market and zero if the respondent states that women should stay at home (= 1 if preference for employment; = 0 otherwise).

Variable	Before children (1)	Pre-school children (2)	School age children (3)	Children left home (4)
Intercept	4.967 (3.6714)	1.2439 (1.0433)	4.8732* (1.7484)	10.4456 (7.7210)
Country indicator for Australia (1 = for Australia; 0 = otherwise)	-0.5739 (0.6190)	-0.1611 (0.1240)	0.0422 (0.2125)	0.7449 (0.4756)
Country indicator for Canada (1 = for Canada; 0 = otherwise)	-0.3544 (0.6936)	0.1847 (0.1193)	-0.3824 (0.2056)	-0.5774 (0.4933)
Values concerning the family				
Perceived costs to family life a) costs to children b) costs to pre-school children c) costs to family	-0.0972 (0.1997)	-0.6496* (0.0487)	-0.2824* (0.0758)	-0.0417 (0.1374)
Legitimacy of female employment a) employment means independence b) both contribute to household income	0.3141 (0.2272)	0.2018* (0.0530)	0.1851* (0.0853)	0.0572 (0.1481)
Support for ideology of family wage a) women prefer home and children b) home as fulfilling as employment	-0.7760* (0.3070)	-0.3044* (0.0565)	-0.5926* (0.1065)	-0.4059* (0.1667)
Religiosity variables				
Religious affiliation (No religion = 1; Religion = 0)	0.0210 (0.58)	-0.0574 (0.1054)	0.0529 (0.1781)	-0.6700 (0.4059)
Religious attendance (multiple scale with high score = frequent attendance)	0.0805 (0.1263)	-0.0132 (0.0274)	-0.0393 (0.0432)	0.0659 (0.0830)

Continued next page

Table 5-7 continued

Variable	Before children (1)	Pre-school children (2)	School age children (3)	Children left home (4)
Background and demographic variables				
Age	0.3712 (0.2021)	0.0527 (0.0516)	-0.0308 (0.0840)	-0.0495 (0.1553)
Age squared	-0.0045 (0.0026)	-0.0007 (0.0007)	0.0003 (0.0011)	0.0008 (0.0020)
High school (= 1 if completed high school)	5.4003* (0.4421)	0.0772 (0.2008)	0.0496 (0.3484)	5.0296 (3.1216)
Higher education (= 1 if more than high school education)	5.3600* (0.4791)	0.0347 (0.2044)	0.3217 (0.3547)	4.7072 (3.1469)
-2 Log likelihood	16.18	422.06	99.36	19.29
R ² _L -statistic	0.2698	0.2857	0.2258	0.1572
Number of observations	1 075	1 075	1 075	1 075

Source: Estimates from ISSP.

Note: The figures in each column are probit parameter estimates with standard errors shown in parentheses.

Table 5-8

Probit estimates of labour force participation

for married women aged between 21 and 54 years, 1989-1991

The dependent variable is labour force participation defined as a woman whose current labour force status indicates that she is attached to the labour force (= 1 if labour force participant; = 0 otherwise).

Variable	Pooled data Shift only (1)	Pooled data Interacted (2)
Intercept	-2.8640* (1.0444)	-4.4802* (2.1345)
Country indicator variables		
Country indicator for Australia (AUS = 1 for Australia; = 0 otherwise)	-0.1876 (0.1158)	3.6377 (3.0128)
Country indicator for Canada (CAN = 1 for Canada; = 0 otherwise)	0.1731 (0.1186)	0.7058 (2.7189)
Preferences for paid employment		
Employment before children	0.2368* (0.1157)	0.2933 (0.2268)
Before children * AUS (= 1 for Australia; = 0 otherwise)		-0.0253 (0.2865)
Before children * CAN (= 1 for Canada; = 0 otherwise)		0.0413 (0.3323)
With pre-school children	0.2368* (0.1157)	0.2933 (0.2268)
Pre-school * AUS (= 1 for Australia; = 0 otherwise)		0.0105 (0.2535)
Pre-school * CAN (= 1 for Canada; = 0 otherwise)		-0.4622* (0.2460)
With school age children	0.2874* (0.0941)	0.4676* (0.1899)
School children * AUS (= 1 for Australia; = 0 otherwise)		-0.3465 (0.3039)

