MALE EMPLOYMENT AND FIRST UNION FORMATION IN CANADA

by

Yanyi Wang
B.A. Nankai University, P. R. China, 1997
M.A., Nankai University, P. R. China, 2000

A Thesis Submitted in Partial Fulfillment of the
Requirements for the Degree of

MASTER OF ARTS

in the Department of Sociology

Supervisor: Dr. Zheng Wu

ABSTRACT

Over the past several decades, Canada has experienced substantial changes in the formation of first union, mainly characterized by a decline in first marriage and upsurge in nonmarital cohabitation. Relying on male-oriented economic arguments, this study explores the relation of men's employment to their transition to first union, both first marriage and first cohabitation. Empirical findings, based on data from the 1995 General Social Survey (GSS-95), generally suggest that employment is positively associated with the formation of either type of first union, although with a greater effect on marriage than on cohabitation. Further, there is no evidence that the effect of employment on first union depends on the level of education. This study also conducts regional analysis in first union formation between Quebec men and other Canadian men. The findings imply that the effect of employment does not differ between the two regions in the process of first union. Incorporating marital and nonmarital unions in a single analysis, this study broadens our knowledge of the transition to first union of Canadian men.

TABLE OF CONTENTS

Page

LIST OF TABLES

Page

LIST OF FIGURES

Page

ACKNOWLEDGEMENTS

I wish to express my gratitude to Dr. Zheng Wu, my supervisor, for his guidance, encouragement and patience throughout my graduate study at the University of Victoria. My gratitude goes to my committee members, Dr. R. Alan Hedley, Dr. Eric A. Roth, and Dr. Denise Cloutier-Fisher, for their time and assistance. My special thanks also extends to Ms. Darby Carswell for her editorial assistance.

Finally, I would like to express my heartfelt appreciation to my parents for their support and love in my life.

CHAPTER ONE

INTRODUCTION

With advanced industrialism, many demographic changes are taking place in Canada. These changes include declining rates in first marriage, sharp increases in nonmarital cohabitation,[1] a rapid rise in divorce rates, and an increase in the age of childbearing (Turcotte and Goldscheider 1998). First union formation, including both marriage and nonmarital cohabitation, is the centerpiece of these changes because the timing and pattern of first union directly influences nuptiality behavior, fertility behavior, stability and duration of the union, as well as relevant demographic issues. Consequently, many scholars are interested in determining what forces characterize recent changes in the formation of first union, as well as how and why.

1.1 Research Problem

Marriage, traditionally regarded as a necessary prerequisite for starting conjugal life by Canadians, was the only legal form of first union in Canada for years. In recent decades, however, demographers are concerned that the institution of marriage might be in turmoil, since marriage seems to occur later as well as less often in Canadian adult life (Dumas and Péron 1992). Meanwhile, nonmarital cohabitation has gained social acceptance and supplanted first marriage as a form of living arrangement, especially in the first union experience among young generations. These changes contribute greatly to the transformation of first union in Canada. Similar changes are also observed across

industrialized nations, such as the United States and European countries (e.g., Ekert-Jaffe 2001; Kravdal 1999; Sweeney 2002).

Many hypotheses from various perspectives have been offered to explain the causes of the striking changes that have occurred in the formation of first union. Among them, Becker's economic theory of marriage has received the most attention. Becker (1981) argues that women's economic independence, a consequence of their improved employment opportunities, plays an important role in the formation of marriage. Women's active participation in the labor force lessens their reliance on men's monetary earnings, and thereby reduces their motivation for marriage to some extent. In this sense, the increase in women's labor force participation has been regarded as a crucial factor contributing to the recent delay of marriage formation.

However, Oppenheimer (1994) disagrees with Becker and criticizes his argument from both conceptual and empirical aspects. For one thing, she proposes that the change in women's economic status is related to *nonmarriage* rather than *delayed marriage*, while the latter is the major concern in marriage formation. For another, existing empirical analyses illustrate that women with higher levels of educational attainment and earning capacity have a greater propensity to marry, as a wife's periodic or regular income provides more economic security and flexibility for the independent household (e.g., Goldscheider and Waite 1986; Oppenheimer et al. 1997). Oppenheimer (1988) further suggests that it has been men's economic prospects, rather than women's, that affect the transition to marriage for both men and women historically and empirically. In this respect, the recent delay of marriage formation is closely related to changes in men's economic perspective. Men, the major money providers in the household, have recently

experienced difficulty in acquiring employment opportunities: it is important to examine how this difficulty in the labor market influences their union formation in the marriage market. However, studies focusing on men's first union behavior have drawn insufficient attention (Oppenheimer et al. 1997). Research attention needs to be directed toward an in-depth understanding of the relationship between men's economic prospect and first union formation, especially in Canada. This is the primary motivation and goal of the present study.

1.2 Objectives of the Study

Because men are traditionally required to support the family financially, their economic perspective is a major concern in first union decision-making. Work provides men with the means to demonstrate economic capacity and realize economic independence. The hypothesis (primarily developed from Oppenheimer's male-oriented economic argument) that men's economic capacity, i.e., employment in particular, has a crucial implication for first union formation, will be tested by controlling for effects of those variables known to be influential in the process of first union. I will specifically examine whether and how men's employment relates to the formation of first union, including first marriage and first nonmarital cohabitation, given that employment is an apparent indicator of men's marriageability (Oppenheimer 1994).

1.3 Overview of the Study

The focus of this study is on the relationship between men's employment and first union formation. The intention is to bridge the gap between previous studies and the need

for new studies on contemporary Canadian men's nuptiality behavior. I begin with a look at the factual trends in union formation, then review previous studies and construct a theoretical framework for this study, and finally discuss the process and mechanism of first union formation based on results of statistical analyses.

This study comprises six chapters besides the current one. Chapter 2 provides a descriptive account of the demographic trends with respect to the formation of first marriage and nonmarital cohabitation in Canada. Since men's employment is the central concern in my study, I explore possible links between economic circumstance and union behavior through examining the relationship between unemployment rate and total first marriage rate, and that between unemployment rate and cohabitation rate.

Chapter 3 reviews literature that expands our knowledge from statistical descriptions to my research problem. I review previous research regarding the economic perspective of first union formation in Europe, the United States and Canada. The purpose of this chapter is to point out findings as well as limitations in previous research, and how this study will go beyond them.

Chapter 4 explores the inner mechanisms of first union from a theoretical perspective. I developed a theoretical framework for this study mainly based on male-oriented economic theories of marriage formation proposed by sociologists (e.g., Hajnal 1965; Oppenheimer 1988, 1994, 1997). Employment-related factors as well as cultural, demographic, and family origin characteristics known to influence first union will also be introduced. The theoretical background will guide subsequent empirical analyses. I also develop hypotheses in this chapter.

Chapter 5 focuses on the data analyses in this study. I briefly introduce the data (drawn from 1995 General Social Survey, Cycle 10: The Family), statistical method (survival analysis) and the measures of explanatory variables.

Chapter 6 presents the results of the statistical analyses, followed by a discussion of pathways leading to first marriage, first cohabitation, and first union in general. Also, I examine regional differences and the routes of first union in Quebec and in the rest of Canada.

Chapter 7 concludes this study with a short review of the findings and limitations associated with this research.

CHAPTER TWO

DEMOGRAPHIC TRENDS OF FIRST UNION FORMATION

"First union refers either to first marriage or to first cohabitation, whichever is entered first. When cohabitation was not prevalent, first union almost always occurred when a person first married. With the increasing prevalence of cohabitation among young adults, it is more likely that their first union will be cohabitation rather than legal marriage" (Beaujot et al. 1995: 124).

Documented by Beaujot and many other demographers, first union, which once explicitly referred to legal marriage, has been redefined by the increasing prevalence of nonmarital cohabitation. The transformation of first union has been illustrated by the decline in marriage as well as the upsurge in nonmarital cohabitation. For single Canadian men in recent decades, marrying is no longer a prerequisite to starting the union life, while cohabiting has become either a prelude or an alternative to marriage (Dumas and Péron 1992).

This chapter contains four sections: (1) entering first marriage, (2) entering nonmarital cohabitation, (3) employment and first union formation, and (4) summary. The main content of this chapter is made up of descriptive accounts, which outline the speed and magnitude of demographic changes with respect to the process of entering first marriage and first cohabitation, as well as the association of these changes with employment status. They provide this empirical analysis with possible clues to the nature and origin of these changes.

2.1 Entering First Marriage

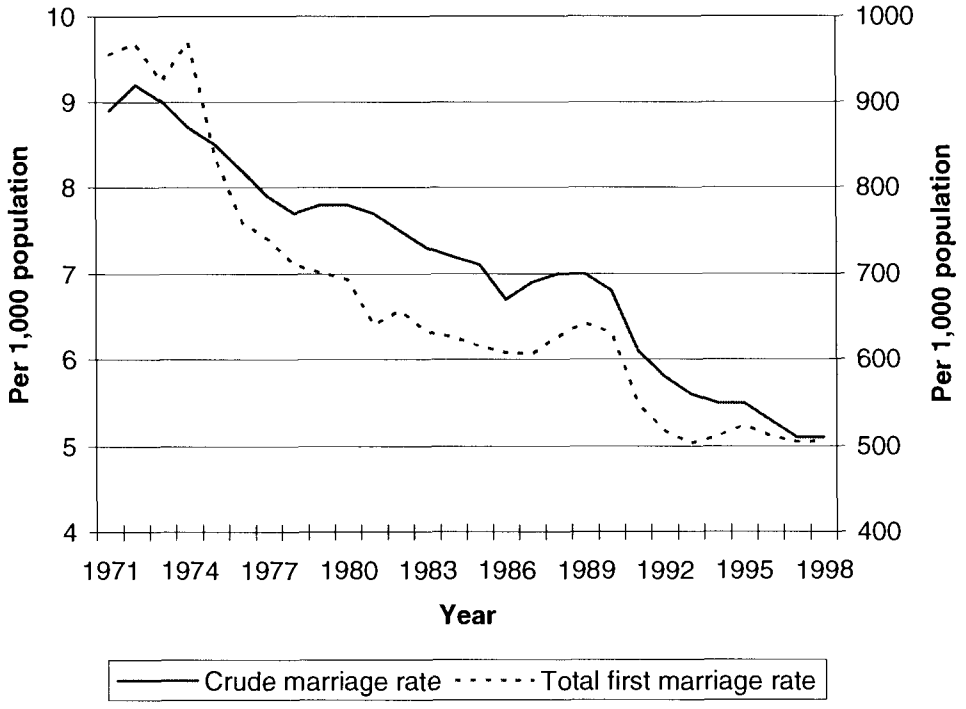
Over the past several decades, marriage has been undergoing substantial

transformation. This is well reflected through declines in marriage rates, an increase in age at first marriage and a considerable proportion of the population remaining single when they reach specific ages (Axinn and Thornton 1992). A sketch of marriage formation can usually be obtained through the examination of crude marriage rate[2] and total first marriage rate[3]. During the past thirty years, the crude marriage rate has shown an overall decline across all age groups, except for a slight fluctuation in the late 1980s (see Figure 1). In 1971, there were 9 marriages per thousand Canadians; this figure dropped to roughly just over 5 per thousand in 1998. Similar to the change in crude marriage rate, the total first marriage rate, a traditional indicator of marriage formation, decreased by 50% for men: the first marriage rate in 1998 is roughly half that of the early 1970s. Although crude marriage rate does not specifically represent the change of first union, as a supplement for the total first marriage rate, it also signifies the shift away from marriage.[4] The trends of these two important indicators of nuptiality are consistent, showing two nearly parallel trend lines after the mid 1970s (see Figure 1).

At the same time, more singles live together as couples without legalizing their union. This has given rise to a decline in the number of married families. It is estimated that married couples accounted for 70% of all families in 2001, down from 83% in 1981 and 77% in 1991 (Statistics Canada 2003).

Accompanying the decline in absolute numbers in marriage, the timing of marriage has been delayed: the average age at first marriage for men has been rising continuously, from 24.9 in 1971 to 29.3 in 1996 (Statistics Canada 1999) (see Figure 2). The proportion of single men in the 20-24 age group has increased since 1971, and reached 90% in 1991. A similar increase has been observed in the 30-34 age group.

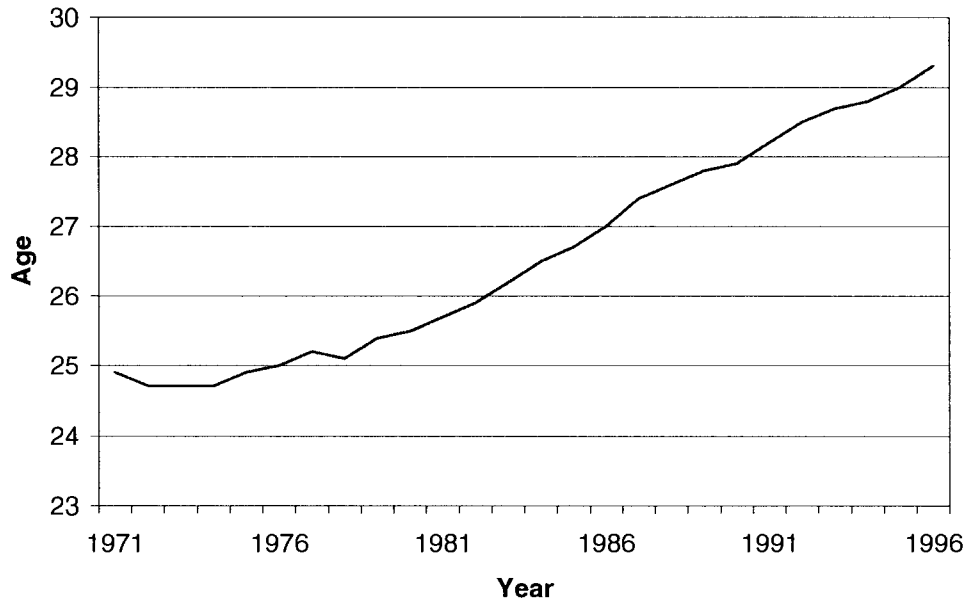
Figure 1. Crude Marriage Rate and Total First Marriage Rate in Canada: 1971 - 1998



Note: 1. Crude marriage rate refers to the left scale; the right scale represents the total first marriage rate.
2. Crude marriage rate is based on the data of both sexes aged 15 and over.
3. Total first marriage rate includes men aged 15-49 prior to 1983 and men aged 17-49 thereafter.

Source: Statistics Canada. 1975-1981. *Vital Statistics.* Catalogue no. 84-205. Ottawa: Statistics Canada.
Statistics Canada. 1990-2001. *Report on the Demographic Situation in Canada.* Catalogue no. 91-209-XPE. Ottawa: Statistics Canada.
United Nations. 1972-1999. *Demographic Yearbook.* New York: UN Publications.

Figure 2. Mean Age at First Marriage: Canadian Men 1971 - 1996



Source: Statistics Canada. 1982-2001. *Report on the Demographic Situation in Canada.* Catalogue no. 91-209-XPE. Ottawa: Statistics Canada.
Statistics Canada. 1999. *Vital Statistics Compendium: 1996.* Catalogue no. 84-214-XPE. Ottawa: Statistics Canada.

Recent data show that when both sexes are estimated together, 81.3% of Canadians in the 20-24 age group remained single in 2001 (Statistics Canada 2003). These numbers seem to suggest that increasing numbers of men are opting to either postpone marriage or forgo it altogether.

Besides the above changes in nuptiality across Canada, it may be noteworthy to look at the marriage pattern in Quebec over the last two decades, because of the low marriage rate in Quebec and its substantial influence over Canadian nuptiality (Pollard and Wu 1998). For instance, the total first marriage rate for male Quebecois was 461 per thousand in 1989, compared to 642 per thousand across Canada, and 704 per thousand excluding Quebec (Statistics Canada 1991). By 1998, this figure had dropped to 317 per thousand for Quebecois, a record low since 1981 (Statistics Canada 2000). Through these indicators, it can be seen that marriage decline in Quebec has greatly lowered the aggregate total first marriage rate when Canada is examined as a whole.

2.2 Entering Nonmarital Cohabitation

Accompanying the decline in marriage, nonmarital cohabitation (also known as "common-law union" in Canada) has risen as a competing "risk"[5] of first union (Wu 2000), representing the most dramatic change in family patterns in Canada (Turcotte and Goldscheider 1998: 146). The massive growth of cohabitation has been measured by the aggregate cohabitation rate,[6] the percentage of cohabiting family among all families, and the proportion of people who ever cohabited. The cohabitation rate of Canadian men was 17.3% in 1996, almost twice that of 1981 (9.5%). This change is overwhelming and is in sharp contrast with the 45% decrease in crude marriage rate. As a result, the cohabiting

family has increased continuously, and comprised 14% of all Canadian families in 2001. This figure more than doubled the 1981 rate of 6% and was 40% higher than the 1991 level of 9.8% (Statistics Canada 2003). As a common and prevalent start of union life, nonmarital cohabitation comprised 51.2% of total first union in Canada in the late 1980s, which was three times that of the early 1970s (Wu 2000). The cohabiting relationship is also found to receive particular approval among young adults. Between 1986 and 1996, the ever cohabited population increased by one third in the 25-29 age group, while people aged 30-34 experienced a 96% increase. Further, at the time of the 1996 survey, one out of three cohabitors was aged between 25 and 35 (Statistics Canada 1999).

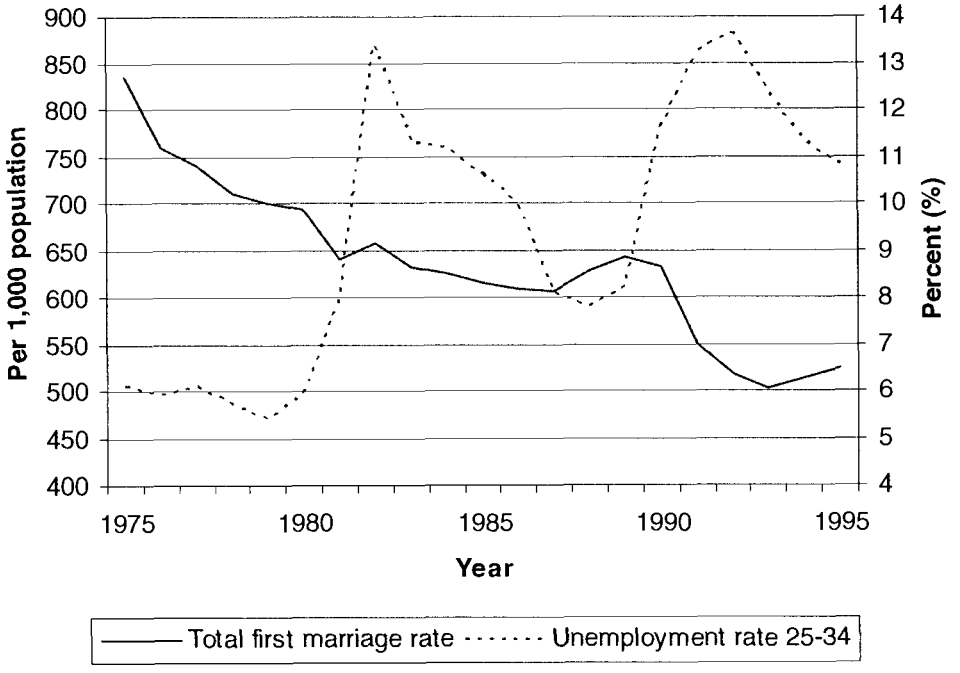
Quebec has also exhibited faster growth in nonmarital cohabitation than the rest of Canada. Between 1986 and 1996, the number of Quebec cohabitors rose by 421,000. Until 1996, two out of five cohabiting couples were Quebecois and at 24.2%, the percent of cohabiting couples in Quebec was twice the national average of 12% (Péron et al. 1999).

In a nutshell, marriage has experienced a significant decline, mainly due to the growing prevalence of nonmarital cohabitation (Statistics Canada 1997). Nonetheless, the effect of marriage decline on total union formation is not completely offset by the upsurge in nonmarital cohabitation. For instance, the proportion of Canadians aged 15 and over without forming a first union increased 10.7% between 1991 and 1996. This growth is about twice the growth of total population within the same period. Consequently, union/first union, regardless of its type, appears to be less prevalent or attractive for Canadians as a lifestyle across all age groups (Statistics Canada 1997).

