INDIVIDUAL ACHIEVEMENT OR MARKET CONSTRAINT: EFFECTS OF HUMAN CAPITAL ON THE INCOME OF ABORIGINAL PEOPLE IN CANADA

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By

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ABSTRACT

Human capital investment postulates that education is a form of investment individuals make in the early part of their career which yields an economic return in the form of labour market outcome later in their career. Thus, proportionately, the higher the human capital investment, the larger is the return of earnings. This thesis is concerned with the question: do different segments of the Aboriginal population with similar levels of education have similar economic returns? In other words, does the labour market in Canada reward income mainly on the basis of educational attainment, or are there other factors which influence economic returns besides schooling?

The major findings of this study show that there are considerable differences in the returns which education provides to various segments of the Aboriginal population. First, the findings indicate that there are two basic segments in the Aboriginal population. One segment, which includes Aboriginal females, Aboriginal people living outside of large urban areas and individuals with registered Indian status, has low economic returns from education. The other segment receives larger economic returns from education, and includes Aboriginal males, individuals living in large urban centres and Aboriginal people without registered Indian status. Second, these differences within the Aboriginal population suggest that the assumption implied in the human capital theory of a competitive labour market based on educational attainment is questionable. This indicates that the Canadian labour market rewards individuals in different ways. The result of this study shows that income is not entirely based on educational attainment, and that self-effort and individual willingness to invest in human capital do not yield proportionate returns that are commensurate with different levels of human capital in the market for different segments of the Aboriginal population.

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CHAPTER ONE: INTRODUCTION

The fact that social inequality has become an integral part of Canadian society is indisputable. From Porter's Vertical Mosaic (1965) to Wolffe's more recent Top Heavy (1995), it has been amply demonstrated that wealth has become more, not less concentrated in recent decades, and "the gap between the rich and poor in Canada has widened, not narrowed" (Himelfarb and Richardson, 1980: 225). Thus, in a society which is commonly accepted as providing equal opportunities for all citizens, Canada remains economically stratified.

1.1 Society and Inequality

One of the chief reasons why studies of inequality are important is that economic inequality is supposedly based upon individual achievement and self effort. It is widely held that the capitalist labour market provides equal opportunity to all; thus, some individuals accomplish more than others because they try harder and are more capable. This concept of 'occupational achievement' implies a hierarchy of prestige where some individuals accomplish more than others (Li, 1988: 17). As well, it supposedly reflects individual achievement in that some individuals are willing to endure years of sacrifice to acquire an education which allows them to better compete in the labour market. The wage an individual receives is then seen as a result of individual effort and it also shows what that person is worth. Inequality exists because individuals achieve differently in the competitive labour market depending on self-effort and previous educational attainment. Thus, income is allocated competitively based mainly upon individual achievements and not so much on structural and social arrangements over which an individual has little control. For example, ascriptively based characteristics that are socially

recognized as important, such as race or gender, are factors that an individual cannot change, but affect life chances. These characteristics are incompatible with the model of competition since they represent irrational grounds for evaluating individual performance. Thus, labour market outcomes are assumed to be influenced by individual achievement, and empirical differences due to ascriptive characteristics are difficult to reconcile theoretically (Porter, Porter and Blishen, 1979; Blau and Duncan, 1967).

According to conventional wisdom, inequality is justified if it is based on individual achievements and efforts. It has been widely accepted that Canada is the land of "equal opportunity" and that economic inequality or difference is based mainly on individual educational attainment. This idea stems from theoretical assumptions in the disciplines of sociology and economics which uphold the view that the capital market is an open system in which individuals can freely compete.

In economics, this idea was initiated in the work of Adam Smith during the eighteenth century from which the theoretical premise of the human capital theory is based. Smith believed that the labour market is influenced by an 'invisible hand' which regulates the supply and demand of products and services. At the same time, the market is also able to regulate workers through adjustments of supply and demand until an equilibrium is reached. The equilibrium represents a fair market price for a given type of labour. Thus, occupations which require more skill are rewarded with higher incomes than occupations requiring less skill. This justifies the existence of inequalities in the labour market as income is incremented by various skill levels.

Out of this economic tradition came a strand of sociological theory known as structural functionalism. The idea here is that institutions like the economy and education system, function positively for society. The function of education is to allocate individuals into various occupational roles according to their skills and abilities. The assumption is that education functions to train individuals for future employment. In the labour market,

occupational positions which require more skill are provided higher wages. Thus, the reward for increasing education is higher wages, following the premise of the human capital theory.

Status attainment models developed are similar to the structural functionalist paradigm. Popularized by Davis and Moore (1945) and Blau and Duncan (1967), the status attainment model treats socio-economic status and earnings as outcomes of previous achievements; education is seen as an accomplishment in early stages of life and is influenced by the family and individual value orientation. Essentially, the idea is that different jobs require different skills. Jobs which require high skills pay more because few are willing to acquire the credentials required for these tasks unless they are rewarded financially. Status attainment models are similar to human capital theory in that they focus mainly on individual differences "assuming that these characteristics are what will differentiate successful individuals from those who are not successful" (Gaskell, 1992: 19). Gaskell (1992: 19) notes that according to status attainment models, occupational status is best predicted by education and as a result, they support increased investment in education.

Status attainment models, the functionalist school and the human capital theory share this theoretical premise which suggests individual effort and achievement determine labour market outcome. By implication, then, these theories endorse both the ideal of the unitary labour market and that investment in education determine labour market consequences. Thus, individuals themselves are responsible for their success or the lack of it in the labour market and income is a fair reflection of their market worth. Theoretically, the models pay little attention to structural and organizational forces which affect life chances of individuals in the labour market.

In my analysis, the structure of the labour market is not assumed. The labour market does not allocate occupational status and income based on individual effort and education alone. In this study, gender, place of residence and the social construction of official registered Indian status are seen to

produce differences among individuals. These social constructions, as will be shown, do have obvious effects on the economic outcome of Aboriginal people, regardless of level of education.

My thesis focuses on how some individual ascriptive features and structural factors can affect the life chances of individuals. Specifically, it will look at how education affects the income of Aboriginal people in Canada in a novel manner, using data collected from the 1991 Census of Canada. The strategy is to see if level of education has the same effect on the income for social groupings stratified by gender, place of residence and registered Indian status. If education, seen as an achieved characteristic, has a uniform influence on income, then it would give credence to the notion that the labour market provides equal treatment to all groups with similar credentials. However, if the effect of education on income is not consistent, it would suggest that inequality in the labour market is associated with non-competitive features that have become socially important.

Inequality is also apparent in the education system. Numerous studies have outlined how social class (Anisef and Okihiro, 1982; Anisef, Paassche and Turrittin, 1980; Porter, Porter and Blishen, 1979), race and ethnicity (Troyna, 1987; Willey, 1984) and gender (Gaskell, 1992; Weis, 1987) all contribute to differences in the labour market outcomes of individuals. These non-competitive features are socially important within the school system as they may affect the type of educational career an individual is placed and may ultimately affect individual labour market outcome. As well, teachers may unconsciously direct their students into specific study areas based on these ascribed characteristics. For example, females may be encouraged to study home economics or cosmetology, while males may be directed into vocational courses like auto mechanics and welding. This thesis however, does not grapple with these issues. Its intent is to see if similar levels of education provide equal economic returns to individuals in order to test the assumption of a competitive labour market based on competition. Thus, although the

study of how inequalities are perpetuated in the education system remain important, they are not discussed here.

1.2 A Snapshot of Aboriginal Demographics in Canada

Often, Aboriginal people have been portrayed as under-educated, unemployed and therefore poor. In reality, some Aboriginal people are highly educated, have steady, full-time employment with high wages. Unfortunately, their accomplishments are lost in the analysis of those individuals who do not perform as well in the labour market.

Wotherspoon and Satzewich (1993: 128-139) and others (Saskatchewan Treaty Indians, 1993; DIAND, 1992; Armstrong, Kennedy and Oberle, 1990) indicate that the education levels of Aboriginal people have continued to increase over the past forty years. However, the unemployment rate has experienced only a slight decline (Frideres, 1993: 143), remaining three times higher than the national average (Frideres, 1993: 170), while wages have not increased at the same rate as with other groups of individuals in Canada (Frideres, 1993: 160). Frideres (1993: 200) also reports that the poverty rate for Aboriginal people is two times higher than the general population in Canada. As well, in comparison to the non-Aboriginal population, Aboriginal people are over-represented in the primary and unskilled occupations, while under-represented in professional and financial occupations (Frideres, 1993: 170). These figures suggest that the Aboriginal population experiences socio-economic inequalities which are different from the general population. It also suggests that Aboriginal people have and continue to encounter barriers in the labour market despite advances in their overall level of education.

For the most part however, this information is well known. Although useful, this research reveals limited information about how inequalities exist within *different* segments of the Aboriginal population. But can the entire Aboriginal population be characterized as poor, less educated and under-employed? Attempts to answer this question reveal that there are segments of the Aboriginal population which do not fit this description. The

observation leads me to question the relationship between education and income. Does education provide the same economic returns for all groups of Aboriginal people? This thesis will explore whether or not education has the same effect on the income levels of different groups of Aboriginal people.

1.3 Research Direction: The Economic Returns of Education for Aboriginal People

The question this study intends to answer is, do Aboriginal people with similar levels of education have similar economic returns? In other words, do increased levels of education provide increased income for all segments of the Aboriginal population? The results of my analysis question the assumption of the human capital theory that the labour market awards individuals with higher levels of education by providing higher incomes. More eloquently, it challenges the idea that the labour market allocates income based on individual achieved characteristics rather than ascriptive characteristics which are not controlled by the individual. This is a strong assumption which has shaped much comtemporary research.

The results will be discussed based on the Canadian labour market which is supposed to allocate income based on educational attainment. This follows the human capital assumption of a freely competitive labour market where individuals compete for employment opportunities based only on achievement characteristics such as education and not other individual ascribed criteria. The assumptions of the human capital theory and the dual labour market theory are examined according to their strength in explaining the effect of education on the income of Aboriginal people.

Several key terms are frequently used in this thesis and are defined as follows.

First, the term 'Aboriginal' is used to refer to that segment of the Canadian population which identifies itself as having Aboriginal ancestry. This includes North American Indians, Métis and Inuit/Eskimo heritages. The word 'Aboriginal' was chosen since it is the term most frequently used in the

literature in reference to individuals collectively known as the First Nations People.

Second, without delving into the complexities of the theory, is the notion of human capital which assumes that income increases with level of education. Thus, education is seen as an investment by individuals in the early part of their lives which is rewarded with market outcomes such as increased earnings, in the long run. It assumes that the labour market allocates jobs and earnings mainly on achieved individual characteristics such as education. This thesis tests this idea.

Third, is the concept of education which is envisioned as the total years of schooling. It does not refer to type of training or credential, rather, it describes the number of years formally spent acquiring human capital. This type of measurement allows for an analysis of human capital theory which does not concern itself with the type or content of education. It simply suggests that any additional schooling would increase one's performance and productivity in the labour market and therefore should increase income.

Finally, the concept of dual labour market theory which refers to the idea that the labour market is segmented into two spheres, one where high skilled and high paying jobs are found; and the other where low skilled, low paying jobs are located. It is important to recognize the existence of this segmentation in order to understand that there are multiple structures in the labour market, and that these different labour market structures do not value or reward human capital in similar ways.

In Chapter Two, the main premises of the human capital and dual labour market theories are explored in order to show how they contribute to the analysis of education and income of Aboriginal people in Canada. This helps to situate my analysis within existing theoretical debates. A review of the literature on income and Aboriginal people is included in order to highlight the gaps which exist in this body of research, particularly on the effects of gender, place of residence and registered Indian status. Chapter

Three looks at the data, as well as some methodological and measurement considerations. Chapter Four explains the findings, while Chapter Five summarizes the arguments, and looks at the human capital and dual labour market theories with regard to their ability to describe the economic return which education provides for Aboriginal people. It also discusses some implications for future research concerning the Aboriginal population in Canada.

The chapter which follow will show first that there are differences in the Aboriginal population related to how various levels of education influence income, and second, that the human capital and dual labour market theories do not provide adequate explanations of how education produces various degrees of economic inequality.

CHAPTER TWO: INCOME INEQUALITIES OF ABORIGINAL PEOPLE: THE THEORETICAL IMPLICATIONS OF THE HUMAN CAPITAL AND DUAL LABOUR MARKET THEORIES

A common approach to studying social inequalities which characterize the lives of Aboriginal people is to compare them with non-Aboriginal people (Ross and Usher, 1992; Working Margins Consulting Group, 1992; Ross, 1991; Armstrong, Kennedy and Oberle, 1990). Although this type of comparison can highlight economic and educational disparities of Aboriginal people in the general population, such comparisons tend to ignore differences *within* the Aboriginal population. In response to deficiencies in the literature which, for the most part, fail to address the differences among the Aboriginal population, I look at how the income disparities of this population are influenced by differences in gender, place of residence and registered Indian status.

The purpose of this chapter is to link my research question to the existing debates in the literature. At the same time, it highlights the gaps in the research concerning Aboriginal people and their economic inequalities. It reveals that the implication in the human capital theory of the existence of a unitary labour market where self-effort and willingness to invest in human capital is supposedly applied to all individuals, is not reflected in the lives of Aboriginal people. In addition, it shows that dual labour market theory does not provide an adequate alternative explanation of the economic inequalities faced by these people.

2.1 Education, Income and Aboriginal People

The effect of education on income has been well established in the literature (Anisef and Okihiro, 1982; Anisef, Paasche and Turrittin, 1980; Porter, Porter

and Blishen, 1979) and the notion of education being a panacea to poverty is reflected in federal and provincial government policies (Working Margins Consulting Group, 1992; Warburton, 1992; Saskatchewan Education, 1991a, 1991b, 1989, 1984). The exact nature of how education contributes to income, however, remains problematic. The debate revolves around a central assumption of the human capital theory which states that as an individual's level of education increases, so does his or her earnings. Proponents of the human capital theory argue that education is a valuable commodity in the labour market and its value is recognized by employers in how much they are willing to pay for people with different educational qualifications. Individuals with high levels of education tend to receive higher incomes and, as a result, depend less on government transfer payments to supplement their income than individuals with higher levels of education. However, the dual labour market theory challenges this by suggesting that the labour market is divided into two separate spheres where the economic returns of education are not equal for all individuals.

One way to question the assumption of human capital theory is to answer the question: do Aboriginal people with similar levels of education have similar incomes? If the answer is yes, it will support the human capital theory which states that individuals with similar educational backgrounds will have similar wages. If the answer is no, it suggests that there are other factors beside of education which affect income. This may support the dual labour market theory in that forces within the market place may be more influential in determining income than education.

This thesis assesses these theories by looking at the effect which education has on income. Academics propose that low levels of education have and continue to be connected to race, suggesting that Aboriginal people have low incomes because they have been previously prevented from participating in the education system, especially in post-secondary levels, (DIAND, 1992; Lanceley, 1991). For example, historically, federal and

provincial government policies controlled Aboriginal education, placing Aboriginal children into separate school systems, most often residential schools (Frideres, 1993; Furniss, 1992; Stevenson, 1991). In this way, race has been historically connected to educational attainment of Aboriginal people.

A tempting solution to the problem of low incomes among Aboriginal people is to increase their level of education. By increasing their level of education, individuals are assumed to become eligible for employment positions which result in higher wages than occupations acquired with lower levels of education.

But is higher education effective in increasing the income of Aboriginal people? Does it provide opportunities for better employment and higher wages? Do Aboriginal people with similar levels of education have similar economic returns? The answers to these questions are pursued in this study.

The assumption that education can increase income could not be tested before since historically, Aboriginal people have been denied entry into the public education system. The question remains, what kind of economic returns do Aboriginal people receive from their education? The next section explains the human capital and dual labour market theories in detail. It followed by a review of the literature exploring the income inequalities of Aboriginal people and a more detailed explanation of how my research contributes to the debate of human capital and dual labour market theories.

2.2 A Human Capital Vision and Aboriginal Economic Inequality

2.2.1 An Explanation of Human Capital Theory

The disparities in income experienced by the Aboriginal population when compared to the non-Aboriginal population have been well established (Dibbs and Leesti, 1995; DIAND, 1992, 1981; Armstrong, Kennedy and Oberle, 1990; Frideres, 1988). According to the human capital theory, the income disparities of the Aboriginal population can be explained by their lower levels of education in comparison to the larger Canadian population. The human capital theory indicates that in order to increase the average income of the

Aboriginal population, their educational attainment must also be increased.

The value of human capital theory dates back to Adam Smith in The Wealth of Nations (1776) where he articulated the link between higher education and higher wages. He states:

> (w)hen any expensive machine is erected, the extraordinary work to be performed by it before it is worn out, it must be expected, will replace the capital laid out upon it, with at least the ordinary profits. A man educated at the expense of much labour and time to any of those employments which require extraordinary dexterity and skill, may be compared to one of those expensive machines. The work which he learns to perform, it must be expected, over and above the usual wages of common labour, will replace to him the whole expense of his education, with at least the ordinary profit of an equally valuable capital. It must do this too in a reasonable time, regard being had to the very uncertain duration of human life, in the same manner as the more certain duration of the machine.
>
> The difference between the wages of skilled labour and those of common labour is founded upon this principle (Adam Smith, cited in Osberg, 1981: 98).

It has become the most influential explanation, in varied forms, of individual income inequalities to date; however, it has serious limitations.

Investment in human capital is premised on the notion of a voluntary delay of income by the individual to allow for investment in human capital. According to Becker (1975: 9), human capital investment is defined as "activities which influence future monetary income by increasing the resources in people". Thus, individuals who enter the labour market out of high school may earn more income in the short term than their counterparts who continue for education and training. However, individuals who increase their education are assumed to receive higher wages due to their increased investment in human capital. Osberg (1981: 99) reiterates this idea stating that "the cost of 'investment' involved in choosing occupation A (requiring higher education) over occupation B is the lower income one receives" until the individual completes his or her training.

Osberg (1981: 102) states that there are six theoretical assumptions of

the human capital theory:

> that a) all individuals are well informed of the future prospects of different occupations; b) that they are of equal ability; c) that they have the same taste for money income vis-a-vis leisure and the non-monetary aspects of jobs; d) that they have access to capital at equal rates of interest; e) that they compete in a labour market where wages are flexible and f) that occupational entry and the supply of training are unrestricted (Osberg, 1981: 102).

These assumptions place emphasis on individual achievement, not social forces beyond the control of the individual, which may affect economic outcome. The idea is that occupations with long periods of training provide higher wages in the long run in order to compensate for low income in the training years as well as a reward for obtaining high levels of educational attainment. Is this true in the Aboriginal population of Canada? Do the costs of increasing education produce higher wages in the long run for Aboriginal people? This thesis assesses the human capital theory in regard to its ability to explain the economic situation of the Aboriginal population.

2.2.2 Inconsistencies of the Human Capital Theory

The assumptions of the human capital theory are difficult to substantiate. There are problems associated with the idea that all individuals are informed of the economic benefits to education, have equal abilities, and equal desires for monetary income, but one of the largest problems is the assumption of equal access to the capital required to invest in increased levels of education. These assumptions leave little room for the consideration of class, race and ethnic or gender inequalities. For Aboriginal people, it was not until recently that funds for education were available beyond the secondary level (DIAND, 1992; Furniss, 1992; INAC, 1991; Lanceley, 1991; Stevenson, 1991). Even so, does education or human capital investment bring the same economic returns for all segments of the Aboriginal population, or does education increase the income for some but not others? The effects of education on the income of the Aboriginal population could not be studied until their integration in the wider school system and the provision for funding of post-secondary education was

established. Without access to capital, the human capital theory could not be applied to this population since most individuals did not have the money available to invest in higher education which would supposedly result in higher economic returns.

Leaving the equal access to education issue aside, the human capital theory can also be questioned on its notion of an openly competitive labour market. In order for the human capital theory to work, these theorists rely on the idea that the labour market equally rewards individuals on their educational credentials and human capital investment and does not discriminate individuals based on racial, gender or other individual characteristics. Competition in this unitary labour market assumes that high waged employment is based mainly on individual educational attainment. Furthermore, this set of rules is assumed to apply equally and uniformly to all participants, regardless of race or gender. Educational attainment according to human capital theory then, is the product of self-effort and willingness to invest in human capital by the individual. Thus, not only do human capital theorists envision open competition for employment based on educational attainment, they also argue that individual features like race and gender do not play a role in employment positions or income allocation. As a result, human capital theory over-emphasizes the effect which education has on income.

The notion of a unitary labour market where competition for employment is based on level of education is a point open for debate. If the human capital theory were correct, competition for employment would be based on individual achieved characteristics like level of education. Any differences in income would be due to educational differences alone. Furthermore, if this assumption were correct, there should be little difference in economic returns based on gender, place of residence, registered Indian status or any other classification.

But is education a major factor influencing income inequality? Human

capital theory fails to adequately address other important issues which affect income. At best, human capital theories pay little attention to the effects of gender or race, especially as factors influencing income (for example: Becker, 1975; Chiswick, 1974; Schultz, 1971). Early analyses of human capital theorists, for the most part, used males as the subject of research, most often white males. Gender and racial variations and discrimination in the hiring practices of employers were not considered (Gaskell, 1992; Amott and Matthaei, 1991; Li, 1988). Why is this? According to human capital theory, these are individual ascribed characteristics are not supposed to influence job placement or earnings in the labour market. Gender, race and other factors are theoretically awkward in human capital theory since in a rational system of supply and demand, gender and race represent irrational factors as influences on income. The idea that these characteristics can and do play a part in allocating roles in the labour market and the acquisition of education cannot be explained by human capital theory due to its belief that competition in the labour market is mostly based on education. If race and gender also affect income, their idea of a unitary labour market would be questionable.

Advocates of human capital theory often believe that individual investment in human capital is required to maintain a healthy and stable economy (Salamon, 1991: 2; Hornbeck, 1991: 360). They argue that increased levels of education are needed because fewer low skilled positions will be available in the future as the economy restructures (Hornbeck, 1991: 360) and that education continues to be *the* important factor in allocating high paying jobs. They have, however, subdued their argument on the economic benefits of schooling in that increased levels of education may not provide the same economic returns to people. They recognize that race, gender and class have effects in labour market structure, yet they maintain that it is the education system, not the labour market structure which is to blame for the existence of discrimination and income inequality. Thus, as the education system must be altered to provide training for individuals to better suit the needs of the labour

market, rather than changing the practices within the labour market to better fit the needs and qualifications of individuals.

Currently, all level of government, federal, provincial and municipal, support the idea that individuals are responsible for their education and their personal economic conditions. Contemporary strands of the human capital theory call for the co-operation of all levels of government in ensuring that adequate funding is available for education and that strong incentives to continue post-secondary schooling are provided (Hornbeck, 1991: 36). These initiatives fall within the agenda of the human capital theory supporting the idea that increased education will benefit individuals economically in future labour market performances. This thesis does not attempt to critique existing education programs or to provide policy recommendations, but rather, it points out that current education policies are not only similar to the human capital agenda, they also do little to alleviate the discriminatory conditions in the education system and labour market structure which combine to perpetuate income inequalities especially among the Aboriginal population.