Continued next page

Table 5-8 continued

Variable	Pooled data Shift only (1)	Pooled data Interacted (2)
Children left home	-0.0961 (0.0999)	-0.2672 (0.2179)
Left home * AUS (= 1 for Australia; = 0 otherwise)		0.2624 (0.2613)
Left home * CAN (= 1 for Canada; = 0 otherwise)		0.0732 (0.2980)
Values concerning the family		
Perceived costs to family life	-0.2042* (0.0499)	-0.1828 (0.1055)
Costs * AUS (= 1 for Australia; = 0 otherwise)		0.0533 (0.1312)
Costs * CAN (= 1 for Canada; = 0 otherwise)		-0.1502 (0.1418)
Legitimacy of female employment	0.1540* (0.0542)	0.2844* (0.1220)
Employment * AUS (= 1 for Australia; = 0 otherwise)		-0.1044 (0.1494)
Employment * CAN (= 1 for Canada; = 0 otherwise)		-0.2390 (0.1531)
Support for ideology of family wage	-0.0489 (0.0554)	-0.0258 (0.1153)
Family wage * AUS (= 1 for Australia; = 0 otherwise)		-0.0609 (0.1458)
Family wage * CAN (= 1 for Canada; = 0 otherwise)		-0.1095 (0.1522)

Continued next page

Table 5-8 continued

Variable	Pooled data Shift only (1)	Pooled data Interacted (2)
Background and demographic variables		
Age	0.1457* (0.0519)	0.1677 (0.1048)
Age * AUS (= 1 for Australia; = 0 otherwise)		-0.1261 (0.1484)
Age * CAN (= 1 for Canada; = 0 otherwise)		0.0881 (0.1345)
Age squared	-0.0016 (0.0015)	-0.0019 (0.0013)
Age squared * AUS (= 1 for Australia; = 0 otherwise)		0.0016 (0.0019)
Age * CAN (= 1 for Canada; = 0 otherwise)		-0.0012 (0.0017)
Education: less than high school		
Completed high school	0.3873* (0.1896)	0.6981* (0.3067)
High school * AUS (= 1 for Australia; = 0 otherwise)		-1.2143* (0.5078)
High school * CAN (= 1 for Canada; = 0 otherwise)		0.1370 (0.4703)
Higher education	0.3027 (0.1921)	0.7901* (0.3340)
Higher education * AUS (= 1 for Australia; = 0 otherwise)		-1.2437* (0.5298)
Higher education * CAN (= 1 for Canada; = 0 otherwise)		-0.3301 (0.4783)

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Table 5-8 continued

Variable	Pooled data Shift only (1)	Pooled data Interacted (2)
Non-earned income expressed in 1991 U.S. dollars (NEI)	-0.0009* (0.0003)	-0.0015* (0.0005)
NEI * AUS (= 1 for Australia; = 0 otherwise)		0.0014* (0.0007)
NEI * CAN (= 1 for Canada; = 0 otherwise)		-0.0003* (0.0009)
Presence of children in the household	-0.2832* (0.1120)	-0.3423 (0.2261)
Children * AUS (= 1 for Australia; = 0 otherwise)		0.1364 (0.2928)
Children * CAN (= 1 for Canada; = 0 otherwise)		-0.0575 (0.3075)
Model statistics		
-2 Log likelihood	161.47	198018
R-squared	0.1278	0.1569
Number of observations	1 075	1 075

Source: Estimates from ISSP.

Note: The figures in each column are probit parameter estimates with standard errors shown in parentheses.

Table 5-9
Decomposition of cross-national labour force participation
into characteristics and responses

	Australia/Canada	Australia/USA	Canada/USA
Total difference	0.1623	0.0699	0.0923
Characteristics	0.105	-0.0754	0.1034
(percent)	64.7	-107.86	111.97
Responses (coefficients)	0.0573	0.1454	-0.0111
(percent)	35.3	207.86	-11.97
Contribution of individual characteristics to the difference			
Perceived costs to family	0.0242	-0.0206	0.0181
Legitimacy of female employment	0.0203	-0.0145	0.0222
Support for ideology of family wage	0.0047	0.0013	-0.0657
Employment before children	0.0014	0.0029	0.0663
With pre-school children	0.0735	-0.0567	0.0449
With school age children	-0.0033	0.0035	0.0099
Children left home	-0.0004	-0.0006	0.005
Age	-0.0612	0.0801	0.0084
Age squared	0.0385	-0.0492	0.0006
Completed high school	0.0346	0.0127	-0.0944
Higher education	-0.0294	-0.0262	0.1361
Non-earned income	0.0009		0.276
Presence of children	0.0013	-0.0094	-0.0157

Source: Calculations based on estimates from ISSP.

