

Welfare and Labor Market Participation:
A Comparison of Saskatchewan and Alberta

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DEDICATON

This thesis is dedicated to my father, Mr. Bulogosi, my sister and brothers for their sacrifices and encouragement. I also dedicate this thesis to my late mother, Mrs. Bulogosi, who instilled in me a sense of discipline, and hard work.

ABSTRACT

This paper attempts to explain welfare and labor market participation differentials between Saskatchewan and Alberta, with greater emphasis placed on welfare participation. Generous benefit levels encourage welfare participation but discourage labor market participation. We are interested in explaining if generous welfare policy has contributed to an increase in welfare participation and discouraged labor market participation. We employ a probit model to analyze the decision to participate in the welfare or the labor market among lone parents and singles (unattached individuals) in the two provinces. The results are then decomposed into the explained and unexplained parts, and these results are used to illustrate which variables contribute to welfare differentials.

We find that benefit levels have a significant positive effect on welfare participation and a significant negative effect on labor market participation. We also find that welfare participation differentials exist between Saskatchewan and Alberta; other factors in addition to benefit levels play a role in explaining that gap. We conclude that welfare differentials between Saskatchewan may be a reflection of program administration differences.

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Chapter 1

Introduction

Social Assistance (SA) or Income Assistance (IA) is a complex issue that provokes a range of emotions among recipients, policy makers, and the public in general. Those receiving assistance are grateful for the support it provides, but they often feel stigmatized by their utilization of welfare and hope to become self-reliant and improve their standard of living. Taxpayers and politicians, on the other hand, realize that social assistance is a necessary part of the social safety net, but they are disturbed by the possibility that the system encourages dependence and discourages work effort.

Significant changes have occurred in welfare programs both in the US and Canada. Faced with increasing welfare caseloads, social spending and a decrease in federal funding, most provincial governments turned to welfare reform. Consequently, there was an increase in policy debates centered around the effect of these policies on governments spending and the people they were trying to affect.

The fundamental issue in welfare reform discussions is to discourage welfare dependency by diverting individuals or families to other resources for help. In addition, for employable individuals, welfare is not supposed to be a source of income but rather a support program towards self-sufficiency. This was the motivation behind welfare reforms in the early 1990s in the provinces of Ontario, British Columbia, and Alberta.

Ontario introduced reforms such as Ontario Works to encourage welfare recipients to join the labor market; Alberta, on the other hand, introduced Supports for Independence (SFI) in 1992 to replace the social allowance program in existence. The program did not come into effect until 1993; it was to act as an active employment program by providing resources that would assist individuals to get paid employment. However, Saskatchewan was reluctant in implementing changes until the summer of 1998 when the government acted after a lot of pressure from other politicians and the public at large. The government came up with a new initiative, *Building Independence-Investing in Families*. This initiative is focused on improving family incomes and decreasing child poverty. All these proposals mentioned have achieved some success but not without a lot of criticisms from welfare activists.

This study was motivated by an article released by Canada Newswire in Vancouver, January 16, 2003. The article was in reference to a paper published by Jason Clemens and Chris Schafer in November 2002 entitled *Welfare in Saskatchewan: a Critical Analysis*; Clemens and Schafer are research fellows at the Fraser Institute. The authors criticized the Saskatchewan welfare policy arguing that it is in need of major changes to reduce welfare caseloads, increase employment and earnings of welfare recipients. Furthermore, the article indicated that Saskatchewan should try to replicate and implement welfare policies available in Alberta, Ontario and some US States. Hence the decision to do a study on welfare and labor market participation decisions on Saskatchewan and Alberta; Saskatchewan and Alberta are similar in some ways and it will be interesting to find out how these issues interact in the two provinces. The study intends to compare how welfare policy and other variable constraints contribute to or discourage welfare and labor market participation in the two provinces.

In this paper I intend to apply joint bivariate and individual binary probit models of welfare and labor market participation. The bivariate employs the same methodology used by Christofides et al (1997) using a different data set (*Survey of Consumer Finances*) for the periods 1986-1997. In this study I will consider only single individuals and lone parents because they have a high incidence of social welfare participation.

Theoretically, generous welfare policies encourage welfare utilization but discourage labor market participation. Favorable economic conditions coupled with good wages should discourage welfare utilization. Young, lone parents (age less than 35) are more likely to participate in welfare due to less market experience, and studies indicate that this group has reported declining wages¹ (especially single mothers).

The issue under investigation is if generous welfare payments have encouraged welfare participation in Saskatchewan and alternatively if stringent welfare payments in Alberta have done the opposite. In addition, which variable constraints considered in this study can explain the difference in welfare participation among the two provinces; greater emphasis will be given to welfare.

Hence the objectives:

- To show the trend in welfare and labor market participation in the two provinces. Does welfare participation in the two provinces exhibit a cyclical pattern? That is, participation increases in business downturns and decreases in the expansion.
- To explain welfare participation differences between Saskatchewan and Alberta by decomposing the welfare differentials into the explained and the unexplained.
- To compare this study with previous studies done in Canada.

¹ See Dooley Martin (1997).

Empirical studies support the claim that generous welfare policies encourage welfare participation and there are several studies done in Canada and the US that reaffirm this assertion. Moreover, data on welfare caseloads indicate that provinces with generous welfare policies have high incidences of welfare participation (Clemens and Schafer, 2002). However, empirical studies on the effects of welfare reforms on welfare participation have produced mixed results; some studies show that welfare reforms have reduced welfare caseloads and encouraged labor force participation (Alberta is a good example in Canada) while others indicate the opposite (Boessonkool, 1997).

1.2 Policy Issue

Many welfare recipients experience severe disincentives when considering labor market involvement. At the same time, most of the recent welfare reforms have focused on policies that encourage welfare recipients to join the labor market. The question is are these policies sustainable and to what extent can they be applied to generate the expected results without causing severe disincentives to labor market participation?

1.3 Outline

This thesis is organized as follows. Chapter 2 provides a brief look at the welfare policy in Canada, and in Saskatchewan and Alberta. Chapter 3 outlines a critical review of literature relevant to welfare and labor participation issues and also gives a brief explanation of the relationship between welfare and poverty. Chapter 4 provides a theoretical background for analysis of the hypothesis posed in this study and description of the data employed. Chapter 5 explains the econometric model used to investigate the validity of the issues highlighted in chapter 4. Chapter 6 presents the results and

interpretation of the results; the results are also used to explain the welfare differentials in Saskatchewan and Alberta, the explanation of the results emphasizes more on welfare.

Chapter 7 provides a summary of the paper and future research proposals.

Chapter 2

Canada and the Provincial Welfare System

This chapter provides an introduction into the welfare programs in Canada, and the provinces of Saskatchewan and Alberta. It also highlights the trends in welfare caseloads, welfare participation rates as a percentage of population, and labor market participation rates among the groups considered. A relationship between the welfare caseloads and unemployment rates is also considered.

2.1 Overview

Canada prides itself in being able to provide its citizens with a high standard of living that is guaranteed through provision of social assistance and other public assistance programs. The welfare system or social assistance program is one of a range of income security programs available to the Canadian public; others include the Employment Insurance, Workers' Compensation, Provincial Automobile Accident Insurance and Old Age Security (National Council of Welfare, 1987). These programs are designed to provide assistance to selected segments of the Canadian population.

Consequently, the Canadian welfare system is often referred to as the "safety net" because it comes into play when other sources of funds, such as personal savings are exhausted or when individuals or families need to supplement their income in an emergency or special need (National Council of Welfare, 1992). It is for this reason that

social assistance as we know it is viewed as the income program of last resort; it provides financial assistance to individuals and families in need as the last alternative.

2.1.1 What is Social Welfare?

Social welfare can be defined as a network of legislation, policies, institutions, resources, and services that have been developed to ensure that citizens will have access to those materials, services and resources of society that will permit them to develop their potential as the individuals in a manner acceptable to them with due regard to the rights of others (Turner & Turner, 1981).

Provision of welfare plays an important part of the social construct of the Canadian society. Although welfare provision remains the sole responsibility of the governments (federal and provincial), the private sector also plays a role in the provision of welfare. For this reason we have to distinguish between public and private social welfare, this distinction is made by Hick (2002). It is important to realize that distinction made here is not in terms of who funds the program, but rather how it is delivered.

2.1.1.1 Public and Private Social Welfare

The three levels of government (federal, provincial, and municipal) and other public non-governmental organizations, advisory and appeal boards are involved in the formulation and administration of social welfare. For example Canada Assistance Plan (CAP) or Canada Health and Social Transfer (CHST) as is known today (Hick, 2002).

Private welfare is provided by not-for-profit or non-governmental organizations and commercial or for-profit firms. These firms receive funds from government or from private donors; they may also receive funds through private contracts to carry out some

work on behalf of the government or private organizations. Examples can be nursing homes or in-home care services (Hick, 2002).

2.2 Brief History of the Canadian Welfare System

Before the emergence of welfare programs for the poor, the federal government did not recognize that it had the responsibility towards the poor (Osborne, 1985). Caring for the poor was traditionally viewed as the responsibility of the church. Churches and other charity organizations had the ultimate responsibility of taking care of the needy; the sick, the old and the disabled members of the community.

The church and other charity organizations had the responsibility of administering social welfare, setting the rules, and enforcing them. For instance, they were supposed to ensure that individuals who could work were given the opportunity, and any individual who tried to defraud the system was punished accordingly (National Council of Welfare, 1987). The same principle is still inherent in the welfare system today; employable individuals are expected to find work and only utilize welfare when there are no alternatives.

At the beginning, applying for welfare was a sign of personal failure and there was a lot of stigma attached to it (National Council of Welfare, 1987). However, after the Great Depression of the 1930s, it became clear that welfare was not only for the lazy individuals who had failed in the society, but anybody could be vulnerable. Churches and local organizations could no longer support the widespread need in the society. Federal and provincial governments had to take responsibility.

The welfare system or social assistance as we know it today has been evolving over time through several legislations introduced by the federal government. In 1939 the

government introduced the *Unemployment Relief Assistance Act* which allowed the government to make payments to the provinces to help them provide relief to the unemployed (Osborne, 1985). Between 1951 and 1954 three categorical welfare programs were introduced, *Old Age Assistance*, *Blind Persons' Allowances* and *Disabled Persons' Allowances*. The federal government offered to share at least 50 percent of provincial expenditures on allowances for residents who fell into the appropriate category (aged 65 to 69, legally blind, or totally and permanently disabled) and had passed the means test (Osborne, 1985). The conditions under these programs were tight and inflexible and were intended to make sure that only “legitimate”, needy, and “deserving” poor people qualified. As a result, the welfare programs were plagued with complicated procedures and administration that they were not adequately serving the people they were made for (Osborne, 1985).

In 1958 the Canadian Welfare Council called for improvements in the areas of income maintenance, public assistance and unemployment insurance. In the same year they recommended a public assistance act that would be an extension of the Unemployment Assistance Act and which would enable the federal government to share the aggregate costs with provinces (National Council of Welfare, 1987). In addition, this act provided the provinces the freedom to continue with the original programs or incorporate them into the general Public Assistance program. The act predetermined that:

- a) Length of residence shall not be the condition for the receipt of assistance.
- b) The proportion of costs carried by the federal government shall progressively increase as the total number of persons on public assistance in a province increases beyond the predetermined percentage of the population.

2.2.1 The Canada Assistance Plan (CAP)

In 1966, the Canada Assistance Plan was borne, it was an attempt to merge the different programs in existence and also create a comprehensive and structured income assistance program. The Canada Assistance Plan Act formed the legislative backbone of all public assistance programs both at the provincial and federal levels. Under CAP the federal government funds about 50% of the welfare costs while the provinces fund the rest. Since 1977, the federal government provided contributions to the post secondary education and health care services through the Established Programs Financing (EPF). Under CAP, provinces establish the eligibility rules for social assistance based on a needs test. The provinces make services available to all those eligible regardless of when they establish residency in the province. In addition they are also responsible for establishing an appeal procedure and are required not to force an individual to work or do any other community service in return for social welfare.

2.2.2 Canada Health and Social Transfer (CHST)

One of the most significant changes to welfare programs since the introduction of CAP was the introduction of CHST in 1996. The CHST involved the merging of CAP and EPF into one program. CHST is a fixed per capita payment; hence federal transfers are not connected to either needs of the people or the state of the economy (Hick, 2002).

Several concerns have been raised with the introduction of CHST. For instance under CHST the economic stabilizing effect of the social spending has been minimized and many view this as a shortcoming of the CHST programs. In addition, the regulations associated with CAP were repelled except for the residency requirements. The CHST gives provinces autonomy in establishing and administering welfare programs and many

social analysts have expressed concern that this might remove the national standards set out under CAP and create significant disparities across provinces.

Moreover, the provincial and territorial governments expressed disapproval of the cancellation of CAP and replacement with CHST. In an attempt to encourage cooperation among the different governments, in 1999, the Social Union Agreement (SUA) was established. Under the Social Union Agreement the different governments work together and focus their efforts to renewing and modernizing Canadian social policy (Hick, 2002). Some of the initiatives established under the SUA are the National Child Benefits, the National Children's Agenda for child care and services for persons with disabilities. The SUA aims to renew the Canadian system of social welfare and to reassure the public that the government is making every effort to ensure their social security.

2.3 Saskatchewan and Alberta Welfare Programs

2.3.1 Jurisdictional Matters

Each province is responsible for the design, administration and delivery of its own social assistance program. Most provinces have a unified social assistance program, but provinces like Nova Scotia, Ontario and Manitoba have a “two- tier” social assistance program (National Council of Welfare, 1991). These provinces offer social support based on which category the clients falls within. The municipalities are responsible for assistance to persons who do not fall within the provincial jurisdiction (National Council of Welfare, 1991).

2.3.2 Objectives of the Provincial Welfare Programs

- The assurance of adequate individual or family income through the transfer of financial benefits.
- The assurance of continuity of individual or family income by protection against unforeseen interruption of earnings.
- The provision of incentive to work or improve an individuals opportunity for self- sufficiency
- The assurance of reasonable lifetime distribution of income through transfers to persons whose earnings or demographic characteristics tend to place stringent restrictions on their disposable incomes example the young, the elderly and parents with dependent children (National Council of Welfare, 1990).

2.3.3 Eligibility²

Eligibility is based on a needs test whereby the individuals or households receive welfare payments based on a shortfall in personal or household income as measured by the needs test, (National council of welfare, 1995). Administrative rules vary across the provinces. For instance, in Alberta application for Social Assistance is a two step process while in Saskatchewan if applicants have a genuine need Social Assistance will be provided. Moreover, the applicants must be of a certain age (usually between the ages of 18-65). Full time students in post secondary institutions are only allowed to apply for social assistance under special circumstances. Single parents are supposed to seek

² For additional information see the Social Assistance Handbook for the provinces of Saskatchewan and Alberta.

alimony, which they are eligible for, and disabled individuals are required to provide a medical certificate to their condition (National Council of Welfare, 1995).