Finally, the human capital theory fails to consider the influences of the labour market structure on income. Too much emphasis is placed on the economic returns on education, and not enough on structural forces such as type of industry and occupation which have profound effects on income. As well gender, race, socio-economic class and other factors have influence in the labour market, and at the same time, affect educational attainment (Curtis, Livingstone and Smaller, 1992; Curtis, 1989; Weis, 1988; Troyna, 1987; McNeil, 1986; Willey, 1984). The influence of these and other factors not only affect educational attainment, but also influence where an individual is placed in the labour market. In fact, inequality in education is argued to be a consequence of previous inequalities, preventing certain individuals from gaining access to education today. Thus, it can be argued that features such as race and gender affect not only the educational attainment of the individual, but also labour market outcome. Discrimination does not end at the education system, it

exists within the labour market and in turn, affects the economic outcome of individuals. The human capital theory, however, attributes economic inequalities to differences in education and that further differences based on race and gender are the result of discrimination in the school, not in the labour market structure. If this is true, individuals of the same gender and race with similar levels of education would have similar economic returns from their investment in human capital since they would be exposed to similar levels of sexual and racial discrimination in the school system. As will be shown in the analysis, this is clearly not the case. A more in depth discussion of how gender and race contribute to both education and labour market performance occurs later in this chapter.

2.3 Other Education and Labour Market Theories

In Canada, Porter (1965) has also articulated the importance of education in the labour market in The Vertical Mosaic. Porter argues that education is an important resource for both the modern industrial economy and the individual for two reasons. First, industry demands a pool of highly educated labourers to manage and work in an increasingly complex process of production; and second, individuals who acquire these high levels of education are rewarded in the labour market with better job opportunities resulting in higher incomes. As a consequence, individuals with low levels of education receive low incomes simply because their education is not as valuable to employers. Since Aboriginal people generally have lower educational attainments in comparison to non-Aboriginal people, a logical solution, if we accept Porter's thesis, is to increase the education of Aboriginal people in order to help them achieve higher employment positions.

In a similar way, occupational structure is linked to educational attainment. Blau and Duncan's (1967) famous analysis of occupational hierarchies subscribes to the human capital model. In their view, both education and occupation are *achieved* by individuals. Simply put, level of education affects the occupational position of the individual. High levels of

education provide high occupational positions which then net high wages in return. In this way, the link between education, occupation and income level is based on individual effort, and is not seen as a product of other forces which may prevent individuals from obtaining higher levels of education or competing equally within the labour market.

Because of their similarity with the human capital theory, Blau and Duncan, as well as Porter, fail to recognize that other factors beyond individual achieved characteristics work to control the allocation of wages in the labour market. Their analyses ignore the role which gender contributes to income inequalities in the labour market. Gender should have no bearing on employment or wage, but the reality is the opposite as Amott and Matthaei (1991), Waring (1987) and Dex (1985) have argued. Gender is a social feature which has importance in the labour market that results in women having lower incomes than men. The effects of gender in the labour market are irrational because labour market performance is not affected by gender. The social importance of gender permeates the labour market structures which often affect income inequalities within this domain. For example, Graham Lowe (1987) shows that clerical work segments the labour force on the basis of gender by separating the high paying managerial positions, traditionally held by men, from the low paying service and clerical positions mainly held by women. What this suggests is that gender may provide the grounds for segregating and recruiting men's and women's employment, indicating that women generally have lower wages than men.

Not only do these theorists downplay the effect which education has on the economic outcome of individuals, they also fail to adequately account for labour market conditions in their analyses. This is because they maintain the importance of education over other factors in the allocation of wages. Although they recognize the labour market as racially divided, they still believe that education contributes the greatest proportion of income inequalities and that race is a contributing factor based mainly in the

education system. In this way, although racial discrimination may exist in the labour market, these theorists would still argue that individuals of similar race would find that education does increase their economic returns but not at the same rate as other populations who are not discriminated against in the labour market. To them, education, not races is salient factor in determining income.

Porter's theory, as well as Blau and Duncan, are thus closely linked with the human capital theory despite their subtle differences. The later analysis has important implications for these theories as well.

2.4 The Dual Labour Market Conception of Aboriginal Income Inequalities

2.4.1 Dual Labour Market Theory

The idea of a labour market where competition among individuals is based on merits and credentials, is challenged by dual labour market theorists. These theorists suggest that the labour market is dichotomized into two or more segments. Although there are many versions of this theory, essentially, the dual and segmented labour market theories agree that there are two major divisions in the labour market. The first is the primary sector, characterized by high wages and better promotion opportunities; and second is a marginal sector where employment is insecure, wages are low and where there is "little incentive provided for human capital investment" (Li, 1988: 43). This segmentation, according to dual labour market theorists (Gordon, Edwards and Reich, 1982; Gordon, 1972), provides economic returns to education only in the primary sector. The rationale of the dual labour market theory is that employers are able to draw their work force from the primary sector containing individuals with high levels of education for highly skilled, high waged employment, while drawing individuals with lower levels of education from the marginal sector for low skilled occupations with lower wages (Skinner, 1995; Stanback and Noyelle, 1982). The dual labour market theory supports the possibility that the low income of Aboriginal people is a result of their exclusion from the primary sector and being channelled into the marginal sector.

This theory appears to apply to the economic situation of the Aboriginal population. Historically, Aboriginal people have been and continue to be over-represented in the marginalized sector of the economy (Frideres 1990, 1988) despite their level of education. This suggests that increased levels of education may not necessarily result in higher incomes. If the dual labour market theorists are correct, policies that attempt to increase the educational attainment of Aboriginal people will be ineffective. In their view, Aboriginal people are denied access to, and are under-represented in the primary labour market of high wage employment for reasons not linked to education (Frideres, 1988). If this is true, then change must be initiated in the hiring practices of employers so that Aboriginal people with high levels of education can compete equally with non-Aboriginal people in the labour market.

Skinner (1995) agrees. He notes "for historical reasons, women, blacks and other minorities fill a disproportionate number of secondary jobs" (Skinner, 1995: 49). This idea is substantiated in research concerning Aboriginal income. Researchers such as Elias (1995), Asch (1987) and Wonders (1987), argue that employment opportunities for Aboriginal people are generally found in the marginal sector of the economy. Government support in this endeavour can be seen in examples like *R v. Sparrow* (1990, cited in Canada, Library of Parliament, 1994) where Aboriginal groups were granted exclusive control over fisheries on reserves. This ruling was expanded to include most renewable and non-renewable resources on reserve lands such as game animals, forest resources, and water. It was hoped that this ruling would eventually increase the employment and income of some Aboriginal people. However, their intentions did not have the expected outcome as this type of resource development is often found in the marginal sector, where higher levels of education are less likely to be rewarded with wage increases. Although recent ventures by Aboriginal people into gaming may provide slightly better incomes for these workers, this type of work generally does not provide career ladders which offer much occupational advancement and

increases in income. For the most part, many new Aboriginal business ventures provide new employment opportunities in the marginalized, rather than the primary, labour market which results in low wages and low economic returns on education.

New federal and provincial employment equity legislation requires that "employers doing business in their respective jurisdictions [to] hire Aboriginal people in proportion to their representation in the population" (Elias, 1995: vi). While this incentive provides promise for increasing employment activity of the Aboriginal population, the hiring practices of employers, for the most part, remain unchanged (Platiel, 1995: A4).

The dual labour market theorists argue that despite the initiatives of the primary sector employers to encourage workers to develop their human capital, their efforts do not bring marginal workers into the primary sector, nor will they create better working conditions and higher wages in the marginalized sector (Skinner, 1995; Gordon, 1972). This is due to the rigid dichotomy between the primary and marginalized sectors which characterize the labour market. Skinner (1995) and others argue that the modern capitalist system has come to rely heavily on the large supply of marginalized labourers whose low wages are essential to increasing company profit (Stanback and Noyelle, 1982; Gordon, Edwards and Reich, 1982). This means that few individuals are able to move from low wage, marginal employment to high waged, primary employment because of the rigid barriers which exist between these sectors. Dual labour market theorists argue that education does not provide equal returns in both sectors. In this theory, primary labourers receive higher wages from their education than individuals who work in the marginalized sector. Thus, education is not the prime determinant of wage but rather, occupational placement in either the primary or marginalized labour market is what defines income.

2.4.2 Other Segmented Labour Market Theories

Related to the dual labour market theory is the internal labour market theory.

Researchers Doeringer and Piore (1971) argue that although level of education remains an important factor determining occupation, it is the point of entry in the internal labour market which ultimately affects income. The internal labour market is one which is defined as a single "administrative unit, such as a manufacturing plant, within which the pricing and allocation of labour is governed by a set of administrative rules and procedures" (Doeringer and Piore, 1971: 1-2). In a sense, it is a mini-labour market where entry jobs are found at the lowest levels of production while vacancies in better occupations with higher wages tend to be filled internally by workers from the next lowest job classification (Doeringer and Piore, 1971: 3). Thus, not only is there an external competition in the larger labour market for the entry level positions, but there is an internal competition for the higher paid employment as well.

According to internal labour market theory, there are two labour market spheres, the larger labour market which allocates entry into specific industries, occupations and companies, and the internal labour market where competition for the better employment positions within a single company take place. Education remains important in this theory as it screens employees for different occupations. Individuals with higher levels of education are perceived by employers to have greater relative abilities in absorbing on-the-job training which, in turn, allow these people greater access to management positions and other promotions (Osberg, 1981: 128). Individuals without education will therefore not have the opportunity to advance to management positions.

Internal labour market theories and dual labour market theories, as well as other segmented labour market theories, argue that educational attainment does not account for all the variations in employment income. They believe there exists a dual or multi-segmented labour market where education is a more highly valued commodity in some segments of the market than in others. These theories cast serious doubts on the assumption of the human capital theory that educational differences affect employment distribution and

account for most income inequalities.

In a more complex vision of the labour market, the dual and segmented labour market theorists suggest that this structure of the labour market structure utilizes individual ascribed characteristics other than level of education to segregate its workers. One such theory looks at how race can be used to "differentiate the price of labour so that employers benefit from the cheap labour of lower paid workers" (Li, 1988: 43; Bolaria and Li, 1988). In this way, the labour market is split along racial lines. The split labour market theory is forwarded by Edna Bonacich (1976: 36) and suggests that race is used to classify wages. This occurs when there is a "difference in the price of labour for two or more groups of labourers, holding constant their efficiency and productivity" (Bonacich, 1976: 36). Essentially, the price of labour for these groups of labourers differs for the same type of work (Bonacich, 1972: 549). According to this theory, workers are divided not only by education, but also by racial differences.

2.4.3 Problems with Dual Labour Market and Other Segmented Labour Market Theories

The problem with dual labour market, internal labour market and split labour market theories is that although their ideas are theoretically attractive, their ideas are difficult to substantiate empirically. There are many occupations and industries which cannot be easily characterized into either the primary or marginalized sectors. It is often the case that industries and occupations may straddle both sectors.

For example, clerical work may find most of its employees in the marginalized sectors working for low wages. However, there is a small segment of workers, such as office administrators and some business managers, who can no longer be associated with the marginalized sector due to the different nature of their employment duties and their higher level of earnings. These workers would then be classified as primary sector labourers even though they have risen from the ranks of marginalized sector

employment. In the case of companies and firms, there are workers in both primary and marginalized sectors within a single company. An automobile manufacturing plant may have many employees classified as marginalized workers, assembling vehicles. Within that same plant however, there would also be primary employees such as plant managers and office administrators, who would be considered primary labourers due to their higher wages and different job descriptions.

Neither dual labour market nor internal labour market theories have quantified a methodology which would capture these differences that clearly exist within the labour market. As will be shown in the data analysis, these theories are also inadequate in describing the income inequalities among the Aboriginal population in Canada.

The next section provides a brief overview of the literature concerning Aboriginal income inequality and describes how this thesis contributes to the research in this area.

2.5 Literature Review

2.5.1 Ethnicity and Income Inequality

The assumption that higher education leads to better employment and better wages has rarely been contested, especially in relation to the Aboriginal people of Canada. As a result, the effects of *different* educational attainments on the income of the Aboriginal population, for the most part, have been left unstudied. This has helped promote the view of government officials, academics and a consensus of the general population that increased education is a panacea for the low incomes of Aboriginal people, which may not necessarily be true.

While the overall disparities in educational attainment and economic status between the Aboriginal and non-Aboriginal populations are indisputable, the linkage between ethnicity and inequality is unclear. An example of this is seen in the Aboriginal population. Most Aboriginal people when compared to non-Aboriginal people, appear to have lower incomes due

to their lower overall average educational attainment.

Thus, the effect which ethnicity has on income and level of education for Aboriginal people contains two possibilities. On one hand, when ethnicity is measured as the difference between individuals of Aboriginal origins and non-Aboriginal origins, lifestyles, cultural values and differences in heritage may appear to affect their income. For instance, some Aboriginal people may not value higher education because the curriculum is not inclusive of their indigenous way of knowing. This, they perceive, is the result of a faulty education system as they view the school as disregarding their cultural values, with the result of low participation levels of Aboriginal people within the education system (Armstrong, Kennedy and Oberle, 1990). The thought here contains an over-emphasis on culture which precludes the consideration of other factors outside the individual that may limit opportunity. Focusing on culture as the reason behind lower educational attainment results in biased interpretations regarding the performance of certain individuals.

These arguments are flawed as they suggest that culture, heritage and lifestyle are key factors influencing the educational attainment and income of Aboriginal people. However, if the human capital theory is correct, race would be linked to lower educational attainment since it would be the reason behind the lower wages of some groups of individuals. This result would ensure that Aboriginal groups remain suppressed at the lower levels of the economy. This, as human capital theorists and many others contend, could be due to racism within the education system which prevents many Aboriginal people from attaining higher levels of education (Henry et al., 1995; Fleuras and Elliot, 1992; Wotherspoon, 1991; Weis, 1988; Willey, 1984). Alternatively, racism could also exist within the labour market and in hiring practices of employers (Henry et. al, 1995; Kalbach, 1987) blocking Aboriginal people with high levels of education from participating in the higher echelons of the work force. Human capital theorists disregard this view as they maintain that the allocation of employment and wages in the labour market

is based mainly on educational attainment, not on racism which may be present in either the labour market or the education system.

Another problem with research on education, race and income inequality is that most research has focused solely on comparisons with the non-Aboriginal population (Haas, 1993; Sandefur and Sakamoto, 1988; Sandefur and Scott, 1983). Furthermore, governments promote research based on the contribution to income which education provides to the *entire* Aboriginal population (Dibbs and Leesti, 1995; Statistics Canada, 1995; Statistics Canada, 1993a). For instance, when Dibbs and Leesti (1995) study the unemployment rates for the country, they compare the rates of Aboriginal people and visible minorities against the national average. They do not look at the differences *within* these populations which characterize either the Aboriginal and visible minority peoples. In taking these populations as a unitary whole, these studies miss the fact that the unemployment rate may be affected by differences other than race which may in turn, affect employment positions.

A brief mention should be made to research on Aboriginal people in Canada under the colonial model. This research is best represented by James S. Frideres (1993). Essentially, colonialism argues that the income inequalities and overall low economic status of the Aboriginal population can be traced back to the colonization of Canada by the French and English. In annexing Aboriginal lands, the colonizing groups were also able to impose a system of political and economic control over Aboriginal people. This process has shaped their inferior economic position today. This theory will not be discussed in this thesis as it tends to portray the Aboriginal population as passive victims of economic and political exploitation. As well, this theory does not analyze in depth, the relationship between education and the labour market outcome of Aboriginal people beyond stating that they occupy lower economic positions today due to past exploitation. This argument may have some merit, but for the most part, does not adequately address the education

system and how it works for Aboriginal people today.

Adding to the problems associated with studies of education, race and economic inequality are federal and provincial government policies which have also unquestionably accepted the assumptions of the human capital theory in that low levels of education are believed to be the main cause of low socio-economic status among Aboriginal people. One concrete example of this are the Saskatchewan education policies (Saskatchewan Education 1991a, 1991b, 1989, 1984). These policies have two goals; first to increase participation rates of Aboriginal people in the education system and second, to educate Aboriginal people at higher post-secondary levels so that they may participate in greater numbers in the labour market. Federal policies such as the Stay In School Initiative, the Aboriginal Employment and Training Strategy, the Native Internship Program and the Canadian Jobs Strategy are federal programs which target the Aboriginal population with education enhancement strategies designed to provide increased opportunities for employment which should supposedly increase their income. In addition, provincial governments have created similar policies of their own. Saskatchewan has developed the Native Career Development Program, while British Columbia sports the Employment Opportunity Program (Working Margins Consulting Group, 1992; Warburton, 1992). Implicit within each of these policies is the idea that training for future employment is one of the primary goals in Aboriginal education.

The problem with these programs is that education is viewed as the main solution to increasing the income of Aboriginal people while other factors which influence their income are disregarded. As a result, despite the government's efforts to increase the participation rate of Aboriginal people within the education system, the educational attainment of Aboriginal people remains far behind that of non-Aboriginal people (Statistics Canada, 1995; Saskatchewan Treaty Indians, 1993; Ross, 1991; Armstrong, Kennedy and Oberle, 1990). It is not the purpose of this thesis to critique existing policies

or suggest new ones. Rather, my mention of them here is simply to suggest the predominance of human capital theory in the government's view of Aboriginal economic inequality.

Recent studies continue to confirm the economic disparities of the Aboriginal population in comparison to the entire Canadian population. For example, Statistics Canada (1995: 26-29) reports that the average total income for Aboriginal people is $16,297 compared to $24,001 for the non-Aboriginal population. In addition, employment income is lower ($10,769 versus $14,430) and, government transfer payments make up a greater proportion of their total income (17.9 per cent versus 11.4 per cent) in comparison to the non-Aboriginal population (Statistics Canada, 1995: 26-29). Dibbs and Leesti (1995: 3) also conservatively report that the unemployment rate for Aboriginal people is much higher than the non-Aboriginal population, 18 per cent for those living off reserves versus 11 per cent for the non-Aboriginal population. As well, the average years of schooling for Aboriginal people is 10.7 years (Statistics Canada, 1994a) compared to the national average of 12.5 years (Statistics Canada, 1993b: 2). These figures indicate that there is a quantifiable difference in economic and educational attainment of the Aboriginal and non-Aboriginal populations in Canada.

There are however, two limitations to this type of research. First, although this type of comparison can highlight the economic and educational disparities of the Aboriginal population as a whole, it is limited because it tends to contrast extremes. Under such conditions, a strong relationship between income and level of education is always present, but it is misleading. Statistical analysis of Aboriginal and non-Aboriginal categories also contributes to these generalizations by artificially inflating the contribution of education to income when these two groups are compared. For example, numerous studies indicate that on average, Aboriginal people earn less and have lower participation rates in the education system than non-Aboriginal people. To substantiate this, many Aboriginal people participate in market structures

which provide lower wages and lower returns on their education.

This information is not new. The result of this kind of research is that even though some Aboriginal people may have high incomes due to high levels of education, their educational and economic achievements may not be apparent since their attainments will be averaged down by the low levels of other Aboriginal people. As a result, their gains will be lost when the overall effect is studied. Consequently, Aboriginal people will always appear, on average, to have lower levels of education and lower incomes, and by association, their racial origin will be believed to be connected with, if not causally linked to their relatively low socio-economic status.

A second limitation in research comparing the incomes of Aboriginal people to non-Aboriginal people stems from a tendency to consider Aboriginal people as a homogeneous group. In this case, the cause of low income and education levels of Aboriginal people may be artificially magnified since individuals having low incomes and low levels of education far out-number those who have higher incomes, with the resulting characterization of Aboriginal people as poor and uneducated in comparison to non-Aboriginal people, when in fact there may be many individuals who do not fit this description. It is for this reason that considering the Aboriginal population as homogeneous is analytically limited.

2.5.2 Research Question

The question which needs to be asked is whether or not Aboriginal people with similar levels of education will have similar economic returns to each other. There are two possible answers. First, if Aboriginal people with the same educational attainment have similar incomes, then the human capital theory is credible as an explanation of income inequalities. This would suggest that competition for employment and high wages is based mainly on educational attainment. On the other hand, if segments of the Aboriginal population with similar levels of education do not receive the same incomes, this would refute the notion of a unitary labour market. In other words, the

idea that competition for employment based mainly on educational credentials is overstated. In this case, the effects of gender, place of residence and registered Indian status would have to explain the existence of economic inequalities. This thesis considers this question and the two possible outcomes.

This research has important implications. First, it has important policy implications. Government policies support increased educational attainment for all individuals as they agree with the human capital notion that education will increase employment opportunities and income. The reason, governments contend, that many Aboriginal people do not have higher incomes is because they generally participate at lower rates in the education system than the rest of the population. If this is so, governments must change education policies in order to attract and maintain Aboriginal people in the education system, particularly at the post-secondary level. Thus, the current disadvantaged position of most Aboriginal people is not due to faulty government practices but rather, the education system fails to provide the incentives and opportunities to Aboriginal people which would help them to remain in the education system. Thus, the government shifts the blame of economic inequalities of Aboriginal people not on a faulty labour market, inadequate educational policies, or ill-fated government policies, but on the education system itself.

Second, and most importantly, this research will test the assumption of a competitive labour market based on educational attainment forwarded by the human capital theory. If education does not provide similar economic returns, it would indicate that factors other than education operate to allocate employment and income in the labour market. As well, this finding could also be applied to other populations. That is, the idea that the economic returns on education may differ within a certain racialized population might be applicable to other groups. In the end, this thesis will either support the human capital notion of the existence of a freely competitive labour market

based mainly on educational attainment, or it will show that educational attainment helps provide larger income for certain individuals.

Finally, if I am able to undermine the human capital assumption that education is a major contributor to income inequality, it would suggest that the labour market receives segments of Aboriginal people in different ways. Some segments would be based on different social conditions, for example gender or place of residence, while others are the result of official government policies such as the two-tiered system of status and non-status Indian. This would show that income is not entirely based on education and that self-effort and individual willingness to invest in human capital are not enough to guarantee higher levels of income.

The next three sections will outline other research based on gender, place of residence and registered Indian status which will help situate this research in the context of other studies.

2.5.3 Gender, Income and Aboriginal People

Much research has documented the economic differences between men and women, however, few have considered gender differences among Aboriginal people. The fact that women earn less total and employment income than men in Canada, has been well established (Gaskell, 1992; Filmore, 1990; Waring, 1987; Orstein, 1983; Fox and Fox, 1983) as well as the fact that visible minority women have some of the lowest average wages (Silvera, 1993, 1989; Brand, 1993; Amott and Matthaei, 1991). However, much of the earlier literature concerning the return on human capital investment for women has been under-studied (see for example: Becker, 1975; Chiswick, 1974; Schultz, 1971). Recently, however, the effect of education on women's income has been recognized in Canadian research (Ryscavage, 1994; Gittleman, 1994; Goodman, 1994). Goodman (1994: 28), for instance, notes that during the 1992 recession in Canada, women actually gained more employment positions in the labour market than their male counterparts. He further notes, however, that most of the increases in female employment are due to the heavy concentration of

women in the low paying, low skilled service sector (Goodman, 1994: 31). Thus in actuality, the economic position of women in general has not changed substantially.

The years following the 1992 recession have seen a *decrease* in the employment of women (Hayghe, 1994; 37). Hayghe (1994: 38-39) argues that women are not leaving the work force to attain traditional husband-as-breadwinner families or to raise children. Rather, he claims they are leaving because of changes in the labour market structure and to increase their education in order to re-enter the labour market.

Are women leaving the labour force to increase their education and investment in human capital? Moreover, is education providing women with better employment opportunities and higher wages? Gittleman (1994: 16) documents the effect of education on income for both men and women during the 1980's and suggests that education increases earnings for men and women considerably, but not in the same proportion. Although he notes that the income gap between men and women has narrowed considerably, he states that changes in the type of labour demanded by employers is has caused an increase in the employment rate for women without the accompanying increase in income, resulting in women having lower economic returns on their education than men. This is because the human capital theory for women works with the assumption that women participate less in the labour force during their life time than men as they often leave employment periodically to raise children (Gittleman, 1994: 20). Women, Gittleman argues, invest in skills which do not lose their value during absences from the work force. This essentially blocks their entry into professional careers such as corporate executive, since their professional skills will atrophy during employment absences.