Table 5-10**Test of weak exogeneity:****Preferences on labour force participation**

Sample	Before children (1)	Pre-school children (2)	School age children (3)	Children left home (4)
Australia	1.42	2.79	7.21*	8.66
Canada	0.67	0.72	0.2	0.07
USA	2.81	0.11	2.13	2.17
Pooled data	3.73	1.77	8.85*	5.66*

Source: χ^2 -tests are based on estimates from ISSP.

Note 1: The statistics shown are χ^2 -statistics. The critical value of the χ^2 -statistic with one degree of freedom is 3.84.

Note 2: The residuals from the four parallel preference equations reported in Table 5-7 are included as an additional explanatory variable in the labour force participation equation for each stage of the family life cycle. The augmented regression test for weak exogeneity (endogeneity) included in Stata (1997) requires that one include the residuals in the preference equations as additional variables in the estimation of labour force participation.

CHAPTER 6

Concluding comments

"Which way ought I go from here?"

"That depends a good deal on where you want to get to," said the Cat.

"I don't much care where-" said Alice.

"Then it doesn't matter which way you go," said the Cat.

Lewis Carroll *Alice in Wonderland.*

This study examined cross-national variation in the labour force participation of married women in Australia, Canada and the United States of America (USA), three countries of similar socio-economic development, in order to offer an explanation for the observed differences in their labour market behaviour. It was shown in Table 2-1 that the average annual labour force participation of all women in 1998 was remarkably similar in the three countries. Examining average annual labour force participation rates for all women, however, obscures the substantial differences across the three countries. For instance, in the age category 25-to-34 years, there is a sharp difference in the labour force participation rate between women in Australia and those in North America: 69 percent in Australia; 79 in Canada; and 76 percent in the USA. This difference persists in the participation rates for the following age category 35-to-44 years: 70 percent in Australia; 79 percent in Canada; and 77 percent in the USA.

In comparing age-participation profiles in the three countries, a similar outcome is observed: the Australian experience is different to that in North America. An examination of the age-participation profiles shown in Figures 2-2a, 2-2b and 2-2c, reveals that women in Australia continue to leave the labour force for marriage, child-bearing and child-raising responsibilities. Recall the illustration of considering three points in time for two age categories of women: the 20-to-24 age group and the 25-to-34 age group in 1979, 1989 and

1998. In 1979, there was a decrease in female labour force participation in all three countries from the younger age group to the older: 26 percent in Australia; 15 percent in Canada and 7 percent in the USA. In 1989, there was a decrease in participation in Australia and Canada of 17 percent and 1.4 percent, respectively, but the USA showed an increase from the younger age group to the older of 1.5 percent. On the other hand, in 1998, there was an increase in participation in Canada and the USA of 8 percent and 5 percent, respectively, but Australia continued to show a decrease from the younger age group to the older of 11 percent. This indicates that younger cohorts of women tend to remain in the labour force throughout their adult life in North America, even if and when they have children. In contrast, the decrease in labour force participation in Australia demonstrates that, on average, women continue to withdraw from the labour market during the family life cycle associated with child-bearing and child-raising.

There is another aspect of variation that is overshadowed when one observes the average labour market behaviour of all women in the three countries. This is labour market participation according to marital status. For instance, the results of this study using the third wave of the Luxembourg Income Study (LIS) database show that the labour force participation rates of women classified as never married in the LIS data is relatively similar: 78 percent in Australia; 80 percent in both Canada and the USA. On the other hand, the participation rates of women classified as married in the LIS data is substantially different: 71 percent in Australia; 79 percent in Canada; and 75 percent in the USA.

Cross-national variation for married women in the three countries was examined in a conventional model, termed the basic model of female labour force participation. This initial window on the observable world was presented and three identically specified equations were estimated using cross-sectional data from the third wave of the LIS database: 1989-90 for Australia; 1991 for both Canada and the USA. In general, the results of the basic model confirmed *a priori* theoretical expectations and demonstrated that the model is theoretically consistent.