2.3.4 Rates of Assistance

Every province and territory uses different methods for calculating basic assistance, which generally includes food, clothing, shelter, utilities and an allowance for personal and household needs. The total assistance granted to a family or an individual will depend on the following: place of residence; individuals living in urban areas will receive more benefits compared to rural areas, ages of any children, employability of the household head, type of housing, and case history. Applicants are also eligible for additional assistance if they have special needs, such as medication and prosthetic devices (National Council of Welfare, 1995).

2.3.5 Earning Exemptions

Applicant's employment income is subjected to a monthly tax. That is, social assistance recipients are allowed to keep some of their employment income up to a certain maximum. After that, employment income is deducted dollar for dollar. In Saskatchewan for instance, single employable individuals are allowed to keep \$25 of monthly earned income + 20% of excess (maximum exemption of \$75), for a two person family \$50 of earned income + 20% of excess (maximum exemption of \$150) (National Council of Welfare, 1996).

In Alberta, everybody is subjected to the same tax rate; individuals and families are allowed to keep \$ 115 of income and 25% of net income over \$ 115. For instance if an individual earns \$ 200 a month the individual will be allowed to keep \$115 then the

next \$85 is subject to a 75% tax rate in total they will keep \$136.25. This tax rate imposes a very high marginal tax rate on welfare recipients which is even higher than full time workers.

2.4 Saskatchewan Assistance Plan

The Saskatchewan assistance plan is administered through the Department of Social Services and six regional offices distributed throughout the province. The regional offices are responsible for determining eligibility and administering health and financial benefits for recipients under the Saskatchewan Assistance Act and Regulations. Under this program the Department of Social Services provides funds to meet the costs of food, shelter, utilities, and clothing and supplementary health services for the individual and families who for various reasons had insufficient funds to meet basic needs (Social Assistance Handbook 1997).

Residents in need apply for assistance through the regional offices nearest to them. After the assessment of their need (needs testing), clients receive benefits as well as any information relating to their rights and responsibilities (Social Assistance Handbook, 1997).

2.4.1 Eligibility

In general, individuals and families in need would be given assistance. Eligibility is based on budget deficit method; all applicants are subjected to similar asset exemption levels, regardless of the reason for assistance (Social Assistance Handbook, 1997). However, exemptions will vary based on the individual or family circumstances. For instance disabled individuals will have higher levels of exemptions compared to

employable individuals. Individuals and families are required to have exhausted all the other options available to them for financial assistance, social assistance is viewed as the last resort to financial help. The applicants will receive monthly benefits based on a pre-added budget, which covers support and shelter requirements (Health and welfare Canada, 1990). The amount of support payable is as defined in section 2.3.4.

2.4.2 Income

Monthly earnings are calculated as a flat rate amount plus a percentage of earnings exceeding that amount, up to a specified maximum for disabled and non-disabled case categories by family size (Social assistance Handbook, 1997).

Non-disabled fully employable individuals are not entitled to earnings exemptions for the first three months on social assistance. Saskatchewan also deducts the child tax benefits from welfare payments.

All assets you had two years before you applied for assistance will be reviewed, and the social worker will tell you how your assets affect the amount of money you get. The following assets are to be reported, liquid assets such as bank accounts bonds etc, real assets like houses, personal assets like cars, jewellery etcetera (Social Assistance Handbook). In the calculation of financial resources the applicant is allowed \$ 1500 for one person, \$ 3000 for two people and \$ 500 for each additional family member (Social Assistance Handbook). For example, a family of 5 is allowed to keep \$4500 in total assets.

2.5 Alberta Social Services and Community Health

Alberta's welfare policy takes a proactive approach. As a result, the Alberta government has been both commended and criticized for its welfare policy. Opponents view it as stringent and an attempt by the Alberta government to forfeit its responsibilities. Proponents view it as an attempt to deal with problems that plague many welfare programs in Canadian provinces.

Challenged by ever increasing welfare caseloads, the Alberta government was determined to change the welfare culture that was not only prevalent in Alberta but also in Canada as whole; sky rocketing caseloads even in times of economic prosperity.

In 1993, Alberta introduced significant changes to its welfare program. The objectives of these reforms were: to integrate the income support programs with employment related services, providing new employment and training opportunities, improving access to mainstream student assistance and removing the disincentives to work (Boessonkool, 1997).

2.5.1 The Alberta Welfare Program

Welfare in Alberta is administered by the Alberta's Department of Family and Social Services (AFSS). It delivers two programs; a welfare program called Supports for Independence (SFI)³ and Assured Income Security for the Severely Handicapped (AISH). AISH provides support for individuals with severe mental and physical disabilities, while SFI supports employable individuals without physical limitations to

³ From May 2004 Alberta Changed its SFI program to Alberta Works. Its focus is on training people for employment (for additional information See Human Resources and Employment Alberta, <http://www3.gov.ab.ca/hre/albertaworks/index.asp>).

work but facing unique circumstances that prevents them from active market employment. In addition, SFI is also given to dependents of individuals on AISH.

The welfare reforms of 1993 saw Alberta achieve very dramatic declines in welfare caseloads. The reforms were achieved through administrative changes and emphasis on support towards self-reliance. Administrative changes involved tightening the eligibility criteria and prevention of misuse. Second, was the shift from emphasizing financial assistance to providing assistance in returning to the workforce (Boessonkool, 1997).

After introduction of these reforms, applying for welfare became a two-step process especially for employable individuals. Through this, the department aims to discourage recidivism, ensure that the help goes to the deserving clients, and discourage new people from joining the welfare caseloads. In addition, the department is trying to discourage “learned behavior” whereby the individuals master the system and use it to their advantage (Boessonkool, 1997). Moreover the Department introduced random home visits to ensure that eligibility and appropriate level of assistance is offered. Welfare benefits were also reduced to coincide with those of low income working Albertans.

2.5.2 Eligibility and Income

If you qualify for welfare (or SFI as is referred to in Alberta), you and your family will be placed into one of the four categories depending on the ability to work. Each category has different benefits and applicants expectation. Your income, and where it comes from, will determine whether you qualify for SFI and how much you will receive. The following incomes are deducted dollar for dollar (SFI guide, 1997):

- Employment Insurance
- Workers' compensation and other sickness or accident insurance payments.
- Canada pension plan (CPP) benefits
- Child or spousal support.

The following incomes will partly be deducted from your income, employment income while you receive SFI, money from room and board (25% deducted) and money from renting part of your home (50% deducted). These incomes will not be deducted from social assistance payments, net employment income of each dependent child who is attending school, Canada child tax benefit, goods and services Tax (GST) credits, Alberta family employment tax credit and gifts and money less than \$600 (over \$600 is deducted dollar for dollar).

2.5.3 Assets

Individuals applying for social assistance are required to report all their assets as they are used in determining how much assistance you will be given. All assets you had two years before you applied for assistance will be reviewed. The following assets are considered:

- Liquid assets such as (bank accounts, bonds, or investment certificates)

You can keep a certain amount of your liquid assets at the time of application, \$1500 for one person, \$3000 for two people in your family and \$500 for an additional family member. For example a family of two can have \$3000 in liquid assets and while a family of six will have \$ 5000 in liquid assets.

- Real assets (such as a house or land)

- Personal assets examples are a car, truck, jewellery etcetera (Government of Alberta, 1997)

2.6 Welfare Beneficiaries in Saskatchewan and Alberta

Generally welfare participation patterns in both provinces have followed the same trend over the period represented on figure 2.1. Both provinces experienced an increase in welfare caseloads between the periods of 1986-1992 with Saskatchewan showing a few fluctuations.

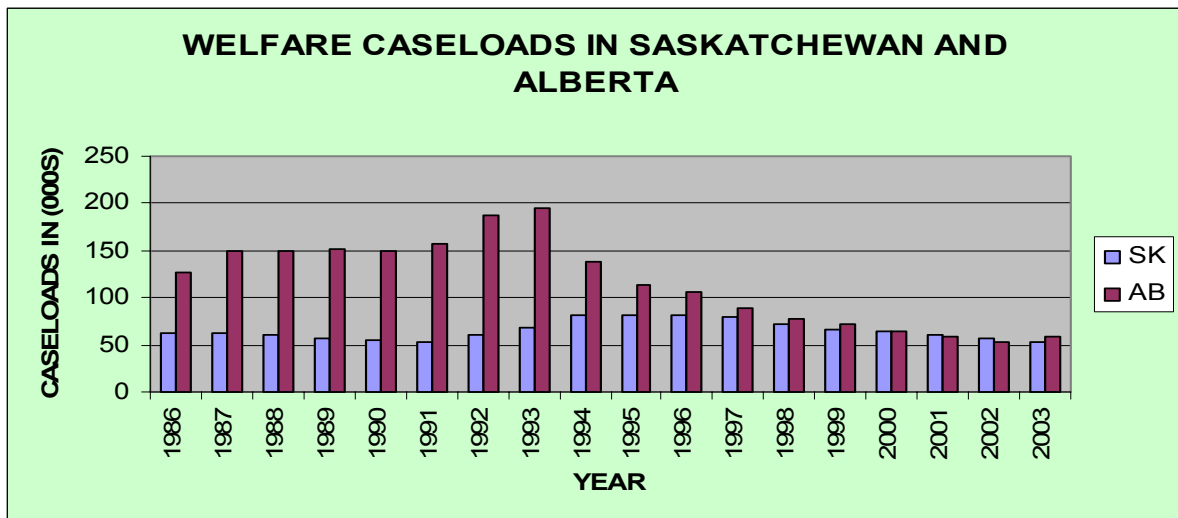


Figure 2.1

Source: Cost-shared programs division, Strategic Policy Branch, Human Resource and Development Canada

Beginning in 1991, Alberta started to record very high numbers of welfare caseloads and reached a peak in 1993. This was partly due to the economic recession of the early 1990s. In 1993, Alberta introduced welfare reforms which came into effect in 1994. Since then Alberta began to experience decreasing welfare cases.

In Saskatchewan, welfare cases followed the same pattern (as Alberta) but peaked in 1995. In 1998 the Saskatchewan government introduced some reforms to the

welfare programs. From 1998, Alberta and Saskatchewan have continued to record almost similar numbers in welfare cases (Figure 2.1). Given the number of welfare beneficiaries in Alberta and Saskatchewan, the caseloads in Saskatchewan represent a bigger portion of the Saskatchewan population compared to Alberta (Table 2.1). This might be a reason for increased criticisms to Saskatchewan's welfare program.

Table 2.1: Welfare Caseloads as a Percentage of the Provincial Population, Labor Force Participation Rates and Unemployment Rates

YEAR	% of SK POP	% of AB POP	LFPR ⁴ SK	LFPR AB	UR ⁵ SK	UR AB
1986	6.1	5.2	76.8	79.0	7.4	9.0
1987	6.0	6.2	76.7	79.4	6.9	8.2
1988	5.9	6.1	77.5	79.8	6.4	7.0
1989	5.6	6.1	77.4	80.1	7.1	6.7
1990	5.4	5.8	78.2	80.0	6.8	6.4
1991	5.3	6.0	78.7	80.3	6.8	7.9
1992	6.0	7.1	78.2	79.9	7.6	9.2
1993	6.8	7.3	78.5	79.7	8.1	9.4
1994	8.0	5.1	77.9	80.3	6.5	8.1
1995	8.1	4.1	77.9	80.5	6.6	7.2
1996	7.9	3.8	77.3	80.6	6.5	6.1
1997	7.8	3.2	78.3	80.5	5.5	5.1
1998	7.1	2.6	78.6	81.1	5.3	5.0
1999	6.5	2.4	79.0	81.0	5.9	4.7
2000	6.2	2.2	78.7	80.7	4.4	4.1
2001	6.1	2.0	77.8	81.0	5.3	4.1
2002	5.6	1.7	79.4	81.8	5.0	4.6
2003	5.3	1.8	80.4	82.1	5.3	4.5

Source: Cost-shared Programs Division, Strategic Policy Branch, Human Resource and Development Canada, CANSIM II Tables 510001 and 2820002

From Table 2.1, we can see that although welfare caseloads continued to increase (especially before the welfare reforms,) labor force participation rates have continued to increase in the both provinces. Alberta's labor market participation has continued to

⁴ Labor participation rate is defined as the proportion of non-institutionalized civilian population 15 years and above that are in the labor force (population of 15-64).

⁵ UR is the provincial unemployment rate.

show an upward trend as the welfare caseloads have continued to decline. Saskatchewan labor market participation rates show an upward trend but with a few fluctuations.

2.7 Welfare and Unemployment Rate

Welfare participation is said to increase when there is a recession and decrease when there is an expansion and the same can be said of unemployment rates. From Table 2.1 above, we can say that welfare participation has followed the same pattern. For instance in 1993, Alberta had the highest unemployment rate approximately 9.4% and that coincides with the highest percentage of welfare recipients (7.3) in the 18 year period represented in the table above.

In Saskatchewan, unemployment rates and caseloads have followed the same pattern. However, there are times when the percentage in caseloads is higher than the unemployment rates in the same year. For instance, in 1995 Saskatchewan had the highest percentage in caseloads but that does not coincide with a high unemployment rate.

In general we can say that both provinces show the same pattern in welfare program participation and unemployment rates; high unemployment rates coincide with high percentages in welfare caseloads. Both provinces also show a downward trend in welfare caseloads after introducing some reforms to the welfare program. In Alberta we begin to see a decline in caseloads after 1993 and in Saskatchewan after 1996, the same can be said of the unemployment rates. This can partly be explained by the improving economic conditions in both provinces and welfare policies in place.

From Figure 2.2 and 2.3 we can see that Alberta exhibits a positive correlation between welfare rates and unemployment rate ($r^6= 0.9033$) compared to Saskatchewan ($r=-0.0012$). Alberta's experience confirms the idea that welfare utilization increases in periods of business downturns (high unemployment rates) while Saskatchewan's experience shows a very weak relationship.