2.3 Employment and First Union Formation

There is a need to look at whether the status of employment also shows coincident changes with the decline in first union within the same periods. The unemployment rate is always regarded as an important indicator of the changes in the labor market and linked with the dynamics in the marriage market.[7] Through looking at the unemployment rate of Canadian men aged 25-34 and the total first marriage rate of men, a generally negative connection is found between these two indicators.[8] Over the past 20 years, the unemployment rate of Canadian men has shown a long-term upward trend. It increased by over one fourth within ten years, from 6.1% in 1975 to 10.8% in 1995, accompanied by a thirty-percent decline in the total first marriage rate (see Figure 3). In the early 1980s, increasing numbers of young men in 25-34 age group were not employed. As a consequence, a declining number of young adults entered first marriage. Conversely, as the unemployment rate fell in the late 1980s, the total first marriage rate rose slightly but apparently. A similar correlation between unemployment rate and total first marriage rate was observed more clearly in the early 1990s. Considering that individuals usually take a period of time to adjust their life decisions to a more favorable or unfavorable financial situation, I also look at the relationship between economic opportunity and marriage formation with a lag of one year.[9] This implies that the unemployment rate in 1975 influences the total first marriage rate of 1976. The two curves show a generally reversed link, which is stronger than without taking the lagged time into account (see Figure 4). Especially after the mid 1980s, the two curves fit well and suggest that the change of employment status does not affect nuptiality behavior substantially until one year later. Additionally, cohabitation rate and unemployment rate exhibited a positive link between

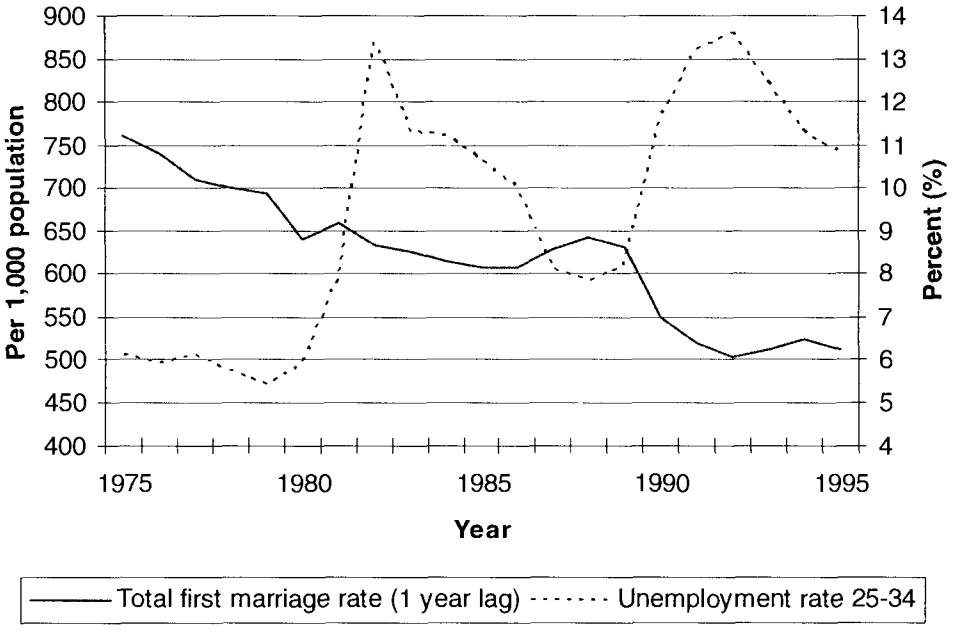
Figure 3. Total First Marriage Rate and Unemployment Rate: Canadian Men Aged 25 - 34, 1975 - 1995 (no lag)



Note: 1. Unemployment rate is based on the data of men aged 25-34 and refers to the right scale.
2. Total first marriage rate includes men aged 15-49 before 1983 and men aged 17-49 thereafter.

Source: Statistics Canada. 1990-2001. *Report on the Demographic Situation in Canada.* Catalogue no. 91-209-XPE. Ottawa: Statistics Canada.
Statistics Canada. 1975-1996. *The Labor Force.* Catalogue no. 71-001. Ottawa: Statistics Canada.

Figure 4. Total First Marriage Rate and Unemployment Rate: Canadian Men Aged 25 - 34, 1975 - 1995 (lag of 1 year)



Note: 1. Unemployment rate is based on the data of men aged 25-34 and refers to the right scale.
2. Total first marriage rate includes men aged 15-49 before 1983 and men aged 17-49 thereafter.
3. Total first marriage rate is with a one year lag, which means that the unemployment rate in 1975 is compared to the total first marriage rate in 1976.

Source: Statistics Canada. 1990-2001. *Report on the Demographic Situation in Canada.* Catalogue no. 91-209-XPE. Ottawa: Statistics Canada.
Statistics Canada. 1975-1996. *The Labor Force.* Catalogue no. 71-001. Ottawa: Statistics Canada.

1981 and 1996, experiencing an increase of 80% and 25%, respectively.[10]

By linking employment status with the formation of first union, I found two contradictory correlations. The negative correlation between men's unemployment rate and the total first marriage rate supports the notion that "marriage is an act with economic implications" (Dumas and Péron 1992: 77). The accompanying increase in men's unemployment rate and the cohabitation rate reflects the viewpoint that cohabitation is associated with a weaker economic concern than marriage (Cherlin 2000; Clarkberg 1999). Telling by these descriptive accounts, it seems that the decisions to enter marriage and nonmarital cohabitation might respond to economic opportunity in somewhat different ways.

2.4 Summary

In this chapter, I examined the aggregate trends in first union formation in Canada over the past several decades. As two competing types of first union, marriage is more likely to be delayed or forgone in adult life among Canadian men, especially young adults, on the one hand; nonmarital cohabitation is more prevalent and approved as an important type of first union, on the other. Additionally, Quebec has exhibited its own pattern of first union, characterized by fewer marriages and more cohabitations than the rest of Canada.

I also intended to link the labor market with the marriage market by introducing the unemployment rate of men aged 25-34 into analysis. A negative correlation has been observed between unemployment rate and total first marriage rate, but a positive relation between unemployment rate and cohabitation rate.

In the following chapter, I review previous studies on the relation of men's economic perspective, employment specifically, to entry into first union, and point out the research gap in the literature as well.

CHAPTER THREE

LITERATURE REVIEW

Although the decline in marriage and growth of nonmarital cohabitation are hardly new demographic phenomena, they have attracted much research attention over the last several decades, because of the importance of first union formation and the influences of its change on relevant demographic issues. Consequently, demographers have been actively monitoring the change, in many cases ascertaining the underlying forces influencing first union formation from various aspects. Some directly emphasize the relation of men's economic characteristics to the process of first union. Some explore the regional, gender, and cohort differences in entering first marriage, while others discuss different routes leading to two competing types of first union. Several of these demographers emphasize macro-level analysis to map the aggregate trend, while others focus on micro-level analysis to develop a picture of individual behavior. Regardless of the variety and differences in the designs of these studies, they examine and address the argument that men's union formation will be facilitated if they have a desirable economic status. However, to some extent, these studies are limited in either analytical strategy or research emphasis, both of which need improving in the current and future studies.

This chapter is composed of six sections: (1) European studies, (2) American studies, (3) Canadian studies, (4) findings of previous studies, (5) limitations of previous studies, and (6) summary. The first three sections review previous studies relating to my research problem from European countries, the United States and Canada, and are organized chronologically within each region. Through examination of these previous

studies, I intend to present what has been learned, and what is yet to be uncovered regarding how men's economic status influences first union entry in Sections 4 and 5, respectively.

3.1 European Studies -- the Role of Unemployment in First Union Formation

The demographic changes of first union in North America have also occurred in European industrialized countries. For instance, it is documented that out of wedlock births account for 45% of all births in Norway, most of them from cohabiting couples (Kravdal 1999). It is apparent that fertility change is a consequence of the associated trends occurring to first union. According to two recent surveys in Norway, economic status is considered a decisive factor for a considerable number of those forming cohabiting relationships. In particular, men's unemployment is revealed as playing an important role in the choice between marriage and cohabitation.

Kravdal (1999) explored issues of economic affordability in the formation of first union by asking whether marriage imposes a stronger economic requirement on men than nonmarital cohabitation does. His study used data obtained from two national surveys, The Statistics Norway Omnibus Survey of 1996 and Norwegian Family and Occupation Survey of 1988. Kravdal's study (1999) reveals that men who are neither employed nor in school prefer cohabitation to marriage, and have a roughly 40% lower chance of getting married than those who are employed, due to their unfavourable economic status. However, this job effect only holds true among those men without children once men are categorized into two groups by the presence of children. In other words, there is no significant difference in the possibility of marriage formation between employed and

unemployed men with premarital children. Finally, Kravdal concludes that marriage in Norway has a higher (although not strongly higher) underpinning for men's economic capacity than cohabitation (1999: 79).

In France, Ekert-Jaffe (2001) finds that men usually start their first jobs before the occurrence of first union. Therefore, he specifically explores the causal relationship between first job and first union entry using data from the 1994 French Family and Fertility Survey. He looks at not only the availability of jobs, but also their stability. Results of his analysis show that the effect of joblessness on first union is only significant for men. For those men without work, the probability of starting first union is almost halved, compared to their employed counterparts. Among them, the earlier they find a job, the sooner they can form a first union, either marriage or cohabitation. Moreover, it is the availability of employment, instead of the type, that contributes to the main difference in the chance of first union. Additionally, the effect of job stability, measured by occupation, is found to be almost as strong as that of employment. The unstable job has become an impediment to first union entry because it fails to provide the future family with necessary economic security, and this situation, in most cases, can create concern about the quality and stability of relationship. Ekert-Jaffe (2001) thus believes that it is virtually always economic reasons that determine and postpone men's formation of first union. Especially for younger cohorts, only men's employment and their occupation status have significant impact on the transition to first union. As a consequence, the combination of the above two factors form the only decisive forces determining the timing (delay) of first union transition. In the end, Ekert-Jaffe remarks that, "unemployment is a burden in the market for unions" (2001: 90).

These two studies explore economic forces driving the current trends in first union formation in Norway and France, respectively. The effect of employment is a common focus of both studies. Ekert-Jaffe (2001) highlights the roles of unemployment and instability of job in union market. Furthermore, Kravdal (1999) addresses that marriage sets a higher requirement for men's economic capacity.

3.2 American Studies -- Economic Foundations in First Union Formation

In this section, I review American studies over the past twenty years that focus on the economic foundations in men's first union transition. With the exception of Sassler and Goldscheider (1997), Clarkberg (1999) and Oppenheimer (2003), American scholars have focused exclusively on the formation of first marriage. Most of their findings are consistent with those from European studies.

In a micro-level analysis, Teachman and his colleagues (1987) looked at factors determining the timing of marriage, using data from the National Longitudinal Study of the High School Class of 1972 (NLS-72). They examined the effects of those variables signifying rewards and costs of marriage, as well as potential partner's attractiveness in the marriage market. They found that, controlling for other variables, working men are more likely to get married than those men either attending school or failing to get a job. This difference is chiefly because working men's financial support for the family gives rise to the rewards of marriage (1987: 244). Further, they believe that men with part-time employment have a lower propensity to marry than those who are employed full-time, since part-time work indicates "incomplete potential to support a family" (Teachman et al. 1987: 244). In this study, racial differences in the effect of employment are also

recorded. An early marriage is associated with white men working full-time, but this is not the case for black men.

Cooney and Hogan (1991) directly examine the age at first marriage of white American men by using data from the Occupational Changes in a Generation II Survey. This study was designed on the argument that individual's roles in different domains correlate and affect each other (Cooney and Hogan 1991: 179). Hence, they relate the experience and situation in the labor market to the position and associated marital behavior in the marriage market. In this study, labor force participation, school enrolment and military service function as the most influential life events in the process of marriage formation. Echoing other research, Cooney and Hogan find that employment shows its positive and significant effect on the formation of marriage across all age groups, because it provides men with "a probably higher value in the marriage market" (1991: 184). They therefore draw the conclusion that in the economic sense, marriage becomes a more likely and favourable choice only for employed white men, due to the availability of necessary resources for the establishment and maintenance of a new and independent household.

Unlike the above two individual-level analyses, Lloyd and South (1996) pay attention to the influence of social context over marriage formation by including macro-level factors in their study. The National Longitudinal Survey of Youth between 1979 and 1984 provides men's individual-level data, and the 1980 Census becomes the source of macro-level information on the marriage market. Income, along with weeks worked and home ownership are regarded as indicators of economic prospects and included to account for women's marriage formation in the equation. The findings indicate that the

three factors promote the transition to first marriage. But the variable, weeks worked, is observed to only affect white men's marriage formation. Aside from income and weeks worked, home ownership is viewed as a critical signal of the current economic position: men with their own home as well as a higher level of educational achievement possess a higher socioeconomic status and accordingly an advantageous position in the marriage market, which results in a higher marriage rate. White men owning their home are 44% more likely to get married than those without home ownership. This effect is also strong for black men, with a corresponding figure of 34%. However, educational attainment is not found to influence black men's transition to first marriage.

Witnessing the substantial growth in nonmarital cohabitation, Sassler and Goldscheider (1997) include it as a competing "risk" of marriage in the analysis. Their purpose is to ascertain whether men's economic status has a declining role in union formation. The National Longitudinal Survey of Labor Market Experience of Young Men (NLSYM) and the National Survey of Families and Household (NSFH) provide data on men who formed marital unions in the 1970s and circa 1990s for this study. Men's economic status is defined as a collective force of employment, occupational status, education, school enrolment, and parental resources. They find that all these measures of men's economic standing show gradually weaker relations to marriage. The expected impacts of occupational status and parental elements are no longer observed. Further analyzing the link of employment with the odds of marriage, they report that controlling for cohabitation, the effect of employment is strengthened. Meanwhile, the effect of employment on cohabitation is about half of that on marriage. These findings clearly indicate that men need less economic resources to enter a cohabiting union than to marry.

Plus, a good economic status provides men with more options for first union, rather than just marriage.

Clarkberg (1999) also extends her research scope and specifically differentiates between the role of economic circumstance in young adults' options for marriage or cohabitation. As with Teachman's study (1987), NLS-72 is the source of data in this study. Economic well-being is estimated through four elements: earnings, high relative income,[11] months at current job and employment history. Her results illustrate that, except for months at job, the other three economic indicators influence the transition to either or both types of first union significantly. In line with most available studies, for both black and white men, earnings encourage the formation of first union, either marriage or cohabitation. However, the effect of earnings is significantly stronger for marriage than for cohabitation. Specifically, a one unit increase in the standard deviation in earnings brings about a 26% rise in the probability of marriage and a 13% rise in probability of cohabitation. Applying a similar change to high relative income, the probability of marriage goes up by almost 100%, but only 20% for cohabitation. One of these variables, employment history, enhances the possibility of cohabitation by 50%. Finally, Clarkberg concludes that the above economic elements are important considerations for the formation of first union, but they generally have a stronger link with marriage than with cohabitation.

Observing that young men have experienced considerable difficulties in the labor market, Oppenheimer and her colleagues (1997) look at the impact of employment on the formation of marriage. Distinct from the above studies, they tackle this problem by focusing on the process of men's career development. They employ longitudinal data

from the 1979 and 1990 National Longitudinal Survey of Youth (NLSY) in their empirical analysis.

A new concept of "career maturity" is initiated to characterize the process of career transition: career maturity usually implies an easy career development, while career immaturity is associated with a difficult career transition. The degree of career maturity increases gradually throughout the process of career transition, resulting in a shift from career immaturity to career maturity. The degree of career maturity is measured by combining a series of variables such as a full-time and full-year job and generally signals a relatively mature career status and an easy career development.

Given that the recent economic hardship is usually associated with those men with less or moderate education, or less experience, or who are black, Oppenheimer and her colleagues select race and education as two predicators of an easy or a difficult career development. They reveal that an easier and faster career development promotes marriage transition and thus yields a higher probability of marriage for both white and black men. Young men who are less educated and less experienced are more apt to encounter a slower and more difficult career transition, which results in a lower chance of marriage. However, the effect of a difficult career development is increased by racial difference and the decline in the level of educational attainment. In addition, a lower level of educational achievement usually goes along with lower earnings and unstable work, and vice versa. The combined force of these elements strengthens the impact on the formation of marriage more than any single factor among young men belonging to various socioeconomic groups.

As a further step in the 1997 study, Oppenheimer (2003) also examines the formation of cohabitation and the transition to first marriage using an identical analytical framework and strategy.[12] In this study, she defines career maturity as "the extent to which regular, stable employment has been achieved" (2003: 131). Generally speaking, a lack of career maturity reduces the "risk" of either marriage or nonmarital cohabitation for both black and white men. Cohabitation accordingly becomes a preferred choice for both white and black men without stable employment. Oppenheimer finds that losing a full-time job leads to a 139% higher chance of cohabiting with a partner for white men. For blacks, a similar change in the labor market gives rise to a 78% increase in the probability of cohabitation. Furthermore, the effect of full-time work is sizable and significant in the transition from cohabitation to first marriage.

Sweeney (2002) focuses her research attention on the economic perspective of marriage formation by exploring whether the importance of men's economic position in the marriage transition has reduced over time. Her study is designed with a similar purpose to Sassler and Goldscheider's study (1997) but with different findings. Sweeney throws light on this problem by comparing marital behavior between two cohorts: early baby-boom cohort (1950-54) and late baby-boom (1961-65) cohort. Data for this study are obtained from multiple cohorts of the National Longitudinal Surveys of Labor Market Experience. Economic status is measured by earnings, currently enrolled in school, currently employed and currently in military service. She finds that the effect of currently employed is particularly stronger for blacks in the late baby-boom cohort than in the early one. In contrast with the growth of employment effect among blacks, this effect is observed to decline significantly between white men of the two different birth cohorts.

Nonetheless, the impact of men's earnings on marriage formation has not reduced over time. In short, Sweeney concludes that men's economic status is generally a preliminary and important basis of their marriage formation, valid for men in both early and late baby-boom cohorts.

In the aforementioned studies, American scholars highlight the importance of men's economic perspective in the formation of first marriage. Except for Lloyd and South's study (1996), all of the others are micro-level analyses, which emphasize individual-level variables rather than variables representing aggregate conditions in the marriage market. As far as work is concerned, various measurements have been applied to the target population in the analyses, including: employment status (employed and unemployed); the nature of job (full-time and part-time job); the extent and pace of career development (career maturity or career immaturity); and the length (weeks or months) worked at current job. Similar to what Ekert-Jaffe (2001) has done in the French study, some of the American studies also consider the effect of the stability of employment (measured by employment history) in statistical models and treat it as a supplement for employment status (Clarkberg 1999; Oppenheimer 1997, 2003; Sassler and Goldscheider 1997). Further, Sassler and Goldscheider (1997), Clarkberg (1999) and Oppenheimer (2003) incorporate the transition to cohabitation in their analyses so as to uncover and compare different roles of economic characteristics in entering two types of first union. In spite of the differences in these studies, they confirm the significant and indispensable role of employment in the formation of first union.

3.3 Canadian Studies -- Work Effect on First Union Formation

Canadians share many similarities with their southern neighbors in the trend in the formation of first union. Nevertheless, unique socioeconomic and cultural traditions in each society necessitate detailed national examinations on demographic behaviors. Also, Canadian demographers have conducted a number of studies on striking changes in first union formation in the Canadian context. This section reviews some of these studies.

Turcotte and Goldscheider (1998) explore the role of work in Canadian men's union formation through analyzing the data obtained from the 1995 Canadian General Social Survey (GSS-95). Their starting point is whether the function of employment has changed since women's labor force participation appears to have made men's economic position less essential. Their study shows that employed men are twice as likely to form a marital union as those men who are neither working nor going to school. However, this is not the case in the formation of cohabitation: there is no significant difference observed between the above two groups of men in their transition to cohabiting union. Male students have around a 60% lower chance than employed men of entering either marriage or cohabitation.