In addition, the analysis indicated that the explanatory variables of the basic model were significant predictors of female labour force participation. The results of the basic

model showed the negative relationship of children on the probability of labour market participation of married women, indicated by large negative coefficients. In North America, the signs of the coefficients for the non-earned income variables were negative. This showed that, *ceteris paribus*, women with greater financial resources other than their own labour market earnings were less likely to participate in the labour market. *Ceteris paribus*, the probability of married women participating in the labour market was directly associated with education in all three countries. Likewise, the parameter estimates for age at younger ages showed that this variable was associated with a higher probability of participation.

The simulation exercise in chapter two established that variation in cross-national female labour force participation rates could be explained by both country-specific characteristics and the measured differences in the responses of those characteristics. It was found that the probability of participation of married women in Australia was lower compared with North America both because women in Australia had more children and because Australian women were less likely to participate in the labour market when children were present. Moreover, the probability of participation was lower in Australia compared with Canada and the USA both because the proportion of married women in Australia with less than a high school education was higher and because the returns to higher levels of education were lower in Australia.

A decomposition of cross-national variation in female labour force participation shows that the differential can be attributed to both country-specific characteristics and to the measured differences in the behavioural responses of those characteristics. If the behavioural responses of married women in Canada were imposed on the characteristics of women in Australia, then the probability of labour force participation would be higher. On the other hand, if the characteristics for either Canada or the USA were applied to the coefficients in Australia, then the probability of participation would also be higher. Generally, two characteristics were of particular importance in explaining the differences between Australia and North America: the number of children in the family; and education. While the results of the basic model demonstrated that there was significant variation across the three countries, much remained to be explained. The challenge was to find a better explanation

for cross-national variation. One explanation explored was that there were different labour market effects attributable to the structural parameters of unemployment compensation (UC) programs, which may have affected the decision of whether, or not, to participate in the labour market. It was found that the social rights of women in Australia, Canada and the USA with respect to UC programs were different. Since the enactment of the Social Security Act in 1935 in the USA and the Unemployment Insurance (UI) Act in 1940 in Canada, the principle of social insurance founded on the payment of a contribution entitling an individual to a social right based on labour market status was introduced in North America. The specific terms and conditions of the UI programs applied to both women and men who had relevant labour market attachment.

This was not the situation in Australia from 1944 to 1995. Until July 1995, the basis of entitlement to the unemployment assistance (UA) program in Australia was the family. It was not until relatively recently that each marital partner became eligible for benefits independently of the other. The effect of this structure on labour force participation was indirect in that it sought to change the decisions of individuals and may have altered labour market behaviour.

Chapter four explored this possibility: labour market effects attributable to the structure of UC programs. Here, the view for watching the observable world was expanded to a larger window. It was observed that there were substantial differences among the three countries in terms of female regional unemployment, unemployment experience of the male partner and the duration of his unemployment. The extended model of female labour force participation included two additional explanatory variables: labour market conditions originating from the demand side as well as labour market incentives attributable to the basis of entitlement to UC programs.

Maximum likelihood probit estimation, again using the third wave of the LIS data, examined the impact of the means test on family income in Australia. The model statistics for the predictor set showed that the inclusion of the additional explanatory variables had a significant effect in explaining the probability of female labour force participation. In

addition, while the level of prediction attributable to both models remained modest, there was an improvement in predictive efficacy in the extended model.

The results of the extended model for the number of children, education, non-earned income and age was similar to the basic model of female labour force participation. For the regional rate of unemployment, the coefficient was negative and statistically significant in all three countries, irrespective of the specification used for the proxy variable to capture labour market incentives. The hypothesis examined was that the basis of entitlement and the nature of the means test acted made it less likely for married women in Australia to participate in the labour market. The results were conclusive whether one estimated identically specified probit equations using three separate country samples of married women or a pooled sample of married women. These results are consistent with the explanation that differences in labour market effects attributable to the structure of UC programs can help to explain cross-national variation in the observed labour market participation rates of married women in the three countries. Furthermore, the results showed that married women in Australia were more responsive to the unemployment experience of the partner than similarly classified women in either Canada or the USA.