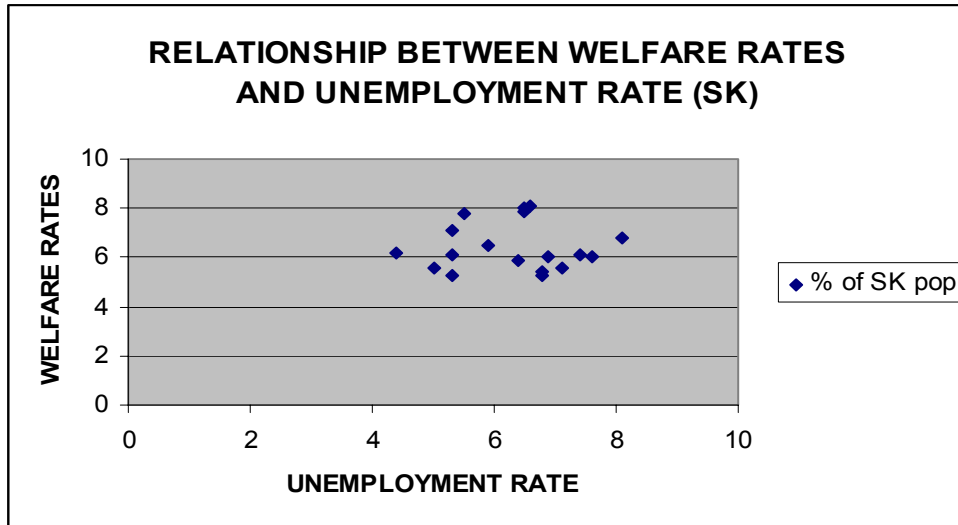


Figure 2.2 (a)

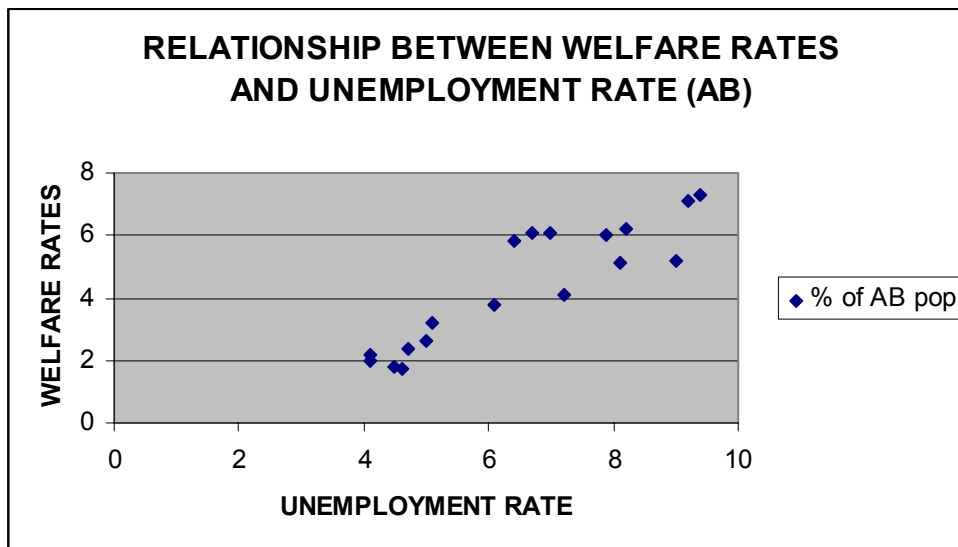


Figure 2.2(b)

⁶ r indicates the correlation coefficient.

Chapter 3

Literature Review

This chapter provides a review of studies as pertains to welfare and labor market participation issues. A review of Canadian literature is provided first followed by the American literature. The chapter also provides a brief discussion on the interaction between Employment Insurance and Social Assistance, and the relationship between welfare and poverty.

3.1 Overview

Labor supply behavior of low-income individuals and welfare recipients continues to be a key research area in economics; many studies have been undertaken both empirically and theoretically. One of the important issues discussed has been the effect of welfare programs on labor market participation. In the US especially, there has been a keen interest on the interaction of welfare program utilization and labor market participation among single mothers who are said to comprise a large portion of welfare recipients. In Canada, on the other hand, research on this issue has been very limited and only begun to gain popularity after the 1990s welfare reforms.

3.2 Canadian Studies

Christofides et al (1997) applied a bivariate probit model of welfare and labor force participation to account for the correlation among the two decisions. They justify the use of bivariate probit model because they argue that the decision to go on welfare or labor market or both depends on the individual's or family's income, since an individual with sufficient income will not qualify for welfare. They utilized data from the Canadian *Labor Market Activity Surveys* 1998-9 (LMAS), which are longitudinal surveys carried out yearly. The data set provides detailed information on the individual's market activity and income received in a given year. They find that welfare and labor market participation decisions are not independent as evidenced by the significant correlation coefficient they found in their study. In addition, they find that the generosity of welfare programs (as measured by the basic allowance) does not influence participation decisions as suggested by the static labor supply model. However, they argue that tax on earned income; personal characteristics and available market opportunities have a significant role in welfare and labor market participation decisions. They conclude that policies directed exclusively to the generosity of welfare program will reduce program costs but may fail to reduce the welfare rolls or encourage labor market activity.

In another study, Kapsalis (1996) explores the incidence of social assistance and employment rate of lone mothers in Ontario and Quebec. He utilized data from the 1989 LMAS on the provinces of Ontario and Quebec. He found that, higher social assistance benefits had a negative effect on employment rate of lone mothers in Ontario but the labor market conditions did not have a major impact on employment rates. Kapsalis concluded that efforts to improve the income situation of lone mothers should be combined with work incentives to avoid dependency.

Fortin et al (1993), using a data set from the 1986 *Consumer Finances Survey* (CFS) for Quebec, analyze the effects of welfare programs by simulating the effects of different combinations of basic allowance (G) and marginal taxes (t) on different social welfare indices. Their results do support other works on Negative Income Tax (NIT) but they also indicate that their results suggest otherwise. They suggest that a workfare scheme properly categorized to take into account heterogeneity of population could be Pareto superior to NITs. In addition, they emphasize that NIT and workfare programs should be regarded as complimentary rather than substitute programs.

Charette and Meng (1994) estimate the probability of welfare participation by female-headed households given changes in benefit level, earned income and the implicit tax. Data used in this study is taken from the 1989 LMAS and welfare incomes published by the National Council of Welfare. They find that marital status and family structure are important determinants of welfare participation. Children increase the probability of welfare participation; presence of children under the age of 6 increases the probability of welfare participation by 0.33 while older ones by 0.09. However, labor market conditions as measured by the unemployment rate do not seem to have a significant effect on welfare participation among female-headed households. Expected wages have a significant negative effect on welfare participation while basic welfare benefit levels have a significant positive impact on welfare participation. They report the elasticity of welfare participation with respect to wage rate to be -0.38 and that of basic assistance level to be 0.27.

3.2.1 Dynamics of Welfare Participation

Following the increased emphasis by the provincial governments on welfare reform, several researchers have focused their interest on understanding the behavior of welfare recipients. The idea stems from the fact that to initiate meaningful reforms you have to understand the behavior of the people you are trying to affect with your policies, consequently the study of dynamics of welfare. Studies on dynamics of welfare focus on determining welfare spells among different social demographic groups. The spells are used to characterize the durations of exit and entry rates and thus identify high-risk groups.

Most of the research carried out in Canada has been at provincial levels; so far these studies have been carried out in British Columbia (Barrett, 1996; Barrett and Cragg, 1998), Quebec (Fortin, Lacroix, and Roberger 1996; Fortin, Lacroix and Thibault, 1998) and Ontario (Stewart and Dooley, 1997), and Newfoundland (Lacroix, 1999).

Results from these studies indicate that on average most of the welfare spells last an average of one year and exit rates becoming rare with increase in the length of the spells. Single men and individuals with higher education are more likely to exit welfare faster compared to single women and less educated individuals. Lone parents exhibit the lowest exit rates and couples with or without children have the same exit rates (Barret and Cragg, 1998).

3.3 United States

In the US, the following programs have received a lot of attention: Aid for Dependent Children (AFDC), Food Stamps and Medicaid. Analysis of these programs has focused on single mothers although other family structures have been considered. A

study by Hagstrom (1995) on married couples, to determine the effect of Food Stamp program on interfamily labor supply and program participation decisions found that married couples' program participation is relatively responsive to changes in food stamp benefits. Moreover, the own wage elasticities indicate that wives are on average more responsive to changes in wages than husbands. He used Data from the Survey of Income and Program participation using a nested multinomial logit model.

In another study by Gensler and Walls (1997), they apply a bivariate probit model to determine the effects of welfare program on labor supply decisions of low income families. They use data from US Census Bureau of Current Population Survey. They find that effective welfare guarantee levels and the effective tax rates on unearned income significantly affect the probability of labor market and welfare participation but the estimated impact is very small in magnitude. They report that a \$1000 increase in welfare guarantee levels would increase the probability of welfare receipt by 0.05 but reduce the probability of labor market participation by 0.02. From their results they concluded that welfare policy instruments have a very small impact in practical terms. In addition they also indicate that their data supports the use of a bivariate probit model.

Gensler (1996) studied the effect of welfare program characteristics on the decision to seek welfare. He compares one and two-parent families using data from US census Bureau's of Current Population Survey. The decision to seek welfare is modeled as a binary choice dependent upon an underlying index function. He finds the decision to enter the welfare system is affected by the alternative opportunities as represented by the available or expected wage and the unemployment rate.

Kilkenny and Huffman (2002) using a bivariate probit model and data from US Census Bureau to study the interaction of regional welfare programs and labor force

participation, find that estimated wages have a larger effect on both labor force and welfare participation than the welfare policy instruments. They also indicate that many eligible households do not participate in welfare programs because the costs of participating outweigh the benefits.

Moffitt and Keane (1998) estimate a structural model of multiple welfare program participation and labor supply using data from the Survey of Income and Program Participation (SIPP) in the US. They apply a multinomial choice model; this involves the estimation of the labor supply model jointly with three welfare participation equations in order to account for the correlations between the error terms. They find that participation in one of the major transfer programs for the poor in the US like subsidized housing is unrelated to housing benefits.

Moreover, they also find that while cumulative tax rates for recipients in multiple programs are very high, small to moderate reduction on those tax rates have very little effect on labor supply. This is because decreases in labor supply are offset by increased program entry. Using their estimates they compute the uncompensated wage elasticity at variable means. They report the wage elasticity of 1.94 and -0.21 for total income.

3.4 Employment Insurance and Social Assistance

Employment Insurance (EI) and Social Assistance (SA) are the two principal public assistance programs available to the non-elderly population in Canada. There has been a growing research interest in Canada on the interaction of the two programs. For instance, Grey (2002) studied the interaction of Employment Insurance (EI) and Social Assistance (SA) in Canada from 1987 to 1997. Using data on Survey of Consumer Finances and EI coverage survey for 1999, find that few individuals combine EI and SA

in the same year. He goes on to discuss that the EI is concentrated among the unemployed with recent employment and SA was concentrated among long-term jobless. He concludes that this points out the difficulty of mixing short-term employment and SA.

3.5 Welfare and Poverty

This study is not intended to discuss welfare and poverty issues. However, it is important to make the connection because the National Council of Welfare has reported that the incidence of poverty among welfare recipients is very high.

The National Council of Welfare publishes a yearly report on the plight of welfare recipients in Canada. They have argued that the current welfare payments are inadequate and exacerbate the poverty problem especially among single parent families. Single parent families are especially vulnerable; since many are employed in low paying jobs, part-time work or rely on welfare for support. In addition welfare recipients are faced with that constant reminder that their income situation can change any time.

The National Council of Welfare and many other social groups regard Low Income Cut-offs (LICOS) produced by Statistics Canada as poverty lines. Using this measure they have shown that welfare incomes have continued to decline and represent 20% to 80% of poverty lines in Canada (National Council of Welfare, 1996). These poverty lines have been the basis for arguing that poverty is prevalent among welfare recipients.

However, Chris Sarlo 1996, in his book *Poverty in Canada*, has argued that LICOs are not a good measure of poverty because they are relative measures and therefore will increase with increase in average incomes. Instead he suggests the use of Basic Needs Lines (BNLs) which are constructed to measure what it costs to buy the

basic necessities in Canada. Using the same measure (BNLs), Emes and Kreptul (1999) have shown that welfare incomes are enough to cover the costs of basic necessities and in cases where they are below the BNL the differences are quite small. Furthermore they have argued that by using LICOs it becomes nearly impossible to eliminate poverty, and no matter how well off Canadians are there will always be people below the poverty lines

Chapter 4

Theoretical Framework and Data

This chapter presents the basic labor supply theory based on an individual's optimization problem subject to constraints. It also examines labor supply and welfare participation decision given the welfare programs in place. A description and the sources of the data are also given.

4.1 Overview

Analyzing the effect of welfare programs on welfare and labor force participation can be a complicated issue; first, changes to welfare program parameters may either change the eligibility point or make individuals to locate above or below the eligibility point (Moffitt, 2002). Secondly, welfare participation itself is a choice variable, not only because of the decision to locate above or below the eligibility point but also some individuals whose income is below the eligibility point choose not to participate in welfare. The above reasons and others such as differences in welfare program administration across the provinces, human capital investment and job search behavior further complicate the analysis.

Fortunately, the labor supply model of income-leisure choice provides the framework for organizing the possible effects of welfare program parameters on welfare and labor force participation.

4.2 The Basic Income- Leisure Choice Model

In the neo-classical model of labor supply, an individual is assumed to maximize utility subject to certain constraints. Individuals are assumed rational and therefore will make choices that increase their utility; the utility function is maximized by choice of hours of work, and therefore labor income earned and leisure time. An individual accepts social assistance if the value of the indirect utility function from participation in the welfare program exceeds that from non-participation.

An individual is assumed to have a well behaved preference function defined over two goods; composite consumption goods and services (C) measured in terms of money income (I), and over hours of leisure (L), L is defined as all other activities other than paid market work.

The utility function can be represented as,

$$U(L, C) \text{ where } U_L > 0, U_C > 0$$

The budget constraint faced by an individual can be represented as

$$C = N + W H = Y,$$

Where:

N is the unearned income,

W is the wage rate

Y is the total Income

H is time devoted to market work

Time constraint $T = H + L$, substituting time constraint into the budget constraint we have

$$C = N + W (T - L)$$

Individual's preferences can be represented graphically by non-intersecting downward sloping indifference curves (Figure 4.1). The slope of the indifference curve defined as the marginal rate of substitution (MRS) is the rate at which an individual would substitute market work for leisure. The MRS at which $L=T$ is defined as the reservation wage (W^R), which is the minimum acceptable wage for labor market participation. Figure 4.1a below gives a graphical representation of the labor-leisure choice model given that the individual is a non-labor market participant.

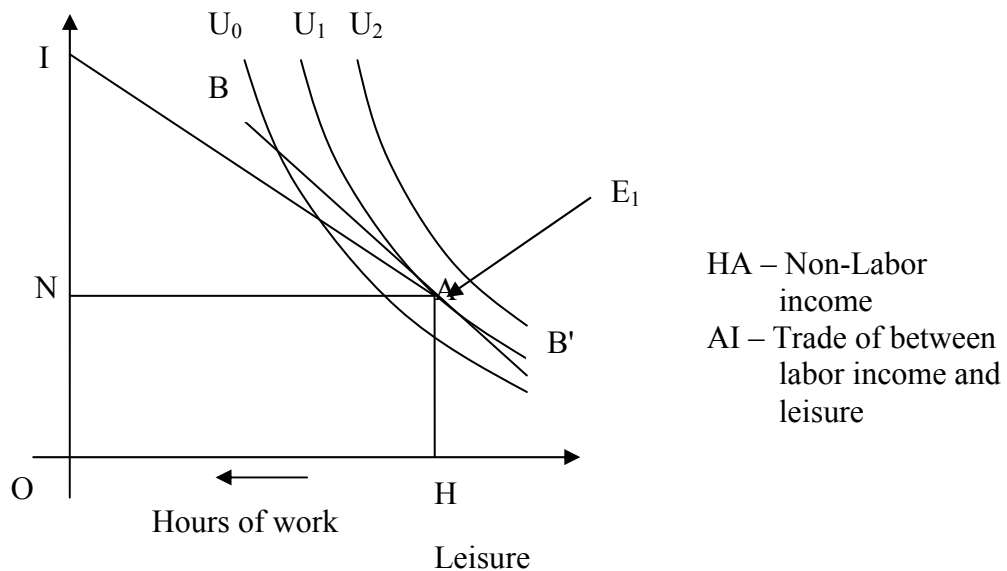


Figure 4.1 (a) Budget constraint for a non- participant.