They further suggest that there are changing effects in those factors identified to influence the union formation across different birth cohorts. The effect of educational attainment is also one of their emphases. For both types of first union, the influence of educational attainment has exhibited an attenuated tendency, although this change is not significant. On the whole, this study confirms the findings of other research (e.g. Clarkberg 1999; Oppenheimer 2003) and suggests that employment is a decisive and increasingly important factor in the decision to enter first union, both marriage and

cohabitation. Additionally, their study reveals that a premarital child, either born or impending, substantially improves the likelihood of marriage and cohabitation. This effect is stronger for men than for women, much stronger in the process of marriage than in cohabitation, and much stronger for a younger cohort than for an older cohort (Turcotte and Goldscheider 1998: 160).

Pollard and Wu (1998) pay attention to the regional patterns of marriage between Quebec and the rest of Canada, a field that has not been studied adequately. Although their study only documents the divergence of marital patterns of female Canadians, it has become "a first attempt" (1998: 330) in the empirical study of regional divergence in marriage patterns in Canada. They assume that employment is an important factor contributing to the low marriage rate in Quebec, due to the traditionally higher unemployment rate in Quebec than elsewhere in Canada (Denis 1993: 520). GSS-95 is employed to analyze first marriage transition of Canadian women between the ages of 15 and 40. They find that employment has no significant impact on the formation of first marriage for Quebec women, which implies that female Quebecois are unwilling to give up their job for marriage (1998: 345). On the contrary, employed women in the rest of Canada are 20% more likely to enter marriage than their unemployed counterparts. Moreover, if Canada is examined as a whole, employment is observed to encourage women's first marriage formation. Additionally, if premarital cohabitation is removed from the analysis, employment status also loses its impact on the transition to first marriage.

Due to the increasing prevalence of cohabitation, Wu (2000) conducts a comprehensive study on its formation and associated influences on demographic

behaviors. As in other Canadian studies, the GSS-95 provides the longitudinal data needed in this study. The study sample consists of men and women aged between 15 and 35. By simply dividing the target population into employed and unemployed groups, Wu estimates the effect of work on the formation of cohabitation. His findings illustrate that being employed, as a key indicator of socioeconomic status, significantly improves the occurrence of cohabitation for both women and men. This effect is revealed to be much stronger among men than women: working men have a 60% higher chance of entering cohabitation than those who are not working; the corresponding figure is less than 50% for women. In another study, Wu and Pollard (2000) further explore the relation of economic circumstances to the stability of cohabitation using data from the Survey of Labor and Income Dynamics (1993 and 1994). They report that both employment and occupational status negatively relate to the stability of cohabitation and therefore enhance the transition from cohabitation to marriage for Canadian men.

Ravanera and her colleagues (2002) directly analyze Canadian men's transitions to first marriage and first union by treating them as two components of a series of life events signalling the transition to adulthood. Their study sample includes Canadian men aged between 20 and 80 at the time of the 1995 General Social Survey. According to GSS-95, starting with the 1946-50 cohort, the median age at first marriage becomes older than that at first union. Then the gap between these two ages grows faster and wider, which demonstrates the growing prevalence of cohabitation among recent cohorts.

Their study uses two life events -- school completion and work start -- to determine the trajectories of first marriage and first union in general. Within each cohort, they estimate the distribution of the probability of first marriage among three pathways

structured by these two life events. The first group includes men who marry without experiencing any other life events. The second group is composed of men starting work before the start of marital life. The third group consists of men experiencing both school completion and work start prior to first marriage. Results of their analysis indicate that the probability of first marriage is not distributed evenly among the three groups with distinctive pathways. Since the probability of first marriage declines gradually and significantly from the earliest birth cohort (1916-25) to the most recent cohort (1966-75), the chance of first marriage in each group also decreases accordingly. The first group has the lowest chance of getting married among three groups for all birth cohorts. In the second group, the probability of marriage increases significantly for each successive cohort, which provides strong evidence for the importance of work. Compared to the first group, men in the third group are the most likely to enter first marriage. In particular, the 1956-65 and 1966-75 cohorts in the third group have two and three-time higher chances of entering marital union than their counterparts in the first group, respectively.

In this study, they also examine the routes of first union for 1956-65 cohort and the 1966-75 cohort. They use identical methods to categorize men into three groups and look at the distribution of the probability of first union. A similar trend is found in the formation of first union. For the men in the third group, school completion and employment collaboratively and significantly increase the first union by five times, compared to the men in first group. All these results indicate that work has been significantly influencing men's transition to first marriage across all birth cohorts and first union for young cohorts. More importantly, this effect exhibits a growing importance in the process of decision-making from the oldest cohort to the youngest cohort. What is

more, schooling also plays as important a role in facilitating first marriage and first union as work does.

In these Canadian studies, men's employment is again a crucial factor in the entry into first union. This effect has not waned since women have gained more work opportunities and economic independence (Turcotte and Goldscheider 1998). In fact, men's employment has played an increasingly important role in the entry into first marriage and first union (Ravanera et al. 2002). Most of these studies use data drawn from the 1995 Canadian General Social Survey (GSS-95) and measure employment by categorizing the target population into employed and unemployed groups. The consistence in the selection and coding of this variable helps to make comparisons among these studies and with my study as well. Although Pollard and Wu (1998) focus on female marriage formation exclusively, it is still included in this section due to the importance of regional patterns to first union in Canada. This also inspired a part of my empirical study.

3.4 Findings of Previous Studies

Even though the aforementioned studies were conducted to examine first union transition in different countries, they reach a similar point: the formation of first union heavily relies on men's economic capacity, regardless of the differences in its measure and degree of its influence. Specifically, employment facilitates and paves the way for young men's transitions to both first marriage and first cohabitation (e.g. Oppenheimer 2003; Oppenheimer et al. 1997; Ravanera et al. 2002; Turcotte and Goldscheider 1998; Wu 2000). Simply put, marriage is not an affordable option for those without a steady job

and dependable income. Even though employment provides young men with the opportunity and means to marry, it influences the formation of marriage and cohabitation in somewhat different ways. It generally encourages the transition to first marriage. In the case of nonmarital cohabitation, employment also enhances its formation (Oppenheimer 2003; Sassler and Goldscheider 1997; Turcotte and Goldscheider 1998; Wu 2000), but the association between them is generally weaker than that with marriage (Clarkberg 1999; Kravdal 1999). Further, the importance of men's employment has increased over time, even though their employment is no longer the only economic source in the independent household (e.g., Ravanera et al. 2002). In addition, given that education is considered to predict long-term economic prospects (Oppenheimer 1988), educational attainment and school enrolment usually appear in the models, accompanying employment, and affect the transition to first union significantly.

3.5 Limitations of Previous Studies

Without any doubt, these earlier studies advance our knowledge of men's union behavior. Nevertheless, they have several limitations in their analytical procedures, which point out aspects that need improvement in the current and future studies.

The first limitation lies in the research emphasis. Most of these works describe how men's economic prospect links with the transition to either marriage or cohabitation individually. Only a few of them examine both types of first union in a single analysis (Clarkberg 1999; Oppenheimer 2003; Sassler and Goldscheider 1997; Turcotte and Goldscheider 1998). However, as Bumpass and his colleagues (1989) point out, ignorance of cohabitation will miss a lot of stories as it is a competing "risk" of marriage.

Therefore, it is important to know to what extent work affects men's decision to enter both first marriage and cohabitation. This forms the main task of my study.

The other limitation is the insufficiency of direct study on Canadian men's first union transition. Most available empirical studies have been conducted in the United States, and present a comparatively clear picture of American men's first union formation. But research directly focusing on the relation of work to Canadian men's first union is insufficient. It is thus difficult to tell whether those mechanisms affecting first union formation in the United States apply in Canada. Moreover, relatively little is known about the differences in the formation of first union between Quebec men and other Canadian men, even though the regional differences affect the overall trends in first union formation.

With the aid of the GSS-95, the current study intends to bridge the research gap by discussing the transition into first union in terms of men's employment and regional differences. Compared to available Canadian studies (Turcotte and Goldscheider's study in particular), the current study examines more recent processes of first union formation for Canadian men by placing the direct emphasis on their economic capacity.

3.6 Summary

In this chapter, I reviewed previous research on the relation of economic capacity, employment in particular, to first union formation. Generally consistent conclusions have been reached from the studies conducted in Europe, the United States and Canada. Men's employment, no matter how it is measured, is found to have influenced and continues to determine men's economic affordability and their transition to first union. Also, I pointed

out the limitations involved in previous studies. This study is designed to overcome these limitations.

In the next chapter, I develop a theoretical framework relying on male-oriented economic hypotheses of marriage formation for this study. They interpret the inner links leading to the formation of first union and guide the subsequent empirical analysis.

CHAPTER FOUR

THEORETICAL FRAMEWORK AND HYPOTHESES

For years, many researchers have been actively seeking the underlying forces behind the formation of demographic behaviors and associated changes (e.g., Becker 1981; Oppenheimer 1988, 1994). Economic reason has always been a crucial concern to both economists and sociologists. From Marshall to Becker, economists have applied an economic approach in studies on non-economic relationships, such as marriage formation, childbearing, and so on. They believe that economic interpretation efficiently explores those factors contributing greatly to the formation of first marriage (Becker 1981). From Hajnal to Oppenheimer, sociologists have made great efforts to understand the relationship between economic factors and nuptiality behaviour. They insist that economic factors have influenced individual's behavior and associated differentiation of family behavior. The male-oriented economic arguments will continue to contribute significantly to understanding the changes in marriage formation (Oppenheimer 2000).

Primarily relying on male-oriented economic interpretations, I provide theoretical background of first union formation to guide my empirical analysis. These theories and arguments account for the link of economic factors with first union formation and its recent transformation from early and universal marriage. Although these arguments are principally used to interpret the formation of first marriage, they are applicable to the study on nonmarital cohabitation, given that these two share more similarities than differences (Wu 2000).

This chapter is divided into six sections: (1) Becker's economic theory of marriage, (2) Oppenheimer's critique (of Becker's hypothesis of women's economic independence), (3) theoretical framework of the study, (4) hypotheses for the study, (5) other determinants of first union formation, and (6) summary.

4.1 Becker's Economic Theory of Marriage

Becker (1981) pioneered the study on marriage formation by applying an economic approach and developed the theory of gain to marriage. He also extended his theory to interpret the influence of women's economic independence over marriage formation, fertility, divorce and remarriage. "Gain to marriage" is the central point in Becker's economic analysis of marital behavior. He explores the source of gain to marriage, how it plays a role in the formation of marriage, the reasons why it changes and how these changes affect first marriage transition. This section introduces Becker's theory of the formation of first marriage and derived "economic independence" hypothesis.

4.1.1 Gain to Marriage

Borrowing basic concepts and an analytical framework from international trade theory, Becker (1981) presents his theory that gain to marriage determines individual's marital behavior. In Becker's theory, single men and women are treated as potential trading partners and are assumed to maximize their respective gain from the trade (marriage). They will enter into marriage only if they are provided with more gain from the marriage than from remaining single. The gain from marriage is derived from not

only goods and services available in the market, but those in the household, such as children, prestige, recreation, companionship, love, and health status.

Becker (1981) regards economies of scale and gender division of labor associated with comparative advantage as two major sources of gain to marriage. Economies of scale can be realized through sharing households, joint production and consumption. As for the gender division of labor, it is determined by the comparative advantage resulting from differences in biology and investment in human capital between women and men in the marital relationship. Becker believes that women and men hold comparative advantage in home production and market activities, respectively. Gender division of labor thus requires individuals only allocate their time and energy to the sector that in which they have comparative advantage. According to this principle, married women specialize in domestic activities (e.g., childbearing, childrearing and other production in the home), while married men devote their time to market activities (e.g., food, clothing and so on). Women will exchange their time and products in home production for men's time and goods (e.g., income) in market activities. In this respect, the gender division of labor brings about specialization and trade within marriage, a way of improving the gain from marriage for married couples.

Following this logic, women need to make good use of their comparative advantage by specializing in domestic production, and men in the market outside the household. This gender division of labor thereby characterizes the traditional marriage pattern[13] and produces an efficient household with maximized gain from marriage for men and women.

4.1.2 Women's Economic Independence Hypothesis

As described in Becker's theory, gain to marriage is the crucial point in marriage formation. It also provides a tool to interpret the changes of first union behavior over the last decades of the twentieth century.

From Becker's point of view, change in the economic system necessarily leads to changes in the family formation and relevant demographic behaviors. He (1981) accordingly attributes the postwar changes in marital behavior to women's economic independence in the labor market. When women receive better education, they acquire more employment opportunities in the labor market, improve their earning capability and achieve economic independence. As a result, the difference in wage rate between men and women is reduced, which renders men's income less essential in the marriage. Consequently, women become less motivated to devote their time and energy to household production exclusively, due to the growing value of their time. Meanwhile, women's involvement in the labor market increases the opportunity cost of having children, which discourages women from bearing children and directly reduces an important marital-specific gain from marriage. Therefore, women's economic independence lowers the comparative advantage of men over women in market activities, undermines the principle of gender division of labor in the marriage, reduces associated gain from marriage, and has a negative influence on the formation of marriage. In short, Becker (1981) concludes that "the gain from marriage is reduced by a rise in the earnings and labor force participation of women and by a fall in fertility because a gender division of labor becomes less advantageous" (248).

4.2 Oppenheimer's Critique

Becker's theory explains marriage formation and its change from the perspective of gain to marriage. He insists that a reduced gain from marriage makes marriage a less favorable choice. Oppenheimer (1988, 1994, 1997) disagrees, and challenges his theory from both conceptual and empirical aspects. She also presents an alternative explanation for recent trends in marriage formation.

To begin with the conceptual issue, Oppenheimer (1994, 1997) believes that Becker's theory primarily accounts for *nonmarriage* rather than *delayed marriage*, while the latter greatly affects the formation of marriage. Although the two demographic trends are related due to their influences over the decline in marriage rate, they are not identical. Becker holds that women's economic independence decreases their motivation for marriage because it weakens the foundation of gender division of labor in the marital relationship, and thus reduces the main source of gain from marriage. However, Oppenheimer holds that for women, marriage is no longer the only available option, a situation which obviously provides evidence for *nonmarriage* instead of *delayed marriage*. In this sense, Becker's explanation answers why individuals want to marry, rather than when. Therefore, the interpretation from the perspective of women's increased economic independence leaves reasons for the decline of marriage and thus the change of marriage formation unexplained.

Secondly, Oppenheimer (1997) maintains that Becker's hypothesis of women's economic independence fails on the basis of empirical evidence. Economic independence is usually measured by educational achievement, employment and the level of income. If this is true, Becker's hypothesis is challenged by empirical analyses. Empirical evidence

suggests that women with higher levels of these attributes usually hold an advantageous position in the marriage market, which exhibits an either positive or non-existing impact on the formation of marriage (e.g., Oppenheimer 1994). Hence, women's labor force participation has a mixed effect on marriage formation and its changing pattern. Oppenheimer (1994) further proposes that the crucial purpose of demographic study is not to merely detect "an independent effect" (315) of influential factors but to track forces behind the demographic phenomenon. Judging by this criterion, the independence hypothesis fails to present a convincing explanation for the recent changes in marriage patterns (315).

Finally, Oppenheimer (1988) argues that the study of nuptiality has historically been male-oriented, which implies that it is men's, rather than women's, economic status that plays a decisive role in marriage formation and its change. In this sense, recent changes in marriage formation should mostly be traced to men's economic opportunity in the labor market, "just as they have always been" (Oppenheimer 1988: 582). Within the same period in which women acquire economic independence, men have experienced considerable difficulties in the labor market, mainly illustrated by a less advantageous position and a difficult career development. As a result, men have difficulties or at least take a longer time to meet the material basis of marriage to establish and support an independent household at an acceptable level of living (ibid. 1994). From this perspective, men's economic status and its change might tell much about the trend in marriage decline and formation.

By addressing these points, Oppenheimer shifts her research attention to men's position in the labor market and examines its impact on their behavior in the marriage

market because men's economic status was a central concern in marriage formation historically, holding the other elements constant (Dixon 1978; Hajnal 1965), and it continues its role in present-day society (e.g., Goldscheider and Waite 1986; Oppenheimer 1994, 1997, 2003; Ravanera et al. 2002; Turcotte and Goldscheider 1998).

4.3 Theoretical Framework of the Study

As in other family behaviors, first union formation represents the impact of economic status and the response to changes in economic conditions. This study focuses on the role of economic forces in first union formation and specifically discusses how employment status can affect the pathways leading to marriage and nonmarital cohabitation in Canada. The core proposition of my theoretical framework is that men's economic capacity, specifically employment, is a crucial and indispensable factor determining the formation of first union.

4.3.1 Economic Perspective of Marriage Formation

Historically, marriage, by definition, implies that men undertake the adult economic role of financially supporting their wives and children. As Hajnal (1965) pointed out, "marriage means roughly the entry into a union which is regarded as appropriate for the bearing and rearing of children in the society in question" (105). From this perspective, marriage includes an implicit expectation of the couple's economic resources. Hermalin and van de Walle (1978) support this notion, arguing that "they [men and women] need a material basis for marriage, which includes a place to live and a means of livelihood. It follows logically that they *will* get married, provided dwellings

and jobs are available" (80).

In the stereotypical single-earner marriage, it is the man who works as "breadwinner" (Davis 1984) and establishes the economic basis for the household.[14] In contemporary dual-earner marriage, men are no longer the only economic provider since women have acquired more working opportunities and realized economic independence. However, unchanged over time is the importance of men's economic position in the process of mate selection. Generally speaking, the formation of marriage is largely determined by men's transition to an independent economic position, realized either through taking advantage of the structure of the household or through developing their capacity in market work. In the following sections, I will discuss how the above links are established.

4.3.1.1 Structure of Household and Marriage Formation

It is believed that marriage formation is significantly affected by the structure of the household in society (Hajnal 1965). This notion implies that differences in the structure of the household can lead to different ways that young men access economic resources and obtain the material basis for entry into marriage. Within the joint family system,[15] young men can marry without leaving their parents' household, and thus share the household, and require less of a material basis for an easy and fast marriage transition. In the stem family system,[16] the eldest son has the privilege of inheriting family land (or other property), staying in his parent's household, and thus marrying earlier than any other child in the family. In this sense, marriage can be facilitated in the above family systems. However, outside these family systems, young men must leave the

parental household, and set up their own independent household once they marry. They accordingly have to acquire the necessary economic capacity to afford "a certain standard of living," which is largely determined by the social class they belong to, for their future independent household (Hajnal 1965:133). Therefore, the economic status of young men is an influential element in the formation of marriage.

Eighteenth-century Europe offers a historic illustration of how the noted mechanism works. According to European social norms of the time, a man was generally required to set up his own independent household when he entered marriage, which implies that "a man should have a living before he marries" (Hajnal 1965: 123). Young men would not only "maximize the productive capability without the responsibility of children" (ibid. 1965: 132), but also save money. The time necessary to accumulate wealth delayed the timing of marriage, and formed a late marriage pattern in Europe.[17]

In brief, household structure affects the formation of marriage by setting the ways to meet material requirements for marriage. For those men in the joint or stem family systems, obtaining family property (e. g., land, farm or other property) is a common way to acquire economic affordability for the marriage. For those who have no access to economic security from their family system, employment is the only path to obtaining economic resources for their independent household. Following the principles of Western culture, young people are usually expected to leave their parents' household and settle in their own independent household. Employment thus functions as the most important tool to achieve this goal. In the next section, I will specifically explore how employment structures the transition to marriage in men's life.

4.3.1.2 Employment and Marriage Formation

As noted, employment has become nearly the sole means by which men can achieve economic independence and start their independent household. This statement remains valid even though women have an increased participation in the labor market.