The second decomposition of cross-national variation indicated that the more important explanation in accounting for the differences between Australia and Canada was the impact of behavioural responses while country-specific characteristics were more important in accounting for differences between Australia and the USA. While variation in regional female unemployment rates made an important contribution to the 'differences in characteristics' component of the total variation, the contribution of education, particularly university education, remained as the most important factor.

The results of the analysis for the extended model presented in chapter four were consistent with the hypothesis that differences in the basis of entitlement are important in explaining cross-national variation in female labour force participation. Despite these conclusive findings, substantial differences still remained even with the inclusion of additional explanatory variables. Hence, much of the cross-country variation in female labour force participation still needed to be explained.

One possible reason for this is suggested by Nakamura and Nakamura (1986b: 363) who note that

(v)ariables for child status, educational level, ... and so forth are all composite variables reflecting a variety of socioeconomic, life cycle, expectational and institutional factors.

One is forced to contend with the possibility that conventional economic explanations using standard microeconomic data may not be sufficient. This was the challenge of the penultimate chapter that had as its objective the identification of explanatory variables that have an impact on labour force participation, such as the preferences of married women for home-oriented activities as opposed to market-oriented activities.

The model presented in chapter five represented a broader perspective in viewing the observable world. In this model, the focus was on how the decision to participate in the labour market was affected not only by conventional determinants, such as the ones explored in both the basic and extended model, but also the preferences of married women for labour market employment. This was a clear departure from the more conventional economic treatment of female labour force participation.

The empirical analysis utilised data from the International Social Survey Programme (ISSP) to examine the relationship of values concerning the family and the preferences of married women for employment in the labour market, and the effect of both values and preferences for paid employment on labour force participation. Value scales were constructed and used to examine the preferences of women for labour market employment. An examination of these scales showed that values concerning the family differed significantly in the three countries. These values were more traditional in Australia compared with North America. As values concerning the family are reflected in the preferences for paid employment, it is possible that they act to reduce the labour force participation of married women in Australia.

The results of the probit estimation examining the relationship between values and preferences for paid employment indicated that values concerning the family are positively associated with preferences at each stage of the family life cycle identified by the ISSP data: after marrying and before there are children; when there is a child under school age; after the

youngest child starts school; and after the children leave home. The most consistent results across the family life cycle were for married women who support the ideology of the family wage and enjoy the benefits of homemaking, that is, home-oriented women. In all three countries, women who support this ideology were less inclined to believe that married women ought to work outside the home. Moreover, married women who perceived a higher degree of conflict between career and family commitments were significantly less likely to believe that it was appropriate for them to participate in the labour market when pre-school or school age children were present in the family. In addition, married women who discerned the benefits associated with a career outside the home were more inclined to support the legitimacy of employment in the labour market where young children were present in the family. The impact of values concerning the family was not significantly different in the three countries. Thus, an 'Australian effect' over and above the influence of values was not distinguished.

The results of the probit estimation using both values and preferences for paid employment to explain the probability of labour force participation show that some aspects of values and preferences affect the labour market behaviour of married women in Australia, Canada and the USA. One of the four preference variables was significant as an explanatory variable: employment in the first stage of the family life cycle before the decision was made to have children. The differential impact of this preference variable was not, however, significantly different in the three countries. In addition, one of the three value scale variables was significant in explaining female labour force participation: the legitimacy of paid employment for women, that is, career-oriented activities. Career-oriented women who discerned the benefits associated with a career outside the home were more inclined to enter the labour market thereby increasing the probability of labour force participation. Again, the impact of this variable was not significantly different in the three countries. Thus, an 'Australian effect' over and above the influence of values concerning the family and preferences for paid employment was not discernable.

The results presented in chapter five of the study are consistent with the explanation that values concerning the family and preferences of married women for career-oriented

activities are both important factors in explaining cross-national variation in the observed labour market participation rates of married women in Australia, Canada and the USA.

The third decomposition of cross-national variation indicated that the more important explanation in accounting for the differences in female labour force participation between Australia and Canada were country-specific characteristics while it was impact of behavioural responses between Australia and the USA.