Ryscavage (1994: 4) also supports this notion stating that although the income gap between women and men has narrowed substantially from 1980 to 1990, women continue to fall behind men due to their overall failure to

adapt to what he calls "skill biased technological change". This "skill bias" involves increasing the human capital investment of workers in order to allow people to compete more efficiently in an increasingly technologically orientated work place. This follows Adam Smith's idea that the labour force is in need of more highly educated workers in order to maintain the more advanced technology used in the work place. Ryscavage further states that educational attainment is an important factor in determining wage in the 1980's and that women have received higher economic returns from higher levels of education (Ryscavage, 1994: 9). He supports this with evidence that women comprised 52.6 per cent of the middle wage earners in 1990 compared to only 38.3 per cent in 1980 (Ryscavage, 1994: 9). He also notes, however, that there was an increase in the proportion of women in the lowest wage bracket and a corresponding decrease in the highest brackets, which he attributed to the fact that overall, women were not increasing their investments in human capital and this continued to affect their wages. He argues that if women were to increase their investment in human capital, their income would also increase.

The effects of gender on income, the labour market and the education system cannot be ignored. Women of all racial, ethnic and class backgrounds encounter more obstacles in the job market and receive lower renumeration than men (Gaskell, 1992; Silvera, 1993; 1989; Armstrong and Armstrong, 1984). Waring (1988) points to a deficiency in the literature and states that much research has failed to address the connections which gender has with education, the labour market and income. "The larger number of single households headed by women, the larger numbers of black females in poverty, the continuing stereotyping in education that discriminates against women" all result in women being employed in low status occupations with meagre pay in comparison to men, but this, she argues, has often been ignored (Waring, 1988: 203).

Jane Gaskell (1992) addresses some of these issues in her book Gender

Matters. The connection she draws between gender, schooling and work is that women and men experience different career paths in the school system which lead them to different occupations. She highlights the need for increased consideration of the impact of gender in education and how it influences differential outcomes of students. One of her suggestions involves making changes in the education system to create a curriculum that is more inclusive of the knowledge of others.

Various ideas have been forwarded as to why women continue to experience lower economic returns from education than men. Glass (1988) suggests that pregnancy and children affect women's employment and income. Similarly, Li and Currie (1992: 220-226) in their analysis, show that women are three times more likely than men to have experienced job interruptions which the researchers attribute to their "unequal share of the burden of childrearing".

The burden of childbearing and childrearing are only two of many other factors which disadvantage the earning capacities of women relative to men. Other arguments include the types of skills women acquire in school. Gaskell (1992) and Lowe (1987) indicate that in secondary education, young women tend to chose vocational courses that lead to employment with lower wages rather than classes which might lead to post-secondary education and higher economic returns. This partly explains the over-representation of women in the clerical sectors (Gaskell, 1992; Anderson, 1988; Lowe, 1987; McNally, 1979).

Related to this is the feminization of occupations. This refers to the transformation of employment through which gender is linked. Feminization of employment consists of two components. The first is that gender is linked to certain types of employment. This is defined as a segmentation of tasks which are either female or male. For example, nursing is defined as a feminine task as it involves a nurturing role, as related to motherhood, and transplants it to the workplace under the guise of health care provider. In this way, nursing has become a feminine task because it is coupled with

motherhood. The second component involves the job placement of women. Once these jobs have been defined as 'feminine', women are placed into this type of employment. This is why there are feminized occupations like clerical work and nursing which have a disproportionately large number of women practitioners. These two components combined are referred to in the literature as the 'ghettoization' of women (Armstrong and Armstrong, 1984; Fox and Fox, 1983). Women are placed into these traditionally low skilled, low waged occupations on the basis that they are close to their 'motherhood' or feminine roles in society.

Women also have lower employment income than males not only because they have been channelled into employment defined as feminine, but that women, because of various reasons, are more likely to have part-time work (Carroll, 1987; Ornstein, 1983; Connelly, 1978). This has a major effect on income. Part-time work means not only lower wages, but it usually is connected with occupations in the lower sectors of the labour market characterized with little job security. These positions usually offer little in career advancement, and the work experience they provide is not usually useful in gaining higher employment elsewhere.

Li (1992: 504-505) warns, however, that even when the effects of part-time work, skill acquisition, and work experience are controlled, women still earn less than men, and suggests that understanding these variables alone are insufficient to understand their income inequality.

Thus, the linkage between gender, education and the labour market is very complex. Although earning differences of men and women in the general population have been repeatedly confirmed, gender differences among the Aboriginal population have not been thoroughly investigated.

If Aboriginal women increased their investment in human capital, would their income increase? Chapter 4 shows that not only is there a gap between high income and low income earners among the different educational categories, but the return which education brings to Aboriginal women still

falls behind the corresponding returns for Aboriginal men.

2.5.4 Place of Residence and Income Disparities

Does place of residence affect income? Much of the literature suggests that income is greater for individuals residing in urban areas than in rural areas (Braun, 1991), that within urban centres, high income earners are more likely to live in suburbs than in the inner city core (Burnell, 1984; Smith, 1979) and that size of city affects income distribution (Soroka, 1984).

Braun (1991: 520-21) states that metropolitan areas are dichotomized, comprised of a "permanent underclass of sporadically employed workers" which form the marginalized population living in the inner city core, accompanied by a corporate group of executives, managers and skilled labourers with high wages living in the suburbs. Wages appear to be higher, on average, in the city than in non-urban areas because the income of the corporate group hides the low wages of the marginalized group (Braun, 1991: 528). Thus, there is variation in income distribution within a single city (Smith, 1979: 175). As well, Smith (1979: 179) indicates that technological innovations and inventions originate, for the most part, within the urban centres which also contribute to greater wealth in urban areas.

Soroka (1984) tested the assumption that size of city affects income inequality using the 1971 Census of Canada. His results were similar to Braun's except he found that the distribution of income inequality within Canadian cities is not as large as in American cities (Soroka, 1984: 359).

Chiswick (1974: 7) also notes that place of residence and its effect on income supports the human capital theory. He states that "schooling is an important determinant of individual differences in income and of regional differences in distribution" (Chiswick, 1974: 8). In Canada, Chiswick explains that schooling accounts for 65 per cent of the variation in income inequality among the provinces. Thus, he argues that schooling, not place of residence, remains the most crucial factor determining differences in income. He further postulates that when income inequality is large, the return on human capital

investment will be higher and there will be a greater inequality in the amount of education available (Chiswick, 1974: 21).

His findings indicate that individuals with higher levels of education are more mobile, more likely to move from place to place to find higher wage employment than non-educated individuals. He further notes that there is less income inequality between individuals in the higher education groups (Chiswick, 1974: 81). That is, the economic return for higher levels of education are more similar than the returns for individuals with lower levels of education. He explains that there is a national labour market for educated workers as opposed to the local labour market for low-skilled workers mostly due to their low mobility.

Are the incomes of Aboriginal people affected by place of residence? Do the returns on education differ for this group when differences in place of residence are taken into account? The analysis reveals that, in terms of both income level and the return which education brings to income for Aboriginal people, living inside or outside a city does make a considerable impact on income.

2.5.5 Income Inequality and Registered Indian Status

The impact of Indian status on Aboriginal income also has not been adequately considered in the literature. The economic effect of the status Indian designation is an interesting and important phenomenon to study since this distinction is based upon a legal definition which is indistinguishable physically or culturally. This legal distinction should have no basis in income or educational attainment. The analysis shows that, in fact, official Indian designation does have an impact on both income and the economic returns on education even though it should not affect employment or education.

It is helpful to briefly explain some of the history behind the Indian status designation before the analysis is considered. Prior to 1985, Aboriginal people could lose their *Indian* status; either voluntarily, through enfranchisement to obtain the right to vote in federal elections, or

involuntarily, such as the case of Aboriginal women marrying non-Aboriginal men and the children of these unions (Boldt, 1993; Frideres, 1993; Wotherspoon and Satzewich, 1993; Canada, Constitution, 1993, 1976; DIAND, 1981). The passing of *Bill C-31, An Act to Amend the Indian Act* in 1985, allowed individuals who had previously lost their Indian status to repatriate themselves as status Indians. Figure 2.1 displays the different categories of status and non-status Indians. These individuals became known as the Bill C-31 Indians and include those Aboriginal women who lost their status through marriage, and Aboriginal individuals with two status parents (section 6[1]) or one status parent (section 6[2]) (Boldt, 1993; 214; Holmes, 1987: 2). As a result of this amendment, Aboriginal people are classified either as status or non-status Indians.

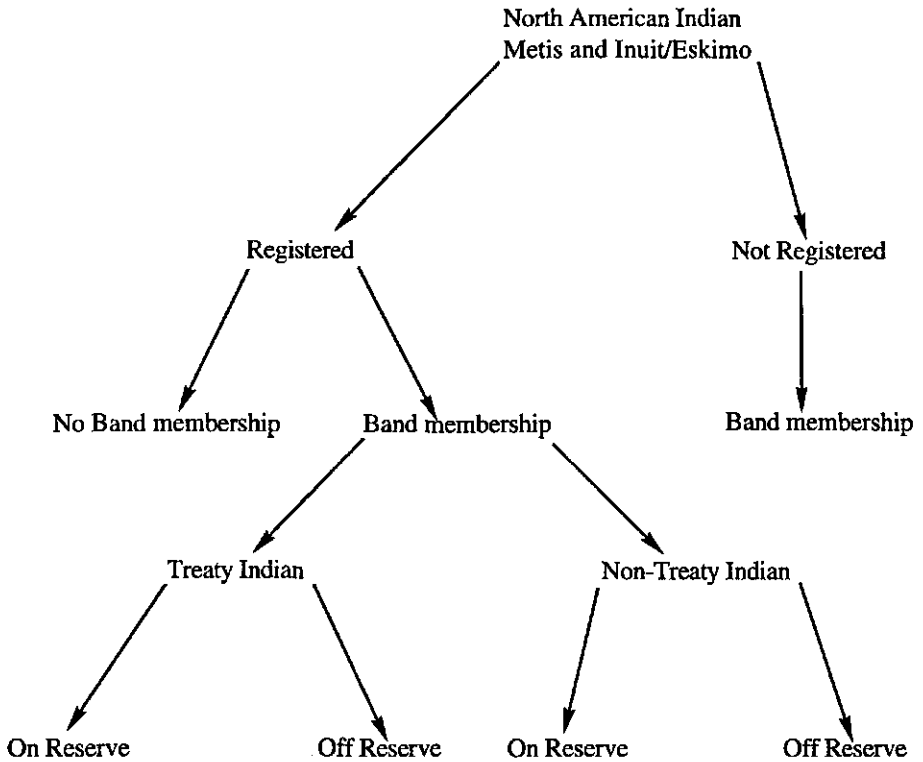
Ahenakew (1985) highlights the inconsistencies associated with the status/non-status Indian designations, but he does not consider these in the context of income inequalities. These official Indian distinctions create, according to Ahenakew (1985: 25), unnecessary tension among Aboriginal people as to who has treaty rights, which band they are members of, and how funds and services are distributed among the Aboriginal population. Despite this observation, he does not further his analysis into how official Indian status affects income inequalities.

Do these legal categories produce economic inequality *within* the Aboriginal population? Answers to this question will be provided in my data analysis. It is however, postulated that there are substantial differences in the income of status and non-status Indians.

2.6 Conclusion

This literature has argued two findings. First, for the most part, most research on Aboriginal income inequalities is contextualized by comparisons with the non-Aboriginal population. This has led researchers to neglect the possibility that other factors like gender, place of residence and registered Indian status may also affect income. Second, much of the literature supports the human

Figure 2.1
Legal Categories of Aboriginal People According to the Definitions in Bill C-31, Canada



Source: Frideres, James S. Native Peoples in Canada: Contemporary Conflicts. p. 31. Scarborough, Ontario: Prentice Hall, 1993; Holmes, Joan. Bill C-31, Equality or Disparity? The Effects of the New Indian Act on Native Women. p. 2. Ottawa: Canadian Advisory Council on the Status of Women, 1987.

capital notion that competition for high wage employment is based on the idea of a labour market where the major determinant of income is education. None have considered the possibility that competition in the labour market may be based on other factors. In the case of Canada's Aboriginal population, much of the research on economic inequality takes the Aboriginal population as a unitary whole and compares it against other populations without considering that there may be large variations in the income within the Aboriginal population itself. My research first questions the human capital notion of a labour market which uses educational credentials alone to allocate income. At the same time, it looks at how differences based on gender, place of residence and registered Indian status might affect the economic returns on education. This endeavour tests the validity of this human capital notion and the idea that the Aboriginal population is homogeneous.

This chapter has also detailed the theoretical debates surrounding the issue of economic inequalities of the Aboriginal population. The human capital theory suggests that education is the solution to the income disparities of this population. Federal and provincial policies, human capital theorists and the general public all agree that increasing levels of education would help provide Aboriginal people with opportunities to increase their income. Unfortunately, the solution is not that simple. Conversely, dual labour market as well as segmented labour market theories argue that inequalities exist within the labour market structure which prohibit Aboriginal people from obtaining high wage employment. They also suggest that this segmentation has a purpose in the capitalist system in that it reduces the price of labour for employers. Split labour market theorists like Bonacich also argue that race further segments the labour market as white workers receive higher returns on their investment in human capital than non-white workers.

My analysis argues that while the existence of a dual labour market may be true, other factors also contribute to the income inequalities of the Aboriginal population. In addition, it is difficult to identify the segmented

labour market empirically. Finally, these theories fail to account for differences which fractionalize the Aboriginal population in terms of income inequalities. Thus, not only is the labour market segmented by education and by primary and marginal sectors, differential economic outcomes are also factors of differences in gender, place of residence and registered Indian status. The analysis in the following chapters highlight these differences which characterize a heterogeneous Aboriginal population in Canada.

CHAPTER 3: SOURCE OF DATA AND METHODOLOGY

Five issues are discussed in this chapter. The first section describes the data source and the sample. Section two provides the operationalization of the variables used in this study, while sections three, four and five describe the type of statistical analysis used and related methodological considerations.

3.1 Source of Data

The 1991 Census of Canada is the main source of data for this research. It was collected by Statistics Canada on June 1, 1991 as part of the quinnenial census of the Canadian population.

The census contains information for approximately one million Aboriginal individuals living in this country (Statistics Canada, 1994a). The Aboriginal population in this study is defined by the following criteria. First, Aboriginal people are defined as any person of Aboriginal ancestry, as indicated on question 15 of the census questionnaire, either as a registered or non-registered Indian (Statistics Canada, 1993c: 1; Statistics Canada, 1991: 51). In the 1991 Census of Canada, Aboriginal people are classified into three main categories: North American Indian, Inuit/Eskimo and Métis. In addition, the following categories are also considered as making up the Aboriginal population: status Indians who are registered under the Indian Act or Bill C-31, those who have applied for status under Bill C-31 but have not yet regained official Indian status, and those individuals who are not registered under the Indian Act or Bill C-31 but identify themselves as having native ancestry (Statistics Canada, 1993c: 4). The sample does not include residents of institutions, residents of incompletely enumerated Indian reserves or Indian settlements and foreign residents, foreign diplomats, members of foreign

Armed Services stationed in Canada, or residents of another country who are visiting Canada temporarily (Statistics Canada, 1993d: 167).

The Aboriginal origin variable was generated using the "Aboriginal Ethnic Category" (ABETHCP) variable which consists of five categories, the first four of which are included in the sample for this analysis. These include: single North American Indian origin, single other Aboriginal origins, multiple North American Indian and other origins, multiple other Aboriginal origins and other origins (Statistics Canada, 1994b: 49). The sample does not include people who do not identify themselves as having Aboriginal origins. The 1991 Census estimates the Aboriginal population using these parameters as numbering 1,001,933 individuals (Statistics Canada, 1994a).

There is a further selection in the creation of the sample used in the analysis. Aboriginal people under the age of fifteen years are excluded for two reasons. First, Statistics Canada data on income exclude them since most of these individuals are dependents (Statistics Canada, 1993c; Statistics Canada, 1991). Second, the minimum legal age at which individuals are allowed to leave the public education system is age fifteen for most provinces (Devereaux, 1993: 9). After this age, individuals are free to leave the school system and enter the labour force or collect social assistance. This self imposed selection criterion reduces the sample of this study to 425, 800 individuals, representing 42.5% per cent of the entire Aboriginal population of Canada.[1] Appendix Table A-1 outlines the selection process and calculation of the Aboriginal population used for this thesis.

3.2 Operationalization of Variables

The variables used in this analysis include the following: total income, total government transfer payments, employment and self employment income, total years of schooling, gender, census metropolitan area of residence, registered Indian status indicator, work experience, work experience quadratic, employment status and full time/part time weeks worked.

There are three dependent variables in this analysis: total income

(TOTINCP), total government transfer payments (TGOVTP) and employment and self employment income (EMPINC). They have been separated in order to study the differences in the effects of the independent variables for each type of income, rather than focusing solely on total income as many other studies. In this way, I will be able to show how the factors affecting different types of income may vary.

3.2.1 Dependent Variables

a) Total Income

This variable refers to income from all sources. The official Statistics Canada definition is "the total money income received from the following sources during the calendar year 1990 by persons 15 years of age and over including: employment income, government transfer payments, investment income and other income" (Statistics Canada, 1992: 48).

Some studies (Schissel, 1992) have used the natural logarithm of total income as the dependent variable instead of the raw value of total income in order to provide a more accurate picture of how age contributes to differences in income. These studies recognize that age and income have a curvilinear relationship, that is, as an individual ages, income also continues to increase until a certain point. After a certain age, depending upon the occupation, income ceases to increase. For instance, after retirement, income for most individuals will most likely decrease since they are no longer participating in the labour force. This explains why the relationship between income and age is curvilinear. I have used regression models to examine total income, using both their raw values and natural logarithm, but there is no significant difference between them[2]. As a result, I have used the raw income scores rather than their natural logarithm, as the dependent variable in this analysis to allow easier interpretation of the results. Some examples of the regression models using the natural logarithm of total income are presented in the Appendix Tables B-1 and B-2.[3]

The average total income for all Aboriginal people over the age of 15

years is $17, 296 per annum.

b) Employment Income

Employment income is the second dependent variable in this analysis. It measures the income received from employment and self employment. Employment income is created using a combination of two variables in the Public Use Microdata File on Individuals (Statistics Canada, 1994a): wages and self employment income (WAGESP+ SELFIP). This is officially defined as "The total income received by persons 15 years of age and over during 1990 as wages and salaries, net income from unincorporated non-farm business and/or professional practice and net farm self employment income" (Statistics Canada, 1992: 42). Like total income, this is an interval level variable and will be analyzed in its natural form. The average income from employment is $13,675 per annum.

c) Total Government Transfer Payments

Total government transfer payments refers to "the total income from all transfer payments received from federal, provincial, or municipal governments in the calendar year 1990" (Statistics Canada, 1992: 42). This variable is used to indicate the amount of money provided as income from all government sources.

The total government transfer payment variable is also used as a measure of dependency on government for income support. Thus total government transfer payments can also be expressed as a percentage of total income in order to measure relative dependencies on government transfer payments by groups of individuals. For instance, relative dependencies between males and females can be measured using a comparison of the percentage of total income for each group that government transfer payments make up. Thus, one group can be said to be more dependent upon government transfer payments as a source of income than another depending on how much the total income is made up of transfer payments. Leaving these explanations aside, the average total government transfer payment for

the Aboriginal people in this analysis is $2,962.

3.2.2 Independent Variables

a) Total Years of Schooling

The variable I have chosen to represent education in this analysis is the total years of schooling variable (TOTSCHP). It was chosen since the level of education could be easily and accurately assigned a numeric value. Total years of schooling refers to "the total sum of the years (or grades) of schooling at the elementary, secondary, university and other non-university levels" (Statistics Canada, 1992: 109). Although it does not state the certificate(s), diploma(s) or degree(s) that an individual may acquire, it is a useful estimate of educational attainment which can be used in regression analysis. It also provides an estimate of the type of work an individual is capable of performing in the work force. Thus an education level of less than twelve years would, in most cases, indicate an average education of less than a high school diploma. Individuals with schooling numbering up to 14 years would indicate some post-secondary education, while those individuals with levels of education higher than 16 years would most likely, but not always, indicate some university education.

Education, according to the human capital theorists, is an investment by the individual which is supposed to provide returns later on in the form of income from the labour market. The human capital theory is concerned only with the amount of schooling. Not much consideration is given to the type of education obtained by the individual. The simple tenet of the human capital theory is that the more education an individual attains, the more 'employable' he or she becomes in the labour market, regardless of the type of education they have (Hornbeck and Salamon, 1991; Becker 1975; Schultz, 1971). Accordingly, any additional years of schooling should provide individuals with a larger base of human capital from which they may potentially benefit from the work force with the receipt of greater economic returns. The actual type of education that an individual attains is therefore

not considered in the study.

The mean total years of schooling is 10.73 years.

b) Gender

Gender is measured as a dummy variable with 0 representing females and 1 representing males. Of the 425,800 Aboriginal people included in this sample, 202,200 or 47.5 % are female, while 223,600 or 52.5% are male (Statistics Canada, 1994a).

c) Census Metropolitan Area (CMA)

The purpose of including CMA residence in the analysis is to see if the income of Aboriginal people living in large urban centres is markedly different from that of those living outside such areas. A census metropolitan area (CMA) is defined as "a very large urban area, together with adjacent urban and rural areas which have a high degree of economic and social integration with that urban area" (Statistics Canada, 1992: 182). To be considered a CMA, the area must have a population of at least 100,000 people.[4] Although this definition does not coincide with the definitions of cities in some provinces (populations of more than 5,000 residents made up urban centres in Saskatchewan[5]), it does provide a rough indication of metropolitan and non-metropolitan areas.

For the purposes of this analysis, the CMA indicator is dichotomized into CMA residence (areas with 100,000 or more residents) and non-CMA residence (areas with 99,999 or less inhabitants) to match the parameters described by Census Canada.

According to the data, 41.5% of the Aboriginal people in Canada reside in CMA's.

d) Registered Indian Status

This variable is used to indicate whether an individual is considered by the government as legally possessing registered Indian status. This includes Aboriginal people who are registered under the Indian Act, or its amendment, Bill C-31 (Statistics Canada, 1993c: 4; Statistics Canada, 1992: 21). The purpose of this variable is to see if there are any differences exhibited by the

populations with registered Indian status as compared to those Aboriginal people without registered Indian status.

Conventionally, the literature has not adequately considered the economic impact of the registered Indian status. When it is studied, often the results are interpretated much like Frideres (1988: 73) in that "there is very little difference [between status and non-status Indians] in their socio-economic status in Canada". This is clearly incorrect as Sandefur and Scott (1988) have suggested. In their analysis of the American Indian population, they discovered that 25.2 per cent of the Aboriginal population had changed their ethnic identity from non-Indian to Indian in the years between 1970 and 1980 (Sandefur and Scott, 1988: 72). Although they did not study income or Aboriginal peoples in Canada, the results are applicable here due to the rapid expansion in the registered Indian population after the introduction of Bill C-31. The impact of these new entrants would certainly affect the economic status of the registered Indian population. The problem is that these differences have not been adequately considered in sociological or economic research.