Men's work has demonstrated its crucial importance in the formation of marriage, in spite of differences in the availability and type of work opportunities. In the preindustrial era, work was restricted to the farmland. For instance, in the Middle Ages, a man's path to marriage was described as follows: "a man should first build a house, then plant a vineyard and after that marry" (Cohen 1932: 171). Agricultural opportunity was accordingly an important determinant in the timing and prevalence of marriage (Landale 1989). Later, with the emergence of the industrial economy, the choice of work expanded from land to cottage, workshop and early factory. As recorded by Hajnal (1965) in his study on the pattern of marriage in Europe, "they [men] have to wait [to get married] until they have a livelihood, a farmer till he acquires land, an apprentice till he finishes his apprenticeship and so on" (133). In the early stages of the industrial economy, job opportunities in the factory had a substantial impact on the chances of marriage. For instance, due to a shortage of jobs, many men in Ireland in the late nineteenth century had to forego marriage. In sharp contrast, most Japanese men in the same period of time had the chance to work in factories and eventually marry, even though the time they spent on work and saving money delayed the timing of marriage. With the development of the industrial economy, various jobs were available, and to a great extent, this allowed men to accumulate the economic resources necessary to an attractive partner in the marriage market.

In modern industrial society, employment has an increasing importance in the formation of marriage through influencing the process of assortative mate selection. Oppenheimer (1988) argues that there are two ways to form a good match: assortative mating and postmarital adaptive socialization. Since postmarital socialization has declined in importance as men are no longer the only economic source in the family, assortative mating has gained an increasingly important role in making a good match. Assortative mating is affected by the degree of uncertainty about the economic characteristics of a potential partner. In an industrial society, uncertainty mainly derives from the male ability to acquire a steady job, as that employment opportunity significantly determines the couple's socioeconomic position and lifestyle.

Oppenheimer and her colleagues (1997) proposes that the process of career development affects the formation of marriage by relating career transition to that of marriage, and develops the concept of "career maturity" to characterize the process of career transition. The process of career development implies a change from career immaturity to career maturity, concomitant with increased economic capacity in the labor market and status in the marriage market. In the early stages of career development, young men usually have not yet acquired stable employment, which signals great difficulty and immaturity in career transition. As the career develops, the degree of stability increases gradually, resulting in a shift from career immaturity to career maturity. Generally speaking, the transition to a stable job represents the realization of career maturity. Career maturity signifies an easy career development, whereas career immaturity is associated with a difficult career transition.

The nature of career transition is usually decisive in determining the degree of

uncertainty about men's eligibility as a potential partner and chances in the marriage market. A successful transition to stable employment can significantly decrease uncertainty about a potential partner. Conversely, a difficult career transition always casts considerable uncertainty on men and causes women to doubt their partner's willingness and capacity of committing to the marital relationship. Therefore, if the process of career transition is long and difficult, one would expect a prolonged process of assortative mate selection and a difficult marriage transition. Consequently, in the process of career development, the nature and timing of career transition can be used to justify the economic security that men are able to provide for the future independent household, and become a central indicator of the pace and process of assortative mating, as well as the possibility and timing of marriage formation indirectly (Oppenheimer et al. 1997).

In short, regardless of changes in marriage patterns characterized by the switch from "breadwinner" to dual-earner family, employment still signals men's economic capacity for marriage and has exhibited a strong positive effect on marriage formation. This situation is independent of the progress in the economic system and marriage pattern in society. In a society dominated by Western cultural norms, lack of employment opportunity presents a barrier to forming marriage for men (Goldscheider and Waite 1986). On that account, the ability to obtain an employment opportunity determines the process of career transition for men and becomes a valuable predictor of marriage formation for men (Oppenheimer 1988, 1997).

4.3.2 Economic Perspective of Nonmarital Cohabitation Formation

Nonmarital cohabitation, also known as common-law union in Canada, refers to

"opposite-sex couples who choose to live together in a family setting without being legally married" (Wu 2000: 1). It is a competing "risk" of marriage, since it accounts for a significant proportion of first union in the present day. On the one hand, compared to marriage, cohabitation generally appears as a short-term intimate relationship and is accordingly viewed as an extended courtship leading to marriage (e.g. Bumpass and Lu 2000; Bumpass, Sweet and Cherlin 1991). On the other hand, cohabitation has gradually evolved to be "not necessarily a middle category" between singlehood and marriage (Clarkberg 1999: 962) and is considered as an alternative to marriage, especially in Canadian conjugal life (e.g., Wu 2000).

Empirical evidence suggests that cohabitation, as the competing "risk" of first union aside from first marriage, is both like and unlike marriage. It resembles marriage as it allows cohabitors to access the benefits of marriage through shared household and pooled resources. In this way cohabitors achieve economy of scale, an important source of gain to marriage (Becker 1981). However, cohabitation is unlike marriage in the sense that it keeps the benefits associated with single life. Cohabitors can enjoy union life without a serious and assumed long-term commitment to the union and to the financial and legal duties associated with marriage. Hence, cohabitation offers a route to enter the marital role and enjoy its benefits for those individuals who fail to meet the economic requirements for marriage (who currently lack career maturity or who experience a slow and difficult career transition) (e.g., Oppenheimer 1988, 1997, 2003). It can be expected that cohabitation may not impose the same level of requirement on young men's economic resources as marriage does. Although marital and cohabiting unions are two competing "risks" of first union, they share more commonalities than differences (Wu

2000). Since there are no solid theoretical interpretations for the mechanism of cohabitation, I analyze the formation of cohabitation and marriage within the same analytical framework.

Following this line of reasoning, the massive growth of cohabitation may result from the absence of economic security that young men are able to provide for their future independent household. This can be traced to the change of economic position in the labor market. In this respect, young adult men's declining opportunity for employment not only hinders marriage transition, but also results in the preference for cohabitation. Consequently, the surge of cohabitation is "an adaptive strategy" responding directly to young men's difficulty in the labor market (Oppenheimer 2003: 127).

4.4 Hypotheses for the Study

Clearly, the male-oriented economic interpretation offers an effective tool to ascertain employment effect on the formation of first union for men. Relying on the theoretical paradigm, I intend to test two hypotheses in this empirical study.

Hypothesis1: I hypothesize that employment plays an important role in the formation of first marriage and it facilitates the transition to first marriage.

Hypothesis2: I hypothesize that employment plays an important role in the formation of first cohabitation and it facilitates the entry into first cohabitation.

My empirical study is conducted in several steps. First, I test the first hypothesis with a purpose to determining whether being employed has a significant impact on the formation of first marriage. In the second step, a similar analytical mode is applied to test the second hypothesis, exploring whether being employed enhances the entry into

cohabitation. In the following step, I also look at the effect of employment on first union formation by treating marriage and cohabitation the same in the analysis. Finally, I put emphasis on the regional analysis to see whether and how employment influences the transition to first union in Quebec distinctively from the rest of Canada.

4.5 Other Determinants of First Union Formation

Entering first union, either marriage or cohabitation, involves a complicated decision-making process influenced by a number of factors. These elements are known either theoretically or empirically to affect first union formation in various ways and to different extents. I regard education and school enrolment as employment-related factors interrelated with employment and subsequent economic propensity. Meanwhile, I include three sets of variables in the analysis: cultural variables, demographic variables, and family background variables.

4.5.1 Employment-Related Factors

Oppenheimer (1988) points out that the economic concern within the formation of marriage includes the attention paid to both the current and future economic status of young men. Current employment is usually considered as a sign of young men's present economic position, whereas educational attainment a long-term economic perspective. Educational attainment, basically implying "the accumulation of information, skills, and occupational credentials gained in school" (Thornton, Axinn and Teachman 1995: 764), strongly determines employment and economic success in the labor market. In the case of marriage, the long-term expectation is of special importance because marriage is

supposed to be a life-long commitment. In this sense, educational attainment, as an outcome of human capital investment, closely relates to labor-market position and helps reduce uncertainty about the future partner's economic attributes in the process of assortative mate selection (Oppenheimer 1988). Consequently, it plays a crucial role in predicting men's career development in the labor market and marriage transition in the marriage market as well. Its impact on marriage might vary by the level of education. A higher level of educational attainment is generally associated with an easier and faster career transition and marriage formation (Oppenheimer et al. 1997).

Also, school enrolment is treated as an employment-related factor in the analysis. While educational attainment signifies the achievement of education, school enrolment is the process by which education is acquired. In contrast to educational attainment, school enrolment partly represents career immaturity (ibid. 1997: 314). It has been universally found to be negatively connected with the timing of marriage due to "role incompatibility" and the high opportunity cost of dropping out of school (Thornton et al. 1995). Marriage frequently signifies an adult role, which requires not only substantial economic independence from parents but the commitment of time and energy to a partner or even children. Nevertheless, school attendance implicitly represents a student role, which is characterized by financial dependence on their parents as well as the devotion to demanding study. On that account, it is obvious that the role of student conflicts with that of husband or wife or parent in family life (ibid. 1995: 763). Further, school enrolment helps individuals accumulate knowledge for steady employment and an acceptable level of living in the future, which implies a high opportunity cost of quitting school for marriage.

In the case of cohabitation, Thornton and his colleagues (1995) theorize a similar effect of educational attainment as in marriage, while to a smaller extent. But empirical results suggest that educational attainment affects marriage and cohabitation in opposite ways. On the one hand, a higher level of education increases the probability of marriage (Goldscheider and Waite 1986; Teachman et al. 1987; ibid.). On the other hand, it decreases the occurrence of cohabitation (Bumpass et al. 1991; Rindfuss and Vandenheuvel 1990; ibid.). However, Canadian studies indicate that highly educated men are more likely to cohabit with the partner, although this effect is not significant. Consequently, the effect of educational attainment is not empirically straightforward in the transition to cohabitation (Turcotte and Goldscheider 1998; Wu 2000).

Thornton and his colleagues (1995) believe that school attendance is also not compatible with cohabitation, given that it resembles marriage in many aspects. But school enrolment is expected to have a weaker effect on the formation of cohabitation than on marriage, considering the difference between the two types of first union and a comparatively lower opportunity cost of cohabitation. In this sense, school attendance is more likely to match with a cohabiting relationship. Therefore, although school enrolment impedes the formation of first union, both marriage and cohabitation, this effect is stronger on marriage transition than on cohabitation. This effect has been showed for both sexes in previous research in Canada (e.g., Turcotte and Goldscheider 1998; Wu 2000).

Additionally, Oppenheimer and her colleagues (1997) propose that educational attainment plays a dual role in marriage formation since it largely decides not only the current but long-term position in the labor market. A lower level of education often

appears with a less advantageous labor market position, while a higher level of education combines with a better labor market position. Hence, educational attainment predicts and goes along with labor-market position to produce a collaborative effect on the process of marriage formation. I reason that there probably exists an interaction effect between educational attainment and employment status. As a result, I expect that the effect of employment on marriage depends on the level of educational attainment. More specifically, employed men with higher levels of education are more likely to marry than employed men with lower levels of education. In the case of cohabitation, I also expect that the effect of employment may vary by the level of educational attainment. In other words, employed men with lower levels of educational attainment are more inclined to enter cohabiting relationships than employed men with higher levels of education. Therefore, the interaction term is negatively related to cohabitation, although it is found nonsignificant in some cases (e.g., Blom 1994).

4.5.2 Cultural Variables

I employ three variables: religion, geographic region and nativity, to capture cultural effects. Religion has long been considered as a subcultural dimension (Hogan 1978) and to be associated with many facets of family behavior through the teaching and influence of religious codes. It is observed to have a significant effect on the type and timing of first union. As an example, despite revisions of its doctrine over time, the Catholic church upholds such views as "marriage is a sacrament; only within marriage can sanctioned gender expression take place; artificial means of contraception and remarriage are forbidden; Catholics should postpone the initiation of gender relations";

and so on (Thornton, Axinn and Hill 1992: 629-630). Obeying these principles, Catholics always have a late marriage after searching for a mate intensively, and are less attracted to nonmarital cohabitation. Other religions, such as Protestant, exhibit a similar attitude toward union formation and the other family behaviors (Thornton, Axinn and Hill 1992). In both Canadian and American studies, women with religious faith are more likely to marry and less likely to cohabit, compared to those who do not declare any religious connections. Conversely, religious affiliation shows a nonsignificant or very limited impact on men's decision to either marry or cohabit (Goldscheider and Waite 1986; Pollard and Wu 1998; Thornton et al. 1992; Wu 2000).

Both nuptiality and fertility behaviors are found to vary by geographic region (Coale and Watkins 1986; Hajnal 1965). The geographic region is therefore considered as "a proxy for aspects of the cultural system not explained by other cultural elements" (Pollard and Wu 1998: 350) influencing the process of union formation. Further, regional differences are largely due to variations in cultural elements. In Canada, since "English-French dualism" is the most distinctive characteristic of Canadian history (Beaujot and McQuillan 1982), it also leads to the divergence of Quebec from the rest of Canada in union formation behavior. Previous analyses suggest that for both sexes, Quebec residents prefer cohabitation to marriage more than Canadians outside Quebec (Wu 2000). Quebec women have a significantly lower chance of forming a marital union than those who live in the rest of Canada (Pollard and Wu 1998). This distinct pattern of union behavior addresses the importance of exploring regional effect by not only treating it as an explanatory variable in the model, but comparing the process of first union between Quebec men and other Canadian men.

Immigration status also plays an important role in the entry into first union, not only because immigration itself brings about a temporary disruption of life transition (Hogan 1978) but because immigrants are faced with a new environment, and both of these circumstances may influence union behaviors of immigrants (Landale 1994). In the case of Canada, empirical evidence suggests that foreign-born Canadians are less likely to cohabit because they carry "different cultural expectations and behaviors than those they found in Canada" (Turcotte and Goldscheider 1998: 159). Meanwhile, they are more likely to delay their transition to marriage (Wu 1999).

4.5.3 Demographic Variables

Two demographic aspects are controlled in this study: birth cohort and children. Union formation behavior always varies by birth cohort (e.g., Burch and Madan 1986). Prior studies show that the cohort difference is always significant between the oldest and youngest cohorts in Canada. Cohabitation is negatively associated with birth cohort and recent cohorts are more likely to select cohabitation instead of marriage as their first union (Ravanera et al. 2002; Turcotte and Goldscheider 1998).

Pre-union children are also found to affect the process of first union.[18] On the one hand, a pre-union child may reduce the desirability of marriage, given the perceived economic and social burden of raising an out-of-wedlock child. On the other hand, the presence of a child may increase the likelihood of marriage for those men who expect "instant parenthood" (Bennett, Bloom and Miller 1995: 48). This case especially applies in Canada. In the case of cohabitation, the effect of a pre-union child is both positive and negative (Bennett, Bloom and Miller 1995; Nock 1998). Studies reveal that the presence

of a pre-union child increases the likelihood of both first marriage and cohabitation. This effect is stronger in marriage formation than that of cohabitation and significant for both sexes. It also exhibits an increasing importance in men's union formation over time. A similar effect of pre-union pregnancy is also documented to speed the entry into first union for both sexes (Pollard and Wu 1998; Turcotte and Goldscheider 1998; Wu 2000).

4.5.4 Family Background Variables

Since family is a central agent in the process of socialization, family origin is expected to have an influential impact on young people's union formation. I include three variables—intact family, number of siblings, and a happy childhood—in this analysis. Growing up in a family with both parents, known as "an intact family structure," may increase individuals' chances of marriage because they are more inclined to cultivate a positive attitude toward the institution of marriage (Goldscheider and Waite 1986; Sassler and Schoen 1999; South 2001). But this effect is not significant for American men (Clarkberg 1999; Goldscheider and Waite 1986). With regard to the transition of nonmarital cohabitation, this effect is completely reversed. An intact family experience significantly reduces the "risk" of cohabitation for both sexes (Clarkberg 1999; Thornton et al. 1992). In Canada, intact family structure influences Canadian's union formation in a somewhat different way. Empirical evidence shows that intact family experience plays a significant role in the decision of cohabitation among Canadian women; while it slightly, but not significantly, reduces men's preference for cohabitation (Wu 2000). Moreover, the impact of family structure is not observed in Canadian women's marriage formation (Pollard and Wu 1998).

Similarly, the number of siblings is expected to positively relate to the entry into marriage because having more siblings lowers the economic resources available per person in the family and increases the desirability of marriage and parenthood (Michael and Tuma 1985). However, sibling structure gradually has a very limited effect on the entry into first union, either marriage or cohabitation (Pollard and Wu 1998; Turcotte and Goldscheider 1998; Wu 2000).

Finally, the variable of having a happy childhood has recently been found empirically to account for part of the difference in the probability of cohabitation in Canada: having a happy childhood reduces the occurrence of cohabiting relationship among Canadian men significantly (Wu 2000). But there is little knowledge of its effect on the marriage formation for men.

4.6 Summary

In this chapter, I first developed a theoretical background for this study, mainly based on male-oriented economic arguments. Then I proposed hypotheses: simply put, I hypothesized that men's employment facilitates the transition to both first marriage and first cohabitation. In the last section, I discussed the influences of several other factors, which are known to affect men's decision-making and are thereby included as explanatory variables in statistical analyses.

After setting up the male-oriented theoretical framework, I move on to the procedure of data analysis. In the next chapter, I introduce the data set, statistical method and analytical strategy employed in statistical analyses.

CHAPTER FIVE

DATA AND METHODS

In this chapter, I discuss analytical tools and strategy used in my study. The six sections consist of: (1) data, (2) study sample, (3) variables, (4) statistical method, (5) modeling strategy, and (6) summary. The first section outlines the structure and advantages of the data set used in this study, the second deals with the selection of the study sample, the third discusses variables involved in the analysis, and their measurements as well. The fourth section introduces the statistical method used to conduct data analysis, and the fifth shows the modeling strategy, which includes the design and purpose of statistical models. In the sixth and final section, I summarize this chapter.

5.1 Data

Data for this study are obtained from the 1995 General Social Survey, Cycle 10: The Family (GSS-95). GSS-95 is the tenth cycle of General Social Survey, conducted by the Housing, Family and Social Statistics Division of Statistics Canada in 1995. It includes a nationally representative sample of 10,749 people, 5,914 women and 4,835 men aged 15 and older. It covers information on family behaviour and marital histories (both marriage and common-law union), work interruptions, family origins, children, and value and attitudes. This survey excludes residents of Yukon and Northwest Territories, and full-time institutionalized residents. Data were collected through telephone interviews with an overall response rate of 81%.

GSS-95 is composed of three separate data files: main file, union file and child file, each with a specific focus. The main file includes information on the respondent's demographic, socioeconomic, family and personal characteristics, and household characteristics. The child file has information of all children that the respondent ever had. The union file only includes those respondents who report having experienced at least one union by the time of the survey. It contains a complete history of the respondent's union life by creating one record for each union that the respondent has reported. Up to seven unions were recorded. It presents such information as age at the start and dissolution of each union, the type of each union and the transition from common-law to marriage. Considering the emphasis of my research problem, I combined the three separate data files in order to obtain all necessary information for the sample in my study.

GSS-95 focuses on family behaviors and is the best source of data available for my study for several reasons. First, GSS-95 provides retrospective data, which are compatible with the statistical technique (survival analysis) used in my study. Second, GSS-95 has detailed information on first union transition and relevant variables, which endorses the necessary information to my research focus. Combining information on the rank of union, type of first union and age at first union, I can ensure only first marriage and first cohabitation have been included in the statistical models. Finally, GSS-95 records the respondent's employment history, which makes it possible to model the role of men's employment at the occurrence of first union. It documents the respondent's work interruptions, up to four times, with the starting time of each work interruption as well as its duration. For these reasons, GSS-95 provides data matching my research problem and statistical analysis.

5.2 Study Sample

Since my research problem focuses on the recent changes in first union formation, the study sample includes respondents who are not older than 45 years old at the time of 1995 survey. The population at "risk" is composed of Canadian men who have been in either type of first union (marriage or cohabitation), or who remain single at the time of survey. With the above restrictions, the study sample includes 2,886 Canadian men aged between 15 and 45 years. The selection of the study sample and its relevant issues are discussed in the rest of current section.