The highest possible utility that can be attained by this individual (represented in figure 4.1a) is to locate at point A, equilibrium E_1 , where the individual supplies zero hours to the market. This is referred to as a corner solution because the equilibrium occurs at the extreme point on the budget constraint.

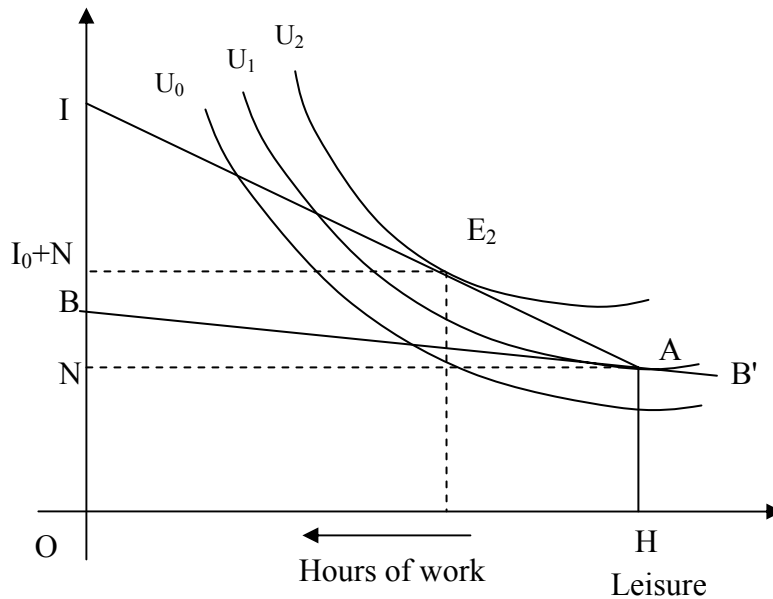


Figure 4.1 (b) Budget constraint for a labor market participant.

Figure 4.1b shows an individual who will be a participant, given the individual's preferences and constraints. In this case we have an interior solution (equilibrium E_2) because the optimum occurs between the extreme points on the budget constraint. The interior solution equilibrium is characterized by the tangency between the budget constraint and the highest attainable indifference curve.

To explain the individual's optimum we examine the relationship between the MRS and the market wage rate. When the MRS at zero hours of work (slope of indifference curve at A) exceeds wage rate (slope of budget constraint), equilibrium E_1 in Figure 4.1(a) the individual values non-market work more than market work therefore the individual will be a non-labor market participant. When the MRS at zero hours of work is less than the wage rate, equilibrium E_2 in Figure 4.1(b), the individual values market work more than leisure time and therefore will participate in the labor market.

The individual will increase market work until MRS between income and leisure equals the wage rate.

Slope of the indifference curve at zero hours of work represents the reservation wage; the wage rate at which the individual will be indifferent between participating and not participating in the labor market, the budget constraint is given by line B and B' Figure 4.1 (a) and (b). That is the point at which the individual will be indifferent between labor market work and non-labor market activities such as retirement, welfare program participation or other leisure activities. If the market wage rate is less than the reservation wage Figure 4.1 (a), the individual will not participate in the labor and instead might opt for the welfare program. Contrary, if the market wage rate is greater than the reservation wage Figure 4.1(b), the individual will be a labor market participant.

4.2.1 Welfare Program

A standard welfare program provides benefits $B = G - t(WH + N)$ where G is the guarantee amount or basic allowance given to those with zero income and t is the marginal tax rate and the budget constraint is given by $N + W(T - L) = Y$. When we combine the benefits and the budget constraint to give us the total income⁷, we have:

$W(1-t)H + G - tN = Y$. This formula indicates that benefits decline as the hours of work and non-labor income N increases, taxes reduce the income from market work and non-labor income (Moffitt, 2002).

A shift in the budget line (Figure 4.2) can be caused by an increase in basic allowance (segment BCD), an increase in exempt earning or a decrease in program taxes (segment CD). Optimal choice for individuals located on segment BCD will be to be on

⁷ For additional information See Moffitt (2002)

welfare and at the same time labor market participants, and at point B optimal choice will be to supply zero hours of market work and be welfare participants.

4.3 Labor Supply and Welfare Programs

The Labor supply model discussed above provides the tools necessary to analyze the interaction between welfare and labor market participation. Christofides et al (1997) provide a graphical representation of the augmented labor leisure choice model of welfare. They incorporate the essential features of Canada's provincial welfare programs, namely the basic allowance, the earnings exemptions and the tax on earned income in excess of exempt earnings; Figure 4.2 below will be used to explain the features.

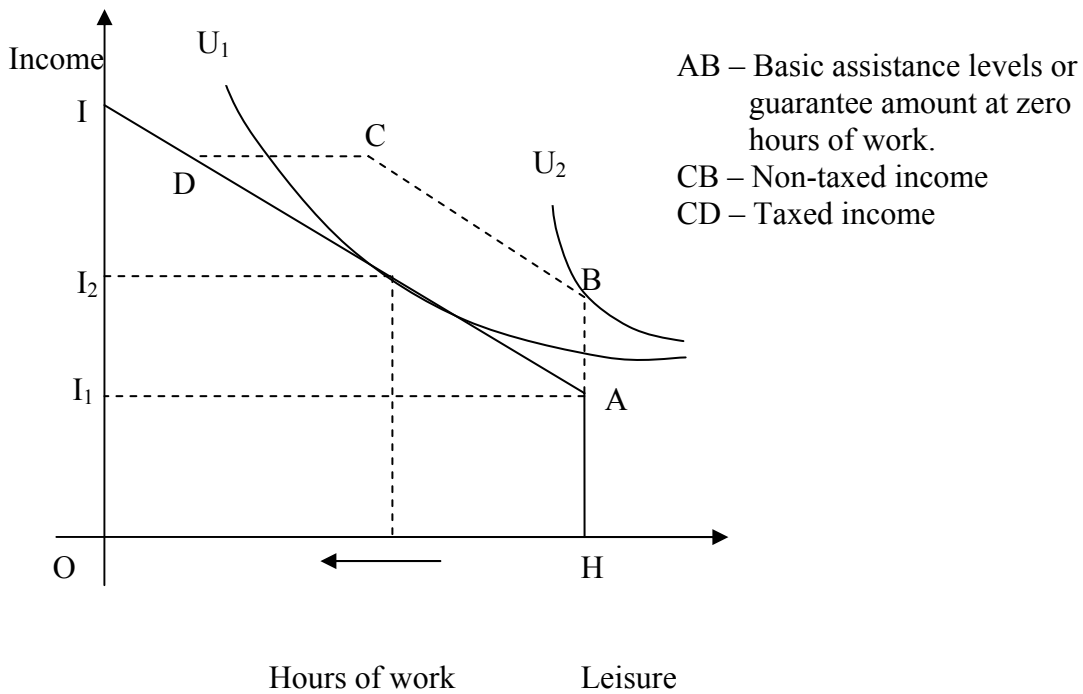


Figure 4.2 Income- leisure choice model augmented with the welfare program

Excluding the welfare program, the budget constraint is given by HADI, where segment HA is non-labor income and segment ADI describes the trade-off between earned income and leisure given the market wage. The welfare budget constraints is HBCDI, where segment AB is the basic allowance at zero hours of work, segment BC captures the non-taxed earnings component, segment CD captures the taxed income, that is the part of earned income that would be lost when an individual supplies positive hours of market work. An individual's optimum choice when located on segment DI above the breakeven point D is to supply positive hours of market work and not participate in the welfare program.

Individuals on segment BCD will be program participants and will also supply positive hours of work. On the other hand, individuals at B will be program participants and supply zero hours of market work. In addition, there are those individuals who would locate on segment AD, although they are qualified to be welfare program participants they choose not to; this may be due the stigma associated with program participation, or transaction cost, or lack of information on eligibility (Moffitt, 2002).

4.3.1 Increase in Basic Assistance or Guarantee

An increase in basic assistance will shift the ABC segment upward (parallel) to BEF and the breakeven point from D to G (Figure 4.3). Individuals initially located by their preferences on segment DG and some individuals on segment GI may now obtain greater utility on social assistance (Christofides et al, 1997); this will lead to an increase in welfare participation rate and a decline in labor market participation rate. In addition, other individuals who are eligible for welfare but are non- participants (segment DI)

might find the benefits of participating outweigh costs of not participating and might now become welfare participants (Moffitt, 1992).

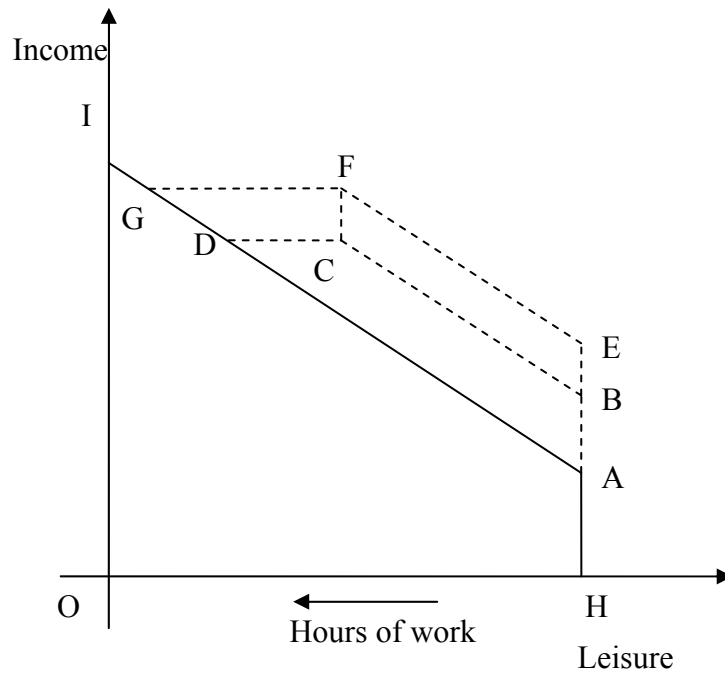


Figure 4.3 Increase in basic welfare benefits

Assuming that leisure is a normal good, an increase in basic allowance (AB to BE) will likely encourage the individuals located at this point to continue supplying zero hours of work. Moreover, some individuals due to the increase in welfare benefits will locate at point E ‘corner solution’. The optimal solution would be to supply zero hours of market work and become welfare program participants. Assuming that the effect is big enough, the result will be an increase in welfare participation rates and decline in labor market participation rates.

Therefore, given an individual's preferences and budget constraints, increase in basic assistance or guarantee amount will likely increase welfare participation rates and decrease labor market participation rates.

4.3.2 A Decrease in Program Tax

A decrease in program tax rate (segment CE) (Figure 4.4) would shift the break even point from D to E, therefore making individuals who were both welfare and labor market participants to either increase or decrease the supply of market hours. On the other hand, the non-welfare participants would find higher benefits to welfare participation and might reduce their hours of work.

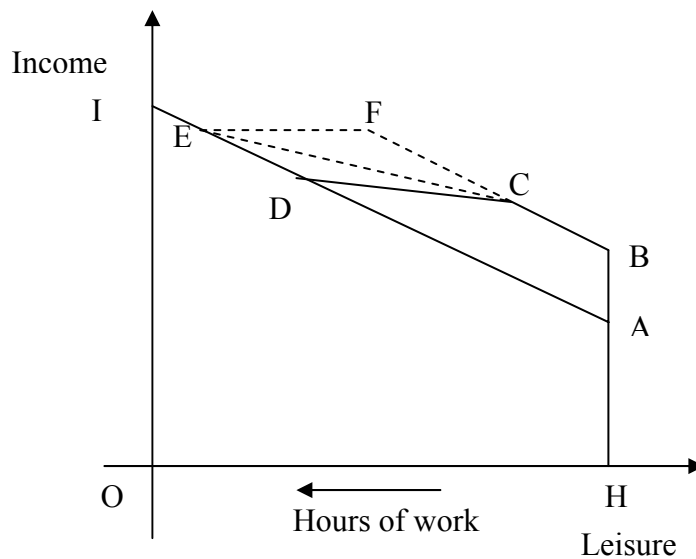


Figure 4.4 Welfare program with a decrease in program tax

Blank (2002) asserts that a change in marginal tax rate is equivalent to a change in the effective wage rate, because it includes both income and substitution effects, it is

theoretically uncertain whether work incentives should rise or fall. At low wages substitution effects should dominate income effects of low-income workers, which suggest that lower marginal rates should increase work incentives. A decrease in marginal taxes would not have an effect on the decision to participate in the labor market.

4.3.2.1 Change in Exempt Earnings

An increase in exempt earnings will be characterized by a parallel shift of segment CD to segment EF (Figure 4.4). Individual on segment ED who were initially non-participants are now eligible for welfare this might encourage them to reduce market work and participate in welfare. Individuals on segment CB might increase or decrease supply of market work depending on whether the substitution effect is stronger or the income effect.

Generally, from the above explanation an increase in guarantee amount coupled with an increase in taxes will lead to an increase in welfare participation rates. Conversely, a decrease in guarantee amount coupled with an increase in exempt earnings will increase labor market participation rates.

4.3.3 Basic Assistance, Program Tax Rate and Hours of Work

Although in this study we have not considered hours of work, I think it is very important to mention something about hours of work because most of the effort in welfare reform has focused on encouraging welfare participants to engage in market work. An increase in basic assistance can be described as pure income effect (Figure 4.3) and it is expected to reduce hours of work by welfare participants.

A decrease in tax rate CD to CE (Figure 4.4) will have mixed substitution effect which implies more hours of work, if initially on CD or fewer hours if initially on ED but the sign cannot be assigned apriori (Christofides et al, 1997). Moreover, Moffitt (2002) cautions that employment hours may also be correlated with the level of tax (t) even if there is no labor supply response.

4.4 Explanatory Variables

The basic argument is that welfare utilization and labor market participation will differ depending on the shape of the indifference map or preferences. The following factors have been included to account for differences in preferences and budget constraints:

4.4.1 Social Assistance Factors

The provincial social assistance programs differ in so many ways: in terms of generosity, work incentives (tax back rates, treatment of work-related costs, differential treatment of long term and short term recipients and administration). In this study we use the basic assistance levels as reported by the National Council of Welfare⁸, tax back rates or marginal taxes are also reported by the Council and the provincial welfare departments. The implicit tax on unearned income is 100% because it is assumed that once an individual's assets exceed a certain level then they will not be eligible for welfare. It is expected that generous welfare payments (basic assistance levels) will

⁸ Other researchers have used this because they have argued that the National Council of Welfare provides a better comparison among the provinces.

increase welfare participation and high marginal tax rates would discourage labor market participation because a big portion of the income will be taxed away.