Status and non-status Indian labels are problematic for two reasons. First, this categorization may be viewed as a cultural term by both common language usage and in race and ethnic relations literature. This terminology is confusing not only because it sorts individuals into abstract categories, but there is no consensus as to who should be defined as having registered Indian status. Second, the status/non-status Indian designation is also a legal category since the federal government classifies Aboriginal people on the basis of historical treaty agreements, the interpretation of which can be contentious. The debate surrounding the validity of the label "registered Indian" requires separate research. For this study, the census categorization of registered versus not-registered statuses is used.

The registered Indian indicator is also a dummy variable were individuals with registered Indian status were given a value of 1 and those

not registered where assigned a value of 0. Thirty-four per cent of the Aboriginal people in this sample in the 1991 Census indicated that they had official Indian status.

e) Nature of Employment

The nature of employment variable was constructed by using the full-time/part-time weeks worked variable in the 1991 Census. It separates those individuals employed in the labour force into two categories, according to the time they spent at work. In the 1991 Census questionnaire, individuals were asked to report "whether the weeks they worked in 1990 were full weeks (30 hours or more per week) of work or not. Persons with a part-time job for part of the year and a full-time job for another part of the year were to report information for the job at which they worked the most weeks" (Statistics Canada, 1992: 58).

This variable has two categories, with full-time work valued as 1 and part-time work assigned a value of 0. The purpose of this variable is to assess whether or not hours of work had a significant impact on total income, employment income and government transfer payments. Of those individuals in the labour force, 77.8% had full-time employment during 1990.[6]

f) Employment Status

Employment status is also a dummy variable indicating whether an individual is employed or not. It was created by recoding the labour force participation indicator in the 1991 Census. According to Statistics Canada, labour force activity is "the labour market activity of the working age population who, in the week prior to June 4, 1991 were employed, unemployed or not in the labour force" (Statistics Canada, 1992: 62). The employment status variable was created by discarding individuals who are not actively participating in the labour force or looking for work. Out of 425,800 Aboriginal people in this sample, 24.5% are not participating in the labour market. These individuals were excluded from the analysis. Of the remaining Aboriginal people, 58.5% are employed. The purpose of this variable is to assess the effects of

employment on total income, employment income and government transfer payments.

g) Work Experience Indicator and Quadratic

The work experience indicator is an interval level variable created as a proxy measurement of work experience. This variable takes into account the age of the individual and level of education. It is calculated using the following equation:

$$\text{Work experience}=(\text{Age-total years of schooling-6}) \qquad (3.1)$$

The rationale behind this calculation is that by taking the age of an individual, subtracting the total years they attended school then subtracting six (the age which most individuals begin enrolling in some type of education system) provides an estimate of the years that an individual is eligible to enter the work force, regardless of whether they are actively employed or not.

The work experience quadratic term serves as a corrective factor for age in the work experience variable. Age as a separate variable cannot be considered in this analysis since it is highly correlated with the work experience variable. Thus the work experience and work experience quadratic term act not only as measurements of experience in the labour force, but also as a measure of the age of an individual. Social scientists have used this variable as an indicator of work experience of individuals (see Li, 1993; Armstrong, Kennedy and Oberle, 1990).

There is one consideration about the work experience indicator which must be mentioned. The work experience indicator does not take into account individuals who may have career interruptions or who may have worked seasonally. The variable considers that all individuals are employed on a continual basis. Furthermore, the amount of time between work periods varies from individual to individual according to the nature of their occupation (seasonal work) or their reasons for not working. This issue is especially important in the study of Aboriginal people since seasonal employment characterizes the careers of many Aboriginal people, especially

those living outside of large urban centres. As well, work interruptions not related to seasonal employment are also not considered as there is no information concerning the reasons behind labour force inactivity in the 1991 Census. This is important in the analysis of income, especially for females who are more likely to remain outside the labour market than males. These considerations will be taken into account while reviewing the analysis.

The mean work experience of the Aboriginal people included in this analysis is 18.11 years.

The next section will describe the methodology used in this study.

3.3 Methodology

This thesis uses a combination of methods to highlight the inequalities within the Aboriginal population of Canada.

Aboriginal people were selected out of the survey in the following manner. All individuals were recoded first using the "Aboriginal Ethnic Category" variable. This variable takes the entire Canadian population in the census and separates them into the following categories:

1) single North American Indian Aboriginal origins
2) single other Aboriginal origins
3) multiple North American Indian Aboriginal origins
4) multiple other Aboriginal origins and other origins; and
5) Non-Aboriginal origin

Those individuals falling into the last category were excluded from the analysis. All other respondents were accepted as having an Aboriginal origin. This variable was further refined by the use of the registered Indian indicator. Individuals who stated they had Aboriginal origins were separated into those who had official status, as registered under the Indian Act, versus those who did not have this status. This is how the Aboriginal groups in the sample were created.

The Aboriginal people in the sample were further classified on the basis of gender, metropolitan residence, and Indian status in order to compare how the average income of each subgroup differs from each other. Income is

compared in three ways: total government transfer payments, total employment income, and total income from all sources including the first two types.

Gross differences in total income, employment income and total government transfer payments among sub-groups of Aboriginal people are discussed first. Multiple regressions are then used to assess the influence of a combination of independent variables on the three variables (Loether and McTavish, 1993: 332).

Multiple regression analysis is useful for two reasons. First, by using the unstandardized regression coefficients as units of comparison, I can analyze how education affects the income of different groups of Aboriginal people. In other words, it helps to answer the question: how does education contribute to the incomes of Aboriginal people when they are split into different groups? This will allow me to assess how strongly education affects the various components of income across groups. Second, standardized regression coefficients allow a comparison within each separate model in order to assess how strongly education affects income in comparison with the other variables in the equation. It will help to assess the validity of the dual labour market theory, answering the question: do labour market features influence the income of Aboriginal people more than education? This is accomplished by comparing the standardized regression coefficient of the labour market variables (nature of employment, employment status, work experience indicator and quadratic) with the effects of other variables, namely education, gender, CMA residence and registered Indian status. If the labour market variables account for a greater proportion of the variation in income than any other variable then it would support the kind of explanation provided by the dual labour market theory. Similarly, if the education variable accounts for more of the variation in income, then it would strengthen the human capital theory. A third possibility arising from this analysis is that the independent variables of gender, CMA residence and registered Indian status may account

for a larger proportion of the variation in Aboriginal income. If this is the case, then it would suggest that neither the dual labour market theory nor the human capital theory is adequate in explaining the income for Aboriginal peoples.

Thus, the use of multiple regression analysis allows an effective study of how education and other characteristics affect the income of Aboriginal people. This analysis allows an assessment of the validity of both the human capital and dual labour market theories in the Aboriginal population.

The next section highlights some of the difficulties encountered within the sample design and the methodology used in this research.

3.4 Methodological Limitations

There are some problems associated with the use of the Public Use Microdata File on Individuals (1994a) and the weighting of the sample which needs discussing before the analysis begins.

The 1991 Census failed to or incompletely enumerated various reserves. As a result, there is a segment of the Aboriginal population missing from this analysis. Out of the 611 reserves in Canada (Indian and Inuit Affairs Program, 1991), 78, or 13 per cent (Statistics Canada, 1993e: 30-31) were incompletely enumerated, representing approximately 14,238 Aboriginal people. Appendix Table C-1 presents a list of the incompletely enumerated reserves. There are, however, two reasons why a study based on the 1991 Census is still worth pursuing. First, despite the number of missing cases, the 1991 Census remains the most complete and current statistical data available concerning the Aboriginal population in Canada. Second, the missing cases are likely to have come from the segment of the Aboriginal population which is most marginalized, that is, those with no fixed address and with seasonal employment. If this is indeed the case, their exclusion in my analysis would only strengthen my hypothesis about the small effect of education on income for Aboriginal people, since by including them, the true relationship would be further weakened.

My reliance on secondary data as the primary source of information also presents certain problems in my research which must also be addressed. Invariably, the data which was collected by Statistics Canada do not contain all the information required for my research purposes. For example, there is no direct question pertaining to work experience, the number of years of experience in the labour force for an individual. A surrogate measure of work experience is created by combining the age variable and total years of schooling variable as an approximation of work experience. Also, since an interval level value is required in regression analysis, level of education was also estimated by using the "total years of schooling" variable. This provides a reasonable alternative to using the actual degree, diploma or certificate obtained as a measure, although total years of schooling is not as precise a measure.

Similarly, I had to rely solely on the CMA residence indicator as the representation of place of residence. The only other related variable available is the province of residence. Had I relied on the province of residence as the indication of geographical boundary, my analysis would have increased twelve-fold since I would be required to use separate regression analyses for each province and territory. Furthermore, there were no satisfactory geographical variables available other than CMA residence.

Leaving these difficulties aside, the data remain extremely useful in describing the income of Aboriginal people in Canada. Although the missing data would enhance the validity of the present research, the missing cases are few in comparison to the population in the study which numbers 425,800 individuals. As mentioned earlier, the Census of 1991 remains the most accurate and complete source of data concerning the Aboriginal population, which makes the information collected by Statistics Canada a valuable source of data.

Another limitation concerns the weighting of the Aboriginal sample. The Public Use Microdata File on Individuals has been compacted

electronically to allow faster analysis. It is based on a 3% probability sample of Canada's population. Where required, I will report the weighted value of the population to give a more accurate indication of the actual numbers of individuals within the Aboriginal population. The following formula was used to provide a more accurate calculation of the population sized rather than simply multiplying by 3:

$$\frac{N \times 100}{3} \tag{3.2}$$

These limitations should be considered while reading this analysis.

3.5 Presentation of Data

There are some methodological explanations concerning the presentation of the data in the next chapter which need clarification before the analysis is discussed. The unstandardized regression coefficients are used in order to discuss the effects of education on income. An analysis of the unstandardized regression coefficients will allow a comparison of the education variable across the models of total income, employment income and total government transfer payments (Loether and McTavish, 1993: 345). This will also aid the discussion concerning the validity of the human capital theory in regards to the Aboriginal population which will take place in detail in Chapter Five. The tables with the standardized regression coefficients or beta weights, provide a "measure of the contribution of a variable to the prediction" (Loether and McTavish, 1993: 334), indicating how education compares to the other variables in its influence over the three dependent variables. This will highlight the discussion of the dual labour market theory in relation to the Aboriginal population in this sample.

The following discussion applies to both the unstandardized and the standardized regression models. Each table contains three types of regression models, each of which is discussed below.

First, the complete regression model, the one which includes all the variables in the regression equation, is reported in the "Net" column. For the

standardized models, the "Net" equation provides a view of how education compares in strength to the other variables in the equation. In the unstandardized models, the "Net" equation allows a comparison across income models, indicating which type of income education has the greatest effect on. The accompanying multiple regression coefficient is found under the same column in the row entitled "Adjusted Multiple R Squared". This value indicates the amount of variation within the dependent variable which is explained by all the variables in the equation.

Second, the column headed by the title "Gross" is the model which indicates how level of education alone contributes to the dependent variables. In other words, the "Gross" column is a regression model using only one variable, education, as a measure of the dependent variable. Its accompanying effect is reported as the "Adjusted Multiple R Squared" in the "Gross" column. This figure indicates how much variation in the dependent variable can be attributed to education when all other variables are removed from the equation.

The final note concerns the row entitled "Unique Contribution of Education" or the "Change in R Squared". This is the third way of expressing the effect of education on the three dependent variables. A "Unique Contribution" is a measure of how much the multiple correlation coefficient for the complete (Net) equation, subtracting the multiple correlation coefficient for the equation containing all the independent variables except education, contributes to the income of Aboriginal people. This is known as the "Unique Contribution of Education", the effects of education alone, on income. It should be noted that education has a small interaction with other variables in this analysis. Care should be taken in interpreting these results. What is significant, however, is that the covariation of education with the other variables in this analysis is significantly smaller than found in similar studies of the non-Aboriginal population. When the zero-order correlation of education and income is considered (see Appendix D), the correlation for

Aboriginal people does not have a value higher than 0.379 (see Appendix Table D-2), while the corresponding relationship in the non-Aboriginal population has been reported as 0.60 (Boyd, 1986: 460). This is important to note since even at this elementary level of analysis, education does not appear to provide the same economic returns to Aboriginal people as compared to non Aboriginal people. The significance of this finding will be discussed in later chapters.

Essentially, many of the tables in Chapter Four contain three different versions of the regression model for each dependent variable. The models start with a study of the entire population in Tables 4.8 and 4.9, and move to more complex models in Tables 4.10, 4.11, 4.12, 4.13, 4.14 and 4.15 when the analysis is split using the control variables of gender, CMA residence and registered Indian status.

ENDNOTES

1.The remaining 57.5 per cent of the population are either under age fifteen or have negative total incomes. Of this 57.5 per cent, the majority, are under age fifteen.

2.In this sample, there are no significant differences between the equations using the raw values and the natural logarithms when the R^2 values are compared with one another.

3.The employment income component also remains in its raw form for the same reasons. Total government transfer payments is also reported as raw scores as the value of government transfer payments is usually not dependent upon age, thus there is no curvilinear relationship between age and total government transfer payments. Furthermore, because the sample removed only individuals with negative incomes and individuals without total incomes, the regression analysis could not be run for employment income or total government transfer payments as the natural logarithm could not be calculated for individuals who had zero values for either income variable.

4.Areas with 10,000-99,999 residents are considered as Census agglomerations and are included in the Public Use Microdata Files on Households. As a result, the effect of living in smaller urban and rural centres cannot be considered in the present study.

5.City, town, village and hamlet designations vary according to provincial legislation. Thus, what might be considered a city in Saskatchewan might be considered a town elsewhere.

6.In the entire population, 24.2% of the respondents did not participate in the labour force and were not included in the analysis. Those employed and unemployed accounted for 75.7% of the sample, or (425,800) individuals.

CHAPTER 4: THE EFFECTS OF HUMAN CAPITAL AND LABOUR MARKET FEATURES ON THE INCOME OF ABORIGINAL PEOPLE IN CANADA

In the post-war era, expenditures on education in Canada have increased dramatically. This expansion was based on the belief that with industrialization, there is an increase in demand for technical and skilled labour. Accordingly, investments in education increase individual human capital, making individuals more productive. This would benefit the government in the form of higher gross national income, the individual with higher personal incomes and the capitalist with higher productivity of workers (Li, 1988: 70).

It has been well documented that Aboriginal people have less education than the average Canadian population, and that this has contributed to their lower incomes (Wotherspoon and Satzewich, 1993; Frideres, 1993, 1990, 1988). On the surface, this empirical finding would seem to support the human capital theory in that since Aboriginal people, on average, have lower levels of schooling, they have lower market returns. But how exactly does education affect the income of different groups of Aboriginal people? For example, does education affect the income of the Aboriginal population the same way when we consider variations according to gender, CMA residence and registered Indian status? Thus far, the literature has not paid sufficient attention to the idea that the economic returns of schooling may vary for different Aboriginal groups. The most common comparison of income is made between Aboriginal and non-Aboriginal people, or between Aboriginal males and Aboriginal females. In reality, factors other than education, such as ethnicity, gender, age and other characteristics are also grounds for unequal earnings (Li, 1992: 489;

Li, 1988; 85).

This chapter analyzes the income of Aboriginal people. First, I look at the differences in mean total income, employment income and total government transfer payments. Next I discuss how different levels of education affect economic returns of Aboriginal people based on differences in gender, CMA residence and registered Indian status. If the effect of education on income is the same for individuals regardless of differences in gender, CMA residence and registered Indian status, then there is support for the basic tenant of the human capital theory which suggests that "rewards are mainly based on the merit and credentials individuals acquire" (Li, 1988: 99).

Conversely, if the level of education provides different effects on income when these three independent variables are taken into account, then there are grounds to question the human capital theory as a viable explanation of income variations for Aboriginal people. The result is that one can logically claim that there are costs or benefits associated with a particular gender, location of residence, and registered Indian status. Such findings would also negate the suggestion of a single, unified labour market that provides equal opportunities for all participants.

Similarly, this analysis provides the basis for an examination of the dual labour market theory. If the level of education is not a strong predictor of income in the regression model when other variables are taken into account *and* if the work force variables such as nature of employment, employment status and work experience account for more of the variation in income than the remaining variable, the dual labour market theory may be accepted as a better explanation of the differentials observed in the income of Aboriginal people. This would suggest that income is affected more by labour market attributes such as type of employment, rather than the individual attribute of education.

On the other hand, if work-related characteristics fail to account for variations in Aboriginal income, the dual labour market theory may be

rejected. It may be the case that other variables not accounted for by the dual labour market theory also affect the income of Aboriginal people. If this is the case, the dual labour market theory has to be refined to include the influences of other factors such as gender, CMA residence and registered Indian status.

This chapter considers the implications of both the dual labour market and human capital theories in regards to the income of Aboriginal people. Three possibilities exist. First, the education variable may be the cause of the greatest variation in income, making the human capital theory the most logical explanation of income variation. Second, labour market features, not education, may contribute the most to Aboriginal income differences, and it would suggest that the dual labour market theory may be a better explanation. Finally, neither theory may adequately explain the situation of the Aboriginal people. In this case, either both theories must be revamped in order to provide a better explanation of income variation, or a new theoretical paradigm must be developed in order to account for the income differences among Canada's Aboriginal people.

The next section compares the mean total income, employment income and total government transfer payments for all Aboriginal people, and is followed by a detailed analysis of the effects of gender, place of residence and registered Indian status on income.

4.1 An Analysis of Aboriginal Income: A Comparison of Means

Income differences among sub-groups of the Aboriginal population in Canada can be compared using averages. Table 4.1 presents the three dependent variables, total income, employment income and total government transfer payments and reports their means among groups classified by gender, CMA residence and registered Indian status. The mean total income for the entire Aboriginal population, not adjusting for differences across any other independent variable, is $17,296 per annum, with an average employment income of $13,675 and a mean total government transfer payment of $2,962[1].

These results indicate that there are substantial differences in annual

Table 4.1
The Sources of Income for Aboriginal People, Canada, 1991

	Population		Mean Total Income	Mean Employment Income		Mean Government Transfer Payments	
	Weighted N	Per cent		$	as % of total Income	$	as % of total Income
Total Sample	425,800	100.0	17,296	13,675	79.1	2,962	17.1
Gender							
Female	202,200	47.5	13,797	10,245	74.3	2,919	21.2
Male	223,600	52.5	20,900	17,207	82.3	3,006	14.4
CMA residence							
in CMA	190,500	44.7	20,089	16,783	83.5	2,474	12.3
not in CMA	235,300	55.3	15,314	11,469	74.9	3,308	21.6
Registered Indian status							
Registered	116,533	27.4	12,380	8,227	66.5	2,552	20.6
Not registered	309,267	72.6	19,854	16,509	83.2	3,750	18.9

Source:
Statistics Canada, 1991 Census of Canada, Public Use Microdata File on Individuals.

incomes based on gender, CMA residence and registered Indian status. Aboriginal females, on average, earn $13,797, which is substantially lower than the average Aboriginal male earning of $20,900. In employment income, females earn $10,245 compared to $17,207 for males[2]. The mean government transfer payment differs only slightly for males and females in absolute terms, but it made up 21 per cent of Aboriginal female income while only accounting for 14 per cent of the total income of Aboriginal males.

Aboriginal people who live in large urban centres have higher total income and employment income than those who live outside of CMA's. CMA residents earn $4,775 more per year in employment income than their counterparts outside of CMA's. Aboriginal people residing in a CMA also earn $834 per year more than Aboriginal people residing outside of CMA's in terms of total government transfer payments.

Status and non-status Indians show the most difference in income. Status Indians earn $7,474 less than those without registered Indian status. In employment earnings, non-registered Indians have an average earning *two times higher* than their counterparts. The mean total government transfer payment for both groups is remarkably similar accounting for 21 per cent of the total income for registered Indians, as compared to 19 per cent for those individuals not registered. However, in absolute dollars, non-status Indians receive $3,750 from government transfer payments, on average, while registered Indians, who have lower incomes, receive only $2,552. Hence, not only do registered Indians earn less total and employment incomes than non-registered Indians, they also receive less government support.

The census data indicate that the total income of Aboriginal people is made up of two major components: employment income and total government transfer payments. These two sources combined account for approximately 95 per cent of their income, the other 5 per cent coming from investments, retirement pensions and other income sources. The income data also reflect fundamental income differences based on gender, CMA residence

and registered Indian status. These differences suggest that the population is more heterogeneous than previous studies have assumed.

Next I look at how levels of education influence the components of income of social groupings based on gender, place of residence and registered Indian status.

4.2 The Effects of Gender, Place of Residence and Registered Indian Status on the Income of Aboriginal People

The finding that the income of Aboriginal people is much lower than the general population is not new. Many researchers have studied gender differences in income, and the fact that Aboriginal males earn more income than Aboriginal females (Henry et. al, 1995: 63; Statistics Canada, 1995; Fleuras and Elliot, 1992; Ross and Usher, 1992; Working Margins Consulting Group, 1992; Ross, 1991; Armstrong, Kennedy and Oberle, 1990). However, few studies have examined the effects of gender, place of residence and Indian status on income.

Tables 4.2 and 4.3 support the findings of previous research: women earn less than men at all levels of education. For instance, about half of the Aboriginal women with secondary schooling had total incomes below $10,000 per year, as compared to 36 per cent among Aboriginal men with the same education. For employment income, only 10 per cent of the Aboriginal women with post-secondary education, as compared to 27 per cent Aboriginal men, earn $40,000 or more per year. Similarly, for government transfer payments, 57 per cent Aboriginal women with post-secondary education did not collect this form of income, compared to 46.75 per cent of men.

Aboriginal women with similar levels of education persistently receive lower total income, employment income and total government transfer payments than men. Even among Aboriginal men and women with post-secondary education, 30 per cent of women had total incomes below $10,000 compared to 17 per cent for men[3]. The data show that Aboriginal women are more likely to be in lower income brackets than men when differences in

Table 4.2
Total Income, Employment Income and Total Government Transfer Payments by Level of Education for Aboriginal Females, Canada, 1991

Income Bracket	No School		Elementary Education		Secondary Education		Post-Secondary Education		Total
	Number	%	Number	%	Number	%	Number	%	
Total Income									
$1-$1,999	800	12.06	8,300	18.69	25,100	14.43	3,133	5.22	37,333
$2,000-$9,999	3,300	49.75	19,967	44.97	60,867	34.99	14,800	24.65	98,933
$10,000-$19,999	2,100	31.66	12,733	28.68	48,367	27.80	13,767	22.93	76,967
$20,000-$39,999	367	5.53	3,100	6.98	35,300	20.29	21,300	35.48	60,067
$40,000 or more	67	1.01	300	0.68	4,333	2.49	7,033	11.72	11,733
Total Income Total	6,633	100.00	44,400	100.00	173,967	100.00	60,033	100.00	285,033
Employment Income									
Zero	5,233	78.89	28,933	65.17	43,433	24.97	6,267	10.44	83,867
$1-$1,999	533	8.04	3,700	8.33	23,367	13.43	4,200	7.00	31,800
$2,000-$9,999	433	6.53	5,833	13.14	41,067	23.61	13,567	22.60	60,900
$10,000-$19,999	133	2.01	3,600	8.11	32,867	18.89	10,867	18.10	47,467
$20,000-$39,999	233	3.52	2,067	4.65	29,967	17.23	19,000	31.65	51,267
$40,000 or more	67	1.01	267	0.60	3,267	1.88	6,133	10.22	9,733
Employment Income Total	6,633	100.00	44,400	100.00	173,967	100.00	60,033	100.00	285,033
Total Government Transfer Payments									
Zero	1100	16.58	12,867	28.98	82,633	47.50	34,333	57.19	130,933
$1-$5,000	967	14.57	12,300	27.70	56,567	32.52	17,300	28.82	87,133
$5,001-$10,000	2,667	40.20	11,700	26.35	22,367	12.86	5,400	9.00	42,133
$10,001-$15,000	1,633	24.62	6,167	13.89	9,367	5.38	2,167	3.61	19,333
$15,001 or more	267	4.02	1,367	3.08	3,033	1.74	833	1.39	5,500
Transfer Payments Total	6,633	100.00	44,400	100.00	173,967	100.00	60,033	100.00	285,033

Note:
The income brackets were created according to the brackets suggested by Statistics Canada, 1991 in Selected Income Statistics (Statistics Canada, 1993: 1). The education levels are indicated as follows: No school=never or kindergarten only, elementary education=1 to 8 years of schooling, Secondary education=9 to 13 years of schooling and post-secondary education= 14 or more years of schooling. The data set is based on a 3% probability sample of Canada's Aboriginal population; the numbers have been weighted to population size. The figures in the table do not include persons under 15 years of age, persons who did not work, persons who earned negative incomes and inmates.