I selected respondents under age 45 as the population at "risk", determined by both referring to the practice of previous studies on union formation and considering the emphasis of my research problem. For instance, Wu (2000) selects respondents under age 35 in his examination of cohabiting union in Canada because cohabitation is more likely to be an option among young generations. But this age is too young to apply to a study on marriage formation. Pollard and Wu (1998) use age 40 as the censoring time in their study on women's marriage formation. However, in my analysis, men are the exclusive emphasis, and they normally get married at an older age than women. For example, the difference in the mean age at first marriage between men (27 in 1986 and 29.3 in 1996) and women (24.8 in 1986 and 27.3 in 1996) was around 2 years between 1986 and 1996 (Statistics Canada 1999: 10). It is therefore reasonable to choose men under age 45 as my target population to ensure a significant proportion of cases is included.

This study encompasses both uncensored and censored data in statistical analyses. The exposure time is calculated from age 15 until the time of the event occurrence or age at the time of survey. If a man enters either first marriage or first cohabitation within his

exposure time, he is removed from the population at "risk" and becomes an uncensored case. Otherwise, the respondent is treated as censored. The respondent is right-censored if he has not formed first union by the end of his exposure time. If a respondent enters either type of first union before age 15, he is left-censored and excluded from target population. According to GSS-95, 0.2% of Canadian men report that their first union occurred prior to age 15.

5.3 Variables

The dependent variable in this study is the "hazard" rate[19] of the event first union formation). It shows the hazard rate of first union of a particular individual at the beginning of each interval (month) during his exposure time.

The independent variable represents men's employment. It is a time-variant variable indicating current work status at the beginning of each interval (month) during exposure time. It is coded 1 for being employed and 0 for non-employed. Two important employment-related factors are educational attainment and school enrolment. Educational attainment is a time-invariant variable measured by the highest level of education completed by the respondents at the time of the survey. School enrolment is a time-variant variable coded with the same principle applied to employment status (see Table 1).

As noted, a number of factors are included to help examine the transition to first union. Here I introduce the variables used to capture the effects of those factors and their measures. The definition and descriptive statistics of all explanatory variables are listed in Table 1. Table 1 shows that the average level of educational attainment is some

Table 1. Definitions and Descriptive Statistics of Variables Used in the Analysis

Variable	Definition	Mean or Percentage[a]	S. D.
Employed[a]	Time-variant variable of current employment status (1 = yes, 0 = no)	58.54%	
Employment-related Variables			
Educational attainment	Continuous variable of highest level of education (in 10 levels, 1 = no schooling, ..., 10 = bachelor or higher)	6.21	2.64
School enrolment[a]	Time-variant variable of currently enrolment as a full-time student (1 = yes, 0 = no)	14.44%	
Cultural Variables			
Religion	Three dummy variables of respondent's religious affiliations		
Catholic	Dummy variable of Catholic (1 = yes, 0 = no)	43.84%	
Protestant	Dummy variable of Protestant (1 = yes, 0 = no)	27.48%	
Other religions	Dummy variable of other religions (1 = yes, 0 = no)	4.64%	
None	Reference category		
Geographic region	Dummy variable of province of residence (1 = Quebec, 0 = Non-Quebec)	24.98%	
Nativity	Dummy variable of nativity (1 = Canadian born, 0 = foreign born)	82.32%	
Demographic Variables			
Birth cohort	Two dummy variables of birth cohort		
1950-59	Dummy variable of birth in 1950-59 (1 = yes, 0 = no)	35.02%	
1960-69	Dummy variable of birth in 1960-69 (1 = yes, 0 = no)	35.13%	
1970-80	Reference category		
Pre-union child[a]	Time-variant variable of current presence of child (1 = yes, 0 = no)	5.13%	
Had a pregnant partner[a]	Time-variant variable of current pregnancy (1 = yes, 0 = no)	4.17%	

Continued			
Family Background			
Number of Siblings	Number of siblings respondent grew up with	2.89	2.38
Intact family	Respondent always lives with both parents until age 15 (1 = yes, 0 = no)	82.49%	
Had a happy childhood	Respondent had a happy childhood (1 = yes, 0 = no)	89.75%	
N (Unweighted)		2,886	

Note: S. D. = Standard Deviation.

[a] The percentage of time – variant variables is calculated from the person-month records; for time – invariant variables, this column includes their weighted means or percentage.

Source: The 1995 General Social Survey.

community college. Approximately 40% of men declare themselves Catholic, and 30% declare they are Protestants, and about 75% of the target population has some religious affiliations. Geographically, Quebec men account for 25% of the target population. A large proportion of the target population is born within Canada. Additionally, on average, men have grown up in a family with a couple of siblings. Over 80% of men report that they have experienced an intact family until the age of 15, and nearly 90% report that they had a happy childhood. In sum, Table 1 provides basic information on the target population pertaining to socioeconomic, cultural, demographic, and family background.

5.4 Statistical Method

Survival analysis is the statistical tool used in this study. In this section, I outline its advantages over other conventional methods used in demographic research, and two specific analytical techniques applied in my statistical modeling.

5.4.1 Survival Analysis

The technique of survival analysis is the most suitable tool for my empirical study. First, "survival analysis is frequently used with retrospective data"[20] (Allison 1995: 3), which is compatible with the data in my study. Second, compared to the ordinary least squares (OLS) regression, survival analysis focuses on an individual-level event and factors affecting the process of its occurrence. This satisfies the goal of this study, to explore how a set of factors influence individual's decision to either marry or cohabit. Third, compared to other conventional methods, survival analysis can include censored data in the model and produce consistent parameter estimations (ibid. 1995: 5).

This advantage allows me to combine all the information from censored and uncensored cases. It is a key point in a study on union behavior in the sense that this analysis can be carried out without waiting for the event having occurred to all respondents. Finally, survival analysis facilitates this study through its ability to estimate the effects of time-variant variables, whose values change over time. Therefore, I am able to treat employment and other variables, i.e., school enrolment, pre-union child, and had a pregnant partner, as time-variant variables and capture their effects on first union entry more precisely.

Two different methods in survival analysis are used in modeling the formation of first union. They are introduced in the next sections.

5.4.2 Life Table Techniques

Life table techniques are simple (descriptive) methods of survival analysis. They were applied first to estimate the "risk" of entering first union at the beginning of each interval (month) within the exposure period. Those men who enter either type of first union are exposed to the "risk" at each interval until the occurrence of first union. Those men who remain single are also exposed at each time interval. Based on this information, I can obtain the cumulative proportion of first union.

5.4.3 Proportional Hazard Model

Cox's proportional hazard model was applied to examine the effects of explanatory variables on the event in this study. This model is regarded as the most popular approach in survival (event history) analysis, widely used in "demographic

studies of marriage, childbirth, divorce, migration, job mobility, and the like" (Yamaguchi 1991: 101). Using a partial likelihood (PL) method for parameter estimation, Cox's model offers two significant characteristics that facilitate this study. One involves the nature or distribution of the time of event occurrence. In particular, this model allows for the analysis without specifying the distinguished function of the event. The other benefit of proportional hazard model lies in its ability in dealing with time-variant variables. It can assume time variance without specifying its form, as well as treat with a time-variant categorical variable without identifying its interaction effect.

The proportional hazard model takes the following form:

$$h_i(t) = \lambda_0(t) \cdot \exp\{\beta_1 \cdot x_{i1} + \ldots + \beta_k \cdot x_{ik}\}$$

where $h_i(t)$ is the hazard of individual *i* at time *t*, $\lambda_0(t)$ is the baseline hazard function, β is the coefficient of explanatory variable x examined in the model of individual *i*. $\beta_1 \ldots \beta_k$ are regression parameters showing the effect of explanatory variables.[21] I will do a transformation, $100 \times (e^{\beta} - 1)$, to β_k in order to present a more straightforward interpretation in the sense that the transformation reveals the change (increase or decrease) in the baseline hazard for each one unit change (increase or decrease) in explanatory variable x, holding other variables constant (Allison 1995).

5.5 Modeling Strategy

The statistical analyses comprise two stages. The first stage is straightforward, in which I computed life tables to describe the cumulative proportion of event at each interval (month) during the exposure time. The second stage is the core of statistical

analyses. A number of models were set up by adding different sets of explanatory variables to the statistical models.

In the second stage, I initially ran five models by considering Canada as a whole. I began with a simple regression analysis (model 1), which looked at the impact of employment status on the first union entry. According to Oppenheimer's theoretical arguments, model 2 focused on employment and its related factors, which added educational attainment and school enrolment to model 1. Models 3 and 4 replicated the first two models by adding all control variables into the equation. Model 5 was a full model that includes all explanatory variables of this study. Later, I added an interaction term to the full model with the purpose of examining a possible interaction effect between work and education in the process of first union. Finally, I conducted regional analysis by modeling union formation separately for Quebec men and other Canadian men. Only the results of the full model were presented and discussed in regional analysis.

In each stage of the analyses, I modeled not only the formation of first union in general, but also that of first marriage and first cohabitation separately. These two types of first union are two mutually exclusive ways to leave "singlehood," as the occurrence of either removes the individual from being exposed to the other (Balakrishnan et al. 1993). First, I focused on first marriage (cohabitation) by treating first cohabitation (marriage) as censoring. The occurrence of each "risk" here is associated with a particular process (Yamaguchi 1991: 168). Then, I treated two types of first union the same and modeled the occurrence of the generalized event that includes both competing "risks." It is assumed that these two competing "risks" share the same process in this step (ibid.). Following the above modeling strategy, a series of nested models were set up for each of

the processes of first marriage, first cohabitation and first union in general.

5.6 Summary

This chapter outlined the data set and statistical procedure used in my study. The retrospective data for this study were obtained from the 1995 General Social Survey (GSS-95). Survival analysis provides two effective tools, life table techniques and proportional hazard model, for the empirical analyses. Suggested by theoretical framework in chapter 4, a number of variables are included in different nested models in order to account for the process of first union among Canadian men between ages 15 and 45.

In chapter 6, I present results of the statistical models, examine the hypotheses developed in chapter 4, and discuss the findings of this study.

CHAPTER SIX

RESULTS

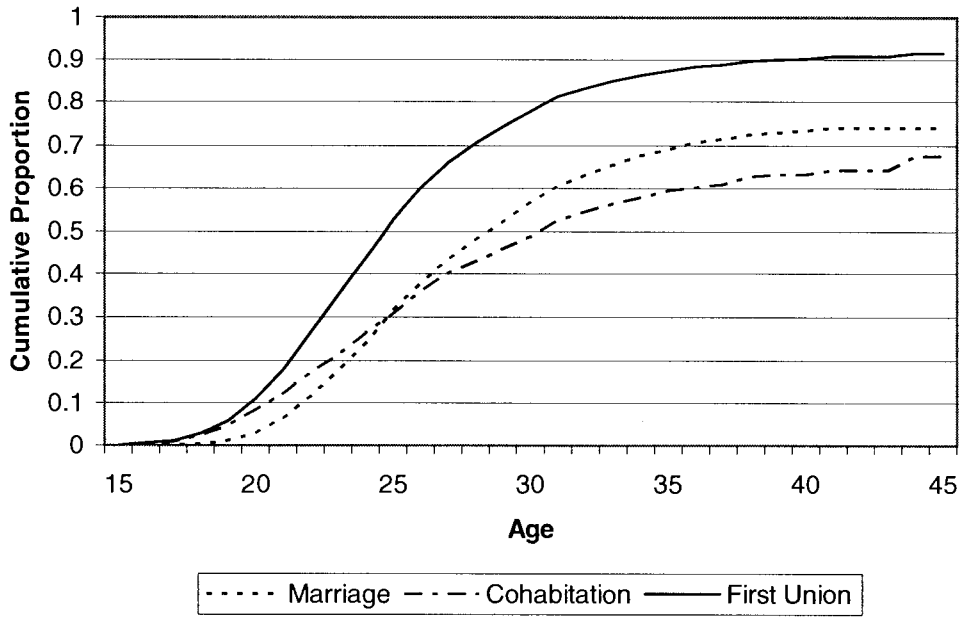
In this chapter, I outline the results of the statistical analyses. Four sections comprise this chapter: (1) life table estimates, (2) proportional hazard models, (3) regional differences, and (4) summary. The first section includes an overview of descriptive life table estimates (in figures) of the entry into first union, the second describes the pathways leading to first union by exploring how explanatory variables contribute to the transitions to first marriage, first cohabitation, and first union in general. With an emphasis on regional patterns, the third section compares the pace and process of first union between Quebec men and other Canadian men. In the fourth and final section, I summarize the results.

6.1 Life Table Estimates

In the first stage of the statistical analyses, I applied life table estimates to calculate the cumulative proportion of first union at each time interval (month). Figure 5 presents the changes in the cumulative proportion of ever had first marriage, cohabitation and first union in general by complete ages.[22]

I initially examine first marriage formation, treating cohabitation as a competing "risk" of marriage. Figure 5 shows that by age 20, only 3% of Canadian men enter first marriage. By age 25, one-third of them are in a marital union. By age 30, this indicator has a substantial growth and doubles the level at age 25. By age 35, the corresponding figure is nearly 70%, and increases little thereafter. It can be seen that the entry into

Figure 5. Life Table Estimates of Cumulative Proportion of First Union: Canadian Men Aged 15 - 45, 1995



Source: The 1995 General Social Survey.

marriage first goes up rapidly between age 20 and 30, then increases steadily after age 30, and finally changes little by age 35 and above.

Next, I look at entry into first cohabitation, treating marriage as a competing "risk" of cohabitation. By age 20, 8% of men are in a cohabiting union. By age 25, this indicator has jumped to one-third, reaching approximately the same level as first marriage. By age 30, nearly half of men have formed a cohabiting relationship. By age 35, this figure is up to 60%. Figure 5 indicates that the proportion of cohabitation is higher than that of marriage before age 25, and then lower as respondents get older. Obviously, this result echoes the trend that cohabitation is more prevalent among young adults (see chapter 1).

Finally, I treat first marriage and cohabitation as a single "risk" to see the transition to first union in general. Figure 5 shows that by age 20, approximately 10% of Canadian men are in either type of first union. By age 30, the comparable figure is 77%. By age 35, this figure is 90%, and remains at this level until age 45. Overall, the changes in the cumulative proportion of ever having first union resemble the pace of first marriage, but finally reach a higher level with the inclusion of cohabitation.

6.2 Proportional Hazard Models

Life table estimates present the pace and ultimate proportion of first union. But they do not depict how the process of first union is structured by employment and other explanatory factors. Therefore, my next task is to move to multivariate analysis, and employ proportional hazard estimates to model the trajectories of first union. Given that first marriage and first cohabitation are competing "risks" of first union, I realize that it is

necessary to look at the individual pathways leading to first marriage, first cohabitation, and first union in general. The results of proportional hazard models are summarized in Tables 2-4. Table 2 provides the estimates of the entry into first marriage, holding cohabitation as a competing "risk". Tables 3 and 4 include the results regarding the formation of first marriage and first cohabitation, respectively. In each of the tables, I first explore the effect of employment without controlling for the other variables except employment-related factors (model 1 and 2); then, starting with model 3, I re-estimate first two models by including other explanatory variables (model 3 and 4); finally, I add all explanatory variables (model 5). In all cases, model 5 is the best model fit to examine my research problem by improving all the other models significantly ($p < 0.001$).[23] My discussion therefore mainly focuses on the full model. Tables 2-4 also provide hazard ratio, the anti-log transformation (exp[β]) of each coefficient, in the full model for convenience of discussion. The hazard ratio is the ratio in hazard rate for a one unit change in variables. A value (exp[β]) greater than 1 means a rise in the hazard rate of first union, while a value less than 1 suggests a decline in the hazard rate. In the next step of analyses, I assess the possible interaction effect between employment and education. In the following four sections, I plan to discuss results of the above mentioned hazard models.

6.2.1 Transition to First Marriage

Table 2 includes the results of proportional hazard models of the transition to first marriage. Let us first look at the effect of employment status. In model 1, the hazard rate of first marriage is 150% ($100\times[e^{0.887}-1]$) higher for employed men than unemployed

Table 2. Proportional Hazard Models of Transition to First Marriage: Canadian Men Aged 15 - 45

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	exp[β]
Employed[a]						
Yes	0.887***	0.826***	0.823***		0.753***	2.124
No[b]						
Employment-related Variables						
Educational attainment		0.019***		0.029*	0.030*	1.031
School enrolment[a]						
Yes		-0.254***		-0.566***	-0.339***	0.712
No[b]						
Cultural Variables						
Religion						
Catholic			0.241*	0.294**	0.227*	1.255
Protestant			0.441***	0.468***	0.436***	1.547
Other religions			0.182	0.179	0.171	1.186
None[b]						
Geographic region						
Quebec			-0.332***	-0.373***	-0.326***	0.722
Non-Quebec[b]						
Nativity						
Canadian born			-0.212*	-0.092	-0.198*	0.820
Non-Canadian born[b]						
Demographic Variables						
Birth cohort						
1950-59			1.519***	1.648***	1.540***	4.666
1960-69			1.042***	1.123***	1.052***	2.863
1970-80[b]						

Continued						
Pre-union child[a]						
Yes			1.515***	1.486***	1.531***	4.625
No[b]						
Had a pregnant partner[a]						
Yes			2.811***	2.835***	2.808***	16.573
No[b]						
Family background						
Number of siblings			-0.008	-0.008	-0.003	0.997
Intact family						
Yes			0.093	0.053	0.063	1.065
No[b]						
Had a happy childhood						
Yes			0.131	0.232*	0.140	1.150
No[b]						
-2 Log Likelihood	10922.73	10913.84	10360.60	10440.01	10343.89	

Note: All dummy variables are coded as 1 = yes and 0 = no.
[a] Time – variant variables.
[b] Reference category.

* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$ (two-tailed test)

Source: The 1995 General Social Survey.

men. In model 5, being employed improves the hazard rate of first marriage by 112% ($100\times[e^{0.753}-1]$) after adding all the other explanatory variables in the model. Regardless of slight decline in the magnitude of the coefficient, employment status remains significant at the 0.001 level in model 5.

Next I focus on employment-related factors. In the full model, I find a significantly positive effect of educational attainment on marriage, with each one additional year of education increasing the hazard rate by 4%. For instance, men with a university education have a 3% higher hazard rate of first marriage than those with community college education. This positive effect is supportive of the notion that educational attainment is the predictor of long-term economic position which is a factor in marriage formation (Oppenheimer 1997). As to school enrolment, it exhibits a large and persistent effect on the marital formation. Model 5 shows that being a student reduces the hazard rate of marriage by 30%, compared to being a non-student. This effect is much weaker when the effects of other explanatory variables are removed (model 2).

Cultural variables are all found to relate to marriage significantly. Table 2 shows that the hazard rate of first marriage is 26% and 50% higher for Catholics and Protestants, respectively, compared to men with no religious affiliations. Generally speaking, these results are contrary to prior research which reports little effect of religion on the marital union for men. I also observe a significant difference in geographic region. Model 5 illustrates that Quebec men have a 30% lower hazard rate of marriage than other Canadian men. Moreover, Canadian-born men are more likely to delay marriage than foreign-born individuals.

Table 2 also indicates that demographic variables contribute to the entry into first

marriage significantly. The effect of birth cohort is highly significant, which indicates that the hazard rate of marriage rises as men get older ($p < 0.001$). The other two demographic variables are related to the presence of children, and they hasten the transition to marriage. For men with a pre-union child or having a pregnant partner, the hazard rate of first marriage increases significantly ($p < 0.001$). Finally, Table 2 provides no evidence of the impact of family background on marriage.

6.2.2 Transition to First Cohabitation

Table 3 reports the results of modeling the process of first cohabitation separately. As we can see, the hazard rate is 77% ($100\times[e^{0.572}-1]$) higher for employed men than their unemployed counterparts in the transition to cohabitation in the baseline model. When the other variables are controlled for, employment improves the hazard rate of cohabitation by 53% (see model 5). Similar to what we observed in the entry into first marriage, the effect of being employed declines in magnitude in the full model.