4.4.2 Demographic Factors

The age of the individuals will determine to what extent they will utilize welfare. For instance young single mothers are more likely to be on welfare and participate less in the labor market compared to older women who might have access to child support and at the same time are likely to be labor market participants. The other factor is the children, presence of very young children is likely to increase the probability of welfare utilization, and aging of children will likely increase the probability of labor market participation and reduce welfare utilization. More education will also increase the probability that the individual will be a labor market participant. In this study four levels of education have been considered: elementary and less than high school (base group), high school, and diploma and university education. In this study sex is a dummy variable; females are the base group in both lone parents and unattached individuals. Lone parents especially single mothers are more likely to be welfare participants compared to single individuals.

4.4.3 Labor Market Factors

As the labor market conditions improve or favorable labor market conditions will tend to encourage more people to be labor market participants. In this study the provincial unemployment rate is used to capture the economic conditions in the province. Data on the provincial unemployment rate is from Statistics Canada; and the unemployment rate of individuals in the prime age (25-44) both sexes is used because it

provides a better representation of the economic situation in the province. Wages have a negative influence on welfare participation; it is expected that higher wages combined with good economic conditions will encourage labor market participation and discourage welfare participation. In this study we use predicted wages because some individuals do not report market income; to get the predicted wage we use the Tobit model and the Mincer earnings equation, the procedure is explained in section (4.5.1) below.

4.4.4 Other Economic Factors

4.4.4.1 Non-Labor Income

Non-labor incomes in this study includes payments for child support, inheritance and any other income received from other sources other than labor market. Non-labor income has a negative effect on welfare participation and labor market participation. Effective tax on non-labor income or unearned income is expected to reduce labor force participation rates among welfare recipients.

4.4.4.2 Employment Insurance

According to the provincial social assistance regulations, social assistance payments will be reduced by the amount of the employment insurance. Therefore, many people do not combine social assistance with employment insurance; in this study individuals who report some labor market activity are the most likely to report employment insurance.

4.4.5 Others

4.4.5.1 Residence

Residence indicates if an individual resides in the rural or urban area, people who live in the rural area are used as a base group. Living in an urban area increases the probability of labor market participation because many urban areas have increased job opportunities compared to rural areas.

4.4.5.2 Immigration Status

Social assistance is only given to permanent residents or Canadian citizens. It is expected that Canadian citizens will be more likely to utilize welfare compared to recent immigrants. Recent immigrants who are eligible for welfare lack proper information on welfare programs. In this study recent immigrants are used as the base group.

4.5 Data Source

The data used in this study is from the *Survey of Consumer Finances* (the survey is not longitudinal) available through the Internet Data Library from the University of Western Ontario. The survey covers the periods from 1987-1998, the information available on these files concerns the period 1986 -1997. The survey is cross-sectional and includes both program participants and non-participants 15 years and older. In this study, of the individuals between the ages of 18-65, only lone parents and singles are considered. The data set provides information on income, the sources of the incomes and the individual family characteristics. The individual family characteristics are used to define if the individual is a lone parent or an unattached individual (single).

Full time students and disabled individuals are excluded from the sample; this resulted in sample of about 2,717 and 3,689 of lone parents, and 4,996 and 5,000 unattached individuals in Saskatchewan and Alberta respectively. The average income reported by lone parents and singles on welfare is about 350 and 400 dollars per month respectively in this data set.

Table 4.1: Summary of Descriptive Statistics

	Saskatchewan		Alberta	
	Lone Parents	Singles	Lone Parents	Singles
Percentage on Welfare	27% 9% Males	9%	20% 8% Males	8%
Average age	33	38	34	37
Average years of Schooling	11	12	11	13
Average income per Month	\$ 2,302	\$1,752	\$3,132	\$1,842
Average number of Children	2	-	2	-
Labor market experience in years	18	20	18	22
Average number of weeks on the market in a year	25	33	27	35

The 11 years of cross-sectional annual data are pooled and nominal dollars are expressed in terms of 1992 dollars⁹. Basic assistance levels for individuals with more than two children are calculated according to the assistance levels as determined by the provincial welfare department; in this study the highest number of children was three¹⁰. Table (4.2) below will give an example of how welfare incomes (guarantee amounts) in

⁹ A table of welfare incomes for the 11 years is provided in the appendix, the table provides incomes for single parents with one child.

¹⁰ The values calculated are approximations and they represent the maximum or minimum assistance given to an individual or a family with given characteristics.

single parent's households with more than one child are calculated, the basic assistance amounts are in \$000s per year; also an example of how the marginal tax rates are calculated. The actual basic assistance payments will vary depending on the individual's or household's needs test.

Table 4.2: Basic Assistance Level for a Single Parent Household with Two Children (1994)

	Saskatchewan	Alberta
Single Parent with one child ¹¹	10,381	9,192
One more child per month ¹²	285	279
Total for the child	285*12= 3,420	279*12=3,348
Total assistance	13,801	12,540

4.5.1 Calculating Marginal Tax Rates

Note: the marginal tax rates are the percentage of income lost above the exemption level; rates are given in the Social Assistance Handbooks of respective provinces

For example: Marginal taxes for a single person in Saskatchewan

Employment Income per month = \$ 150

Allowed to keep up to \$ 75 dollars of your income

The next \$ 75 subject to 80% tax = \$ 60

Total income to keep = \$ 75 + 15= \$90

Marginal tax rate for a single person on welfare in Saskatchewan will be

¹¹ The income for a single parent with one Child is given by the National Council of Welfare

¹² The amount is from the Saskatchewan Social assistance Handbook; we assume the household was on social assistance for the whole year.

$$= \frac{60}{75} \times 100 = 0.80 \text{ or } 80\%$$

Alberta: Marginal tax for a single individual

Employment income per month = \$150

Allowed to keep \$ 115

Next \$ 35 subject to 75% tax = \$ 26.25

Total employment income to keep = 115 + 8.75 = \$123.75

Marginal tax rate for a single individual on welfare living in Alberta

$$= \frac{26.25}{35} \times 100 = 0.75 \text{ or } 75\%$$

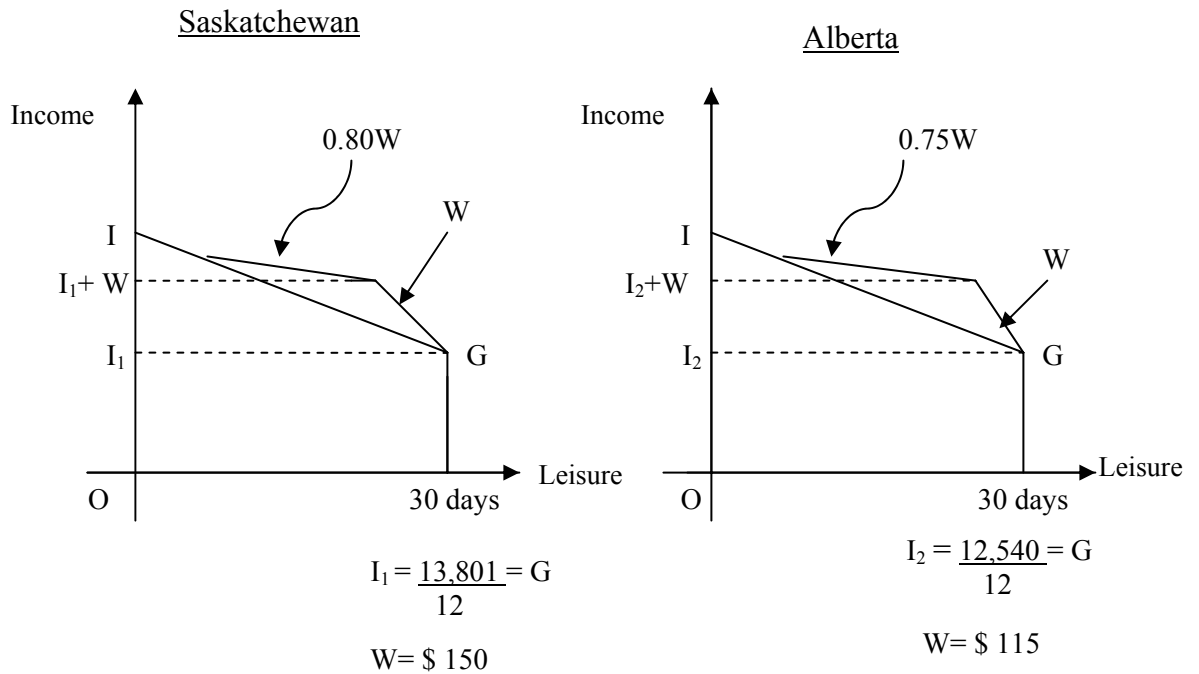


Figure 4.5 Total Monthly income for a Welfare Recipient in Saskatchewan and Alberta

4.5.2 Predicted Wages

Survey of Consumer Finances (SCF) gives information on the annual labor income, the total number of working weeks and the total number of hours worked in a week, but the data does not give direct wage rates and therefore have to be calculated. Wage rates are calculated by dividing total earnings by the number of weeks worked in a year then divided by the number of hours in a week (40 hours). Unfortunately this can not give wages for everybody especially those who do not report positive hours of work and therefore we use Mincer equation to determine the predicted wage.

The predicted wage ($Lnw\hat{age}$) is an increasing function of the experience (Exp) and level of education (Educ). Wages will increase with education and experience but peak at certain level of experience and begin to decline. The wage equation is estimated using the Tobit model of market participants and non-participants. The variable X includes other variables such as: sex, living in an urban area, number of children.

$$Lnw\hat{age} = \beta_0 + \beta_1 Educ + \beta_2 Exp + \beta_3 Exp^2 + \beta_3 X + \varepsilon_w \quad (4.1)$$

4.6 Data Issues or Problems

The data in this study does not differentiate between aboriginal and non-aboriginal and this can be an issue especially if the welfare differentials in Saskatchewan and Alberta are partly due to a high concentration of Aboriginals in either of the provinces. The data does not indicate how long the individual has spent on welfare.

Welfare income is known to be underreported on SCF and therefore the participation rates are likely to be biased downwards¹³. The extent of that bias is not easy to determine because detailed national welfare caseload data are not collected and published in Canada on a regular basis (Dooley, 1994). This problem can be resolved by using administrative data but that is very difficult to find because of the privacy issues involved and moreover, this data has only the recipients. However, Dooley (1997), and Kapsalis (1996) have used Canadian data and propose that this data set will still work better at revealing the underlying differences and for estimation purposes.

¹³ Dooley estimates that the true participation rates are about 10-15% (not percentage points) higher, but he says the underreporting is fairly stable over the years. Given the stable measurement error, the SCF data can measure accurately the difference over time and across family types in the incidence of social assistance income.

Chapter 5

Econometric Procedure and Model Specification

This chapter specifies the econometric model used to identify the factors that determine the decision to participate in welfare and labor market. The econometric question to assess the issues raised in chapters 3 and 4 is also presented here. Two models are specified and estimated using LIMDEP an econometric software developed by Greene. Only the model that provides the best fit will be used in presentation and discussion of the results.

5.1 Hypothesis

Economic research has focused on the effects of higher benefits and higher tax rates on welfare and labor market participation. The argument is based on the fact that raising the basic assistance level (G) provides a stronger safety net and encourages more participation in the welfare program but discourages market work. In this paper we want to test the validity of this proposition and how higher benefit levels have contributed to an increase in welfare participation rates and reduced labor market participation rates.

The issue is to what extent the economic variables identified in chapter 4 explain the gap in welfare participation between Alberta and Saskatchewan. That is, how much of the gap can be explained by the differences in benefit rates, program tax rates, and economic conditions or individual characteristics.

5.2 Econometric Specification

The decision to participate in welfare and labor market is modeled empirically in the form of a binary probit and joint bivariate model. The binary probit model takes the decision to participate in the labor market or the welfare program as independent and the bivariate probit considers the decisions as joint. The bivariate probit model was considered because several researchers have indicated that the two decisions might be dependent especially for low income individuals or families contemplating whether to be labor market participants or welfare program participants. They allude to its (bivariate) advantages over the binary probit model. One of the advantages given is that the bivariate model gives efficient estimates; it also captures the interrelations of the two decisions, allowing for a specific estimate of the degree of this relationship (Christofides et al, 1997); Kilkenny and Huffman, 2002). In this section both specifications are discussed.

5.2.1 Estimation Procedure

Since the dependent variables for individual level data takes the values of either 1 or 0 a probit estimation technique has been used for estimation purposes. Separate regressions for singles and lone parents are estimated. The bivariate is estimated because of the reasons mentioned above. These groups (lone parents and singles) were selected because of a high prevalence of welfare participation. In 1993, the government of Alberta introduced major changes to their welfare program. Since any change in welfare in welfare eligibility is likely to result in fixed time effect, a year dummy is included to control for that structural change in Alberta's welfare program.

Based on the discussion/ theory presented in Chapter 4 the probability of participating in the welfare program is specified as follows:

$$\begin{aligned}
 P^W = F & (\beta_0 + \beta_1 G + \beta_2 \text{TAX} + \beta_3 \text{AGE18} + \beta_4 \text{AGE35} + \beta_5 \text{AGE45} \\
 & \quad (+) \quad (+) \quad (-) \quad (-) \quad (+) \\
 & + \beta_6 \text{CHILD07} + \beta_7 \text{CHILD717} + \beta_8 \text{SEX} + \beta_9 \text{HISCH} + \beta_{10} \text{DIPL} \\
 & \quad (+) \quad (-) \quad (+) \quad (+) \quad (-) \\
 & + \beta_{11} \text{UNIV} + \beta_{12} \text{EXPER} + \beta_{13} \text{EXBERSQ} + \beta_{14} \text{Lnw\hat{a}ge} \\
 & \quad (-) \quad (-) \quad (-) \quad (-) \\
 & + \beta_{15} \text{OTHINC} + \beta_{16} \text{E.I} + \beta_{17} \text{UNRATE} + \beta_{18} \text{RESIDENCE} \\
 & \quad (-) \quad (-) \quad (+) \quad (+) \\
 & + \beta_{19} \text{IMMIG} + \text{Year} + U_w) \quad (5.1) \\
 & \quad (+)
 \end{aligned}$$

Where: P^W = Probability of welfare participation

G = Basic assistance or Guarantee amount in Dollars

TAX= Marginal tax rate, the percentage of income lost above the exemption

AGE18 = 1 if Ages 18 to 24 or 0 otherwise

AGE35 = 1 if Ages 35 to 44 or 0 otherwise

AGE45 = 1 if Ages 45 to 64 or 0 otherwise

CHILD07 = Children under age 7

CHILD717= Children between the ages of 7 and 17

SEX = 1 if male 0 if female

HISCH = 1 if High school education or 0 otherwise

DIPL = 1 if Diploma or trades certificate or 0 otherwise

UNIV = University education or 0 otherwise

EXPER= Labor market experience in years

EXBERSQ= Square of experience

$Ln\hat{w}age$ = Natural logarithm of predicted wage

OTHINC= Non labor income, money from child support payments and other in dollars

E.I = Employment insurance in dollars

UNRATE = Provincial unemployment rate in percentages

RESIDENCE = Place of residence 1 if urban 0 if rural

IMMIG = 1 = Canadian born, 0 = Recent immigrant

YEAR = Dummy for structural changes in welfare program in Alberta, Before 1993 =1

Similarly the probability of labor market participation is specified as follows:

$$\begin{aligned} P^{LM} = & F(\beta_0 + \beta_1 G + \beta_2 TAX + \beta_3 AGE18 + \beta_4 AGE35 + \beta_5 AGE45 \\ & \quad (-) \quad (-) \quad (+) \quad (+) \quad (-) \\ & + \beta_6 CHILD07 + \beta_7 CHILD717 + \beta_8 SEX + \beta_9 HISCH + \beta_{10} DIPL \\ & \quad (-) \quad (+) \quad (+) \quad (+) \quad (+) \\ & + \beta_{11} UNIV + \beta_{12} EXPER + \beta_{13} EXPERSQ + \beta_{14} Ln\hat{w}age \\ & \quad (+) \quad (+) \quad (-) \quad (+) \\ & + \beta_{15} OTHINC + \beta_{16} E.I + \beta_{17} UNRATE + \beta_{18} RESIDENCE \\ & \quad (-) \quad (+) \quad (-) \quad (+) \\ & + \beta_{19} IMMIG + Year + U_w) \end{aligned} \quad (5.2)$$

Where P^{LM} = Probability of labor market participation, the other variables are as defined above.