Source:
Statistics Canada, 1991 Census of Canada, Public Use Microdata File on Individuals, 1994; Statistics Canada, Selected Income Statistics. Catalogue 93-331. Ottawa: Minister of Industry, Science and Technology, 1993.

Table 4.3
Total Income, Employment Income and Total Government Transfer Payments by Level of Education for Aboriginal Males, Canada, 1991

Income Bracket	No School		Elementary Education		Secondary Education		Post-Secondary Education		Total
	Number	%	Number	%	Number	%	Number	%	
Total Income									
$1-$1,999	767	10.31	6,367	12.54	18,700	11.29	1,500	2.84	27,333
$2,000-$9,999	3,300	44.39	16,800	33.09	41,600	25.11	7,567	14.32	69,267
$10,000-$19,999	2,400	32.29	13,633	26.85	35,200	21.24	9,600	18.17	60,833
$20,000-$39,999	900	12.11	10,700	21.08	48,867	29.49	18,467	34.95	78,933
$40,000 or more	67	0.90	3,267	6.43	21,333	12.87	15,700	29.72	40,367
Total Income Total	7,433	100.00	50,767	100.00	165,700	100.00	52,833	100.00	276,733
Employment Income									
Zero	5,000	67.26	21,433	42.22	25,600	15.45	3,933	7.44	55,967
$1-$1,999	633	8.52	4,300	8.47	18,400	11.10	1,900	3.60	25,233
$2,000-$9,999	733	9.87	8,200	16.15	33,100	19.98	7,933	15.02	49,967
$10,000-$19,999	467	6.28	5,900	11.62	27,733	16.74	7,333	13.88	41,433
$20,000-$39,999	533	7.17	8,400	16.55	42,500	25.65	17,467	33.06	68,900
$40,000 or more	67	0.90	2,533	4.99	18,367	11.08	14,267	27.00	35,233
Employment Income Total	7,433	100.00	50,767	100.00	165,700	100.00	52,833	100.00	276,733
Total Government Transfer Payments									
Zero	1,000	13.45	12,767	25.15	67,100	40.49	24,700	46.75	105,567
$1-$5,000	1,900	25.56	18,667	36.77	66,700	40.25	21,400	40.50	108,667
$5,001-$10,000	2,533	34.08	11,633	22.92	21,400	12.91	4,233	8.01	39,800
$10,001-$15,000	1,600	21.52	5,667	11.16	6,967	4.20	1,800	3.41	16,033
$15,001 or more	400	5.38	2,033	4.01	3,533	2.13	700	1.32	6,667
Transfer Payments Total	7,433	100.00	50,767	100.00	165,700	100.00	52,833	100.00	276,733

Note:
The income brackets were created according to the brackets suggested by Statistics Canada, 1991 in Selected Income Statistics (Statistics Canada, 1993: 1). The education levels are indicated as follows: No school=never or kindergarten only, elementary education=1 to 8 years of schooling, Secondary education=9 to 13 years of schooling and post-secondary education= 14 or more years of schooling. The data set is based on a 3% probability sample of Canada's Aboriginal population; the numbers have been weighted to population size. The figures in the table do not include persons under 15 years of age, persons who did not work, persons who earned negative incomes and inmates.

Source:
Statistics Canada, 1991 Census of Canada, Public Use Microdata File on Individuals, 1994; Statistics Canada, Selected Income Statistics. Catalogue 93-331. Ottawa: Minister of Industry, Science and Technology, 1993.

education have been considered. This finding supports previous research and indicates that the returns of education for Aboriginal women are lower than that of men (Statistics Canada, 1995; Carroll, 1987; Dex, 1985; Armstrong and Armstrong, 1984; Ornstein, 1983; Berch, 1982; Mott, 1982; Connelly, 1978).

The 1991 Census indicates that Aboriginal people living within CMA's have larger incomes than Aboriginal people living outside of CMA's. Tables 4.4 and 4.5 show the effects of education on income for the Aboriginal population when place of residence is controlled. Again, the tables indicate that education has varying influences on income when differences in place of residence are controlled; however, this difference is not as pronounced as that between men and women. For those without formal education, 49 per cent of the respondents residing in CMA's had incomes below $10,000 as compared to 58 per cent of those outside of CMA's. When employment income is considered, the difference between those living inside or outside of CMA's is small, but for certain categories such as those with elementary education, large differences are apparent. Nearly twice as many individuals living outside of CMA's have employment incomes ranging from $2,000-$9,999 than those living inside CMA's. The picture is much the same for total government transfer payments. Tables 4.4 and 4.5 suggest that there are differences in how education affects income depending upon place of residence within or outside of a CMA.

For government transfer payments, individuals living outside of CMA's are more likely to collect this form of income regardless of their level of education. For instance, of those living in CMA's 56.8 per cent of the respondents with post-secondary education did not collect government transfer payments as compared to 45.7 per cent of those living outside of CMA's with the same level of education. Those without formal education are more likely to collect some form of government transfer payment regardless of place of residence, with 82.8 per cent of the respondents living in CMA's collecting transfer payments compared to 85.24 per cent of those living outside

Table 4.4
Total Income, Employment Income and Total Government Transfer Payments by Level of Education for Aboriginal People in CMA's, Canada, 1991

Income Bracket	No School		Elementary Education		Secondary Education		Post-Secondary Education		Total
	Number	%	Number	%	Number	%	Number	%	
Total Income									
$1-$1,999	133	13.79	2,200	10.28	14,600	10.14	2,000	2.99	18,933
$2,000-$9,999	333	34.48	7,567	35.36	37,800	26.26	12,833	19.19	58,533
$10,000-$19,999	400	41.38	6,933	32.40	37,200	25.85	13,367	19.99	57,900
$20,000-$39,999	100	10.34	3,633	16.98	42,400	29.46	24,733	36.99	70,867
$40,000 or more	0	0.00	1,067	4.98	11,933	8.29	13,933	20.84	26,933
Total Income Total	967	100.00	21,400	100.00	143,933	100.00	66,867	100.00	233,167
Employment Income									
Zero	667	68.97	12,300	57.48	25,533	17.74	5,667	8.47	44,167
$1-$1,999	100	10.34	1,267	5.92	15,100	10.49	3,133	4.69	19,600
$2,000-$9,999	67	6.90	1,733	8.10	28,167	19.57	12,033	18.00	42,000
$10,000-$19,999	67	6.90	2,367	11.06	26,567	18.46	10,467	15.65	39,467
$20,000-$39,999	67	6.90	2,767	12.93	38,533	26.77	22,633	33.85	64,000
$40,000 or more	0	0.00	967	4.52	10,033	6.97	12,933	19.34	23,933
Employment Income Total	967	100.00	21,400	100.00	143,933	100.00	66,867	100.00	233,167
Total Government Transfer Payments									
Zero	167	17.24	4,967	23.21	69,600	48.36	38,000	56.83	112,733
$1-$5,000	200	20.69	6,433	30.06	48,433	33.65	20,800	31.11	75,867
$5,001-$10,000	300	31.03	6,167	28.82	16,267	11.30	5,300	7.93	28,033
$10,001-$15,000	233	24.14	3,067	14.33	7,167	4.98	1,900	2.84	12,367
$15,001 or more	67	6.90	767	3.58	2,467	1.71	867	1.30	4,167
Transfer Payments Total	967	100.00	21,400	100.00	143,933	100.00	66,867	100.00	233,167

Note:
The income brackets were created according to the brackets suggested by Statistics Canada, 1991 in Selected Income Statistics (Statistics Canada, 1993: 1). The education levels are indicated as follows: No school=never or kindergarten only, elementary education=1 to 8 years of schooling, Secondary education=9 to 13 years of schooling and post-secondary education= 14 or more years of schooling. The data set is based on a 3% probability sample of Canada's Aboriginal population; the numbers have been weighted to population size. The figures in the table do not include persons under 15 years of age, persons who did not work, persons who earned negative incomes and inmates.

Source:
Statistics Canada, 1991 Census of Canada, Public Use Microdata File on Individuals, 1994; Statistics Canada, Selected Income Statistics. Catalogue 93-331. Ottawa: Minister of Industry, Science and Technology, 1993.

Table 4.5
Total Income, Employment Income and Total Government Transfer Payments by Level of Education for Aboriginal People Outside of CMA's, Canada, 1991

Income Bracket	No School		Elementary Education		Secondary Education		Post-Secondary Education		Total
	Number	%	Number	%	Number	%	Number	%	
Total Income									
$1-$1,999	1,433	10.94	12,467	16.90	29,200	14.92	2,633	5.72	45,733
$2,000-$9,999	6,267	47.84	29,200	39.58	64,667	33.04	9,533	20.72	109,667
$10,000-$19,999	4,100	31.30	19,433	26.34	46,367	23.69	10,000	21.74	79,900
$20,000-$39,999	1,167	8.91	10,167	13.78	41,767	21.34	15,033	32.68	68,133
$40,000 or more	133	1.02	2,500	3.39	13,733	7.02	8,800	19.13	25,167
Total Income Total	13,100	100.00	73,767	100.00	195,733	100.00	46,000	100.00	328,600
Employment Income									
Zero	9,567	73.03	38,067	51.60	43,500	22.22	4,533	9.86	95,667
$1-$1,999	1,067	8.14	6,733	9.13	26,667	13.62	2,967	6.45	37,433
$2,000-$9,999	1,100	8.40	12,300	16.67	46,000	23.50	9,467	20.58	68,867
$10,000-$19,999	533	4.07	7,133	9.67	34,033	17.39	7,733	16.81	49,433
$20,000-$39,999	700	5.34	7,700	10.44	33,933	17.34	13,833	30.07	56,167
$40,000 or more	133	1.02	1,833	2.49	11,600	5.93	7,467	16.23	21,033
Employment Income Total	13,100	100.00	73,767	100.00	195,733	100.00	46,000	100.00	328,600
Total Government Transfer Payments									
Zero	1,933	14.76	20,667	28.02	80,133	40.94	21,033	45.72	123,767
$1-$5,000	2,667	20.36	24,533	33.26	74,833	38.23	17,900	38.91	119,933
$5,001-$10,000	4,900	37.40	17,167	23.27	27,500	14.05	4,333	9.42	53,900
$10,001-$15,000	3,000	22.90	8,767	11.88	9,167	4.68	2,067	4.49	23,000
$15,001 or more	600	4.58	2,633	3.57	4,100	2.09	667	1.45	8,000
Transfer Payments Total	13,100	100.00	73,767	100.00	195,733	100.00	46,000	100.00	328,600

Note:
The income brackets were created according to the brackets suggested by Statistics Canada, 1991 in Selected Income Statistics (Statistics Canada, 1993: 1). The education levels are indicated as follows: No school=never or kindergarten only, elementary education=1 to 8 years of schooling, Secondary education=9 to 13 years of schooling and post-secondary education= 14 or more years of schooling. The data set is based on a 3% probability sample of Canada's Aboriginal population; the numbers have been weighted to population size. The figures in the table do not include persons under 15 years of age, persons who did not work, persons who earned negative incomes and inmates.

Source:
Statistics Canada, 1991 Census of Canada, Public Use Microdata File on Individuals, 1994; Statistics Canada, Selected Income Statistics. Catalogue 93-331. Ottawa: Minister of Industry, Science and Technology, 1993.

of CMA's. Thus, although level of education affects the collection of government transfer payments at the higher levels of education, it is not as important when the respondent has no formal education.

Tables 4.6 and 4.7 show a marked difference in earning between status and non-status Indians, a difference which has not been widely explained by the literature. Status and non-status Indians with secondary education show the most differences in total income, 9.46 per cent of registered Indians and 3.6 per cent of non-status Indians had an income over $40,000. Regardless of level of education, registered Indians had more respondents without employment income than their non-status counterparts. For instance, of registered Indians without formal education, 80.1 per cent had no employment income, versus 61.5 per cent of non-registered Indians. The results for total government transfer payments are different. Registered and non-registered Indians have roughly equal numbers of respondents from every level of education, collecting similar amounts of transfer payments. For example, of registered Indians without formal education, 20.3 per cent have payments under $5,000 while non-registered Indians in the same education category have 20.5 per cent of the respondents in this bracket. Tables 4.6 and 4.7 thus indicate that although there are large differences between the total and employment income of status and non-status Indians, there are similarities in the amount of transfer payments they receive.

This initial analysis of the differences between the status and non-status Indian designated populations indicates two things. First, the simple comparison of average total income, employment income and total government transfer payments reveal that there are differences not only in the composition of income, but that there are differences based on gender, place of residence and registered Indian status. Second, among the income differences based on these characteristics, income disparities are most pronounced when Indian status is considered. These results alone highlight the need for research into the effects of education on the various components

Table 4.6
Total Income, Employment Income and Total Government Transfer Payments by Level of Education for Registered Indians in the Aboriginal Population, Canada, 1991

Income Bracket	No School		Elementary Education		Secondary Education		Post-Secondary Education		Total
	Number	%	Number	%	Number	%	Number	%	
Total Income									
$1-$1,999	967	11.33	10,667	20.54	19,867	17.94	1,367	6.49	32,867
$2,000-$9,999	4,133	48.44	21,633	41.66	40,867	36.91	5,233	24.84	71,867
$10,000-$19,999	2,800	32.81	13,000	25.03	26,300	23.75	5,467	25.95	47,567
$20,000-$39,999	567	6.64	5,500	10.59	19,700	17.79	6,567	31.17	32,333
$40,000 or more	67	0.78	1,133	2.18	4,000	3.61	2,433	11.55	7,633
Total Income Total	8,533	100.00	51,933	100.00	110,733	100.00	21,067	100.00	192,267
Employment Income									
Zero	6,833	80.08	31,433	60.53	35,500	32.06	3,300	15.66	77,067
$1-$1,999	367	4.30	4,433	8.54	16,033	14.48	1,567	7.44	22,400
$2,000-$9,999	700	8.20	7,100	13.67	23,200	20.95	4,800	22.78	35,800
$10,000-$19,999	333	3.91	4,500	8.66	17,233	15.56	3,467	16.46	25,533
$20,000-$39,999	233	2.73	3,533	6.80	15,433	13.94	5,833	27.69	25,033
$40,000 or more	67	0.78	933	1.80	3,333	3.01	2,100	9.97	6,433
Employment Income Total	8,533	100.00	51,933	100.00	110,733	100.00	21,067	100.00	192,267
Total Government Transfer Payments									
Zero	967	11.33	13,700	26.38	40,600	36.66	9,200	43.67	64,467
$1-$5,000	1,733	20.31	17,667	34.02	43,767	39.52	7,733	36.71	70,900
$5,001-$10,000	3,400	39.84	12,067	23.23	17,533	15.83	2,500	11.87	35,500
$10,001-$15,000	2,000	23.44	6,433	12.39	6,133	5.54	1,100	5.22	15,667
$15,001 or more	433	5.08	2,067	3.98	2,700	2.44	533	2.53	5,733
Transfer Payments Total	8,533	100.00	51,933	100.00	110,733	100.00	21,067	100.00	192,267

Note:
The income brackets were created according to the brackets suggested by Statistics Canada, 1991 in Selected Income Statistics (Statistics Canada, 1993: 1). The education levels are indicated as follows: No school=never or kindergarten only, elementary education=1 to 8 years of schooling, Secondary education=9 to 13 years of schooling and post-secondary education= 14 or more years of schooling. The data set is based on a 3% probability sample of Canada's Aboriginal population; the numbers have been weighted to population size. The figures in the table do not include persons under 15 years of age, persons who did not work, persons who earned negative incomes and inmates.

Source:
Statistics Canada, 1991 Census of Canada, Public Use Microdata File on Individuals, 1994; Statistics Canada, Selected Income Statistics. Catalogue 93-331. Ottawa: Minister of Industry, Science and Technology, 1993.

Table 4.7
Total Income, Employment Income and Total Government Transfer Payments by Level of Education for Non-Registered Indians in the Aboriginal Population, Canada, 1991

Income Bracket	No School		Elementary Education		Secondary Education		Post-Secondary Education		Total
	Number	%	Number	%	Number	%	Number	%	
Total Income									
$1-$1,999	600	10.84	4,000	9.25	23,933	10.45	3,267	3.56	31,800
$2,000-$9,999	2,467	44.58	15,133	35.00	61,600	26.91	17,133	18.66	96,333
$10,000-$19,999	1,700	30.72	13,367	30.92	57,267	25.01	17,900	19.50	90,233
$20,000-$39,999	700	12.65	8,300	19.20	64,467	28.16	33,200	36.17	106,667
$40,000 or more	67	1.20	2,433	5.63	21,667	9.46	20,300	22.11	44,467
Total Income Total	5,533	100.00	43,233	100.00	228,933	100.00	91,800	100.00	369,500
Employment Income									
Zero	3,400	61.45	18,933	43.79	33,533	14.65	6,900	7.52	62,767
$1-$1,999	800	14.46	3,567	8.25	25,733	11.24	4,533	4.94	34,633
$2,000-$9,999	467	8.43	6,933	16.04	50,967	22.26	16,700	18.19	75,067
$10,000-$19,999	267	4.82	5,000	11.57	43,367	18.94	14,733	16.05	63,367
$20,000-$39,999	533	9.64	6,933	16.04	57,033	24.91	30,633	33.37	95,133
$40,000 or more	67	1.20	1,867	4.32	18,300	7.99	18,300	19.93	38,533
Employment Income Total	5,533	100.00	43,233	100.00	228,933	100.00	91,800	100.00	369,500
Total Government Transfer Payments									
Zero	1,133	20.48	11,933	27.60	109,133	47.67	49,833	54.28	172,033
$1-$5,000	1,133	20.48	13,300	30.76	79,500	34.73	30,967	33.73	124,900
$5,001-$10,000	1,800	32.53	11,267	26.06	26,233	11.46	7,133	7.77	46,433
$10,001-$15,000	1,233	22.29	5,400	12.49	10,200	4.46	2,867	3.12	19,700
$15,001 or more	233	4.22	1,333	3.08	3,867	1.69	1,000	1.09	6,433
Transfer Payments Total	5,533	100.00	43,233	100.00	228,933	100.00	91,800	100.00	369,500

Note:
The income brackets were created according to the brackets suggested by Statistics Canada, 1991 in Selected Income Statistics (Statistics Canada, 1993: 1). The education levels are indicated as follows: No school=never or kindergarten only, elementary education=1 to 8 years of schooling, Secondary education=9 to 13 years of schooling and post-secondary education= 14 or more years of schooling. The data set is based on a 3% probability sample of Canada's Aboriginal population; the numbers have been weighted to population size. The figures in the table do not include persons under 15 years of age, persons who did not work, persons who earned negative incomes and inmates.

Source:
Statistics Canada, 1991 Census of Canada, Public Use Microdata File on Individuals, 1994; Statistics Canada, Selected Income Statistics. Catalogue 93-331. Ottawa: Minister of Industry, Science and Technology, 1993.

of income.

In a broader context, the results of the comparison of means of income indicate that there are differences apparent within the Aboriginal population. At the macro level, differences in income are displayed according to differences in level of education. That is, different levels of education or training appear to contribute to the differences in income. If this result can be proven, this would substantiate the postulate of the human capital theory which suggests that increased levels of education contribute to higher incomes. However, other differences within the Aboriginal population are apparent from this initial analysis which cannot be explained by the human capital theory. For instance, differences based on gender, place of residence and registered Indian status characteristics are not included as factors differentiating the income of the Aboriginal population in the human capital theory. This would suggest a need to re-evaluate the theory to provide a more compelling explanation. As a result of these differences, the analysis indicates that the human capital theory may not be accurate in predicting the economic performance of Aboriginal people.

Section 4.3 looks more closely at how education contributes to the total income, employment income and total government transfer payments of the entire Aboriginal population, without regard to differences in gender, place of residence and registered Indian status.

4.3 Education, Income and the Total Aboriginal Population

This stage of the analysis looks at the effect which education has on total income, employment income and total government transfer payments for all Aboriginal people, regardless of differences in gender, place of residence or registered Indian status. Often, studies consider only total income as the subject of analysis. The complex composition of total income are often not considered. I have separated total income into two components: employment income and total government transfer payments, in order to describe the

Table 4.8
Effects of Education on the Total Income, Employment Income and Total Government Transfer Payments for Aboriginal People, Total Sample Canada, 1991

Independent Variable	Total Income		Total Employment Income		Total Government Transfer Payments	
	Gross	Net	Gross	Net	Gross	Net
Total years of schooling	1,239.11	1,288.89	1,481.85	1,012.14	-304.95	[8.258]
Gender		5,397.02		4,906.76		239.22
Nature of employment		8,574.10		9,412.81		[65.078]
CMA residence		-1,036.69		-1,092.66		[138.415]
Registered Indian status		-3,068.82		-3,178.69		311.45
Employment status		8,092.16		10,855.51		-2,325.06
Work experience		674.02		573.86		42.72
Work experience quadratic		-7.04		-7.70		0.66
Adjusted Multiple R squared	0.0790	0.3783	0.1094	0.4126	0.0690	0.1966
Unique contribution of education (R squared change)		0.0590		0.0300		0.0000
Constant	3,787.82	-16,686.77	-2,479.53	-17,681.18	6,286.28	2,808.60
Weighted number	425,800		425,800		425,800	
Per cent of total sample	100.0		100.0		100.0	

Note:
All variables are significant to the 0.05 level of significance except as indicated by [ ]= not significant. Gender (female=0),Nature of employment (part time= 0), employment status (unemployed=0), Registered Indian status (not registered=0), CMA residence(in CMA=0).

Source:
Statistics Canada, 1991 Census of Canada, Public Use Microdata File on Individuals, 1994.

differential effects which education has on the various *types* of income.

Table 4.8 looks at total income, employment income and government transfer payments and describes the effect which level of education has on each income component using multiple regression analysis. A comparison of the multiple R^2 of the various models suggests that the strongest model, the equation containing the variables which account for the most variation in income for the Aboriginal people, is the employment income equation with an adjusted multiple R^2 value of 0.4126. That is, the variables in this study describe more of the variation within employment income, or have a better fit to the model of employment income, than for the total income and total government transfer payment equations.

At first glance, it appears that the education variable has a stronger effect on total income than on employment income and total government transfer payments since for every one unit increase in education, there is a corresponding increase in total income of $1,289, $1,012 for employment income, and a decrease of $305 in total government transfer payments. When education is considered in the "Gross" income models, for every unit increase in education, total income increases to $1,239 compared to $1,481 in the employment income equations suggesting that education has a greater effect on employment income. Yet when the unique contribution of education is calculated, the reverse is true. The effect of education is greater on total income equation than in the employment income or total government transfer payment models, 0.06 compared to 0.03 and 0.00 respectively. This means that education influences total income more than employment income for Aboriginal people as both the unique contribution of education and the unstandardized models have higher 'r' values in total income than in the employment income models.