Turning to employment-related factors, I observe that both educational attainment and school enrolment relate to cohabitation negatively. Consistent with previous research, being a student lowers the hazard rate of cohabitation by one-third (e.g., Clarkberg 1999; Thornton et al. 1995; Turcotte and Goldscheider 1998; Wu 2000). However, the effect of educational achievement varies significantly by the inclusion of control variables. After removing the effects of other explanatory variables, model 2 shows that a higher educational attainment deters cohabitation significantly ($p < 0.001$). This result lends support for prior findings that cohabitation is a more preferred choice among individuals

Table 3. Proportional Hazard Models of Transition to First Cohabitation: Canadian Men Aged 15 - 45

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	exp[β]
Employed[a]						
Yes	0.572***	0.409***	0.536***		0.423***	1.526
No[b]						
Employment-related Variables						
Educational attainment		-0.056***		-0.022	-0.019	0.982
School enrolment[a]						
Yes		-0.310***		-0.442***	-0.295***	0.745
No[b]						
Cultural Variables						
Religion						
Catholic			-0.180*	-0.170[†]	-0.194*	0.823
Protestant			-0.260**	-0.262**	-0.266**	0.766
Other religions			-0.611*	-0.598*	-0.592*	0.553
None[b]						
Geographic region						
Quebec			0.662***	0.607***	0.633***	1.884
Non-Quebec[b]						
Nativity						
Canadian born			0.735***	0.808***	0.741***	2.098
Non-Canadian born[b]						
Demographic Variables						
Birth cohort						
1950-59			-0.516***	-0.387**	-0.448***	0.639
1960-69			-0.173	-0.085	-0.120	0.887
1970-80[b]						

Continued						
Pre-union child[a]						
Yes			1.420***	1.369***	1.398***	4.046
No[b]						
Had a pregnant partner[a]						
Yes			1.694***	1.695***	1.676***	5.343
No[b]						
Family background						
Number of siblings			0.015	0.010	0.011	1.011
Intact family						
Yes			-0.154†	-0.138	-0.135	0.874
No[b]						
Had a happy childhood						
Yes			-0.289**	-0.228*	-0.260**	0.771
No[b]						
-2 Log Likelihood	10999.24	10952.15	10665.82	10678.74	10647.44	

Note: All dummy variables are coded as 1 = yes and 0 = no.
[a] Time – variant variables.
[b] Reference category.

† $p < 0.10$
* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$ (two-tailed test)

Source: The 1995 General Social Survey.

with lower levels of education (e.g., Thornton et al. 1995). Nevertheless, after controlling for effects of other explanatory variables, the difference in educational attainment becomes nonsignificant (see model 5). Compared to other research, the effect of educational attainment here is mixed and unclear. In Turcotte and Goldscheider's study (1998), they report a positive and significant impact of education. But echoing Wu's analysis (2000), I find no evidence of this effect.

Cultural variables also influence the formation of cohabitation significantly. I find that the hazard rate of cohabitation differs significantly between men with and without religious affiliations. In line with previous findings, men residing in Quebec are more likely to choose cohabitation as their first union ($p < 0.001$). More specifically, Quebec men have an 88% higher hazard rate of cohabitation, compared to non-Quebec men. In addition, Canadian-born men have a higher rate of cohabitation than foreign-born men.

Table 3 shows that demographic variables play important roles in the entry into cohabitation. There is a substantial difference in cohabitation between men older than 35 years and those younger than 25 years at the time of the survey. This confirms the notion that cohabitation is more prevalent for recent cohorts. As would be expected in other Canadian studies (e.g., Turcotte and Goldscheider 1998; Wu 2000), the presence of children, either a pre-union child or having a pregnant partner, is associated with an increased rate of cohabitation. But the effect of children is stronger in the formation of first marriage. Table 3 also indicates that only one measure of family background, "having a happy childhood," reduces the hazard rate of cohabitation significantly. It appears that for Canadian men, family background has a weak impact on the entry into either first marriage or first cohabitation.

6.2.3 Transition to First Union

In this section, I explore the formation of first union in general: first marriage and first cohabitation are treated as a single event in the analysis.

Table 4 first reveals that being employed improves the hazard rate of first union by over 80% ($100\times[e^{0.596}-1]$). Similarly, there is a substantial and significant difference for school enrolment ($p < 0.001$). These findings are in line with what we found in the analyses of first marriage and cohabitation. The effect of educational attainment shows a negative and significant effect on the process of first union (model 2). But this effect becomes nonsignificant when all the other variables are added (model 5).

In Table 4, I find little evidence of the impact of religion. It may be that its negative relation to cohabitation offsets the positive one to marriage (Thornton et al. 1995). The other two cultural variables are found to influence the entry into first union significantly. A higher hazard rate of first union is observed among Quebec men and Canadian-born men. I attribute this result mainly to their strong and positive effects on the transition to cohabitation. For a similar reason as that for the influence of religion, the difference in birth cohort is only significant between 1950-59 and 1970-80 cohort. Consistent with my individual analyses of marriage and cohabitation, Table 4 shows that the presence of children encourages entry into first union. Also, there is no support for the effect of family background.

In summary, the above multivariate analyses suggest that employment status exhibits a positive and significant influence on the transition to first union, while to a greater extent on the process of marriage than on cohabitation.[24] At this point, the first hypothesis is supported: being employed facilitates the transition to first marriage. The

Table 4. Proportional Hazard Models of Transition to First Union: Canadian Men Aged 15 - 45

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	exp[β]
Employed[a]						
Yes	0.727***	0.619***	0.685***		0.596***	1.814
No[b]						
Employment-related Variables						
Educational attainment		-0.017*		0.005	0.008	1.008
School enrolment[a]						
Yes		-0.290***		-0.521***	-0.327***	0.721
No[b]						
Cultural Variables						
Religion						
Catholic			0.029	0.060	0.014	1.014
Protestant			0.110	0.121†	0.105	1.110
Other religions			-0.156	-0.152	-0.156	0.856
None[b]						
Geographic region						
Quebec			0.214***	0.164**	0.202**	1.224
Non-Quebec[b]						
Nativity						
Canadian born			0.164**	0.266***	0.177*	1.193
Non-Canadian born[b]						
Demographic Variables						
Birth cohort						
1950-59			0.167	0.297**	0.212*	1.236
1960-69			0.077	0.164	0.110	1.116
1970-80[b]						

Continued						
Pre-union child[a]						
Yes			1.462***	1.425***	1.464***	4.323
No[b]						
Had a pregnant partner[a]						
Yes			2.442***	2.460***	2.438***	11.447
No[b]						
Family background						
Number of siblings			0.002	0.0001	0.003	1.003
Intact family						
Yes			-0.059	-0.071	-0.065	0.937
No[b]						
Had a happy childhood						
Yes			-0.087	-0.006	-0.068	0.934
No[b]						
-2 Log Likelihood	19971.16	19935.68	19405.61	19499.26	19376.13	

Note: All dummy variables are coded as 1 = yes and 0 = no.
[a] Time – variant variables.
[b] Reference category.

† $p < 0.10$
* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$ (two-tailed test)

Source: The 1995 General Social Survey.

second hypothesis is also supported since being employed is positively related to cohabitation. Moreover, employment-related factors contribute greatly to first union formation as expected. In the following section, I will move to interaction models of the transition to first union.

6.2.4 Interaction Models

Table 5 reports the results of modeling the possible interaction between employment and education. Adding the interaction term to the full model, I find that it does not exhibit a significant impact on the transition to first union, either first marriage or first cohabitation.[25] In other words, the effect of being employed does not depend on the level of education, or vice versa. This finding appears to reinforce the importance of work opportunity for all men across various levels of education.

In the interaction models, one interesting result occurs in the process of first marriage. Compared to that in the full model (see Table 2), the coefficient of being employed experiences a substantial decline in the magnitude with the inclusion of the interaction term. More specifically, having work opportunity improves the hazard rate of marriage by 60% in the interaction model ($p < 0.05$), while the corresponding figure is 124% in the full model ($p < 0.001$) which more than doubles the level in the interaction model. Meanwhile, educational attainment is no longer significant with respect to marriage formation. For these reasons, adding interaction term to full model does not result in a better model fit for the entry into first marriage. This holds true for modeling cohabitation and first union in general.

Table 5. Proportional Hazard Models of Transition to First Union: Canadian Men Aged 15 - 45 (With Interaction Term)

Variables	First Marriage	Cohabitation	First Union
Employed[a]			
Yes	0.469*	0.485**	0.415**
No[b]			
Employment-related Variables			
Educational attainment	-0.001	-0.012	-0.011
School enrolment[a]			
Yes	-0.317***	-0.300***	-0.312***
No[b]			
Employed*education	0.041	-0.010	0.027
Cultural Variables			
Religion			
Catholic	0.227*	-0.194*	0.015
Protestant	0.437***	-0.265**	0.104
Other religions	0.169	-0.591*	-0.156
None[b]			
Geographic region			
Quebec	-0.322***	0.632***	0.205***
Non-Quebec[b]			
Nativity			
Canadian born	-0.197*	0.742***	0.176*
Non-Canadian born[b]			
Demographic Variables			
Birth cohort			
1950-59	1.545***	-0.450***	0.217*
1960-69	1.057***	-0.122	0.115
1970-80[b]			
Pre-union child[a]			
Yes	1.526***	1.399***	1.461***
No[b]			
Had a pregnant partner[a]			
Yes	2.803***	1.677***	2.434***
No[b]			
Family background			
Number of siblings	-0.004	0.011	0.002
Intact family			
Yes	0.067	-0.135	-0.063
No[b]			
Had a happy childhood			
Yes	0.143	-0.260**	-0.068
No[b]			
-2 Log Likelihood	10341.84	10647.31	19374.10

Note: All dummy variables are coded as 1 = yes and 0 = no.
[a] Time – variant variables.
[b] Reference category.
* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$ (two-tailed test)
Source: The 1995 General Social Survey.

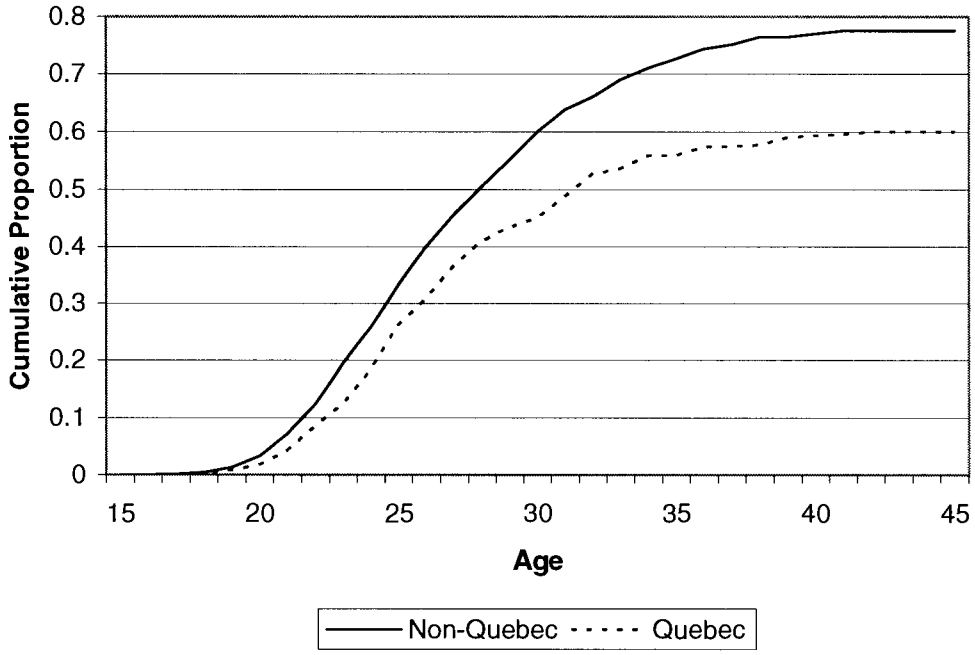
6.3 Regional Differences

On both theoretical and empirical levels, the English-French dualism in Canada has brought about regional differences in demographic behaviors. When examining Canada as a whole, I observe significant differences in the transition to first union between Quebec men and other Canadian men. In this section, I move further and directly conduct regional analyses by dividing the target population into two groups according to their associated geographic region. The main purpose is to see whether the effect of employment varies by region in order to identify different pathways leading to first union in Quebec and the rest of Canada. In a format similar to that in early sections, I discuss the results of life table estimates and proportional hazard models as well.

6.3.1 Life Table Estimates

I calculated the cumulative proportion of first union for Quebec men and other Canadian men separately. The log-rank test also suggests that there is a significant difference between the two groups in the pace and proportion of first union ($p < 0.001$).[26] Figure 6 shows the Quebec/non-Quebec difference in the cumulative proportion of first marriage. By age 30, approximately 45% of Quebec men experience first marriage, compared to 60% of Canadian men outside Quebec. By age 40, 78% of non-Quebec men form first marriage. The comparable figure for Quebec men is 59%, reaching a similar level to their non-Quebec counterparts at age 30. Until age 45, the proportion of marriage remains lower in Quebec than elsewhere in Canada. Figure 6 also reveals that marriage is less prevalent for Quebec men than for other Canadian men, a trend observed in early analyses.

Figure 6. Life Table Estimates of Cumulative Proportion of First Marriage by Region: Canadian Men Aged 15 - 45, 1995



Source: The 1995 General Social Survey.

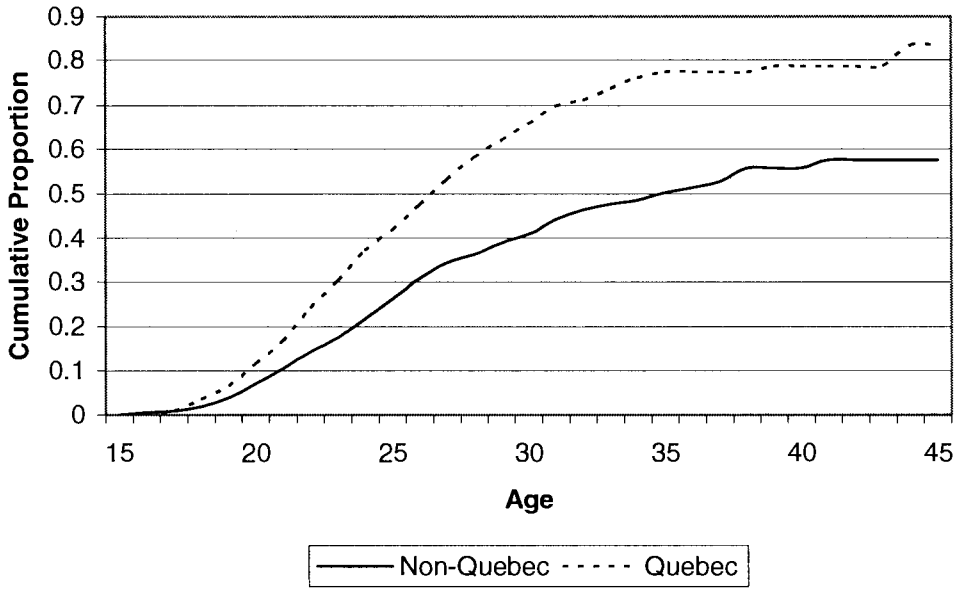
Figure 7 presents apparent Quebec/non-Quebec difference in the entry into first cohabitation. I find that Quebec men have a quicker pace in entering cohabitation than other Canadian men. By age 20, 12% of Quebec men have entered a cohabiting relationship, while the figure is 7% among non-Quebec men. By age 30, the corresponding figures are 65% and 40%, respectively, and by age 45, this divergence remains between these two groups of men. Echoing previous research, Figure 7 indicates that cohabitation is a more popular type of first union among Quebec men, compared to their non-Quebec counterparts.

Figure 8 includes the results of life table estimates of first union. It shows that Quebec men differ significantly, yet not greatly, from men elsewhere in Canada in the pace and ultimate level of first union. By age 30, around 75% of non-Quebec men and roughly over 80% of Quebec are in either type of first union. Until age 45, first union is observed among roughly 90% of men in each region. Although the ultimate proportion in Quebec is only slightly higher than that in the rest of Canada, it still reflects a significant difference in first union between them.

6.3.2 Proportional Hazard Models

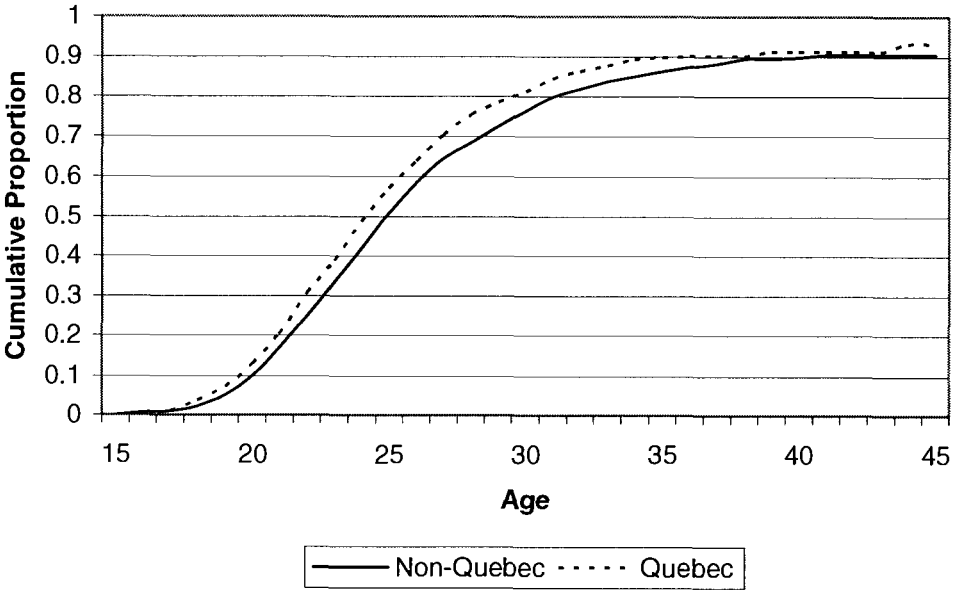
After examining the regional differences in union formation in general, I conduct proportional hazard analyses for Quebec and the rest of Canada separately. In this way I am able to see the role of employment in these two regions through a comparison of regional models. Tables 6-8 present the results of regional models regarding first union formation. The transformation of each coefficient ($\exp[\beta]$) is also provided to facilitate the discussion.

Figure 7. Life Table Estimates of Cumulative Proportion of First Cohabitation by Region: Canadian Men Aged 15 - 45, 1995



Source: The 1995 General Social Survey.

Figure 8. Life Table Estimates of Cumulative Proportion of First Union by Region: Canadian Men Aged 15 - 45, 1995



Source: The 1995 General Social Survey.

6.3.2.1 Transition to First Marriage

Let us look at employment and its related factors first. Consistent with Table 2, Table 6 shows that employment status relates to the process of first marriage positively and significantly by improving the hazard rate by over 100% for Quebec men. Both measures of employment-related variables have marginal impacts on the entry into first marriage. In the rest of Canada, being employed speeds the formation of first marriage significantly. Educational attainment affects the entry into first marriage positively and significantly, while the effect of school enrolment is negative and significant. Moreover, statistical tests indicate that the effects of above variables do not differ significantly between Quebec and non-Quebec models. [27]

Table 6 also shows that the effects of cultural variables are generally limited to the non-Quebec model. In the Quebec model, I find that there is no significant difference between Catholic men and men without religious affiliations, although Catholics comprise a sizable proportion of Quebec men (83%). Also in this model, Canadian-born men do not differ from foreign-born men in the hazard rate of marriage.

Additionally, as with the results reported in Table 2, all demographic variables influence the process of first marriage significantly in regional models. In Quebec, there is only a significant difference in marriage rate between the 1950-59 and 1970-80 cohorts. The effects of a pre-union child and pregnancy are positive and significant. In non-Quebec Canada, the hazard rates of marriage of two early cohorts are 3 times and 1.8 times lower than the recent cohort. Pre-union parenthood again improves the hazard rate of marriage by considerable proportions. Also, consistent with the overall analysis, family background has no impact on marriage in the two regional models.