Equations (5.1) and (5.2) are estimated using LIMDEP which provides the marginal effects. All the data in the sample is considered therefore selectivity problems should not arise.

5.3 Probit Model

The value of the dependent variable in this model is either 1 for a participant and 0 for a non-participant. Due to the nature of the data, Ordinary Least Squares (OLS) does not give efficient estimates therefore; a binary choice model has to be used. An alternative would be the Linear Probability Model (LPM) like the OLS the LPM model has its challenges, such as the non-normality of error terms (u_i) and the heteroscedasticity of u_i . These models also assume that marginal effect of X remains constant throughout, this is not true. A binary choice model like the Probit and the Logit has advantage over the OLS and the LPM because it allows us to restrict the predicted probabilities within 1 and 0, it also allows us to take into consideration the heteroscedastic nature of the error terms and the normality assumption.

The decision to participate in welfare or labor market or not is modeled as $Y= 1$ if the individual is a participant or $Y= 0$ for non-participant. Therefore the predicted probability from a binary choice model is given by ¹⁴

¹⁴The probability that Y_i^* is less than or equal to Y_i can be computed from the standard normal CDF as

$$P_i = \Pr(Y = 1) = \Pr(Y_i^* \leq Y_i) = F(Y_i) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{Y_i} e^{-t^2/2} dt$$

$$= \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\beta_1 + \beta_2 x_i} e^{-t^2/2} dt$$

$$\text{Pr ob}(Y_i = 1 | X_i' \beta) = F(\beta' X_i) \beta \quad (5.7)$$

Where Y is the choice variable, \mathbf{X} is a vector of explanatory variables β is the vector of parameter estimates and F is an assumed cumulative distribution function (CDF), and assuming F is the standard normal distribution (Φ) produces the probit model. From (Greene, 2003), for a given independent vector, it is expected that;

$$\lim_{X' \beta \rightarrow +\infty} \text{Prob}[Y=1 | X] = 1 \quad (\text{as } X' \beta \text{ approaches positive infinity the probability of } y \text{ given } X \text{ will equal } 1)$$

$$\lim_{X' \beta \rightarrow -\infty} \text{Prob}[Y=1 | X] = 0 \quad (\text{as } X' \beta \text{ approaches negative infinity the probability of } y \text{ given } X \text{ will equal } 0)$$

5.3.1 Marginal Effects

The probit model is computed from the standardized normal cumulative distribution function CDF, because the β s do not give the marginal effects of the explanatory variables, the marginal effects have to be determined and they will be given by:

$$E[Y_1 | X_1] = \Phi(\beta' X_1) = \text{Pr ob}[Y_1 = 1]$$

$$\frac{\partial E[Y_1 | X_1]}{\partial X_1} = \left\{ \frac{dF(\beta X_1')}{d(\beta X_1')} \right\} \beta = F(\beta' X_1) \beta \quad (5.8)$$

- For a more detailed and formal explanation see Greene (2003) and Gujarati (2003)

Where F is the corresponding probability density function, for the probit model f is given by the standard normal density function

$$\Phi(\beta'X) = \frac{1}{\sqrt{2\pi}} \exp\left[-\frac{1}{2}(\beta'\bar{X})^2\right] \quad (5.9)$$

The density function $F(\beta'X)$ can be thought of as a scale factor that translates raw parameter estimates into marginal effects.

The marginal effects or slopes transform the results to show how a change in one of the explanatory variables affects the probability that an individual will choose to participate in the labor market or go on welfare. These marginal effects have important implications for various welfare reforms and policy, for instance knowing the decision to work is not influenced by the effective welfare tax rates can assist policy makers to realize that changes to taxes will have a very small impact on welfare recipients.

5.3.2 Variances for the Marginal Effects

Since the marginal effects have to be determined the corresponding standard errors also have to be calculated. The standard errors can be found by first estimating the variances then finding their square roots. The variances for the marginal effects are calculated using the linear approximation method (delta method) suggested by Greene (2003).

The asymptotic covariance matrix for the marginal effects will be given by:

$$Asy.Var\left[\Phi(\hat{\beta}'\bar{X})\hat{\beta}\right] = \Phi(\hat{\beta}'\bar{X})^2 \left[1 - (\hat{\beta}'\bar{X})\hat{\beta}\bar{X}'\right] V \left[1 - (\hat{\beta}'\bar{X})\hat{\beta}\bar{X}'\right] \quad (5.10)$$

Where:

I = identity matrix

$\hat{\beta}$ = parameter estimates

\bar{X} = mean of the independent variables

$\hat{\beta}'$ = transpose of the parameter estimates

\bar{X}' = the transpose of the mean of the independent variables

V = the covariance matrix of the estimated parameters as shown in (Greene 2003, p675)

5.4 Bivariate Probit Model

We employ a bivariate analysis when we want to know if two variables or phenomena are associated. An association is said to exist between two variables when knowing the value of one for a given case improves the odds of our guessing correctly the corresponding value of the second. A full information maximum likelihood estimate of the bivariate probit model is used to estimate models (5.1) and (5.2) above jointly. Based on the relationships among joint, conditional and marginal probabilities, the probabilities of the above equations would be determined in the following manner, Greene (1997).

Take W = Welfare

LF = Labor force participation

$$\begin{aligned} & \text{Pr ob}[W = 1, LF = 1] \\ &= \text{Pr ob}[W = 1|LF = 1] \times \text{Pr ob}[LF = 1] \\ &= \{BVN(W, LF = 1) / \text{Pr ob}[LF = 1]\} \times \text{Pr ob}[LF = 1] \end{aligned} \quad (5.3)$$

Therefore given the probability of welfare participation and the probability labor force participation is equal to one the bivariate probability will be given by:

$$\text{Pr ob}[W = 1, LF = 1] = [BVN(\beta'X_1 + \gamma LF, \alpha'X_2, \rho) / \Phi(\alpha'X_2)] * \Phi(\alpha'X_2) \quad (5.4)$$

Where $\Phi(\alpha'X_2)$ is the univariate probit model for Labor Force participation (LF) which can also be the marginal probability of LF =1. BVN is bivariate normal distribution. Canceling the like terms in the denominator and the numerator, we are left with the bivariate probability.

$$\text{Pr ob}[W = 1, LF = 1] = BVN(\beta'X_1 - \gamma, \alpha'X_2, -\rho) \quad (5.5)$$

The other cases will be determined in the same manner and the bivariate probabilities of the remaining cases are (Greene, 1997)

$$\begin{aligned} \text{Pr ob}[W = 0, LF = 1] &= BVN(-\beta'X_1 - \gamma, \alpha'X_2, \rho) \\ \text{Pr ob}[W = 1, LF = 0] &= BVN(\beta'X_1, \alpha'X_2, -\rho) \\ \text{Pr ob}[W = 0, LF = 0] &= BVN(-\beta'X_1, -\alpha'X_2, \rho) \end{aligned} \quad (5.6)$$

Chapter 6

Estimation Results and Interpretation

In this chapter, we assess our estimated results against the theoretical discussion presented in Chapter 3 and 4. Equations 5.1 and 5.2 are estimated by joint bivariate and binary probit models; the results are obtained and interpreted. These results are used to provide a brief discussion of welfare differentials between Saskatchewan and Alberta. We also compare our results against other Canadian studies. In the explanation of the results we put more emphasis on welfare.

6.1 Estimation Results

6.1.1 Discussion of the Results

The results of the bivariate probit model are presented in the appendix since the model did not performed as expected; we instead present the results of the binary probit models which generally perform as expected. The results of the bivariate probit model were dropped because the correlation coefficient (ρ) was not significant. Greene (1998) indicates that if the correlation coefficient in the bivariate model is not significant the individual probit models provide efficient and unbiased estimates. The marginal effects are presented as well as the T-statistics in parentheses; the marginal effects give the effect of a change in an explanatory variable on the probability of participation in either welfare or labor force. The variables with asterisks indicate their level of significance, an

explanatory variable is said to be statistically significant if at a given level of α , we reject the null hypothesis in favor of the alternative. In interpretation of the results; a positive marginal effect means that the probability of welfare or labor market participation increases while a negative marginal effect indicates the opposite.

Table 6.1 Welfare and Labor Force Participation Results for the Lone Parents, Probit Model (Dependent Variable: Participant =1 or 0 Otherwise)

Explanatory Variables	SASKATCHEWAN		ALBERTA	
	Welfare Participation	LFP	Welfare Participation	LFP
Policy Variables				
Basic assistance (G)	0.00009*** (23.269)	-0.00002*** (9.404)	0.00006*** (12.072)	-0.000001 (0.699)
Marginal tax	0.0002 (0.032)	0.1721 (1.522)	0.3232*** (6.301)	-0.0088 (0.206)
Demographic Variables				
Age (base group 25-34)				
18-24	0.1441** (2.096)	-0.1290*** (2.788)	-0.0887** (2.032)	0.0282 (0.806)
35-44	-0.1063* (1.761)	0.0342 (0.828)	0.0758* (1.908)	-0.0548 (1.849)
45-64	-0.1542 (1.606)	0.0905 (1.361)	0.2050*** (3.349)	-0.0248 (0.514)
Number of Children				
Age < 7	0.2196 (0.937)	-0.1121*** (7.484)	0.0148 (0.972)	-0.0041 (0.346)
Age 7 to 17	-0.0229 (1.355)	0.0232** (2.033)	0.0083 (0.685)	0.0015 (0.166)
SEX (Base- Female)	-0.0789 (1.247)	0.1814 (1.261)	0.0358 (1.191)	0.0234 (-0.979)
Human Capital Variables				
Education (base Elementary)				
High school	0.2674*** (4.811)	0.0385 (1.007)	-0.0352 (1.573)	0.1117*** (6.158)
Diploma, trades certificate	0.0965 (1.179)	0.1036* (1.951)	-0.0755** (2.935)	0.1352*** (6.618)
University	0.0914 (0.634)	0.1116 (1.292)	-0.1297** (2.731)	0.1265*** (4.471)

Table 6.1 Continued

Experience	-0.0394*** (3.947)	0.0217*** (3.236)	-0.0125** (2.307)	0.0052 (1.201)
Experience Squared	-0.0006*** (3.546)	0.0001 (0.987)	0.0001 (1.592)	-0.0001 (1.430)
Other Economic Variables				
<i>Lnwâge</i>	-0.7244*** (3.178)	0.5875*** (3.875)	-0.0903 (1.506)	0.0541 (1.124)
Non-labor Income	-0.00002** (2.336)	-0.000003 (0.984)	-0.000009 (1.333)	0.0000001 (0.067)
Employment Insurance	0.000005 (0.604)	0.00002*** (2.826)	-0.000001 (0.269)	-0.000002 (0.481)
Unemployment Rate	0.0632** (2.827)	-0.0066 (0.453)	-0.0057 (0.777)	-0.0145** (2.388)
Others				
Residence	0.0938*** (3.171)	0.0157 (0.761)	0.0442** (2.106)	-0.0324* (1.837)
Immigration Status	0.0053 (0.084)	-0.0313 (0.629)	0.0398 (1.469)	-0.0046 (0.209)
Constant	2.8718** (2.222)	-2.9439*** (3.407)	0.5345 (1.613)	-0.0790 (0.290)
Year	-	-	0.0879*** (3.344)	0.0854*** (4.654)
SAMPLE	2717	2717	3689	3689
Mean of dependent Variable	0.3194	0.7030	0.2140	0.7788
Log-Likelihood	-541.680	-1258.571	-354.594	-1861.099

Note: Base group would be a single mother age 25-34 with elementary education and living in the rural area.

T-stats in the Parenthesis-

Estimated Parameters are evaluated at the mean

*** Statistically significant at 1% level

** Statistically significant at 5% level

* Statistically significant at 10% level

Table 6.2 Welfare and Labor Force Participation Results for the Singles, Probit Model (Dependent Variable: Participant=1 or 0 Otherwise)

Explanatory Variables	SASKATCHEWAN		ALBERTA	
	Welfare Participation	LFP	Welfare Participation	LFP
Policy Variables				
Basic Assistance (G)	0.000006*** (2.711)	-0.0000002 (0.004)	0.00001*** (6.398)	-0.00004*** (12.216)
Marginal tax	0.7292 (0.302)	-0.0329 (0.704)	0.1590*** (5.258)	0.0858 (1.079)
Demographics				
Age (base group 25-34)				
18-24	-0.0018 (0.157)	0.0010 (0.621)	0.000004 (0.012)	0.0022 (0.111)
35-44	-0.0085 (0.583)	-0.0264 (1.356)	-0.0120 (1.299)	-0.1301*** (4.384)
45-64	0.0019 (0.164)	-0.0075 (0.464)	-0.0060 (0.521)	-0.0505 (1.091)
SEX (Base- Female)	-0.0063 (0.671)	0.0152 (1.136)	0.0085 (0.258)	0.0107 (0.992)
Human Capital Variables				
Education (base Elementary)				
High school	-0.0159 (1.421)	0.0279* (1.772)	-0.0026 (0.627)	0.0043 (0.287)
Diploma, trades certificate	-0.0112 (0.842)	0.0086 (0.461)	-0.0053 (1.182)	0.0076 (0.473)
University	-0.0613** (2.239)	0.0517 (1.475)	-0.0056 (0.764)	0.0122 (0.528)
Experience	-0.0044*** (4.057)	0.0048*** (3.079)	0.0014** (1.973)	0.0096*** (2.970)
Experience Squared	-0.00004* (1.927)	-0.0001*** (3.361)	-0.00001 (1.070)	-0.0002*** (2.841)
Other Economic Variables				
<i>Lnwâge</i>	-0.0424** (2.194)	0.0031 (0.107)	-0.0032 (0.534)	0.0304 (1.265)
Non-labor Income	-0.000008* (1.654)	0.000002 (0.750)	-0.0000005 (0.313)	0.0000008 (0.238)

Table 6.2 Continued

Other Economic Variables**Continued**

Employment	-0.000002	-0.000002	-0.000003**	0.000002
Insurance	(0.910)	(0.537)	(2.312)	(0.537)
Unemployment rate	0.0170*** (2.648)	-0.0075 (0.832)	0.0003 (0.180)	-0.0004 (0.090)
Others				
Residence	0.0033 (0.321)	-0.0295 (0.199)	0.0027 (0.460)	-0.0187 (0.951)
Immigration Status	-0.0009 (0.047)	0.0020 (0.071)	0.0015 (0.308)	0.0036 (0.213)
Constant	0.1151 (0.915)	0.3766** (2.011)	0.0445 (0.952)	-0.1043 (0.540)
Year	-	-	0.0040 (0.815)	-0.0104 (0.670)

SAMPLE	4996	4996	5000	5000
Mean of dependent Variable	0.0962	0.7984	0.0880	0.8394
Log-Likelihood	-1493.865	-2095.790	-158.7088	-2002.024

Note: Base group would be a single female age 25-34, elementary education, living in the rural area.