All in all, the results of this study are consistent with the explanation that both different labour market effects attributable to UC programs and different preferences for paid employment discourage labour force participation of married women in Australia. Thus, the results are consistent with the hypothesis that variation in country-specific labour market effects due to program parameters and different preferences for labour market employment helped to account for cross-national variation in female labour force participation in the reference year: 1989-90 in Australia; 1991 for both Canada and the USA.

APPENDIX A

Construction of variables from the Luxembourg Income Study (LIS) database

Education

Educational attainment is a categorical variable in the LIS database, but the educational attainment variables are not classified in the same way for Australia, Canada and the USA. The educational attainment variable for Australia is classified according to nine categories:

- 1) still at school
- 2) less than secondary
- 3) completed highest year secondary
- 4) completed secondary after left school
- 5) trade certificate
- 6) other certificate or diploma
- 7) bachelor degree or higher
- 8) never went to school

The selection criteria applied on age automatically excludes women in the first category: the term 'school' in Australia refers to the educational process from kindergarten to Year 12 in high school (Years K to 12). The remaining eight categories are reclassified in the empirical analysis of this study into four as follows:

- 1) less than the completion of high school;
- 2) completion of high school;
- 3) some trade or vocational qualifications, and post secondary diploma;¹⁷⁸
- 4) university degree.

There are seven classifications for Canada in the 1991 file:

- 1) no schooling or less than grade 8
- 2) 9 - 10 years
- 3) 11 - 13 years
- 4) 11 - 13 years, graduated, no other education
- 5) some post secondary
- 6) post secondary diploma
- 7) university

¹⁷⁸ It is possible to gain entrance to an institution for trade or vocational training after the completion of grade ten in Australia. Upon the completion of the required course of studies, ranging from one to three years, a certificate or diploma is awarded.

Again, for the purpose of estimation, these seven categories for Canada are reclassified in this study so that they are comparable to the ones constructed above for Australia.

The educational attainment variable for the USA in the 1991 file is classified into eight categories:

- 1) elementary
- 2) some high school
- 3) high school diploma
- 4) some college
- 5) associate degree
- 6) bachelor degree
- 7) masters degree
- 8) doctorate

Similarly, in order to make to make educational attainment comparable, these eight educational categories are redefined in this study so that they are comparable to the ones constructed above for Australia.

Labour force participation

For each individual, the Luxembourg Income Study (LIS) database reports the number of weeks worked both full time and part time in the labour market and the weeks of unemployment in the reference year.¹⁷⁹ Three variables identify the extent of labour force attachment in the reference year:

- 1) weeks worked full time
- 2) weeks worked part time
- 3) weeks unemployed.

These three variables range from zero to 52 weeks. For the purpose of this study, one dichotomous variable is constructed from these three and is termed labour force participation. This takes the value of one if the sum of weeks of full time employment, weeks of part time employment and weeks of unemployment in the reference year is positive; zero otherwise.

Labour force status of partner

Two specifications are used in the analysis to capture labour market incentives in the reference year. The first is a categorical variable, the unemployment experience of the

¹⁷⁹ The LIS database does not report the number of weeks worked part time in the labour market in Canada in 1991.

partner. Because weeks of unemployment range from zero to 52 weeks in the LIS database, the constructed dichotomous variable takes the value of one if weeks of unemployment in the reference year is positive; zero otherwise. The second variable is duration of unemployment of the partner in the reference year: the recorded number of weeks of unemployment ranging from zero to 52 weeks is used for this variable.

Non-earned income

The non-earned income variable is constructed as household gross income less the labour market earnings, if any, of the woman under observation. In addition, for women who received unemployment benefits during the reference year, the amount of the benefit is subtracted from the non-earned income variable. For women who are married, whether *de facto* or *de jure*, non-earned income includes the labour earnings of her partner and his receipt of unemployment benefits, if any.

In the empirical analysis, all monetary values are transformed to 1991 U.S. dollars using the Organisation of Economic Development (OECD) purchasing power parities.

Number of children

The number of children in the family less than 18 years of age is recorded in household data files in the LIS database.¹⁸⁰ The number of children in the family is one of the child status variables used in the basic and extended model of labour force participation in this study. To account for non-linearities in the amount of time spent for each additional child as both the number of children and the number of older children increase, the number of children squared is also included.