Table 6. Proportional Hazard Models of Transition to First Marriage: Canadian Men Aged 15 - 45 by Region

Variables	Quebec	Exp[β]	Non-Quebec	Exp[β]
Employed[a]				
Yes	0.742***	2.101	0.738***	2.091
No[b]				
Employment-related Variables				
Educational attainment	0.054†	1.056	0.019†	1.019
School enrolment[a]				
Yes	-0.367†	0.693	-0.345***	0.708
No[b]				
Cultural Variables				
Religion				
Catholic	0.536	1.708	0.233*	1.263
Protestant	1.042*	2.836	0.402***	1.494
Other religions	1.164*	3.202	-0.001	0.999
None[b]				
Nativity				
Canadian born	-0.049	0.952	-0.186*	0.830
Non-Canadian born[b]				
Demographic Variables				
Birth cohort				
1950-59	2.355*	10.541	1.458***	4.299
1960-69	1.591	4.907	1.015***	2.760
1970-80[b]				
Pre-union child[a]				
Yes	1.025*	2.788	1.615***	5.029
No[b]				
Had a pregnant partner[a]				
Yes	2.823***	16.835	2.804***	16.507
No[b]				
Family background				
Number of siblings	0.010	1.010	-0.013	0.987
Intact family				
Yes	0.295	1.343	0.021	1.021
No[b]				
Had a happy childhood				
Yes	0.121	1.129	0.155	1.168
No[b]				
-2 Log Likelihood	1896.40		8062.42	
N	808		2,078	

Note: All dummy variables are coded as 1 = yes and 0 = no.
[a] Time – variant variables.
[b] Reference category.
† $p < 0.10$
* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$ (two-tailed test)

Source: The 1995 General Social Survey.

6.3.2.2 Transition to First Cohabitation

Table 7 shows the results of regional models of first cohabitation. Clearly, employment increases the hazard rate of cohabitation both in Quebec and in the rest of Canada. Specifically, being employed increases the hazard rate by 56% ($100\times[e^{0.443}-1]$) for men outside Quebec, while the comparable figure is 50% for men residing in Quebec. This effect proves to be the same between the two regional models.[28] Table 7 indicates that educational attainment relates to cohabitation positively and nonsignificantly in the Quebec model. Conversely, it exhibits a significant effect on the formation of cohabitation in the non-Quebec model: in other words, cohabitation is more likely to occur among men with lower levels of education. This finding is in line with previous studies (e.g., Thornton et al. 1995). Consistent with the results in Table 3, school enrolment lowers the hazard rate of cohabitation in both regions.

Table 7 reports generally significant effects of cultural variables. Inconsistent with Table 3, Catholic men are no different from men without religious faiths in the transition to cohabitation in the Quebec model. Meanwhile, Protestant and other religious affiliations show significant impacts on the process of cohabitation in this model. Both Catholics and Protestants outside Quebec have higher hazard rates of cohabitation than men who do not identify with any religion. Additionally, Canadian-born men are more likely to enter a cohabiting relationship than foreign-born men in either the Quebec or non-Quebec model.

In Table 7, I also find significant effects of demographic variables, as were observed in Table 3. In Quebec, the cohort difference appears only between the oldest and youngest cohorts, with a 50% lower hazard rate of cohabitation in the 1950-59 cohort

Table 7. Proportional Hazard Models of Transition to First Cohabitation: Canadian Men Aged 15 - 45 by Region

Variables	Quebec	Exp[β]	Non-Quebec	Exp[β]
Employed[a]				
Yes	0.412**	1.510	0.443***	1.557
No[b]				
Employment-related Variables				
Educational attainment	0.023	1.023	-0.047*	0.954
School enrolment[a]				
Yes	-0.407**	0.666	-0.219*	0.804
No[b]				
Cultural Variables				
Religion				
Catholic	-0.232	0.793	-0.184†	0.832
Protestant	-0.918*	0.399	-0.225*	0.798
Other religions	-1.288*	0.276	-0.441	0.643
None[b]				
Nativity				
Canadian born	0.687**	1.988	0.734***	2.084
Non-Canadian born[b]				
Demographic Variables				
Birth cohort				
1950-59	-0.677***	0.508	-0.304†	0.738
1960-69	-0.281	0.755	-0.025	0.975
1970-80[b]				
Pre-union child[a]				
Yes	1.329***	3.778	1.473***	4.362
No[b]				
Had a pregnant partner[a]				
Yes	1.325***	3.762	1.315***	3.724
No[b]				
Family background				
Number of siblings	0.036†	1.037	0.005	0.995
Intact family				
Yes	-0.074	0.928	-0.182†	0.834
No[b]				
Had a happy childhood				
Yes	-0.327†	0.721	-0.248*	0.780
No[b]				
-2 Log Likelihood	3798.91		6347.78	
N	808		2,078	

Note: All dummy variables are coded as 1 = yes and 0 = no.
[a] Time – variant variables.
[b] Reference category.
† $p < 0.10$
* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$ (two-tailed test)

Source: The 1995 General Social Survey.

than in the 1970-80 cohort. For non-Quebec men, there is only a marginal cohort effect on cohabitation rate. The effect of children is highly significant in both regional models ($p < 0.001$).

Of the family background measures, only the self-reported variable, "had a happy childhood", illustrates a significant negative effect on cohabitation. This effect does not differ significantly between Quebec and non-Quebec men.[29] Moreover, Table 7 indicates that intact family and number of siblings are of marginal importance in the process of cohabitation in the non-Quebec and Quebec models, respectively.

6.3.2.3 Transition to First Union

I also modeled regional difference by looking at first union formation in general. The results of multivariate analysis are shown in Table 8. First, employment status has a significant effect on the entry into first union. For Quebec men, the difference is 70% between employed men and men who do not work. The comparable figure is approximately 90% ($100 \times [e^{0.619} - 1]$) for their non-Quebec counterparts. This effect again does not differ between the two regional models.[30] The effect of school enrolment is consistent with the findings in Table 4. Being a student deters the transition to first union by more than 25% for both regions. However, I find limited evidence of the educational effect in Quebec model.

Second, religion becomes generally nonsignificant, perhaps due to its opposing influences on marriage and cohabitation. The difference between Canadian-born and foreign-born men persists in both regional models.

Third, Table 8 reveals that in both models, men are more likely to form either

Table 8. Proportional Hazard Models of Transition to First Union: Canadian Men Aged 15 - 45 by Region

Variables	Quebec	Exp[β]	Non-Quebec	Exp[β]
Employed[a]				
Yes	0.533***	1.705	0.619***	1.856
No[b]				
Employment-related Variables				
Educational attainment	0.034†	1.035	-0.007	0.993
School enrolment[a]				
Yes	-0.386**	0.680	-0.298***	0.742
No[b]				
Cultural Variables				
Religion				
Catholic	-0.027	0.937	0.041	1.042
Protestant	-0.115	0.891	0.124†	1.132
Other religions	-0.015	0.986	-0.194	0.824
None[b]				
Nativity				
Canadian born	0.385*	1.417	0.136†	1.145
Non-Canadian born[b]				
Demographic Variables				
Birth cohort				
1950-59	-0.195	0.824	0.386**	1.470
1960-69	-0.186	0.830	0.227†	1.255
1970-80[b]				
Pre-union child[a]				
Yes	1.246***	3.476	1.558***	4.750
No[b]				
Had a pregnant partner[a]				
Yes	2.597***	13.426	2.415***	11.192
No[b]				
Family background				
Number of siblings	0.027†	1.027	-0.010	0.990
Intact family				
Yes	-0.008	0.992	-0.085	0.919
No[b]				
Had a happy childhood				
Yes	-0.184	0.832	-0.027	0.974
No[b]				
-2 Log Likelihood	5400.52		13365.84	
N	808		2,078	

Note: All dummy variables are coded as 1 = yes and 0 = no.
[a] Time – variant variables.
[b] Reference category.
† $p < 0.10$
* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$ (two-tailed test)

Source: The 1995 General Social Survey.

type of first union if they have a pre-union child or a pregnant partner. The effect of birth cohort is limited to the non-Quebec model, with a nearly 50% higher rate of first union in the 1950-59 cohort than in the 1970-80 cohort. But this effect is negative, though nonsignificant, in the Quebec model. Finally, consistent with findings in Table 4, I find little support for the effect of family background, except for a weak effect of sibling size in the Quebec model.

To summarize, I employed life table estimates and proportional hazard analyses to further explore the observed Quebec/non-Quebec differences and different pathways in the entry into first union. I found that employment status influences the transition to first union, either marriage or cohabitation, similarly for both Quebec and non-Quebec men. From this perspective, the effect of employment does not vary by geographic region.

6.4 Summary

In this chapter, I first outlined the results of statistical analyses in Canada as a whole. Life table estimates present the pace and cumulative level of first union. Results of proportional hazard models support the hypotheses that employment facilitates the transition to first marriage and first cohabitation. Being employed is of special importance for men in forming either type of first union. The explanatory variables were also discussed in terms of their roles in the process of first union. Moreover, I found no evidence that the effect of employment depends on the level of education, or vice versa.

Next, I examined regional differences in first union between Quebec and the rest of Canada. Life table estimates indicate a higher proportion of cohabitation and lower proportion of marriage in Quebec than elsewhere in Canada. Regional models identified

that employment influences first union formation in a similar way in the two regions.

In the next chapter, I conclude this study with a discussion of findings and conclusion.

CHAPTER SEVEN

CONCLUSIONS

This study attempted to identify the role of men's employment in the transition to first union, incorporating both first marriage and first cohabitation, in Canada. Primarily relying on the male-oriented economic interpretations of marriage formation, I developed a theoretical framework for my empirical analysis. Within this framework, I explored how employment structures the process of first union, controlling for a number of other factors, such as cultural, demographic, and family background. Also, regional differences were further explored.

After summarizing the results of statistical analyses in Chapter 6, I offer a few conclusions for this study. Chapter 7 has three sections: (1) summary of findings, (2) limitations of the study, and (3) conclusion. Section one reviews the findings of this study in terms of the roles of explanatory variables in the transition to first union. Section two describes the major limitations involved in this study. The last section concludes this study.

7.1 Summary of Findings

Empirical findings are in agreement with the male-oriented economic argument and support the hypotheses in this study. In this section, a summary of the findings first focuses on the role of employment and then on those of employment-related factors in the process of first union, followed by a review of the effects of other determinants in the entry into first union.

7.1.1 Employment and First Union Formation

Male-oriented economic interpretation of marriage formation highlights the role of men's economic perspective, of which men's employment is a particularly important aspect. In essence, employment opportunities give men access to economic resources and thus hasten entry into marriage. In the process of assortative mating, being employed helps to reduce the degree of uncertainty associated with young men, specifically their economic uncertainty, in industrialized societies. In this sense, employment is hypothesized to facilitate the transition to first marriage. My empirical findings strongly support this hypothesis, and confirm that employment reduces uncertainty and increases the propensity to marry. For example, the hazard estimates reveal that employed men are more than twice as likely as unemployed men to form a marital union. In my analysis, the effect of employment is positive, significant, and independent of the confounding variables. The measure of employment in my analysis also partly accounts for the impact of work interruptions and associated stability of work. From this perspective, the empirical findings imply that having a steady employment opportunity speeds the process of first marriage.

Accompanying the decline in marriage, nonmarital cohabitation has become a competing "risk" of marriage in the process of first union. On the empirical level, the nature of cohabitation and its relation to marriage is complicated, as cohabitation is considered as an alternative to marriage or singlehood, or as a prelude to marriage. In the economic sense, cohabitation provides a route for those who are not economically ready for marriage to enjoy union life. I also hypothesized that being employed enhances the entry into cohabitation, compared to being unemployed. Although the formation of

cohabitation is analyzed within the same framework as marriage, its process is explored separately because cohabitation has not yet become a full-fledged social institution. I found that being employed influences the entry into cohabitation positively and significantly. Therefore, the hypothesis pertaining to cohabitation is supported. But the effect of employment is much weaker on cohabitation than on marriage. More specifically, I found that the difference in the hazard rate of marriage between employed and unemployed groups more than doubles that of cohabitation when holding all other variables constant (see Tables 2 and 3). The findings also substantiate the argument that concern about men's employment (economic status in a broad sense) weighs more in forming a marital union than a cohabiting relationship (Clarkberg 1999), especially for those who cohabit for economic reasons.

When modeling the entry into first union, I also observed the highly significant impact of employment. The findings again confirm the importance of employment opportunity even for those men who choose cohabitation as their first union. Clearly, for men, being employed is of crucial importance no matter what type of union they want to enter, either cohabitation or marriage.

7.1.2 Employment-Related Factors and First Union Formation

From the economic perspective, the decision to marry is based not only on the current economic circumstances, but also on long-term economic prospects. Employment status serves as the indicator of current or short-term economic status, while education is considered as "a proxy for ultimate socioeconomic status" (Oppenheimer 2000: 29). To a great degree, education determines labor market position and associated union behavior

(Mare 1991). As an employment-related indicator in my analysis, educational attainment is positively connected with marriage. This finding is consistent with U.S. analyses which show that marriage rate has fallen faster for men with less education (e.g., Oppenheimer et al. 1997; Qian 1998). Furthermore, the other employment-related factor, school enrolment, is also an important determinant of marriage formation. I found strong evidence that school enrolment deters the entry into marriage. This is perhaps because the student role conflicts with the family role in the time and economic commitments to union life. Through examining the effects of economic attributes both observed and predicted, my empirical results lend support to the male-oriented argument that men's difficulty in the labor market position is responsible for marriage delay and decline in recent decades.

Following the same logic, I assessed the impacts of employment-related factors on cohabitation formation. Compared to previous studies, educational attainment demonstrates an ambiguous impact on the transition to cohabitation. I found no evidence of a significant effect of educational attainment on cohabitation, which is in line with other Canadian studies (Turcotte and Goldscheider 1998; Wu 2000). However, other studies also reported a significantly negative impact of education on cohabitation (e.g., Thornton et al. 1995). These findings imply that the predictive function of education appears to be confined to the formation of marriage, and that cohabitation does not carry a clear and strong association with men's economic status as marital union does. In sharp contrast, school enrolment illustrates a consistent and substantial impact on the transition to either marriage or cohabitation. As with the effect of employment status, being a student has a weaker impact on the entry into cohabitation than on marriage. Therefore,

employment-related factors generally contribute more to the formation of marriage than they do to cohabitation.

In this analysis, I also focused on a general picture of first union formation without differentiating marriage and cohabitation. Most of the findings are in line with those obtained from the separate analyses of marriage and cohabitation. The impact of employment remained significant. Again, the economic attribute of men proved to be a non-ignorable causal force in the dynamics of union formation.

In a further analysis, I examined a possible interaction effect between employment status and educational attainment. These two elements are interrelated in the sense that education generally represents the accumulation of knowledge and skills which determines both the current and long-term labor market integrations (Thornton et al. 1995). Educational attainment is therefore expected to combine with labor market position to produce a collaborative effect on union formation: for instance, employed men with a higher level of education may be more likely to marry than employed men with a lower lever of education. However, I found no evidence that the effect of employment status depends on educational attainment. In a nested model not reported in chapter 6, the interaction effect is evident in the case of marriage. However, this effect lost its statistical significance when holding all other explanatory variables constant. Obviously, the collective effect of employment and education does not yield an accentuated force to speed the transition to marriage. Similarly, and in line with Blom's study in Norway (1994), the collaborative force does not reduce the propensity to form a cohabiting relationship. A corresponding result is also found in the analysis of first union

in general. Although the interaction effect is nonsignificant, these findings reinforce the idea that employment influences first union formation across all educational groups.

7.1.3 Other Determinants and First Union Formation

First, cultural variables show generally significant impacts on first union formation. As expected, religion, geographic region, and immigration status all affect entry into first marriage and cohabitation. Consistent with other studies (Pollard and Wu 1998; Sander 1993; Thornton et al. 1992; Wu 2000), I observed that religion has a limited impact on union behaviour. Although adding cultural variables improves the overall explanatory power of the model, this does not alter the essential role of employment in union formation.

Second, demographic variables are found to have important effects on union formation. The findings suggest that observed trends in first union formation are of statistical significance across various demographic groups. Without limiting the effect of children to women's union behavior, I found that the presence of biological children (including having a pregnant partner) accelerates men's transition to either type of first union, especially to marriage. Particularly for those men with economic affordability, pre-union childbearing serves as an additional impetus for first union.

Finally, family background is also an important factor when it comes to first union formation. Although some studies have shown that the impact of family experience in childhood tends to remain throughout the life-course and changes little overtime (South 2001), it is not significant in men's union formation, especially when economic

factors are taken into account. This finding may also lend support to the notion that economic concern accounts more in the formation and delay of first marriage.

7.1.4 Regional Differences

As demonstrated by previous studies, nuptiality behavior varies by geographic region. In the analyses, I observed persistent regional differences in the dynamics of union formation and further explored the processes of first union formation in Quebec and elsewhere in Canada. Generally speaking, Quebec men prefer cohabitating relationships and are less inclined to commit to marriage than other Canadian men.

In my analysis, employment plays a similar role in the transition to first union, either marriage or cohabitation, in both Quebec and elsewhere in Canada. Therefore, the effect of employment does not differ between the two regions. Also, empirical findings suggest that employment-related factors generally influence the process of first union similarly, yet with a little variation. In the case of cohabitation, education has a significant impact among non-Quebec men, which suggests that less educated men are more inclined to cohabit. However, this is not the case for Quebec men. Overall, employment and its related factors do not provide sufficient evidence that they play different roles in first union of Quebec men and other Canadian men and can explain away the observed regional differences in first union.

Suggested by other studies (e.g., Pollard and Wu 1998), it is the change in Catholicism, the process of secularization in general in the 1960s, that contributes significantly to the observed regional differences in first union between Quebec and the rest of Canada. Although the Catholic Church had a controlling power over multiple

facets of family life in Quebec, religious beliefs now appear to play a less essential and, in deed, diminishing role in directing Quebec men's life decisions (Fournier, Rosenberg and White 1997; ibid.). I also found that there is no significant difference in union formation between Catholic Quebec men and men with no religious affiliations. Obviously, this finding provides good reasons for the substantial growth of cohabitation and rapid decline in marriage in Quebec. This is consistent with Lipset's observation that, "Quebec, once the most conservative part of Canada, has become the most liberal on social issues" (1985: 158). Although cultural factors explain part of the regional difference, they are not able to account for the entire story. As Pollard and Wu comment (1998), the Quebec/non-Quebec differences in union formation "should be seen as a cultural form that is valid on its own terms" (351).

7.2 Limitations of the Study

This study has several limitations. The first concerns the measure of employment. In order to better capture the impact of men's employment, a single indicator of employment status is insufficient: instead, a refined measure with detailed employment information could be used which includes the level of income and occupation at the time of event (or censoring). Prior studies have suggested the significant role of income in the transition to first union (e.g., Clarkberg 1999; Sweeny 2002). However, the effect of occupation is less consistent (e.g., Ekert-Jaffe 1999; Sassler and Goldscheider 1997). As a consequence, I am interested in exploring the effects of the above variables in the Canadian context. Unfortunately, this information is not available in the data set (GSS-95) used in this study.

The second limitation pertains to the measure of educational attainment. A time-variant variable would be more appropriate to capture the impact of educational attainment since the highest level of education is probably obtained after the occurrence of event. For example, in the case of marriage, given that educational attainment serves as a proxy for long-term economic status, the inclusion of a time-variant estimate would improve the accuracy in the measure and examination of long-term economic status. Further, this is expected to clarify the impact of education on the formation of cohabitation in Canada.

The final limitation is with respect to understanding the cohabiting relationship. As we know, cohabitating union is always short-lived and a considerable proportion of cohabitations ends either in marriage or in separation within a few years (Burch and Madan 1986; Wu and Balakrishnan 1995). In Canada, about one-third of cohabiting couples marry each other within three years of cohabitation (Wu 2000). In the U.S., the corresponding figure is over one-half within five years of cohabitation (Bumpass and Lu 2000). The above trend suggests that it may be of importance in the future to study the role of employment in the transition from cohabitation to marriage, and compare the results with those in the direct transitions to cohabitation and marriage. This would enrich the knowledge of the nature of nonmarital union and changes in first union.