T-stats in the Parenthesis

Estimated Parameters are evaluated at the mean

*** Statistically significant at 1% level

** Statistically significant at 5% level

* Statistically significant at 10% level

6.1.2 Policy Variables**6.1.2.1 Basic Assistance (in Dollars)**

As mentioned in Chapter 3, generous benefit levels encourage welfare participation but discourage work effort and from the results above we can say that holds true. Basic assistance has a significant positive effect on welfare participation among lone parents in both provinces. Among Saskatchewan lone parents, the mean of basic

assistance is \$3494.93¹⁵ and the mean probability of welfare participation is 0.31947, if welfare increases by \$1 welfare participation increases to 0.31956 which is a 0.00009 change in welfare participation. This translates to 0.009 percent increase in welfare participation; given a \$100 dollar increase in basic assistance the probability of welfare participation will increase by 0.9 percent.

We have a sample of 2717 lone parents in Saskatchewan; a \$100 per year increase in basic assistance will translate to 24 more lone parents on welfare. Among Alberta lone parents, the mean of basic assistance is 2115.05 and the mean probability of welfare participation is 0.21387, if welfare increases by \$1 welfare participation increases to 0.21393 which is a 0.00006 change in welfare participation. This translates to 0.006 percent increase in welfare participation; if basic assistance increases by \$100, welfare participation will increase by 0.6 percent. We have a sample of 3689 lone parents in Alberta; a \$100 increase will translate to approximately 22 more lone parents on welfare.

A \$100 increase in basic assistance will decrease the probability of labor market participation by 0.2 percent among lone parents in Saskatchewan. In Alberta, a \$100 increase in basic assistance will decrease the probability of labor market participation by 0.001 percent. From the preceding explanation we can conclude that basic assistance levels have a greater effect on welfare participation than labor market participation decision among lone parents.

Among the singles, basic assistance levels have the same effect on welfare and labor market participation decisions as lone parents. In Saskatchewan, a \$100 increase in

¹⁵ The mean is used because every thing in the discussion is assessed at the means. The mean provides a simple way to asses our results when using the probit model.

basic assistance will increase the probability of welfare participation by 0.06 percent and decrease the probability of labor market participation by 0.02 percent. In Alberta, a \$100 in basic assistance will increase the probability of welfare participation by 0.1 percent and decrease the probability of labor market participation by 0.4 percent.

The elasticity of welfare participation to basic assistance is 0.98 and 0.59 among lone parents and 0.04 and 0.07 among singles in Saskatchewan and Alberta respectively. These elasticities are within the range estimated by other researchers using Canadian data but the elasticity on lone parents in Saskatchewan is relatively high.

6.1.2.2 Marginal Tax

Tax is one of the policy instruments available to the policy makers that can be used to encourage labor market participation. In this study marginal taxes have a mixed effect on welfare and labor market participation decisions. In Saskatchewan, marginal taxes have a positive but insignificant influence on labor market and welfare participation decisions among lone parents. Among the singles, marginal taxes are statistically insignificant to welfare and labor market participation decisions. The insignificant influence on welfare participation might be an indication that many individuals on welfare do not combine welfare program and market work. The positive influence of labor market participation decisions might have to do with how marginal taxes were calculated in this study¹⁶.

¹⁶ The marginal taxes for individuals not on welfare were presumed to 100%, which might not be the case in real sense (there is need for more studies in this area).

In Alberta, marginal taxes have a significant negative impact on welfare participation among singles and lone parents, but insignificant effect on labor market participation decisions.

6.1.3 Demographic Variables

6.1.3.1 Age

Relative to the base group (age 25-34), among Saskatchewan lone parents, individuals in the age group 18-24 have the highest probability of welfare participation, and among Alberta lone parents individuals in the age group 45-64 have the highest probability of welfare participation. Conversely, lone parents in the ages 35- 44 have the highest probability of labor market participation in both provinces. This can be explained by the fact that many of them (age 35-44) have labor market experience and there is also an indication that individuals in this age group have experienced a wage increase relative to basic assistance levels, especially lone mothers (Dooley, 1999). In addition, lone parents in the age group 35-44 are likely to have older children compared to lone parents in ages 18-24 and therefore more likely to be labor market participants.

Furthermore, we can observe that in Saskatchewan lone parents in age group 35-44 and 45-64 have a negative probability to welfare participation while in Alberta it is the opposite. This can be partly due to the welfare policy inherent and the composition of welfare participants in the two provinces. The Alberta government is very firm on ensuring that young people (young parents included) are enrolled into skill development programs and face stringent rules when applying for welfare. Saskatchewan, in contrast is lenient towards single parents with young children.

Singles on the other hand respond differently to welfare and labor market participation decisions; individuals in the age group 45-64 have the highest probability of welfare participation and also have the lowest probability of labor market participation. This can be explained by the fact that many individuals in this age group face challenges in either finding jobs or being rehired.

6.1.3.2 Presence of Children

Children increase the accessibility and reduce the stigma associated with welfare participation, (Charette and Meng, 1994). It is expected that younger children will increase the probability of welfare participation and reduce the probability of labor participation, the reverse holds true for older children. This can be attributed to the fact that the provinces are generous towards parents with very young children. Among Saskatchewan lone parents, having children less than 7 years of age increases the probability of welfare participation by 22 percent and decreases the probability of labor market participation by 11percent. Moreover, having children over age 7 to 17 decreases the probability of welfare participation by 2 percent and increases the probability of labor market participation by 2 percent. In Alberta, children do not exhibit a strong influence on welfare and labor market participation decisions of lone parents as compared to Saskatchewan. Children under the age of 7 increase the probability of welfare participation by 1percent and decrease the probability of labor market participation by 0.4 percent. Children over the age of 7 increase the probability of welfare participation by 0.8 percent but increase the probability of labor market participation by 0.2 percent.

6.1.3.3 Sex

As indicated in Chapter 3, females especially lone mothers are more likely to participate in welfare compared to males. In this study, being a male lone parent decreases the probability of welfare participation but increases the probability of labor market participation in both provinces. The same applies to singles. Being a male lone parent decreases the probability of welfare participation by 8 percent and increases probability of labor market participation by 6 percent in Saskatchewan. In Alberta, being a male lone parent decreases the probability of welfare participation by 4 percent but increases the probability of labor market participation by 2 percent. Among the singles, being male decreases the probability of welfare participation by 0.6 percent and 0.8 percent and increases the probability of labor market participation by 0.2 percent and 1 percent in Saskatchewan and Alberta respectively.

6.1.6 Human Capital Variables

6.1.6.1 Education and Experience

As mentioned in Chapter 4 education and labor market experience increase the probability of labor market participation but decrease the probability of welfare participation. Relative to the comparison group of elementary school graduates, individuals with higher formal education in all categories considered in this study show a considerably lower probability of welfare participation and an increase in probability of labor market participation. In addition, the effect of education is considerably stronger among Alberta lone parents and single individuals in both provinces compared to Saskatchewan lone parents. Experience is a decreasing function of both welfare and

labor market participation; in this study experience has a mixed signage but generally performs as expected.

6.1.7 Other Economic Variables

6.1.7.1 Predicted Wages

Predicted wages have a negative and significant influence on welfare participation and a positive and significant impact on labor market participation. The wage elasticities evaluated at the mean are -2.26 and -0.42 for welfare and 0.84 and 0.07 for labor market participation among Saskatchewan and Alberta lone parents respectively. Saskatchewan's lone parent wage elasticity for welfare is much larger than the values by Charrete and Meng (1994) of (-0.38) but less than Dooley's (1999) of (-1.5) and (-3.3) estimated by Christofides et al (1997). Among single people in Saskatchewan and Alberta, the elasticity of welfare participation to wage is -0.28 and -0.02 and elasticity of labor market participation to wage is 0.07 and 0.02 respectively.

6.1.7.2 Non-labor income

As suggested in chapter 4 non- labor income has a negative influence on both welfare and labor market participation. Moreover, as pointed out by Charette and Meng (1994) if child support payments represent a significant portion of the non-labor income in the case of lone parents, non-labor income should decrease the probability of welfare participation. The elasticity of welfare participation with respect to non-labor income is -0.04 and 0.04 and the elasticity of labor market participation -0.003 and -0.002 among lone parents in Saskatchewan and Alberta respectively. Among the singles, the elasticity

of welfare participation with respect to non-labor income is -0.02 and 0.001 and that of labor market participation is -0.0002 in Saskatchewan and Alberta respectively.

6.1.7.3 Employment Insurance

As indicated in Chapter 2, Employment insurance just like any other income reduces the social assistance benefits given to an individual. In Saskatchewan and Alberta, the total assistance payment given to an individual will reduce by the amount of employment insurance benefit. It follows that employment insurance increases the probability of welfare participation among lone parents and singles in both provinces, although the parameters have mixed signage and not statistically significant. In Chapter 2, we indicated that welfare cases were highly correlated with unemployment rates in Alberta compared to Saskatchewan.

6.1.7.4 Unemployment Rate

The unemployment rate controls for economic conditions in the respective provinces. As indicated in Chapter 3 and 4 given the state of the economy, in recessions we expect increases in welfare participation and the opposite in expansions. Among the lone parents, unemployment rate has a significant positive influence on welfare participation decision and a negative influence on labor market participation decision. A 1 percent increase in unemployment rate increases the probability of welfare participation by 0.06 and 0.006 percent among Saskatchewan and Alberta lone parents respectively. Among single people in Saskatchewan and Alberta unemployment rate has a negative effect on labor market participation but a positive effect on welfare participation. A 1 percent increase in unemployment rate will increase the probability of

welfare participation by 0.02 and 0.0003 percent and reduce the probability of labor participation by 0.008 and 0.0004 percent respectively. In Chapter 2, we indicated that welfare cases were highly correlated with unemployment rates in Alberta compared to Saskatchewan. Our results indicate the opposite, unemployment rates have a significant influence on the probability of welfare participation in Saskatchewan compared to Alberta. This might be an indication of the economic situation in the provinces. Alberta experienced a strong economic growth compared to Saskatchewan in the period considered in this study.

6.1.8 Others

6.1.8.1 Residence and Immigration Status

Our results indicate that living in the urban area increases the probability of welfare and labor market participation in Saskatchewan. On the contrary, in Alberta, living in the urban area decreases both the probability of welfare and labor market participation.

Canadian born individuals have higher probability of welfare participation and labor market participation in both groups although the parameters are not economically significant.

6.1.8.2 Fixed Time Effect (Alberta)

Changes in the welfare program affected the eligibility criteria. These changes were used to encourage labor market participation. Fixed time effects control for changes in eligibility that cannot be captured by the marginal tax and basic assistance. In addition, they control for those changes that might have occurred concurrently with

changes in marginal taxes and basic assistance. From our results, fixed time effect has a significant influence on welfare and labor market participation decisions among lone parents but not singles.

6.2 Evaluation of the results

6.2.1 Decomposing the Saskatchewan-Alberta Welfare differential

The regression results in (Table 6.1 and 6.2) are used to decompose the Saskatchewan – Alberta welfare differentials into the explained and the unexplained part. This principle (decomposition) follows the same procedure developed by Blinder and Oaxaca (1973) to explain wage differentials between men and women. By applying this principle, we hope to identify which variables contribute to welfare differentials between Saskatchewan and Alberta. We then determine if the identified variables can be used by policy makers to influence welfare participation decisions. The variables considered are: age, education, basic assistance, marginal taxes, economic variables, experience, sex, and children.

We provide a table showing variables that contribute to an increase in welfare participation in Saskatchewan. An example of how the explained differential will be determined is given in Table 6.3.

6.2.2 Explaining the Gap

The welfare differential in the probability of welfare participation between Saskatchewan and Alberta will be given by:

$$\begin{aligned}
 (\text{Pr obwelf}_{part}^{AB}) - (\text{Pr obwelf}_{part}^{SK}) &= \sum \beta^{AB} X^{AB} - \sum \beta^{SK} X^{SK} \\
 &= \sum \beta^{AB} X^{AB} - \sum \beta^{AB} X^{SK} + \sum \beta^{AB} X^{SK} - \sum \beta^{SK} X^{SK} \\
 &= \underbrace{\sum \beta^{AB} (X^{AB} - X^{SK})}_{\text{Explained}} + \underbrace{\sum X^{SK} (\beta^{AB} - \beta^{SK})}_{\text{Unexplained}}
 \end{aligned}$$

The explained part gives the difference that we can account for given that there are differences in choice variables. The unexplained part gives the difference that we cannot account for given that Alberta and Saskatchewan have the same choice variables.