Unemployment rate in state (province)

The annual average female rate of unemployment in the state (province) in which a woman resided in the reference year is used to capture the constraints imposed by the demand side of the labour market in the analysis. For Australia, these rates are published in the *Labour Force Survey* (1989-90), Australian Bureau of Statistics Catalogue No. 6203.

¹⁸⁰ There are three files for Canada and the USA in the LIS database for the reference year of 1991: a household file, a person file, and a child file. For Australia, on the other hand, the 1989-90 child file is not available.

Female unemployment rates from Statistics Canada for reference year 1991 can be accessed through the Internet cite: <http://www.statcan.ca/english/CANSIM>.

The **CANadian Socio Economic Information Management System** is a computerised time series database where information can be retried on a user-pay principle. Through the Data Liberation Initiative (DLI), Canadian academic institutions are provided with affordable access to Statistics Canada data files and databases for research and teaching.

Female unemployment rates from the U.S. Bureau of Labor for reference year 1991 can be accessed through the Internet cite: <http://stats.bls.gov/datahome.htm>.

APPENDIX B

Construction of variables from the International Social Survey Programme (ISSP)

Education

Educational attainment is a categorical variable in the ISSP database, but the educational attainment variables are not classified in the same way for Australia, Canada and the USA.

The educational attainment variable for Australia is classified according to seven categories in response to the question: **What is your highest qualification?**

- 1 = none, still at school
- 2 = incomplete primary
- 3 = primary completed
- 4 = incomplete secondary
- 5 = secondary completed
- 6 = incomplete university
- 7 = completed university

The selection criteria applied on age automatically excludes women in the first category. The remaining six categories are reclassified in the empirical analysis of this study into three as follows:

- 1 = less than the completion of high school;
- 2 = completion of high school;
- 3 = more than completion of high school.

The educational attainment variable for Canada is classified according to four categories in response to the question: **How far did you go in school?**

- 1 = less than high school
- 2 = high school
- 3 = junior college, bachelor
- 4 = completed university, graduate

Again, for the purpose of estimation, these four categories for Canada are reclassified in this study so that they are comparable to the ones constructed above for Australia.

The educational attainment variable for the USA is classified according to five categories in response to the question: **What is your highest degree?**

- 1 = grade school

- 2 = some high school
- 3 = finished high school, finished college
- 4 = some university, other, graduate school
- 5 = completed university, graduate

Similarly, in order to make to make educational attainment comparable, these five educational categories are redefined in this study so that they are comparable to the ones constructed above for Australia.

Labour force participation

The current employment status of the respondent in the labour market is a categorical variable in the ISSP data:

- 1 = Full-time employed
- 2 = Part-time employed (15 - 35 hours for Canada)
- 3 = Less than part-time (less than 15 hours in Canada, temporarily out of work; temporarily not working in Australia and the USA)
- 4 = Helping family member
- 5 = Unemployed
- 6 = Student, at school, in education, vocational training
- 7 = Retired
- 8 = Home duties
- 9 = Permanently disabled, sick
- 10 = Other, not in labour force, not working.

For this study, one dichotomous variable, termed labour force participation, is constructed from the original ISSP codes: the first three response categories, together with the fifth category, are combined into a single category that takes the value of one. The remaining six categories are combined into a single category that takes the value of zero.

Non-earned income

There are two variables in the ISSP database related to money income: earnings and family income. The non-earned income variable is constructed as family income less the labour market earnings, if any, of the woman under observation. In the empirical analysis, all monetary values are transformed to 1991 U.S. dollars using the Organisation of Economic Development (OECD) purchasing power parities.

Presence of children in the family

This variable is constructed from the 'household cycle' variable of the ISSP data, which has twenty-eight categories:

- 1 = single household
- 2 = 1 adult, 1 child
 - USA: 1 adult, 1 child + more
- 3 = 1 adult, 2 children
- 4 = 1 adult, 3 or more children
- 5 = 2 adults
- 6 = 2 adults, 1 child
 - USA: 2 adults, 1 child + more
- 7 = 2 adults, 2 children
- 8 = 2 adults, 3 or more children
- ...
- 27 = 12 adults
- 28 = 12 adults with children

There are four categories relevant to the analysis: those indicating two adults with or without any children in the household. For the empirical study, one dichotomous variable, termed presence of children in the family, is constructed taking the value of one if children are present; zero otherwise.

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