7.3 Conclusion

Like most industrialized countries, Canada has experienced a substantial decline in marriage and a growth of cohabitation over the past several decades. Researchers attempt to shed light on the relationship between the change in the marriage market with

men's economic hardship in the labor market. Primarily relying on male-oriented economic hypotheses, this study presented a direct examination of men's employment and the formation of first union in the Canadian context, during a period with substantial changes in first union in the marriage market. Even though men are no longer the exclusive "breadwinner" in the household, their affordability for marriage continues to be a crucial concern. As reported, the findings confirm that long-term growth and stability of employment will necessarily influence the timing and ultimate transition to first union, either marriage or cohabitation, of men. In sum, this study has broadened our understanding of the process of first union for men, by incorporating marital and nonmarital union in the analysis, and has identified the pathways to first marriage and first cohabitation in contemporary Canadian society.

NOTES

1. Nonmarital cohabitation and cohabitation are used synonymously in this paper.

2. Crude marriage rate is "the number of marriages per 1,000 population" (Statistics Canada 1999: 149).

3. Total first marriage rate (TFMR) of men "indicates the proportion of males marrying before their 50th birthday according to nuptiality conditions in a given year computed by the summation of the rates by age at first marriage" (Statistics Canada 1999: 149).

4. The crude marriage rate and the total first marriage rate are both the sum of age-specific rates during a given period. Crude marriage rate includes the information of first marriages and remarriages as well. But any analysis of the nuptiality rate needs to differentiate between first and higher order of marriages because "a given marriage may be the first marriage for one spouse and a remarriage for the other" (Dumas 1984: 59). In this sense, there is a limitation of crude marriage rate in mapping the trend of first marriage formation. It is therefore necessary to look at the total first marriage rate in any study on first marriage. Also, total first marriage rate "has the advantage of not being affected by changes in the size of the population or its age structure" (Statistics Canada 2002: 20).

5. "Risk" can be understood as the chance or possibility in this analysis.

6. Cohabitation rate is "the percentages for those living common-law among the single, separated, divorced, or widowed population" (Wu 2000: 46).

7. Dumas and Péron (1992) set up the link between unemployment rate and total first marriage rate in their analysis of economic conditions and marriage formation. I

followed their approach here to examine the link between first union formation and economic capacity.

8. I chose the unemployment rate of age group 25-34 because a significant proportion of Canadian men formed their first union before age 35, according to the 1995 General Social Survey.

9. Martel and Bélanger (1999) used a three-year lag of relative income to analyze the change of economic condition and fertility behavior in Canada. They considered the lagged time because they argue that economic change does not have a prompt impact on the individual's fertility behavior. I thus assume that the effect of lagged time is also applicable in the study on the nuptiality due to similarities among demographic behaviors. According to them, the lagged time is possibly spent in making the decision to have a baby, becoming pregnant and conceiving the baby. A one-year lag is estimated in my study since the decision to enter marriage might be made more promptly with a change of economic circumstance than fertility behavior is. With a lag of one year, an apparent link was yielded and presented in Figure 4.

10. The cohabitation rate of Canadian men is only available for selected years from 1981 to 1996. The corresponding figures are 9.5% in 1981, 11.9% in 1986, 15.3% in 1991, and 17.1% in 1996.

11. Clarkberg (1999) calculated "high relative income" through the comparison of respondent's actual income and predicted income. Predicted income is determined by respondent's work, educational achievement, family background, parents' income, etc. If the log of actual income is greater than 1.2 x log of predicted income (Clarkberg 1999: 953), high relative income will be coded as 1. Otherwise, 0 is assigned to this indicator.

12. In Oppenheimer's 2003 study, she included both the first and higher order of cohabitation into analysis. Therefore, strictly speaking, the findings of her study do not focus on first cohabitation exclusively.

13. The traditional pattern of marriage refers to the specialization and trading pattern of marriage, in which only men participate in market activities and play the role of "breadwinner," while women specialize in domestic activities. Modern dual-earner marriage implies that both men and women are involved in the labor market and form the dual-earner marital union (Oppenheimer 1994).

14. "Household can be defined as a housekeeping or consumption unit" (Hajnal 1982: 481). It is often used in census and statistical reports. In the current study, household is used equally to family and can denote what was called a "family" (482).

15. In the joint family system, "the young couple could be incorporated in a large economic unit" (Hajnal 1965: 133). This implies that they can stay in the large family until they have the complete ability to start an independent household. Therefore, a joint household "comprises two or more related married couples" (Hajnal 1982: 451).

16. In the stem family system, the eldest son usually inherits the farm and wealth of his family and marries early in order to assume the responsibility of continuing the family line. Younger sons, unless they are the only male children in the family, generally must leave the family farm and build an independent household (Dixon 1978).

17. Hajnal (1965) studied the marriage pattern in Europe. He revealed that a high age at marriage and a high proportion of never-married characterized the European marriage pattern, except in eastern and south-eastern Europe. This pattern existed for about two centuries until 1940 (Hajnal 1965: 101).

18. In the sample of this study, nearly 90% of pre-union children are the biological (birth) children of the respondents. The others are adopted or step-children. For this reason, both pre-union children and having a pregnant partner are used to capture the effect of biological children in the process of first union formation.

19. "Hazard", also known as the hazard rate or hazard function, is conventionally used in demographic studies to describe the probability (or likelihood) of event occurrence during a very short time interval, given that the event does not occur prior to that time interval (Yamaguchi 1991). It here refers to the likelihood of the occurrence of first union formation during the respective time-interval (month).

20. Retrospective data are collected through asking people "to recall the dates of events like marriage, child births, promotions, etc." (Allison 1995: 3).

21. I introduced only the basic form of Cox's proportional hazard model in the body of chapter 5. Cox's model needs to be modified if a time-variant variable is included in the analysis. For simplicity, I here consider a model with one time-variant variable and one time-invariant variable. It takes the following form:

$$\log h_i(t) = \alpha(t) + \beta_1 x_{i1} + \beta_2 x_{i2}(t).$$

It means that the hazard at time t is determined by the value of x_1, and the value of x_2 at time t (Allison 1995: 138).

22. The proportion of the event is calculated within each interval. Using the formation of marriage as an example, the proportion of marriage in the respective time interval (month/age) is equal to (number of marriages in this interval) / (effective sample size of that interval). The effective sample size is measured by the number of individuals not marrying at the beginning of the respective intervals minus half of the number

censored in this interval (Pollard 1998). Life table techniques calculate not only the proportion of the event for each interval, but the cumulative proportion of the event from the beginning of exposure time to the current interval. In my thesis, I generated descriptive figures of first union formation with the cumulative proportion of this event in complete ages (see Figures 5 – 8 in chapter 6).

23. Comparing the -2 Log Likelihood between full model (model 5) with nested models, I find that model 5 improves each of the nested models. Take the difference in -2 Log Likelihood between model 5 and model 2 as an example. In modeling the formation of first marriage, the change of -2 Log Likelihood is 569.95 with 12 d.f., $p < 0.001$. In the case of cohabitation, the change of -2 Log likelihood is 304.71 with 12 d.f., $p < 0.001$. In modeling the first union in general, the change of -2 Log likelihood is 559.55 with 12 d.f., $p < 0.001$.

24. Statistical results indicate that the effect of employment is significantly greater on the formation of marriage than on that of cohabitation ($p < 0.01$).

25. In my initial attempt, I included employment, employment-related factors, and interaction term in the model. I found that the interaction effect is significant in the case of marriage (coefficient is 0.057, $p < 0.05$) and first union in general (coefficient is 0.035, $p < 0.10$). This suggests that the effect of being employed on marriage goes up with the rise in the level of educational attainment, and vice versa.

26. The log-rank test was used to ascertain "the difference between two groups that are performed within the framework of Cox's proportional hazard model" (Allison 1995: 39). From the results of the log-rank test, it can be inferred that a significant difference exists between two curves for each of first union, first marriage and

cohabitation (d.f. = 1, $p < 0.01$ or $p < 0.001$).

Type of Event	*Log-rank test*
First Marriage	24.334^{***}
First Cohabitation	93.049^{***}
First union (in general)	10.405^{**}

$^{**}p < 0.01$, $^{***}p < 0.001$.

27. 28. 29. 30. Using the formula $t = \frac{b_{1a} - b_{1b}}{\sqrt{\sigma_{b_{1a}}^2 + \sigma_{b_{1b}}^2}} \sim T(n-k-1)$, I did t-test to determine whether the difference of coefficients is significant between Quebec and non-Quebec models. The results indicate that the effects of these explanatory variables are not statistically different between Quebec and non-Quebec models ($p < 0.05$, critical value of t is 1.96).

REFERENCES

Allison, P. D. 1995. *Survival Analysis Using the SAS System: A Practical Guide.* Cary, NC: SAS Institute.

Axinn, W. G. and A. Thornton. 1992. "The Relationship Between Cohabitation and Divorce: Selectivity or Causal Influence?" *Demography* 29: 357-74.

Balakrishnan, T. R., E. Lapierre-Adamcyk, and K. J. Krotki. 1993. *Family and Childbearing in Canada: A Demographic Analysis.* Toronto: University of Toronto Press.

Beaujot, R. and K. McQuillan. 1982. *Growth and Dualism.* Toronto, Ontario: Gaga Publishing Limited.

------ et al. 1995. *Report on the Demographic Situation in Canada.* Catalogue no. 91-209-XPE. Ottawa: Statistics Canada.

Becker, G. S. 1981. *A Treatise on the Family.* Cambridge, Mass.: Harvard Univ. Press.

Bennett, N. G., D. E. Bloom, and C. K. Miller. 1995. "The Influence of Non-marital Childbearing on the Formation of First Marriage." *Demography* 32: 47-62.

Blom, S. 1994. "Marriage and Cohabitation in a Changing Society: Experience of Norwegian Men and Women Born in 1945 and 1960." *European Journal of Population* 9: 143-73.

Bumpass, L. L. and J. A. Sweet. 1989. "National Estimates of Cohabitation." *Demography* 26: 615-25.

------, J. J. Sweet, and A. Cherlin. 1991. "The Role of Cohabitation in Declining Rates of Marriage." *Journal of Marriage and the Family* 53: 913-27.

------ and H. Lu. 2000. "Trends in Cohabitation and Implications for Children's Family Contexts in the U.S." *Population Studies* 54: 29-41.

Burch, T. K. and A. K. Madan. 1986. *Union Formation and Dissolution: Results from the 1984 Family History Surveys.* Catalogue no. 99-963. Ottawa: Statistics Canada.

Chelin, A. J. 2000. "Toward a New Home Socioeconomics of Union Formation." Pp.126-46 in *The Ties That Bind,* edited by L. J. Waite. New York: Aldine de Gruyter Inc.

Clarkberg, M.1999. "The Price of Partnering: the Role of Economic Well-being in Young Adults' First Union Experiences." *Social Forces* 77: 945-68.

Coale, A. J. and S. C. Watkins. 1986. *The Decline of Fertility in Europe.* Princeton, New Jersey: Princeton University Press.

Cohen, A. 1932. *Everyman's Talmud.* London: Dent.

Cooney, T. M. and D. P. Hogan. 1991. "Marriage in an Institutionalized Life Course: First Marriages Among American Men in the Twentieth Century." *Journal of Marriage and the Family* 53: 178-90.

Davis, K. 1984. "Wives and work: The Sex Role Revolution and Its Consequences." *Population and Development Review* 10: 397-417.

------ (ed.) 1985. *Contemporary Marriage.* New York: Russell Sage.

Denis, W. B. 1993. "Quebec Society." Pp. 518-43 in *Contemporary Sociology*, edited by P. S. Li and B. S. Bolaria. Toronto: Copp Clark Pitman Ltd.

Dixon, R. B. 1971. "Explaining Cross-cultural Variations in Age at Marriage and Proportions of Never Marrying." *Population Studies* 25: 221-23.

------ 1978. "Late Marriage and Non-Marriage as Demographic Responses: Are They Similar?" *Population Studies* 32: 449-466.

Dumas, J. and Y. Péron. 1992. *Marriage and Conjugal Life in Canada.* Catalogue no. 91-534E. Ottawa: Statistics Canada.

Ekert-Jaffe, O. 2001. "Unemployment, Marriage, and Cohabitation in France." *Journal of Socio-Economics* 30: 75-98.

Fournier, M., M. Rosenberg, and D. White. 1997. *Quebec Society: Critical Issues.* Scarborough, Ontario: Prentice Hall Canada Inc.

Goldscheider, F. K. and L. J. Waite. 1986. "Sex Differences in the Entry into Marriage." *American Journal of Sociology* 92: 91-109.

Hajnal, J. 1965. "European Marriage Patterns in Perspective." Pp. 101-43 in *Population in History: Essays in Historical Demography,* edited by D.V. Glass and D. E. C. Eversley. Chicago: Arnold.

------ 1982. "Two Kinds of Pre-industrial Household Formation." *Population and Development Review* 8: 449-94.

Hermalin, A. I. and E. van de Walle. 1978. "The Civil Code and Nuptiality: Empirical Investigation of a Hypothesis." Pp. 71-111 in *Population Patterns in the Past,* edited by R. D. Lee et al. New York: Academic Press.

Hogan, D. P. 1978. "The Effects of Demographic Factors, Family Background, and Early Job Achievement on Age at Marriage." *Demography* 15: 161-75.

Kravdal, Ø. 1999. "Does Marriage Require a Stronger Economic Underpinning Than Informal Cohabitation?" *Population Studies* 53: 63-80.

Landale, N. S. 1989. "Agricultural Opportunity and Marriage: The United States at the Turn of the Century." *Demography* 26: 203-18.

------ 1994. "Migration and the Latino Family: The Union Formation Behaviour of Puerto Rican Women." *Demography* 31: 133-57.

Lipset, S. M. 1985. "Canada and the United States: The Cultural Dimension." Pp. 109-60 in *Canada and the United States,* edited by C. F. Doran and J. H. Sigler. Prentice-Hall.

Lloyd, K. M. and S. J. South. 1996. "Contextual Influences on Young Men's Transition to First Marriage." *Social Forces* 74: 1097-1119.

Mare, R. D. 1991. "Five Decades of Educational Assortative Mating." *American Sociological Review* 56: 15-32.

Marshall, A. 1898. *Principles of Economics.* London: Macmillan.

Martel, L. and A. Bélanger. 1999. "Relative Income, Opportunity Cost and Fertility Changes in Canada." Pp. 123-63 in *Report on the Demographic Situation in Canada 1998-1999*, edited by A. Bélanger. Catalogue no. 91-209-XPE. Ottawa: Statistics Canada.

Michael, R. and N. Tuma. 1985. "Entry into Marriage and Parenthood by Young Men and Women: The Influence of Family Background." *Demography* 22: 515-44.

Nock, S. L. "The Consequences of Premarital Fatherhood." *American Sociological Review* 63: 250-63.

Oppenheimer, V. K. 1988. "A Theory of Marriage Timing." *American Journal of Sociology* 94: 563-91.

------ 1994. "Women's Rising Employment and the Future of the Family in Industrialized Societies." *Population and Development Review* 20: 293-342.

------ 2000. "The Continuing Importance of Men's Economic Position in Marriage Formation." Pp. 283-301 in *The Ties That Bind*, edited by L. J. Waite. New York: Aldine de Gruyter Inc.

------ 2000. "Educational Assortative Mating Across Marriage Markets: Non-Hispanic Whites in the United States." *Demography* 37: 29-40.

------ 2003. "Cohabiting and Marriage during Young Men's Career-development Process." *Demography* 40: 127-49.

------ , M. Kalmijn, and N. Lim. 1997. "Men's Career Development and Marriage Timing during a Period of Rising Inequality." *Demography* 34: 311-30.

Péron, Y. et al. 1999. *Canadian Families at the Approach of the Year 2000.* Catalogue no. 96-321-MPE No. 4. Ottawa: Statistics Canada.

Pollard, M. S. 1998. "The Divergence of Quebec/Non-Quebec Marriage Patterns: An Event History Analysis." M.A. Thesis, Department of Sociology, University of Victoria, Victoria, BC.

------ and Z. Wu. 1998. "Divergence of Marriage Patterns in Quebec and Elsewhere in Canada." *Population and Development Review* 24: 329-56.

Qian, Z. 1998. "Changes in Assortative Mating: the Impact of Age and Education, 1970-1990." *Demography* 35: 279-92.

Raley, R. K. 1996. "A Shortage of Marriageable Men? A Note on the Role of Cohabitation in Black-White Differences in Marriage Rates." *American Sociological Review* 61: 973-83.

Ravanera, Z. R., R. Fernando, T. K. Burch, and C. L. Bourdais. 2002. "The Early Life Courses of Canadian Men: Analysis of Timing and Sequences of Events." *Canadian Studies in Population* 29: 293-312.

Rindfuss, R. R. and A. Vandenheuvel. 1990. "Cohabitation: A Precursor to Marriage or an Alternative to Being Single?" *Population and Development Review* 16: 703-26.

Sassler, S. and F. Goldscheider. 1997. "Revisiting Jane Austen's Theory of Marriage Timing." *In 1997 Annual Meeting of the Population Association of America.* Washington, D. C.

Smock, P. J. and W. D. Manning. 1997. "Cohabiting Partners' Economic Circumstances and Marriage." *Demography* 34: 331-41.

South, S. J. 2001. "The Variable Effects of Family Background on the Timing of First Marriage: United States, 1969-1993." Social Science Research 30: 606-626.

Statistics Canada. 1975-1981. *Vital Statistics.* Catalogue no. 84-205. Ottawa: Statistics Canada.

------ 1975-1996. *The Labor Force.*Catalogue no. 71-001. Ottawa: Statistics Canada.

------ 1982-2001. *Report on the Demographic Situation in Canada.* Catalogue no. 91-209-XPE. Ottawa: Statistics Canada.

------ 1997. *Census of Canada, 1996.* Ottawa: Statistics Canada.

------ 1997. *1995 General Social Survey, Cycle 10: The Family. Public Use Microdata File Documentation and User's Guide.* Catalogue no. 12M0010GPE. Ottawa: Statistics Canada.

------ 1999. *Vital Statistics Compendium:1996.* Catalogue no. 84-214-XPE. Ottawa: Statistics Canada.

------ 2002. *Family History.* Catalogue no. 89-575-XIE. Ottawa: Statistics Canada.

------ 2003. *The Daily. (online)* Ottawa: Statistics Canada.

Sweeney, M. M. 2002. "Two Decades of Family Change: the Shifting Economic Foundations of Marriage." *American Sociological Review* 67: 132-47.

Teachman, J. D., K. A. Polonko, and G. K. Leigh. 1987. "Marital Timing: Race and Sex Comparisons." *Social Forces* 66: 239-68.

Thornton, A., W. G. Axinn, and H. H. Daniel. 1992. "Reciprocal effects of religiosity, cohabitation and marriage." *American Journal of Sociology* 98: 628-51.

------ , W. G. Axinn, and J. D. Teachman. 1995. "The Influence of School Enrolment and Accumulation on Cohabitation and Marriage in Early Adulthood." *American Sociological Review* 60: 762-74.

Toulemon, L. 1996. "La Cohabitation hos mariage s'installe dans la duree." *Population* 3: 675-716.

Turcotte, P. and F. Goldscheider. 1998. "Evolution of Factors Influencing First Union Formation in Canada." *Canadian Studies in Population* 25: 145-73.

United Nations. 1972-1999. *Demographic Yearbook.* New York: UN Publications.

Waite, L. J. (eds.) 2000. *The Ties That Bind.* New York: Aldine de Gruyter Inc.

Watkins, S. C. 1981. "Regional Patterns of Nuptiality in Europe, 1870-1960." *Population Studies* 35: 195-205.

Wu, Z. 1999. "Premarital Cohabitation and the Timing of First Marriage." *Canadian Review of Sociology and Anthropology* 36: 109-27.

------ 2000. *Cohabitation: An Alternative Form of Family Living.* Oxford University Press.

------ and T. R. Balakrishnan. 1995. "Dissolution of Premarital Cohabitation in Canada." *Demography* 32: 521-32.

------ and M. S. Pollard. 2000. "Economic Circumstances and Stability of Nonmarital Cohabitation." *Journal of Family Issues* 21: 303-28.

Yamaguchi, K. 1991. *Event History Analysis.* Newbury Park: Sage.