Even at this level of analysis, the human capital theory comes into question since education does not provide the strongest variation in income. Although education plays a role in defining Aboriginal income, that role

appears to be overstated in the human capital theory since the effect of other variables in the model are stronger.

The idea of a unified labour market providing equal opportunities to all individuals with equal educations is tested in Table 4.9 in the study of the standardized regression coefficients. Education does have a relatively strong effect on both total income and employment income (0.2789 and .2259 respectively) when all the variables in the equations are considered. However, the effect which education has is weaker when the "Gross" models are studied. The adjusted multiple R^2 is 0.0790 and 0.1094 respectively. The unique contribution of education on total income and employment income is actually much smaller, with the R^2 change values of 0.0592 for total income and 0.0297 for employment income. Thus, education accounts for very little of the variation in both types of income, and this has important implications for the application of the human capital theory to Canada's Aboriginal people.

Education had no significant effect on the total government transfer payment variable. As expected, this suggests that for Aboriginal people, this type of income is not affected by education.

Section 4.4 takes the components of income and looks at how differences in gender effect the influence education has on income.

4.4 Income, Gender and Education of Aboriginal People in Canada

Gender differences in the income of Aboriginal people are similar to those displayed by the total Canadian population. Aboriginal women, as other women in the post-war era, have witnessed unprecedented increases in their labour market participation, yet have failed to realize equity in employment or total income when compared to men (Berch, 1982; Mott, 1982). Much of this discrepancy in income can be attributed to what Dex (1985) and others refer to as the sexual division of work. This division is found in various occupations, such as clerical and service work which tend to attract more females than males (Anderson, 1988; Lowe, 1987; Dex, 1985; McNally, 1979). These occupations are also characterized by low wages and their part-time

Table 4.9
Effects of Education on the Total Income, Employment Income and Total Government Transfer Payments for Aboriginal People, Total Sample Canada, 1991

Independent Variable	Total Income		Total Employment Income		Total Government Transfer Payments	
	Gross	Net	Gross	Net	Gross	Net
Total years of schooling	0.2812	0.2789	0.3308	0.2259	-0.2628	[0.0071]
Gender		0.1641		0.1467		0.0276
Nature of employment		0.2168		0.2341		[-0.0063]
CMA residence		-0.0311		-0.0322		[0.0157]
Registered Indian status		-0.0885		-0.0902		0.0341
Employment status		0.2425		0.3199		-0.2646
Work experience		0.6526		0.5464		0.1571
Work experience quadratic		0.2789		-0.4355		0.1436
Adjusted Multiple R squared	0.0790	0.3783	0.1094	0.4126	0.0690	0.1966
Unique contribution of education (R squared change)		0.0592		0.0297		0.0000
Weighted number	425,800		425,800		425,800	
Per cent of total sample	100.0		100.0		100.0	

Note:
All variables are significant to the 0.05 level of significance except as indicated by [ ]= not significant. Gender (female=0),Nature of employment (part time= 0), employment status (unemployed=0), Registered Indian status (not registered=0), CMA residence(in CMA=0).

Source:
Statistics Canada, 1991 Census of Canada, Public Use Microdata File on Individuals, 1994.

nature. This may account for the discrepancies in employment income for Aboriginal women versus Aboriginal males, but it does not explain all of the differences, mostly because the unemployment rate for Aboriginal women is much higher than that of other female populations (Statistics Canada, 1993a).

The high unemployment rate of Aboriginal women must be considered an important factor influencing their income (Wotherspoon and Satzewich, 1993: 56). It should be noted however, that unemployment should only affect employment income, not government transfer payments. In fact, we would expect the government transfer payments to Aboriginal women to be higher than Aboriginal males, not only because their unemployment rate is much higher than males, but Aboriginal women are also more likely to have custody of children (Gordon, 1986: 459). This is not the case, according to the Census data which would show that Aboriginal women have much lower mean total government transfer payments than men. Thus, while the disparities in employment income may be partially explained by the higher rate of unemployment among Aboriginal women, it is not an explanation of their disproportionately lower levels of government transfer payments.

Not only do Aboriginal women have lower incomes than men, education has a smaller effect on their income as well. Other research (Gaskell, 1992) supports the findings of Table 4.6 where the net effect of education on total income and employment income of Aboriginal males is greater than the effect of education on the incomes of Aboriginal females. Education accounts for $980.20 of total income and $802.01 of employment income for females compared to $1,462.80 and $1,200.55 in the same categories for men. That is, for every one unit increase in education, Aboriginal women receive a $980.20 increase in total income and an $802.01 increase in employment income. For Aboriginal men, the corresponding increase for every single unit of education are $1,462.80 in total income and $1,200.55 in employment income, indicating that education provides greater economic returns for Aboriginal males than for Aboriginal females.

Table 4.10
Effects of Education on the Total Income, Employment Income and Total Government Transfer Payments for Aboriginal People Female and Male Samples, 1991

	Total Income				Total Employment Income				Total Government Transfer Payments			
	Female		Male		Female		Male		Female		Male	
Independent Variable	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net
Total years of schooling	1,087.59	980.20	1,482.58	1,462.80	1,345.39	802.01	1,710.03	1,200.55	-317.41	[10.218]	-293.15	[14.679]
Nature of employment		7,675.39		9,066.33		8,364.36		10,241.51		[-236.848]		[-175.882]
CMA residence		-1,630.90		[-523.840]		-1,442.68		[-4815.902]		[-117.597]		404.28
Registered Indian status		-1,284.30		-4,715.28		-1,423.66		-840.61		217.22		445.39
Employment status		6,684.05		9,437.01		9,700.66		11,916.03		-2,649.13		-1,963.48
Work experience		381.37		975.74		313.54		-840.74		21.84		68.62
Work experience quadratic		-3.26		-10.96		-409.00		-11.44		0.94		[0.31]
Adjusted Multiple R squared	0.1003	0.3539	0.0874	0.3730	0.1437	0.4259	0.1136	0.3887	0.0740	0.2206	0.0641	0.1793
Unique contribution of education (R squared change)		0.0470		0.0500		0.0300		0.0330		0.0000		0.0000
Constant	1,747.49	-9,696.42	5,008.63	-18,033.64	-4,660.69	11,760.48	1,121.63	-18,439.09	6,435.86	3,470.56	6,147.99	2,366.23
Weighted Number	202,200		223,600		202,200		223,600		202,200		223,600	
Per cent of total sample	47.5		52.5		47.5		52.5		47.5		52.5	

Note:
All variables are significant to the 0.05 level of significance except as indicated by [ ]= not significant. Gender (female=0), Nature of employment (part time=0), employment status (unemployed=0), Registered Indian status (not registered=0), CMA residence (in CMA=0). The multiple correlation matrices are located in Appendix Table D-2 and D-3.

Source:
Statistics Canada, 1991 Census of Canada, Public Use Microdata File on Individuals, 1994.

A study of the "Gross" model contrasts this finding and suggests that education has a greater impact on the variation in total and employment income of females than for males. In total income, education has an R^2 value of 0.10 for females and 0.09 for males; in employment income, the R^2 value for females is 0.14, compared to 0.11 for males. This is in stark contrast to the unique contribution of education. In total income, the unique contribution of education of education is 0.0470 for females and 0.050 for males. In employment income, females score 0.030 compared to 0.0330 for men.

This suggests that education helps increase incomes slightly more for males than for females. It substantiates findings like those from the Economic Council of Canada (1992), Filmore (1990), Gaskell, (1989), Fox and Fox (1983) and Armstrong and Armstrong (1984) which suggest that females, on average, earn less than men, regardless of their education. However, it also suggest that, at least in the case of the Aboriginal population, gender differences in the returns on education are not as pronounced as they are reported in the literature. As this analysis indicates, when education is compared across gender lines, education actually has little effect on total income, employment income or total government transfer payments for both groups. Education does play a slightly larger role in determining the variation in the income, of men, but only marginally so. In the end, when gender is controlled, education accounts for an almost equal amount of variation in the incomes of Aboriginal men and women.

The results of the standardized regression models follow this trend and indicate that education contributes more to both the employment and total income of males than for females.

Table 4.11 reveals that education again has a relatively strong, although not the strongest, effect on the total income of both males and females. For females, the "Net" effect for every single unit of education, total income increases by 0.2856. However, this ranking falls when the "Gross" equation and unique contribution of education are studied. In the "Gross" model, the

Table 4.11
Effects of Education on the Total Income, Employment Income and Total Government Transfer Payments for Aboriginal People Controlling for Gender, Canada, 1991

	Total Income				Total Employment Income				Total Government Transfer Payments			
	Female		Male		Female		Male		Female		Male	
Independent Variable	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net
Total years of schooling	0.3169	0.2856	0.2958	0.2918	0.3792	0.2261	0.3373	0.2368	-0.2722	[0.0088]	-0.2533	[-0.0127]
Registered Indian status		-0.0484		-0.1179		-0.0519		-0.1190		0.0241		0.0482
Nature of employment		0.2795		0.1711		0.2946		0.1911		-0.0254		[-0.0144]
CMA residence		-0.0642		-0.0135		-0.0549		[-0.0214]		[-0.0136]		0.0451
Employment status		0.2639		0.2411		0.3705		0.3010		-0.3079		-0.2173
Work experience		0.4858		0.8116		0.3864		0.6913		0.0819		0.2472
Work experience quadratic		-0.2485		-0.5375		-0.3014		-0.5548		0.2114		0.0656
Adjusted Multiple R squared	0.1003	0.3539	0.0874	0.3730	0.1437	0.4260	0.1136	0.3887	0.0740	0.2206	0.0641	0.1793
Unique contribution of education (R squared change)		0.0472		0.0497		0.0296		0.0327		-0.0001		-0.0001
Weighted Number	202,200		223,600		202,200		223,600		202,200		223,600	
Per cent of total sample	47.5		52.5		47.5		52.5		47.5		52.5	

Note:
All variables are significant to the 0.05 level of significance except as indicated by [ ]= not significant. Gender (female=0), Nature of employment (part time=0), employment status (unemployed=0), Registered Indian status (not registered=0), CMA residence (in CMA=0).

Source:
Statistics Canada, 1991 Census of Canada, Public Use Microdata File on Individuals, 1994.

R^2 value of education accounts for only 0.1003 of the variation in total income. That drops to 0.0472 with the unique contribution model.

For the employment income equation, the "Net" value for every single unit of education is only 0.2261, ranking fifth in size in comparison to other variables in the equation. This trend continues in the "Gross" model where education accounts for only 0.1437 of the variation here. The unique contribution reveals that education provides only 0.0296 of the total variation in employment income. In the total government transfer payments model, the education variable is not significant in the "Net" equation and has a unique contribution value of -0.0001, indicating that education has no effect on total government transfer payments for females.

Education has a similar effect on the income of Aboriginal males. A single unit of education in the "Net" equation increases total income by a value of 0.2918. In the "Gross" model, the value drops to 0.0874, while the unique contribution reveals that education accounts for only 0.0497 of the variation in total income. Similarly, in employment income, education ranks low in the "Net" equation compared to the performance of the other variables in the equation (0.2368). In the "Gross" model, the adjusted R^2 for education is only 0.1136 and the unique contribution is 0.0327. Finally, just as in the female models, for males, the total government transfer payment equation shows no significant effect of education on this type of income.

4.5 The Effect of Place of Residence on the Income of Aboriginal People

The effect of education on income by place of residence is consistent with the findings based on gender. Statistics Canada (1994c, 1993a, 1993c) and others note that the total income of individuals living in urban centres is larger than that of those living outside of CMA's. In the Aboriginal population, as shown in Table 4.1, the effect is similar. Aboriginal people living in CMA's generally have larger average incomes than individuals living outside of CMA's.

Table 4.12 displays the results of the unstandardized regression equations. It substantiates the finding that the effects of education on total

Table 4.12
Effects of Education on the Total Income, Employment Income and Total Government Transfer Payments for Aboriginal People, Residing in CMA and Outside CMA, Canada, 1991

	Total Income				Total Employment Income				Total Government Transfer Payments			
	In CMA		Not in CMA		In CMA		Not in CMA		In CMA		Not in CMA	
Independent Variable	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net
Total years of schooling	1,484.28	1,496.10	992.98	1,066.80	1,722.58	1,266.59	1,235.97	870.24	-306.80	[-30.204]	-292.57	[30.57]
Gender		5,752.78		5,140.92		5,380.49		4,574.49		[8.284]		408.93
Nature of employment		9,324.15		7,933.87		10,389.18		8,520.08		[-17.112]		[-39.378]
Registered Indian status		-2,534.65		-3,495.21		-2,879.39		-3,539.32		442.56		304.65
Employment status		8,619.52		7,697.73		12,077.44		9,952.58		-2,947.48		-1,940.77
Work experience		861.41		572.50		782.40		472.61		24.49		52.73
Work experience quadratic		-10.15		-5.66		-11.47		-6.19		0.79		0.59
Adjusted Multiple R squared	0.0733	0.3829	0.0614	0.3585	0.0939	0.4197	0.0943	0.3906	0.0579	0.2261	0.0629	0.1758
Unique contribution of education (R squared change)		0.0550		0.0400		0.0340		0.0270		0.0000		0.0000
Constant	2,093.74	-22,738.33	5,350.41	-14,003.20	-4,100.78	-24,271.54	-932.92	-14,879.19	6,193.79	3,973.63	6,243.65	2,265.42
Weighted Number	190,500		235,300		190,500		235,300		190,500		235,300	
Per cent of total sample	44.7		55.3		44.7		55.3		44.7		55.3	

Note:
All variables are significant to the 0.05 level of significance except as indicated by [ ]= not significant. Gender (female=0), Nature of employment (part time=0), employment status (unemployed=0), Registered Indian status (not registered=0), CMA residence (in CMA=0).

Source:
Statistics Canada, 1991 Census of Canada, Public Use Microdata File on Individuals, 1994.

income and employment income are greater for Aboriginal people living in large urban centres. The contrast is most startling for the "Net" model of total income where a single unit of education accounts for $1,496 of the variation in income for people living in a CMA versus only $1,067 for those living outside of CMA's.

A similar pattern occurs when employment income is studied. In terms of the "Gross" contribution of education to employment income, again Aboriginal people residing within a CMA have a larger return on education for both total income and employment income than those living outside of CMA's. Education had similar effects on this type of income regardless of place of residence. In the "Gross" model, the R^2 value for individuals living in CMA's was 0.0939 compared to 0.0943 for those living outside of CMA's.

Yet when the unique contribution of education is considered, individuals living within a CMA have an education effect of 0.055 compared to those living outside of the CMA (0.040). As a result, the effect which education has on total income and employment income is small and similar to one another despite differences in place of residence.

In the standardized regression models of Aboriginal income, education has only a minimal effect on the variation in income, in comparison to the effects of other variables, when place of residence is considered.

The unstandardized regression model for the income variables also shows the overall effect of education on income is not as large as the human capital theorists contend. Education is not the strongest variable in comparison to the effects of other variables in the "Net" equation for individuals living in CMA's (0.2732). As well, the R^2 value in the "Gross" model of education is 0.07. The unique contribution of education is even lower, with a value of 0.0551.

In terms of employment income, the "Net" value of a single unit of education is very similar to total income (0.2254). The "Gross" model indicates that education provides for 0.0939 of the variation in income, but the unique

Table 4.13
Effects of Education on the Total Income, Employment Income and Total Government Transfer Payments for Aboriginal People Controlling for CMA Residence, Canada, 1991

	Total Income				Total Employment Income				Total Government Transfer Payments			
	in CMA		Outside CMA		in CMA		Outside CMA		in CMA		Outside CMA	
Independent Variable	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net
Total years of schooling	0.2711	0.2732	0.2479	0.2664	0.3066	0.2254	0.3073	0.2164	-0.2410	[-0.0237]	-0.2510	[0.0262]
Registered Indian status		-0.0571		-0.1127		-0.0632		-0.1137		0.0429		0.0338
Nature of employment		0.2191		0.2492		0.2379		0.2317		[-0.0017]		[-0.0037]
Gender		0.1649		0.1665		0.1503		0.1476		[0.0010]		0.0455
Employment status		0.2323		0.2492		0.3173		0.3209		0.3417		-0.2159
Work experience		0.7042		0.6271		0.6234		0.5155		[0.0861]		0.1984
Work experience quadratic		-0.4521		-0.3829		-0.4977		-0.4166		0.1519		0.1379
Adjusted Multiple R squared	0.0733	0.3829	0.0614	0.3585	0.0939	0.4197	0.0943	0.3906	0.0579	0.2261	0.0629	0.1758
Unique contribution of education (R squared change)		0.0551		0.0404		0.0375		0.0266		0.0003		0.0002
Weighted Number	190,500		235,300		190,500		235,300		190,500		235,300	
Per cent of total sample	44.7		55.3		44.7		55.3		44.7		55.3	

Note:
All variables are significant to the 0.05 level of significance except as indicated by [ ]= not significant. Gender (female=0), Nature of employment (part time=0), employment status (unemployed=0), Registered Indian status (not registered=0), CMA residence (in CMA=0).

Source:
Statistics Canada, 1991 Census of Canada, Public Use Microdata File on Individuals, 1994.

contribution of education (0.0375) indicates that the effect of education on employment income for Aboriginal people residing in CMA's is small in comparison to the effects of other variables. For the total government transfer payments model, education is not significant.

Individuals living outside of CMA's have a similar experience to their counterparts residing in CMA's. Again, education is not the strongest variable in the "Net" equation for total income (0.2664), nor is the "Gross" model very high (R^2 value=0.0614). The unique contribution of education to total income is even smaller for those living outside CMA's, with the contribution of education at only 0.0404. Again, education had no significant effect on total government transfer payments.

4.6 Registered Indian Status and Its Effect on Income

Little research has been conducted concerning the effects of registered Indian status on the income of Aboriginal people. Most previous research has not considered the legal effects of the interpretation of the status/non-status distinctions. This problem revolves around the legal and political definitions of the official Indian designation. The status designation is a distinct legal category as the government classifies Aboriginal people on the basis of treaty agreements, the interpretation of which is often contentious. These classifications, then, provide additional problems in the consideration of status/non-status Indian designations.

Frideres (1993) and Boldt (1993) also find these arbitrary distinctions problematic and argue that the effect of these classifications is dual. First it divides the Aboriginal population in order to allow the government easier control of Aboriginal people "as they began to fight among themselves" (Frideres, 1993: 44). This infighting is particularly divisive since these groups receive different privileges, different amounts of money and different rights from the government and in terms of the other services it provides. Second, the effect of this arbitrary division of Aboriginal people also contributes to further generalizations about the Aboriginal population (Boldt, 1993; Frideres,

1993). Since the focus on status and non-status designation is most apparent in government policy, differences in culture, language and other internal differences within the population are ignored. This effectively inhibits the consideration of other issues besides status designation which may also contribute to differences within the Aboriginal population.

Because the distinction between status and non-status Indian designations is arbitrary, this distinction should not have any effect on income. However, this assumption is not true. The effects of education should also be impartial, that is, education should not provide variation which differs between status and non-status designations. On the contrary, according to the results in Table 4.1, registered Indians have lower mean incomes, employment incomes and total government transfer payments than Aboriginal people without status designation.

Education appears to provide greater returns for both total income and employment income for non-registered Aboriginal people than it does for registered Indians. For non-status Indians, the "Net" return for every single unit of education in total income is $1,439 and $1,189 for employment income while registered Indians follow with $831 and $699 respectively. The "Gross" effects of education for non-registered Indians are small, with R^2 values of 0.064 for total income 0.086 for employment income For registered Indians, these values are 0.046 and 0.083. This suggests that education plays a much *larger* role in influencing the income of non-status Aboriginal people than status Aboriginal people, providing more economic return to non-status Indians than for status Indians.

The difference between status and non-status designation is even more pronounced when the unique contribution of education is considered. The unique contribution of education for non-status Indians is larger than registered Indians for both total income and employment income. For every unit of education in the Aboriginal population, the unique contribution of education on the total and employment income of non-status Indians is 0.054

Table 4.14
Effects of Education on the Total Income, Employment Income and Total Government Transfer Payments for Aboriginal People for Registered Indian Status and Not Registered Indian Status, Canada, 1991

	Total Income				Total Employment Income				Total Government Transfer Payments			
	Registered		Not Registered		Registered		Not Registered		Registered		Not Registered	
Independent Variable	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net
Total years of schooling	710.19	830.93	1,280.38	1,438.79	959.06	699.24	1,501.60	1,188.58	-286.90	[27.558]	-283.07	[-3.543]
Gender		2,617.70		6,844.69		2,284.62		6,288.72		374.87		173.74
Nature of employment		6,112.63		9,246.48		6,532.05		10,161.21		[47.001]		[-5.269]
CMA residence		-1,753.82		[-757.967]		-1,382.86		-953.93		[-128.409]		237.04
Employment status		7,831.57		8,309.31		10,033.89		11,311.85		-2,036.03		-2,505.72
Work experience		480.87		790.58		394.96		697.74		66.20		28.29
Work experience quadratic		-4.59		-8.80		-5.01		-9.88		[0.35]		0.86
Adjusted Multiple R squared	0.0459	0.3212	0.0639	0.3684	0.0829	0.3689	0.0855	0.3954	0.0546	0.1554	0.0580	0.2036
Unique contribution of education (R squared change)		0.0350		0.0540		0.0242		0.0378		0.0000		0.0000
Constant	5,628.93	-9,865.69	4,966.04	-21,740.34	889.40	-12,084.33	-950.89	-22,367.54	6,477.63	2,684.76	5,843.05	3,150.31
Weighted Number	116,533		309,267		116,533		309,267		116,533		309,267	
Per cent of total sample	27.4		72.6		27.4		72.6		27.4		72.6	

Note:
All variables are significant to the 0.05 level of significance except as indicated by [ ]= not significant. Gender (female=0), Nature of employment (part time=0), employment status (unemployed=0), Registered Indian status (not registered=0), CMA residence (in CMA=0).

Source:
Statistics Canada, 1991 Census of Canada, Public Use Microdata File on Individuals, 1994.

and 0.0378 respectively. Status Indians receive only 0.0350 and 0.0242 as contributions from education in these categories. Thus, education accounts for more variation in the income of non-status Indians than for status Indians.

The effects of education on total government transfer payments of status and non-status Indians reveals that the effects of education are not existent for both groups of Aboriginal people. This is consistent with earlier findings that education has no effect on government transfer payments even when gender and place of residence are considered.

The unstandardized regression coefficients in Table 4.15 indicate a similar scenario concerning the effects of education on income for status versus non-status Aboriginal people.

For registered Indians, the effect which a unit of education has on the income variables implies that the human capital theory again is not the best explanation of Aboriginal income. In the total income model for registered Indians, the "Net" value of education on income is 0.2841. The adjusted multiple R^2 in the "Gross" model shows that education accounts for only 0.0639 of the variation in total income. The unique contribution of education drops to 0.0543. In employment income, for every unit increase in education for the "Net" equation accounts for 0.2210 of the variation in income. For the "Gross" model, a unit of education contributes 0.0829 to the variation in income, while the unique contribution of education is only 0.0242.

This pattern continues in the models of income for non-status Indians. For total income, a single unit change in education contributes to 0.2511 of the variation in the "Net" equation. For the "Gross" model, education accounts for a R^2 value of 0.0639, while the unique contribution accounts for only 0.0347 of the variation in total income. For employment income, the results are similar. The "Net" value of education is 0.2315, with a "Gross" R^2 value of 0.086. The unique contribution of education provides only 0.0360 of the variation in employment income for not-registered Indians.