Given the explanatory variables in Equation 5.1 the explained gap will be given by:

$$\begin{aligned}
 \text{Explained gap} &= \beta_G^{AB} (X_G^{AB} - X_G^{SK}) \text{ due to difference in basic assistance (G)} \\
 &+ \beta_{Tax}^{AB} (X_{tax}^{AB} - X_{tax}^{SK}) \text{ due to difference in marginal tax} \\
 &+ \beta_{age}^{AB} (X_{age}^{AB} - X_{age}^{SK}) \text{ due to difference in age composition} \\
 &+ \beta_{Educ}^{AB} (X_{educ}^{AB} - X_{educ}^{SK}) \text{ due to difference in education} \\
 &+ \beta_{Exper}^{AB} (X_{exper}^{AB} - X_{exper}^{SK}) \text{ due to difference in experience} \\
 &+ \beta_{sex}^{AB} (X_{sex}^{AB} - X_{sex}^{SK}) \text{ due to difference in sex composition} \\
 &+ \beta_{\ln w}^{AB} (X_{\ln w}^{AB} - X_{\ln w}^{SK}) \text{ due to difference in predicted wages} \\
 &+ \beta_{unrate}^{AB} (X_{unrate}^{AB} - X_{unrate}^{SK}) \text{ due to difference in unemployment rate} \\
 &+ \beta_{child}^{AB} (X_{child}^{AB} - X_{child}^{SK}) \text{ due to difference in number of children} \\
 &+ \beta_{oth minc}^{AB} (X_{oth minc}^{AB} - X_{oth minc}^{SK}) \text{ due to the difference in non-labor income} \\
 &+ \beta_{EI}^{AB} (X_{EI}^{AB} - X_{EI}^S) \text{ due to difference in Employment insurance}
 \end{aligned}$$

Table 6.3 Mean of Age Composition in the Two Provinces (Lone Parents)

	Saskatchewan	Alberta
18-24	0.1991	0.1919
25-34(base)	0.3051	0.2976
35-44	0.2845	0.2947
45-64	0.2113	0.2158

$$\begin{aligned}
 \text{Explained gap due to age}^{17} &= \beta_{age}^{AB} (X_{age}^{AB} - X_{age}^{SK}) \\
 &= -0.0887 * (0.1919 - 0.1991) + 0.0758 * (0.2947 - 0.2845) \\
 &\quad + 0.2050 * (0.2158 - 0.2113) \\
 &= 0.0106
 \end{aligned}$$

Therefore given that Alberta and Saskatchewan have the same age composition welfare participation differential due to age will be 0.0106 or 1.06%.

Table 6.4: Total Welfare Participation Gap

Lone parents		Singles	
Mean of Saskatchewan	31.94	Mean of Saskatchewan	9.62
Mean of Alberta	21.40	Mean of Alberta	8.8
Total Welfare gap	10.54	Total Welfare gap	0.82

¹⁷ Values in Table 6.5 are determined in the same way.

Table 6.5: Factors Explaining the Gap

Lone parents		Singles	
Explanatory variable	Percentage	Explanatory variable	Percentage
Basic assistance (G)	8.28	Basic Assistance (G)	0.00083
Children	0.15	Education	0.074
Education	0.15	Experience	0.62
Non- Labor Income	0.15	Immigration	0.009
Employment Insurance	0.0016		
Unemployment Rate	0.49		
Immigration	0.30		
Total explained	9.52	Total explained	0.70
Percentage of the total gap	90%	Percentage of the total gap	85%

After controlling for the variables constraints considered in this study, the variables in Table 6.5 have been found to contribute to the increase in welfare participation in Saskatchewan. That is, for instance, if Saskatchewan and Alberta had the same basic assistance (G) levels welfare participation rates among lone parents in Saskatchewan will be lower by 8.3 percent and the same can be said of the other variables. In addition, we can also observe that basic assistance among lone parents explains a big proportion of the welfare gap. This might be explained by the fact that after the welfare reforms of 1993, the Alberta government reduced welfare payments to coincide with those of low income working Albertan's.

6.3 Comparison with other Canadian Studies

Overall our results are consistent with other Canadian studies with a slight variation indicating the disparity of welfare programs across the provinces and data used. Charette and Meng (1994); Christofides et al (1997) found that children increase the probability of welfare participation and family structure to be an important factor in determining the decision to participate in welfare. In addition, basic assistance (G) has a significant positive effect on welfare and a significant negative effect on labor market participation. In this study we have found these assertions to be true, we have also seen that lone parents with young children ages 7 and under are more likely to be welfare participants than labor market participants.

It is also clear that individuals on social assistance rarely combine social assistance with employment (Grey, 2002); from the results we saw that employment income has a negative effect on welfare participation. From the results, we can also support the observations made by Dooley (1999) that younger mothers have a high reliance on welfare compared to older parents.

Chapter 7

Summary and Conclusion

Comparing welfare participation across provinces is a challenging experience not only because of the difference in welfare policies but also finding appropriate data. The objective of this thesis has been an attempt to explain the difference in welfare and labor market participation between the provinces of Saskatchewan and Alberta. More emphasis was put on welfare participation decision because that is where the motivation of this study was established. Welfare or labor market participation decision has been analyzed through individual probit models. The results were evaluated and then decomposed to show which variable constraints explain the differences in welfare participation in Saskatchewan and Alberta.

Alberta has managed to reduce welfare caseloads unparalleled to any other province since 1993 when it introduced welfare reforms; welfare participation has gone from 7.3 percent of Alberta's population to about 1.8 percent in 2003 (see Table 2.1). Welfare caseloads in Saskatchewan, in contrast, have continued to represent a moderate proportion of the province's population with a few fluctuations.

Alberta introduced policies that lowered benefit levels and stringent procedures when applying for welfare. Saskatchewan on the other hand was very reluctant to follow the same course; this can explain why Saskatchewan received a lot of criticisms to its welfare policy.

Higher welfare benefit levels and higher marginal tax rates increase the probability of welfare participation, theoretical and empirical studies reaffirm this. Our results support the former but do not show marginal taxes to have a significant influence on welfare participation decisions in Saskatchewan. This might indicate that marginal taxes are too high that most welfare recipients do not combine welfare program and labor market work.

Our results also indicate that there exist welfare participation differentials between Saskatchewan and Alberta. Basic assistance levels explain much of the welfare gap among lone parents and labor market experience among singles. We can also identify basic assistance and education as some of the variables that the government can use to influence welfare participation decision. For instance, providing incentives for young people to go to school (especially those from families on welfare) can help reduce welfare demand in the future. Education can also enhance their opportunities and as a result channel them to other alternatives.

We have seen that Alberta has been successful in lowering welfare caseloads. Unfortunately, we cannot conclude that if Saskatchewan adopted the welfare policies in Alberta it can attain the same results. First, there might be a difference in the population composition in the two provinces; for instance in this study we cannot differentiate between aboriginal and non-aboriginal population. Secondly, there is no clear documentation to show that former welfare recipients are better off after joining the labor force. Baker (1997) has suggested that many of the welfare recipients connected to the labor market through government sponsored programs lost their jobs when the government stopped the funding. Thirdly, from table 2.2, we see a dramatic decline in welfare caseload rates in Alberta and at the same time we observe almost similar labor

market participation rates (Table 2.1), suggesting that Saskatchewan is not that bad. Basing on this explanation, we can conclude that welfare participation differentials found in this study may be a reflection of differences in welfare program administration.

However, there is something that can be learned from the Alberta experience, for instance the Saskatchewan government should be very vigilant about ensuring that people who are applying for welfare have exhausted other options. Young people especially singles should be encouraged to go to school because we have seen that education has a positive influence on labor market participation but a negative influence on welfare participation. The Saskatchewan government should strive to assist children born in families that utilize welfare to avoid the cycle.

Generally if the economy is good we expect that welfare participation should decline especially among employable individuals. Policy instruments chosen carefully coupled with economic opportunities should discourage welfare participation and encourage labor market participation. Creating training and employment opportunities should help some of the welfare recipients gets off welfare and become self- reliant just as Kapsalis indicates in the excerpt below,

.that lack of paid work or limited attachment to paid work are common factors among the low income and SA recipients, the main focus should be on providing employment services (such as referrals and employment counseling coupled with more generous treatment of earnings under SA and wage subsidies to those able to work a significant number of paid hours (Kapsalis, 1996)

In addition, Solow (1998) suggests mixing work and welfare with adequate supply of jobs to encourage both self-reliance and public support of the system. However, he cautions that such a system will not come cheaply.

Focusing only on reducing caseloads will not solve the problem, long term solutions have to be sought and that is where the challenge lies. Social programs are designed to assist individuals become self-reliant but there is no specific formula to go about it. Finally, Solow (1998) asserts that the no matter how expensive the welfare system is it is a necessary component of society. It helps reduce the problem of homelessness, child hunger and many other social problems that might arise due to lack and it is imperative that it is supported.

Future Research Proposals

Moffitt (1992) clearly sums up everything “Welfare participation decision is an economic decision based on labor supply considerations.” Given that this is case, I would suggest that future research employs a bivariate analysis of welfare and labor participation using actual data from provincial welfare departments. I think this analysis would provide superior results compared to the ones presented here. Moreover, pooling the data together (Saskatchewan and Alberta) and using a dummy variable to identify the provinces would be a valid idea. Secondly, the incidence of welfare participation is considered high among lone parents; welfare participation needs to be modeled jointly with marital and fertility behavior especially among single mothers. Careful attention should be given to the impact of spousal payment or alimony also referred to as ‘other income’ on the probability of welfare participation. In addition how does the cost of finding employment and child care cost contribute to the decision to be labor market or welfare participants?

Another important area would be to study the dynamics of welfare participation in Saskatchewan. Studies on dynamics of welfare focus on determining welfare spells

among different social demographic groups. These studies are used to characterize the behavior of welfare recipients and hence identifying the high risk groups. Such a study will be beneficial to Saskatchewan, not only because it will help the government to determine the high risk groups but also formulate policies targeted to those groups.

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APPENDIX

Table A1: Bivariate Probit Results Welfare and Labor Market Participation (Dependent Variable participant = 1 or 0 otherwise)

Variable	Saskatchewan M.E (Standard errors)				Alberta M.E (Standard Errors)			
	Singles		Lone Parents		Singles		Lone Parents	
	Welfare	LFP	Welfare	LFP	Welfare	LFP	Welfare	LFP
Age 18	0.00047 (0.00038)	-0.00018 (0.0002)	0.9470 (25.0749)	-0.4390*** (0.1455)	-0.9888 (6.0775)	-0.00074 (0.1128)	-0.5015 (3.5236)	-0.1927 (0.1224)
Age 35	0.0035 (0.1654)	0.0387 (0.1109)	-0.4211 (18.7337)	0.1382 (0.1315)	-0.5796 (16.0937)	-0.0501 (0.1827)	0.4571 (5.3545)	0.2246** (0.1134)
Age 45	0.0106 (0.3784)	0.1494 (0.1617)	-0.8420 (31.9209)	0.3221 (0.2137)	-0.6990 (13.1380)	0.2068 (0.2184)	0.6119 (15.8932)	0.2976 (0.1891)
Residence	-0.5237 (0.0931)	0.1156 (0.0601)	-0.5382 (8.5395)	0.1323** (0.0636)	-0.0297 (6.2820)	0.2659*** (0.0805)	0.0779 (1.7108)	0.2857*** (0.0608)
Basic assistance	0.0013 (0.00002)	-0.00013 (0.000039)	0.00059 (0.0016)	-0.000076** (0.00003)	0.0013 (0.0028)	-0.00015** (0.000006)	0.00037* (0.00022)	-0.000013 (0.000031)
Child07	-	-	0.6834 (1.1823)	-0.3222*** (0.05023)	-	-	0.1460 (0.9782)	-0.2300*** (0.04392)
Child717	-	-	-0.2542 (2.3446)	0.0769* (0.0385)	-	-	-0.0139 (1.2955)	-0.0012 (0.0355)
Diploma	0.0016 (0.1165)	-0.0526 (0.0772)	3.0359 (6.1794)	0.1537** (0.0911)	-0.2593 (4.5909)	0.0341 (0.0708)	0.1794 (2.1803)	0.1175 (0.0716)
Employment Insurance	-0.00065 (0.00002)	0.000093 (0.000009)	-0.00031 (0.0015)	0.00006*** (0.000013)	-0.00002 (0.0011)	0.00004*** (0.00001)	0.00001 (0.0007)	0.000016 (0.00002)

Table A1 Continued

Experience	0.00021 (0.0121)	-0.0087 (0.0123)	0.7610 (1.7078)	-0.0337 (0.0196)	0.0472 (0.8543)	-0.0111 (0.0170)	-0.0593 (0.6199)	-0.0319** (0.0179)
Experience squared	-0.0026 (0.0004)	-0.00032 (0.0002)	-0.0110 (0.0706)	-0.00033 (0.3107)	-0.00047 (0.0125)	-0.0633** (0.2448)	0.00061 (0.0247)	-0.00019 (0.00032)
High school	0.0016 (0.1121)	-0.0208 (0.0758)	0.0664 (10.8760)	0.3775*** (0.0855)	-0.0629 (4.7424)	0.0334 (0.0668)	0.2212 (2.0781)	0.03498 (0.0680)
Immigration status	-0.0027 (0.1520)	-0.0197 (0.1106)	-0.5453 (158.7352)	-0.1011 (0.1564)	-1.8254 (14.6596)	0.1422* (0.0771)	-0.0860 (3.7448)	0.07921 (0.0900)
Log wage	-0.0141 (0.0885)	0.1826 (0.0737)	-3.6211 (20.3614)	0.3069*** (0.0773)	-0.3211 (1.7361)	0.1810* (0.0289)	-0.5560 (1.4074)	0.2348*** (0.0608)
Other Income	-0.00049 (0.00008)	-0.0000059 (0.0000063)	0.00010 (0.0033)	-0.000015 (0.000012)	-0.00004 (0.0027)	-0.00004*** (0.000008)	-0.00009 (0.00049)	-0.00002*** (0.000008)
Program tax	0.1572 (0.2148)	-0.1362 (0.2700)	0.9263 (11.0942)	-0.3957 (0.4404)	0.0112 (0.2600)	0.0054 (0.4142)	5.5775** (2.2395)	-1.0815** (0.4372)
Sex	-0.0012 (0.0656)	-0.0840 (0.0576)	0.4176 (5.2386)	-0.2598*** (0.0773)	-0.0096 (2.6685)	-0.0667 (0.0523)	0.2942 (3.4678)	-0.3662 (0.0759)
University	0.0055 (0.1456)	-0.07102 (0.1135)	3.0421 (1033.5212)	0.3454* (0.1829)	-0.4357 (6.8309)	0.0274 (0.1137)	0.4523 (2.6143)	-0.1039 (0.1079)
Unemployment rate	0.0129 (0.0653)	-0.01570 (-0.0548)	0.8488 (0.0496)	-0.2682 (5.7444)	-0.0423 (1.0005)	-0.0093 (0.0160)	0.0558 (0.6370)	0.0177 (0.0215)
Rho(1,2), ρ (Stdard Error) (T-stat)	-0.1777 (0.1176) (-0.016)		-0.9996 (4.7570) (-0.2101)		-0.3065 (2.3347) (-0.131)		-0.9980 (1.3702) (-0.7281)	
Sample	4996		2717		5000		3686	
Log likelihood	-3549.358		-1961.683		-1723.312		-1723.312	

Note

*** 1% significant level ** 5% significant level * 10% significant level

Table A2: Welfare Incomes

Year	1986	1987	1989	1989	1990	1991	1992	1993	1994	1995	1996	1997
Saskatchewan												
Single employable	5,777	5,775	5,776	5,779	5,652	5,477	5,692	5,990	5,973	5,852	5,760	5,831
Single Parent, One child	11,853	11,803	11,803	11,803	11,475	11,103	10,919	10,796	10,765	10,548	10,381	11,482
Alberta												
Single employable	8,220	5,800	5,616	5,711	5,451	5,922	5,973	5,628	4,903	4,804	4,728	5,260
Single Parent, One child	12,036	12,024	11,400	10,708	10,222	10,715	10,700	10,271	9,532	9,339	9,192	10,250

Source: Welfare Incomes, National Council of Welfare.