Again, the effect of education on total government transfer payments

Table 4.15
Effects of Education on the Total Income, Employment Income and Total Government Transfer Payments for Aboriginal People Controlling for Registered Indian Status, Canada, 1991

	Total Income				Total Employment Income				Total Government Transfer Payments			
	Registered		Not registered		Registered		Not registered		Registered		Not registered	
Independent Variable	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net
Total years of schooling	0.2528	0.2841	0.2147	0.2511	0.2881	0.2210	0.2925	0.2315	-0.2340	[0.0225]	-0.2411	[-0.0030]
CMA residence		[-0.0216]		-0.0584		-0.0458		[-0.0268]		[-0.0115]		0.0291
Nature of employment		0.2193		0.1998		0.2122		0.2378		[-0.0041]		[-0.0001]
Gender		0.1947		0.1035		0.0898		0.1764		0.0400		0.0213
Employment status		0.2210		0.3044		0.3876		0.2968		-0.2135		0.2874
Work experience		0.6779		0.6579		0.5371		0.5902		0.2444		0.1046
Work experience quadratic		-0.4276		-0.3963		-0.4301		-0.4740		[0.0825]		0.1978
Adjusted Multiple R squared	0.0639	0.3684	0.0459	0.3212	0.0829	0.3689	0.0855	0.3936	0.0546	0.1554	0.0580	0.2036
Unique contribution of education (R squared change)		0.0543		0.0347		0.0242		0.0360		0.0000		-0.0001
Weighted Number	116,533		309,267		116,533		309,267		116,533		309,267	
Per cent of total sample	27.4		72.6		27.4		72.6		27.4		72.6	

Note:
All variables are significant to the 0.05 level of significance except as indicated by [ ]= not significant. Gender (female=0), Nature of employment (part time=0), employment status (unemployed=0), Registered Indian status (not registered=0), CMA residence (in CMA=0).

Source:
Statistics Canada, 1991 Census of Canada, Public Use Microdata File on Individuals, 1994.

for both registered and not-registered Indians is not significant. The unique contributions of education for both groups is 0.00, suggesting that education has no effect on total government transfer payments for all Aboriginal people when they are separated by registered Indian status.

4.7 Conclusion

The purpose of this chapter is to assess the effect that education has on the income of Aboriginal people, principally to look at how well the human capital theory explains their economic performance. I argue that despite the widely accepted claim that schooling has strong influences on income, education does not provide the same economic returns for all groups of Aboriginal people. There is strong evidence to suggest that gender, place of residence and registered Indian status affect not only the average income, but also the returns which education bring to employment and total income. To simply compare mean incomes of Aboriginal people without regard to the differential effects of education based on differences in gender, place of residence and registered Indian status does not provide a complete description of income distribution among the Aboriginal population of Canada.

There is also a danger in overstating the effect which education has on income. As the results indicate, education is not the strongest predictor of income when it is compared with the effects of other variables in the regression models. Any theory regarding economic returns from education must account for the effects of other factors on income. In this way, the dual labour market theory may be rejected as a viable alternative to the human capital theory. Although labour market features, for the most part, had a stronger effect on the variations in income than education, they did not account for the differences attributed to gender, place of residence and registered Indian status. Because both these theories fail to account for these variations, their value in describing the income of Aboriginal people is limited.

The 1991 Census data indicate that there is a difference in Aboriginal income based on gender, place of residence and registered Indian status.

Mean income and the effect which education has on the three dependent variables is higher among some groups than others. Males, those living in CMA's and individuals without registered Indian status have higher mean total and employment incomes than females, individuals living outside of CMA's and those with registered Indian status. When the contribution which education brings to various types of incomes is considered, the results are much the same. Education brings greater economic returns to males, individuals living in CMA's and to Aboriginal individuals without registered Indian status than for any other group.

When the effects of education on total government transfer payments of Aboriginal people are considered, it is found that there are differences in who receives these payments. As expected, Aboriginal people living outside of CMA's have larger total government transfer payments than those living within CMA's since their income is much smaller. Surprisingly, Aboriginal females and registered Indians do not receive increased government benefits despite their lower mean incomes. Their counterparts, males and non-registered Indians, receive larger government transfer payments, although the payments make up a lesser proportion of their total income. Not surprisingly, education had no effect on the variations in total government transfer payments and this could be due to the fact that other variables besides those considered in this analysis affect the variation in these payments.

The poor performance of the education variable in comparison to the contribution of other variables in this analysis questions the human capital notion that education provides equal returns for all individuals. In the post-war decades, Canada has been increasing its expenditure on education in the hopes that this will produce a more educated, skilled and productive workforce. This, in turn, is supposed to provide the workers with greater incomes. The data in this analysis indicate that although education does increase economic returns, it is not the only factor, nor is it the strongest factor influencing the income of Aboriginal people. In the case of Canada's

Aboriginal people, education brings different returns based on gender, place of residence and registered Indian status differences. In addition, other factors besides education also contribute, often much more strongly to the variations in income. This again suggests that the human capital theory is not the best explanation for Aboriginal income.

How can Aboriginal income be understood? In other words, if the human capital and dual labour market theories cannot explain the effects of all the variables on income, what is a viable alternative theory to describing the differentials displayed in Aboriginal income? The next chapter will deal with this issue at length, suggesting new theoretical insights on the analysis of the income of Canada's Aboriginal population.

ENDNOTES

1.The comparable Canadian average total income for individuals over age 15 is $24,001. The average employment income for those receiving employment income is $24,329. (Statistics Canada, 1993c: 1).

2.The Canadian average for total income for females is $17,577 and for males is $30,205. The average employment income for females in Canada is $17,751 while for males it is $29,847 (Statistics Canada, 1993c: 1).

3.In 1991, the lowest poverty level for any individual was $9,637. Therefore, the Aboriginal women and men with incomes less than $10,000 can be considered as falling under the poverty line (Statistics Canada, 1994c: 8).

CHAPTER FIVE: INCOME INEQUALITIES OF THE ABORIGINAL POPULATION, THE HUMAN CAPITAL AND DUAL LABOUR MARKET THEORIES RECONSIDERED

The objective of this thesis is to assess the effect of education on income for different groups of Aboriginal people exposed to different social and market conditions. In so doing, it attempts to address two main issues. First, it has been shown that income is affected by differences in gender, place of residence and registered Indian status. When the mean incomes of these groups are compared with one another, the results indicate that there are substantial differences between these sub-groups. Second, the effect which education has on the variation in income is not the same for these sub-groups, whether income is considered as total income, employment income or total government transfer payments. That is, not only does the effect of education vary by gender, place of residence and registered Indian status, but this effect is not the same for any of the three types of income. In essence, this thesis addresses the question: given the emphasis of human capital theory on education, can education be expected to yield the same economic returns to different segments of the Aboriginal population who are exposed to various labour market and social conditions?

This chapter describes the current debate surrounding the human capital and dual labour market theories in regard to the Aboriginal population. It indicates that these theories fail to describe the economic inequalities of the Aboriginal population and suggests a reconsideration of the human capital and dual labour market theories with regards to Aboriginal income inequalities. The chapter concludes with a brief summary of the

research results and provide a direction for further research.

5.1 Income Inequality: The Human Capital Implications for Aboriginal People

Evidence in support of the human capital theory remains strong today. Individuals with higher levels of education generally have better chances to gain employment with higher economic returns than individuals with lower levels of education. Contemporary strands of human capital theory stress the demands of the market place rather than individual returns on human capital investment as the focal point of economic inequality. That is, human capital theory explains income inequalities and the fact that sometimes education does not provide the same returns for individuals as a product of market demand. The labour market may demand workers with certain types of education over other workers which accounts for the existence of income inequality.

Does the human capital explanation apply to the Aboriginal population? This theory rests on the assumption of a labour market where competition for high waged employment is based mainly on the notion that the allocation of income in the labour market is based on level of education. Contemporary human capital theorists such as Lester Salamon (1991: 20) recognize that "the effectiveness of education overcoming poverty seems to have deteriorated with time". That is, the returns on the investment in human capital are not as great as they once were. As well, he also suggests that any discussion of human capital theory in the 1990's must recognize that three target groups, women, visible minorities and immigrants, generally have lower returns on their education than white native-born males, who were the subject of most early research. He maintains, however, that education can still increase the income of these traditionally marginalized groups.

As well, human capital theorists explain that the continued existence of income inequality in economic returns on education points to the existence of a labour market where the education of white native-born males still exceeds that of women (Barrett, 1991: 79), visible minorities (Packer, 1991) and

immigrants (Marshall, 1991: 114). For example, Marshall (1991: 115) points out that for immigrants, the economic returns on education in the United States vary from East Indians having median incomes $6,000 over the average native-born median income, while Mexican immigrants have median incomes $4,000 below the average. Thus, human capital theorists do recognize that the returns on education differ for different groups of individuals (Salamon, 1991: 21). However, they suggest changes in the education for "at risk" groups, rather than changes in existing labour market practices (Salamon, 1991: 26) as the solution to contemporary economic inequalities.

The proposed human capital solution to reducing the economic inequalities of marginalized groups not only fails to recognize that changes in education are not enough to bring about an increase in income for Aboriginal people, it also over looks demographic changes which may influence both labour market practice and the economic returns on education. For example, the fall in birth rates during the 1970's and onwards, during what economists label the "Birth Dirth", or the reduction in fertility rate in the 1970's (Packer, 1991: 51), is due to the fact that the composition of the labour market has changed. More women and visible minorities are entering the work force (Packer, 1991) and there will be fewer workers to support the burgeoning classes of the retired and retiring 'baby-boomers' (Li, in press, 1996: Chapter 5). This demands, according to Salamon (1991: 29), a more productive work force. He notes that there will be a shortage of skilled workers in the near future. As a result, in order to combat this deficiency, human capital theory suggests that change must be initiated in the education system so that equality may exist in the labour market.

But will changing the education system be enough to increase the returns of human capital investment for Aboriginal people? Human capital theorists, although they recognize that some Aboriginal people face barriers to quality education and high paid employment, suggest that major changes in the schooling system are enough to increase not only economic returns, but

increase the productivity of workers in general. They believe that education is a panacea which will provide more skilled and productive workers required for a more technologically advanced labour market in the near future. What these theorists fail to realize however, is that change must come from other sources in addition to the education system in order to reduce economic inequalities. A fully functioning school system that produces graduates with the skills necessary to compete in the labour market will not be effective if that labour market harbours prejudices against certain individuals regardless of their level of education.

Another idea of the human capital theory which can be questioned is the need for increased skills in the labour force. Both Salamon (1991) and Packer (1991) argue that workers require more skills and training for what they claim is an increasingly technologically and knowledge-based labour market. In Canada, an Employment and Immigration (1985: 24) report states the opposite: "of the 30 occupations forecast to grow, a substantial number are low-level skill jobs for which little formal training would be required". Dickinson (1991: 107) agrees, arguing that there is only a small segment of the labour force which requires advanced skills and technical knowledge, and these positions in the long run, "become subject to the same processes of organizational and technical transformation which result in deskilling". In contrast to the human capital notion, even the more technical and skilled occupational positions are subject to the trend of decreasing knowledge and lower wages. Increasing the education of the general labour force would not resolve economic inequalities if the production process continues to advance toward less skilled occupations with lower wages.

In the capitalist production system, it is cheaper to deskill the labour force by splitting complex tasks into simple, repetitive steps in order to increase the productivity of workers and to reduce the price of labour. The general trend in Canada supports this hypothesis. A recent report of the OECD (1992: 48) suggests that the economic climate in Canada is providing

fewer employment opportunities for individuals with post-secondary education "despite this investment in human capital, increasing numbers of recent graduates are unemployed or under-employed" and the corresponding economic rate of return of education is also decreasing for all levels of education. This evidence indicates that education does not necessarily mean better economic returns on human capital investment for the general labour force.

How does this apply to Aboriginal people? I have already stated that the average educational attainment for all Aboriginal people is lower than the national average (Statistics Canada, 1995, 1994a; Saskatchewan Treaty Indians, 1993) and that the economic return which education brings to income is also lower for certain sub-groups of this population. Clearly, the data in this thesis suggest that changes within the existing education system are not enough to bring increases in income to many Aboriginal people because of the influence of other variables outside of education. The existence of a labour market where competition for high paying employment is not entirely based on educational attainment, indicates that change would also focus on the labour market structure in order to reduce income inequalities.

In conjunction, the human capital theory is not supported by the data analysis for three reasons. First, the effect which education has on the income for all Aboriginal people regardless of differences in gender, place of residence and registered Indian status is small in comparison to the effects of other variables. This is especially significant in the unique contribution of education, where the contribution of education is below 0.07. Other factors such as the labour market variables of nature of employment, employment status and work experience, in addition to gender, place of residence and registered Indian status, contribute to larger proportions of the variation in income than education. If the human capital theory is correct, education would have a greater effect on the variation in employment income than any other dependent variable. As well, education should account for more of the

variation in employment income than total income as the former is comprised of various sources of income which are not necessarily linked to educational attainment. The result showed the opposite. For all groups of Aboriginal people, education influenced total income more than employment income. This too suggests that the human capital theory is an inadequate explanation of Aboriginal economic inequalities.

Second, the human capital theory may be questioned on its notion of a unitary labour market which rewards people mainly on their individual investment in human capital. This theory fails to recognize to provide adequate recognition of market factors that also influence earnings, often more strongly than education. This said, if human capital investment in education determines income, the economic returns would be similar for all groups of Aboriginal people. That is, if two individuals, one female and one male, had the same years of education, they would have equal investments in human capital and therefore theoretically should have similar economic returns. The results of this analysis, however, indicate that this is not true. Aboriginal females consistently gain less income from their investment in education than Aboriginal males. The same can be said for place of residence and registered Indian status. Individuals not living in CMA's and those who have registered Indian status have lower economic returns from education than individuals who live in CMA's and who are non-status Indians. This suggests that forces within the labour market, as well as factors other than education, must create disproportionate economic returns for certain groups of Aboriginal people. On these grounds, the existence of a labour market where competition is based on educational merit is questionable.

Finally, the human capital theory fails to explain the large disparities in mean income and the variation in economic returns which education provides to Aboriginal people along differences in gender, place of residence and registered Indian status. Although current work in the human capital field has attempted to explain these differences (Hornbeck and Salamon, 1991),

there has yet to be a definitive account of why they continue to affect income. The explanation contemporary human capital theorists provide suggest that the low income of these individuals is due to inadequacies originating in the education system. This eventually affects the allocation of higher and lower paying jobs. The human capital theory, then, places most of the blame of income inequalities on the school system, not the labour market.

Although the education system is responsible for the reproduction of certain inequalities, it cannot solely be blamed for all inequalities in the labour market. Human capital theory, in the end, does not fully recognize that other factors besides education have a large effect on income inequalities and therefore, it does not provide an adequate explanation for the variations in the income of Aboriginal people.

5.2 Dual Labour Market Theory and the Analysis of Income

The dual labour market theory also fails to adequately explain the income inequality of Aboriginal people. By placing an emphasis on labour market features as the primary source of variation in income, the dual labour market theory may appear at first glance to be more appropriate in describing the economic situation of Aboriginal people in Canada. To a certain extent, this may be true. Many of the labour market variables in the regression equations had stronger effects on the total income and employment income than the education variable. Further analysis however, suggests otherwise.

Differences in income remain split along gender, place of residence and registered Indian status despite accounting for differences in labour market structures. This theory places little emphasis on factors outside of the labour market as features producing income disparities *among* Aboriginal people. In essence, dual labour market theory promises much more than it can deliver. The theory is awkward since its dual typologies of segmentation are too simplistic for the labour realities. The labour market is far more complex than simply being split into a primary and a marginalized sector. On the contrary, there may be multiple factors which segment the labour market. These factors

must also be considered in a theory which proposes labour market segmentation.

Related to this argument is the way in which duality in the labour market is quantified. It is often difficult to locate one occupation or industry in either the primary or marginalized labour sector. Often, an industry contains occupations from both sectors of the labour force. For instance, a single manufacturing plant will contain employers from the marginalized sector, such as production line workers, as well as employees from the primary sector, such as plant managers and administrative personnel. Thus, identifying the industry in which an individual works is not necessarily a good indication of duality in the labour market. In addition, the manufacturing processors themselves should not be considered as entirely marginal. In some instances, individuals who work in the increasingly large sector of drug and chemical manufacturing could not be described as marginalized labourers, even though they are production line operators, since their education and wages surpass those in the marginalized sector. These individuals have higher wages due to the complexity of on-the-job tasks and knowledge they require to perform their jobs. Thus, the gap between labour market segmentation and its manifestation in society is not easily bridged. Although theoretically elegant, the dual labour market theory is too simplistic in that it does not account for other variations such as gender, place of residence and registered Indian status, which also affect income.

Even though the dual labour market theory acknowledges the linkage between educational attainment and income, it cannot adequately describe the economic inequalities which characterize some individuals within the Aboriginal population in Canada. In addition, the theory offers little towards a solution to the economic inequalities or the differences in the economic returns of education on the incomes of Aboriginal people. The utility of the dual labour market and human capital theories in regards to the Aboriginal population must be re-evaluated in light of evidence to suggest that many

factors influence income. The last section will briefly highlight the major findings of this thesis.

5.3 A Theoretical Alternative

If both the human capital and dual labour market explanations cannot be directly applied to the economic situation of Canada's Aboriginal population, how can the variation in mean incomes and the differences in the economic returns on education be explained? An alternative understanding can be reached with an examination of what these and other theories ignore in their explanations of Aboriginal income inequalities.

Essentially, human capital theory and dual labour market theory fail to account for the various degrees of discrimination present within the labour market. The typical understanding of discrimination centres around the assumption that racism and sexism operate to reward certain individuals in the labour market, rather than others. To a certain extent, both contemporary versions of the human capital and dual labour market theories include these in their analyses. Contemporary human capital theory admits that the investment in human capital may provide differential economic rewards based on gender, race and immigrant status, while the dual labour market theory rests on the premise that individuals are allocated employment in the primary or marginalized markets based on factors largely influenced by gender and race. Unfortunately, none of these theories adequately captures the nuance of how discrimination operates in the labour market and how it affects individuals in different ways.

The case of Canada's Aboriginal population provides an illustration of the multi-dimensionality which exists in the discriminatory labour market. The first dimension occurs along racial lines. That is, racism in the labour market operates to reward groups of individuals in the labour market differentially with one racial group receiving higher economic rewards than another. In the same manner, the returns on education are also varied by racial group. This information is not new. What is novel is the magnitude of

the differences in the economic returns of education as measured for the Aboriginal population. Although the intent of this thesis is not to provide another comparison of the economic inequalities of the Aboriginal population with the non-Aboriginal population, it is important to note that the economic returns of education are substantially lower than the non-Aboriginal population. It has been well documented that the relationship between education and income of the non-Aboriginal population is very strong, with multiple regression coefficients ranging above 0.60 (Boyd, 1986: 460). What this analysis discovered was that for any multiple regression model for the Aboriginal population, the highest multiple regression coefficient valued only 0.33. This indicates that the return of education for the Aboriginal population is *half* of the observed returns for the non-Aboriginal population. this itself has significant implications for the Aboriginal population, mainly suggesting that at the first layer of discrimination in the labour market, there exists a significant variation in the value of education. It implies that individuals in the labour market are often evaluated according to features separate from individual investment in human capital.

The next dimension in the labour market for Aboriginal people has roots in the current literature. It evolves around the existence of sexism. It has been amply documented that men and women receive differential earnings in the labour market despite the fact that women invest more time in education than men (Boyd, 1990: 286), regardless of racial differences. What separates the Aboriginal population from others is that the return from education is lower for both males and females. Furthermore, the results of current research indicate that the income non-white males is lower than white males, but both are higher than the income of white and non-white females (Li, 1992). In the case of Canada's Aboriginal population, this is not true. Both Aboriginal males and females not only have lower mean incomes than the non-Aboriginal population, but the returns of education are lower than any other group. This again indicates that both racism and sexism affect this

population to a different degree than other populations.

Yet another dimension to the discrimination of the labour market is based on another racial factor, but is unique to the Aboriginal population. This concerns both place of residence and official Indian status.

Place of residence is an important factor which has become racialized in the case of the Aboriginal population, in part due to the reserve system. According to Frideres (1993: 258), 64.6 per cent of the Aboriginal population live on reserves. this is important to note since nearly 25 per cent of all reserves are more than 350 km from a major service centre, with 18.6 per cent of all Aboriginal people living in areas designated as special access indicating that there is no year-round road connecting the reserve to a major services centre (Frideres, 1993: 152-153). In addition, another 38.8 per cent of the reserves are designated as rural. Roughly, this suggests that over 60 per cent of all reserves are located more than 50 km from a major service centre. It is these service centres which provide employment opportunities and increased wages. This has important implications as currently, there are generally more lucrative economic and employment opportunities off reserves than on reserves (Elias, 1995). This situation is unique to the Aboriginal population since no other population in Canada is as residentially segregated from the entire Canadian population. This factor itself has implications for the employment and income of many Aboriginal people.

The other factor unique to the Aboriginal population is official Indian status. Again, no other group in Canada is designated by such distinction. As the results in this analysis indicate, official Indian status does have direct effect on mean income and the economic returns on education. This would suggest that official Indian status operates to further separate groups *within* the Aboriginal population. This is important to note as 34 per cent of the Aboriginal population maintains its official Indian status and the fact that many other non-status Aboriginal people are in the process of reinstating their official status.

The distinctive factors of residence and official Indian status, combined with the racism and sexism already present in the labour market, shape the wages and participation rate of many Aboriginal people in the labour force. These influences are important to note not only because they help explain the income disparities of the Aboriginal population in comparison to the non-Aboriginal population, but they laos explain the variations in the returns which education provides to income. Understanding these unique influences may not explain all the differences in income, but it gives a detailed snapshot of the labour market which may also be applied to other populations.

5.4 Summary

This thesis has shown that the economic inequalities of the Aboriginal population cannot be entirely understood by suggesting that lower levels of education and poor employment positions account for their lower than average income. As well, this analysis suggests that in terms of economic status, it is a mistake to consider Aboriginal people as a homogeneous group. The findings indicate that variations exist among different segments of the Aboriginal population based on differences in gender, place of residence and registered Indian status. Females, Aboriginal people living outside of CMA's and registered Indians exhibit lower mean incomes than their counterparts. When the effect which education contributes to income is analyzed, the results are the same. These groups of individuals have lower economic returns from education than Aboriginal males, individuals living in CMA's and non-status Indians. In addition, when different types of income are examined, education contributes to more of the variation in total income than either employment income or total government transfer payments.

Finally, the differences in returns on education are less pronounced by differences in gender and place of residence, but are more apparent within the status/non-status Indian categories. Thus, registered Indian status has a greater effect on the economic returns of education on income than differences in gender or place of residence. This suggests that certain differences among

the Aboriginal population are more important in relation to economic status than others. Theoretically, this suggests that the legal categorization of status/non-status Indian, which should not affect income or education, in reality, does have a substantial influence on the economic inequalities faced by Aboriginal people over and above the effects of gender and place of residence. The returns which education provides to the income of status Indians furthers the economic inequality of this segment of the population. Thus, the idea of an economically depressed population is incorrect.

The utility of the human capital theory as an explanation of Aboriginal economic inequality is also questioned. This analysis suggests that first of all, education has only a small effect in comparison to the effects of other variables on the income of Aboriginal people. With unique contribution values and multiple correlation coefficients below 0.10, the return which education has on all types of income for all groups of Aboriginal people is low. This suggests that factors in addition to education have greater effect on income. Other variables such as the nature of work, employment status and work experience affect the variation in income more than the education variable, which suggests that education contributes only a small amount of variation in income. Second, the human capital theory fails to explain why for certain groups, most notably non-status Indians, the effect of education on income is much more pronounced than for status Indians. This indicates that education benefits certain segments of the Aboriginal population more than others, and this theory can only be applied to certain sub-groups within the Aboriginal population. This finding questions the human capital assumption of a unified labour market where income and employment are allocated by differences in educational attainment alone, not by other characteristics. The idea that the labour market functions on the basis of educational attainment is challenged because of the small effect of education on the variation in income.

As a result, the human capital theory fails to account for the external

forces which may affect the acquisition of education. In this way, the small effect of the education variable on income can also be understood in terms of forces external to the individual. External factors are forces which result from social arrangements and which individuals have little control. For example, an individual is generally free to choose to continue his or her education, which is a personal choice. However, until recently, many Aboriginal people did not have access to the post-secondary education sphere because of little government commitment to advanced education (Lanceley, 1991; Stevenson, 1991), thus an individual can do little to change the labour market forces since they are external to the individual.

External factors, such as place of residence and registered Indian status, divide the Aboriginal population in terms of income. There is usually little an individual can do to change these factors, yet they appear to have a large effect on the income of Aboriginal people. As the results in this analysis indicate, external forces such as labour market conditions play a larger role in defining the income of Aboriginal people rather than individual attributes such as educational attainment. What this suggests is that in order to increase the income levels of all Aboriginal people, especially those within the marginalized groups, changes must be initiated not at the individual level, but at the social level.

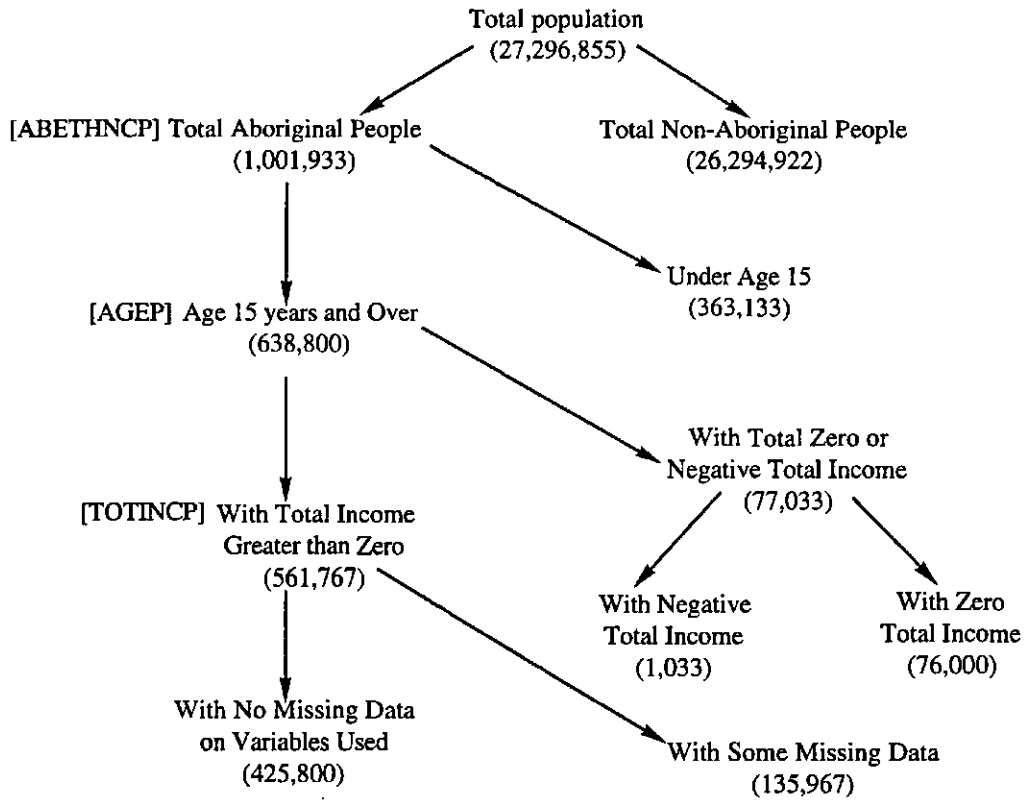
Still another problem associated with the human capital theory is that if we were to expect the theory to be correct, education would be a key factor on employment income than on total income or total government transfer payments. The analysis revealed this proposition to be untrue. The rate of return on education on income is not consistent over different segments of the Aboriginal population. Total income was affected more by level of education than employment income, showing higher values of the multiple correlation coefficient for all divisions of Aboriginal people. This suggests that the human capital theory is limited in the explanation of the economic inequalities experienced by Aboriginal groups.

The dual labour market theory must also be discussed in terms of its contribution to the understanding of Aboriginal economic inequalities. Although the dual labour market theory recognizes that labour market features are more important in determining income than education, it over emphasizes the effect of these variables. Differences in income remain split by gender, place of residence and registered Indian status. Dual labour market theory would simply suggest that these individuals are more likely to be employed in the marginalized sectors of the labour force. As well, the dual labour market theory has yet to provide a definitive system of measuring the duality of the labour market. Although duality may exist, there is no quantitative method of measuring labour market divisions. Due to the problems of over emphasizing the effects of labour market features and the inconsistencies in measurement, the dual labour market theory fails to describe the economic situation of the Aboriginal population in Canada.

In conclusion, neither human capital theory nor dual labour market theory adequately describes the income of the Aboriginal population. This suggests that further studies be conducted using different segments of the population to study the various occupation structures which characterize them in an attempt to redefine a theory of economic inequality. The effects of sexism and racism, and the effect of other variables unique to the Aboriginal population must be emphasized. This type of analysis would not only help to understand the nature of economic inequalities within the Aboriginal population, but it would also highlight inequalities existing in other populations. As well, this position could serve as a starting point for a new theorization of inequality. A theory which fails to embrace the possibility that *various* factors influence income will not prove to be valuable in the social sciences. My study suggests the consideration of various segments of the Aboriginal population since their life chances may not be the same due to differences in gender construction, labour market opportunities and historical constructions of registered Indian status. Until these influences are

considered, total understanding Aboriginal income inequality cannot be achieved.

Appendix Figure A-1
Construction of the Aboriginal Population According to the 1991 Census of Canada



Note: The figures have been weighted to population size. Results are based on respondents with no missing data on variables used.

Source: Statistics Canada, 1991 Census of Canada, Public Use Microdata File On Individuals, 1994.

Table B-1
Effects of Education on the Logarithm of Total Income for Aboriginal People, Total Population, Canada, 1991

Independent Variable	Logar ithm of Total Income Gross	Net
Total years of schooling	0.2410	0.2374
Gender		0.0664
CMA residence		-0.0500
Registered Indian status		-0.1288
Nature of employment		0.3112
Employment status		0.2352
Work experience		0.4791
Work experience quadratic		-0.1960
Adjusted Multiple R squared	0.0581	0.3836
Unique contribution of education (R squared change)		0.0555
Weighted number	425,800	
Per cent of total sample	100.0	

Note:
All variables are significant to the 0.05 level of significance except as indicated by [ ]= not significant. Gender (female=0),Nature of employment (part time= 0), employment status (unemployed=0), Registered Indian status (not registered=0), CMA residence (in CMA=0).

Source:
Statistics Canada, 1991 Census of Canada, Public Use Microdata File on Individuals, 1994.

Table B-2
Logarithm of Total Income Correlation Matrix for Total Aboriginal Population, Canada, 1991

	X1a	X4	X5	X6	X7	X8	X9	X10	X11
Logarithm of Total Income X1a	1.000								
Gender X4	0.134	1.000							
CMA residence X5	-0.162	0.048	1.000						
Registered Indian Status X6	-0.243	[-0.002]	0.271	1.000					
Nature of employment X7	0.421	0.181	-0.022	[0.006]	1.000				
Employment status X8	0.364	0.077	-0.151	-0.261	0.118	1.000			
Work experience X9	0.158	0.017	0.099	0.084	0.139	-0.179	1.000		
Work experience quadratic X10	0.070	[0.006]	0.103	0.089	0.058	-0.238	0.937	1.000	
Total years of schooling X11	0.241	-0.048	-0.276	-0.270	0.061	0.357	-0.523	-0.543	1.000
Mean	9.109	0.493	0.585	0.342	0.778	0.585	18.284	587.856	10.901
Standard Deviation	1.592	0.500	0.493	0.474	0.493	0.493	15.924	946.223	3.733

Note:
All variables significant to the 0.05 level of significance except as indicated by [ ]=not significant. Gender (female=0), Nature of employment (part time=0), employment status (unemployed=0), Registered Indian status (not registered=0), CMA residence (in CMA=0). N=3496 (unweighted).

Source:
Statistics Canada, 1991 Census of Canada, Public Use Microdata File on Individuals, 1994.

Appendix Table C-1
Incompletely Enumerated Reserves and Settlements in the 1991 Census of Canada

Province	Incompletely Enumerated Reserves and Settlements	1986 Population
New Brunswick		**922**
	Big Hole Tract 8	52
	Burnt Church 14	n/a
	Eel Ground 2	328
	Kingsclear 6	n/a
	Tobique 20	542
Quebec		**1,035**
	Akwesasne (Partie)	n/a
	Kahnawake 14	n/a
	Kanesatake	n/a
	Lac-Rapide	n/a
	Wendake	1,035
Ontario		**9,249**
	Akwesasne (Part)	n/a
	Bear Island 1	n/a
	Big Trout Lake	n/a
	Chippewas of the Thames First Nation 42	591
	Garden River 14	588
	Golden Lake 39	236
	Golais Bay 15A	n/a
	Kenora 38B	191
	Kettle Point 44	n/a
	Kingfisher 1	n/a
	Lac Seul 28	519
	Long Dog Lake	n/a
	MacDowell Lake	n/a
	Matachewan 72	13
	Mississagi River 8	195
	Munsee-Delaware Nation 1	157
	Naiscoutaing 17A	2
	North Spirit Lake	203
	Oneida 41	n/a
	Osnaburg 63A	n/a
	Rankin Location 15D	n/a
	Shawanaga 17	85
	Sheguiandah 24	n/a
	Sheshegwaning 20	71
	Shoal Lake 34B 2	161
	Six Nations (Part) 40 (Haldimand-Norfolk R.M.)	479
	Six Nations (Part) 40 (Brant County)	3,702
	Spanish Rive 5	717
	The Dalles 38C	41
	Thessalon 12	26
	Tyendinaga 38	882
	Wapekeka 1	12
	Wapekeka 2	n/a
	Whitefish Bay 32 A	378

Manitoba		**184**
	Roseau Rapids 2A	n/a
	Roseau River 2	n/a
	Valley Riveer 63A	184
Saskatchewan		**339**
	Big Head 124	339
Alberta		**1,434**
	Beaver Lake 131	n/a
	Ermineskin 138	n/a
	Heart Lake 167	n/a
	Kehiwin 123	507
	Montana 139	n/a
	Puskiakiwenin 122	222
	Samson 137	n/a
	Samson 137A	n/a
	Sucker Creek 150A	299
	Unipouheos 121	406
	White Fish Lake 128	n/a
British Columbia		**990**
	Becher Bay	n/a
	Campbell River 11	123
	Chekwelp 26	35
	Esquimalt	n/a
	Katit 1	n/a
	Malahat 11	n/a
	Marble Canyon 3	n/a
	Mount Currie 1	n/a
	Mount Currie 10	n/a
	Mount Currie 2	n/a
	Mount Currie 6	n/a
	Mount Currie 8	n/a
	Nesuch 3	n/a
	Pacheena 1	n/a
	Sliammon 1	646
	Sooke 1	n/a
	Sooke 2	n/a
	Stone 1	186
Yukon Territory		**85**
	Two Mile Village	85
Total		**14,238**

Note:

Figures not available include numbers which are not applicable, settlements with zero people, or those reserves or settlements which were not completely enumerated.

Source:

Statistics Canada, User's Guide: 1991 Aboriginal Data. Ottawa: Minister of Industry, Science and Technology, 1993.

Table D-1
Total Income, Employment Income and Total Government Transfer Payments Correlation Matrix for Total Aboriginal Population, Canada, 1991

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
Total income X1	1.000										
Employment income X2		1.000									
Total Government Transfer Payments X3			1.000								
Gender X4	0.216	0.208	[0.010]	1.000							
CMA residence X5	-0.143	-0.157	0.095	0.048	1.000						
Registered Indian Status X6	-0.216	-0.235	0.131	[-0.002]	0.271	1.000					
Nature of employment X7	0.360	0.363	[-0.002]	0.181	-0.022	[0.006]	1.000				
Employment status X8	0.388	0.474	-0.334	0.077	-0.151	-0.261	0.118	1.000			
Work experience X9	0.106	-0.013	0.339	0.017	0.099	0.084	0.139	-0.179	1.000		
Work experience quadratic X10	[0.000]	-0.119	0.354	[0.006]	0.103	0.089	0.058	-0.238	0.937	1.000	
Total years of schooling X11	0.281	0.331	-0.263	-0.048	-0.276	-0.270	0.061	0.357	-0.523	-0.543	1.000
Mean	17,295.835	13,674.666	2,961.893	0.493	0.585	0.342	0.778	0.585	18.284	587.856	10.901
Standard Deviation	16,446.993	16,723.035	4,330.980	0.500	0.493	0.474	0.416	0.493	15.924	946.223	3.733

Note:
All variables significant to the 0.05 level of significance except as indicated by [ ]=not significant. Gender (female=0), Nature of employment (part time=0), employment status (unemployed=0), Registered Indian status (not registered=0), CMA residence (in CMA=0). N=3496 (unweighted).

Source:
Statistics Canada, 1991 Census of Canada, Public Use Microdata File on Individuals, 1994.

Table D-2
Total Income, Employment Income and Total Government Transfer Payments Correlation Matrix for Aboriginal Females, Canada, 1991

	X1	X2	X3	X5	X6	X7	X8	X9	X10	X11
Total income X1	1.000									
Employment income X2		1.000								
Total government transfer payments X3			1.000							
CMA residence X5	-0.182	-0.189	-0.064	1.000						
Registered Indian status X6	-0.117	-0.202	0.120	0.262	1.000					
Nature of employment X7	0.373	0.381	-0.038	-0.041	0.029	1.000				
Employment status X8	0.387	0.505	-0.381	-0.148	-0.250	0.099	1.000			
Work experience X9	0.069	-0.680	0.335	0.087	0.089	0.106	-0.200	1.000		
Work experience quadratic X10	-0.017	-0.156	0.361	0.096	0.088	0.035	-0.252	0.937	1.000	
Total years of schooling X11	0.317	0.379	-0.272	-0.257	-0.263	-0.257	0.381	-0.529	-0.547	1.000
Mean	13,796.930	12,379.777	2,919.226	0.562	0.343	0.698	0.547	18.019	582.577	11.079
Standard Deviation	12,606.920	12,639.365	4,283.459	0.496	0.475	0.459	0.498	16.060	961.277	3.674

Note:
All variables significant to the 0.05 level of significance except as indicated by [ ]=not significant. Gender (female=0), Nature of employment (part time=0), employment status (unemployed=0), Registered Indian status (not registered=0), CMA residence (in CMA=0). N=6066 (unweighted).

Source:
Statistics Canada, 1991 Census of Canada, Public Use Microdata File on Individuals, 1994.

Table D-3
Total Income, Employment Income and Total Government Transfer Payments Correlation Matrix for Aboriginal Males, Canada, 1991

	X1	X2	X3	X5	X6	X7	X8	X9	X10	X11
Total income X1	1.000									
Employment income X2		1.000								
Total Government Transfer Payments X3			1.000							
CMA residence X5	-0.146	-0.163	0.125	1.000						
Registered Indian status X6	-0.258	-0.274	0.143	0.282	1.000					
Nature of employment X7	0.330	0.334	[-0.004]	-0.023	-0.026	1.000				
Employment status X8	0.392	0.460	-0.290	-0.164	0.145	0.145	1.000			
Work experience X9	0.134	0.019	0.344	0.110	0.159	0.159	-0.161	1.000		
Work experience quadratic X10	[0.009]	-0.104	0.348	0.111	0.062	0.062	-0.226	0.937	1.000	
Total years of schooling X11	0.296	0.337	-0.253	-0.292	0.086	0.086	0.344	-0.518	-0.539	1.000
Mean	20,899.680	17,207.289	3,005.839	0.609	0.341	0.849	0.623	18.577	593.293	10.719
Standard Deviation	18,969.758	19,187.968	4,379.211	0.488	0.474	0.358	0.485	15.778	930.490	3.784

Note:
All variables significant to the 0.05 level of significance except as indicated by [ ]=not significant. Gender (female=0), Nature of employment (part time=0), employment status (unemployed=0), Registered Indian status (not registered=0), CMA residence (in CMA=0). N=6708 (unweighted).

Source:
Statistics Canada, 1991 Census of Canada, Public Use Microdata File on Individuals, 1994.

Table D-4
Total Income, Employment Income and Total Government Transfer Payments Correlation Matrix for Aboriginal People Living in CMA's, Canada, 1991

	X1	X2	X3	X4	X6	X7	X8	X9	X10	X11
Total income X1	1.000									
Employment income X2		1.000								
Total Government Transfer Payments X3			1.000							
Gender X4	0.228	0.226	-0.035	1.000						
Registered Indian status X6	-0.139	-0.158	0.116	-0.036	1.000					
Nature of employment X7	0.383	0.391	-0.026	0.172	-0.028	1.000				
Employment status X8	0.360	0.458	-0.411	0.097	-0.183	0.146	1.000			
Work experience X9	0.162	0.046	0.301	[-0.002]	0.032	0.172	-0.185	1.000		
Work experience quadratic X10	0.038	-0.081	0.329	[-0.009]	0.029	0.087	-0.250	0.929	1.000	
Total years of schooling X11	0.271	0.307	-0.241	[-0.008]	-0.135	0.067	0.314	-0.422	-0.444	1.000
Mean	20,088.686	16,783.177	2,474.228	0.464	0.189	0.788	0.673	16.418	471.957	12.124
Standard Deviation	17,404.590	17,857.856	4,046.381	0.499	0.392	0.409	0.469	14.228	775.076	3.178

Note:
All variables significant to the 0.05 level of significance except as indicated by [ ]=not significant. Gender (female=0), Nature of employment (part time=0), employment status (unemployed=0), Registered Indian status (not registered=0), CMA residence (in CMA=0). N=5715 (unweighted).

Source:
Statistics Canada, 1991 Census of Canada, Public Use Microdata File on Individuals, 1994.

Table D-5
Total Income, Employment Income and Total Government Transfer Payments Correlation Matrix for Aboriginal People Not Living in CMA's, Canada, 1991

	X1	X2	X3	X4	X6	X7	X8	X9	X10	X11
Total income X1	1.000									
Employment income X2		1.000								
Total Government Transfer Payments X3			1.000							
Gender X4	0.224	0.214	0.032	1.000						
Registered Indian status X6	-0.220	-0.237	0.018	[-0.005]	1.000					
Nature of employment X7	0.340	0.341	[0.017]	0.191	0.035	1.000				
Employment status X8	0.387	0.467	-0.274	0.077	-0.258	0.097	1.000			
Work experience X9	0.098	-0.027	0.351	0.021	0.073	0.121	-0.158	1.000		
Work experience quadratic X10	[0.002]	-0.123	0.359	[0.006]	0.078	0.046	-0.217	0.942	1.000	
Total years of schooling X11	0.248	0.307	-0.251	-0.054	-0.245	0.050	0.343	-0.566	-0.579	1.000
Mean	15,314.095	11,468.942	3,307.929	0.513	0.451	0.769	0.522	19.608	670.095	10.034
Standard Deviation	15,429.430	15,495.823	4,490.264	0.500	0.498	0.421	0.500	16.901	1,043.150	3.800

Note:
All variables significant to the 0.05 level of significance except as indicated by [ ]=not significant. Gender (female=0), Nature of employment (part time=0), employment status (unemployed=0), Registered Indian status (not registered=0), CMA residence (in CMA=0). N=5715 (unweighted).

Source:
Statistics Canada, 1991 Census of Canada, Public Use Microdata File on Individuals, 1994.

Table D-6
Total Income, Employment Income and Total Government Transfer Payments Correlation Matrix for Aboriginal People Without Registered Indian Status, Canada, 1991

	X1	X2	X3	X4	X5	X7	X8	X9	X10	X11
Total income X1	1.000									
Employment income X2		1.000								
Total Government Transfer Payments X3			1.000							
Gender X4	0.256	0.248	[0.001]	1.000						
CMA residence X5	-0.082	-0.094	0.076	0.042	1.000					
Nature of employment X7	0.384	0.388	[-0.004]	0.197	-0.042	1.000				
Employment status X8	0.337	0.427	-0.356	0.087	-0.082	0.125	1.000			
Work experience X9	0.139	0.020	0.332	-0.193	0.076	0.162	-0.193	1.000		
Work experience quadratic X10	0.017	-0.104	0.357	-0.262	0.079	0.068	-0.262	0.932	1.000	
Total years of schooling X11	0.253	0.293	-0.241	0.313	-0.208	0.060	0.313	-0.480	-0.505	1.000
Mean	19,853.870	16,509.215	2,551.600	0.493	0.488	0.776	0.677	17.319	527.136	11.628
Standard Deviation	17,579.263	17,821.236	4,075.855	0.500	0.500	0.417	0.468	15.074	854.663	3.471

Note:
All variables significant to the 0.05 level of significance except as indicated by [ ]=not significant. Gender (female=0), Nature of employment (part time=0), employment status (unemployed=0), Registered Indian status (not registered=0), CMA residence (in CMA=0). N=9278 (unweighted).

Source:
Statistics Canada, 1991 Census of Canada, Public Use Microdata File on Individuals, 1994.

Table D-7
Total Income, Employment Income and Total Government Transfer Payments Correlation Matrix for Aboriginal People With Registered Indian Status, Canada, 1991

	X1	X2	X3	X4	X5	X7	X8	X9	X10	X11
Total income X1	1.000									
Employment income X2		1.000								
Total Government Transfer Payments X3			1.000							
Gender X4	0.134	0.130	0.026	1.000						
CMA residence X5	-0.117	-0.117	0.036	0.070	1.000					
Nature of employment X7	0.305	0.311	[0.002]	0.138	0.028	1.000				
Employment status X8	0.406	0.496	-0.246	0.064	-0.099	0.114	1.000			
Work experience X9	0.113	-0.024	0.333	[0.008]	0.088	0.083	-0.117	1.000		
Work experience quadratic X10	0.027	-0.109	0.336	[0.005]	0.093	0.037	-0.171	0.945	1.000	
Total years of schooling X11	0.215	0.288	-0.234	-0.630	-0.247	0.071	0.302	-0.586	-0.593	1.000
Mean	12,379.777	8,227.202	3,750.397	0.491	0.770	0.782	0.406	20.139	704.548	9.506
Standard Deviation	12,639.365	12,715.020	4,683.743	0.500	0.421	0.413	0.491	17.292	1,091.652	3.820

Note:
All variables significant to the 0.05 level of significance except as indicated by [ ]=not significant. Gender (female=0), Nature of employment (part time=0), employment status (unemployed=0), Registered Indian status (not registered=0), CMA residence (in CMA=0). N=3496 (unweighted).

Source:
Statistics Canada, 1991 Census of Canada, Public Use Microdata File on Individuals, 1994.

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