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Determinants of Delayed First Births in Canada: The Profile of Delayers.

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A Thesis

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Abstract

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This thesis examines the effects of selected variables on the decision of married Canadian women to delay the timing of the first birth. A model, based upon two combined theoretical approaches, the micro-economic and the social exchange, was tested by using data provided by the Canadian Fertility Survey (Balakrishnan et al., 1984), the first of its kind on a national level. Step-wise regression was used as the method of analysis in testing both the individual effects of explanatory variables on timing decisions, and the direction of effects of different groups of variables, as proposed by the theories employed.

The findings indicate that age at marriage has the strongest effect on the timing of the first birth. The findings also highlight the importance of economic considerations on the decision to delay the first birth. Economic factors were found to have a direct effect on

timing decisions, as proposed by economists, while their effects remained unchanged when indexes measuring sex roles and attitudes toward children were included in the analysis. Among economic variables, the wife's employment status appeared to be the most important constraint, while, contrary to expectations, husband's income was found to have a positive effect. Sex role attitudes and attitudes toward children appeared to have very weak effect on the decision of married Canadians to begin a family, while interaction effects between these variables and employment status on timing decisions were uncovered.

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INTRODUCTION

The following study examines the effects of selected variables on the decision of married women to delay their first birth. The literature on the topic indicates that little research effort has been devoted to the timing of first births in Canada. This suggests the need for investigation into patterns of delayed parenthood among Canadian women.

In Chapter I the research problem is discussed in general terms. This includes a statement of the usefulness of this study in fertility research.

Chapter II deals with the review of the literature on fertility behaviour. Three theoretical approaches are reviewed for their relevance to fertility decision-making. In addition, empirical studies based on the theories are included and a critical overview of these theories is presented.

This chapter also focuses on the theoretical framework utilized in the study. The model, comprised of two combined

theoretical frameworks, that is, the economic and the social exchange approaches to fetility, is outlined and its significance for the study of the timing of fertility is indicated.

Chapter III deals with the specification of the model. The variables which are used as indicators of the concepts are also discussed.

In Chapter IV, the Methodology used in the study is presented. The data are described and the method of analysis is indicated.

In Chapter V, the empirical findings are discussed and the outcome of the relationships are compared against the proposed hypotheses.

Finally, in Chapter VI the conclusion of the study is presented. The fruitfulness of using the proposed model is discussed and suggestions for future research on the timing of the first birth are assessed.

CHAPTER I

The Research Problem

This study examines the fertility patterns of married women in Canada in their late reproductive years. The main concern is with the decision-making process involved in the timing of the first birth. Sociodemographic, economic, and attitudinal variables are tested for their effect on the decision of those women who delay the birth of their first child.

The Canadian Fertility Survey, which is the data source of this research, contains the most complete fertility history ever provided on a national level. For example, the interval between marriage and the first birth, an important piece of information for many fertility studies, is for the first time available in this survey. In addition, useful information on attitudes about childbearing as well as the sex role attitudes of 5,315 women aged 18-49 years is provided. Along with these, detailed labour force histories and other demographic and socio-economic characteristics of these women provide a useful basis to examine Canadian reproductive behaviour and the processes involved in deciding on the timing of the transition from non-parenthood to parenthood.

Rationale

Recent fertility rates in Canada and other developed countries have reached the lowest level ever. In 1970 in Canada, the total fertility rate per 1,000 women was 2,331 births. By 1982 this number had fallen to 1,694 births (Statistics Canada:1)

Part of the decline in fertility rates is attributed by researchers to the increase of the average age at which women begin childbearing (Ryder, 1980). In Canada, in 1971, the median age of mothers at the time of their first birth was 23.4 years. By 1982 it had risen to 24.8 years (Romaniuc, 1984:139). Research in the U.S. indicates that the increase of the average age at which American women have their first birth "is due both to the postponement of marriage and to the lengthening of the interval between marriage and first birth" (Pebley, 1981:171).

There is a growing proportion of women who have their first birth later in their reproductive lives. Statistical figures show that in Canada, the proportion of first order births between 1970 and 1985 increased from 14% to 27% for women aged 30-34 years, from 9% to 21% for women in the 35-39 age category and from 7% to 18% for women in the 40-44 age category (Statistics Canada:1).

There have been many reasons suggested for the upward shift in the timing of first births in Canada. The widespread use and effectiveness of modern contraceptives in recent years have enabled women to regulate both the timing and the number of their births. Closely related to the timing of first birth decisions is the labour force participation of married women. Statistics reveal that in Canada, in 1970, 32% of married women were in the labour force. By 1984 this proportion had risen to 53.7% (Labour Canada, 1970, 1984).

Another factor likely to affect decisions about a late timing of first births is the increased educational level of women. Education is expected to affect values, aspirations and skills that may encourage non-familial roles (Rindfuss et al., 1980). Also, statistics show that the higher an individual's educational level the more likely s/he is to be in the labour force. In Canada, in 1975, 66.4% of women having a university degree were in the labour force as compared to 47.2% of those who attended or completed high school (Statistics Canada:2). In 1984 these numbers were 76.6% and 58.5% respectively (Labour Canada, 1985-86). It is more likely that enhanced career opportunities for better educated women would precipitate an upward shift in the timing of family formation.

Previous research on fertility behaviour has focused mainly on the number of children a woman bears and on the effects of early childbearing on completed family size. Yet, little attention has been directed towards the issue of delayed parenthood and the factors involved in the decision to delay the first birth. Clearly, a micro-level analysis of the determinants of the timing of the first birth, will help to identify a possible pattern of delayers in order to better predict future trends.

Delayed first births affect population growth with subsequent implications for the size of the labour markets, relations among generations (Wilkie, 1981) and women's roles through a change in total fertility. Also, women who have their first birth after the age of 30 tend to have fewer children than early childbearers (Hoffreth, 1984: Bumpass et al., 1978). Quebec data shows that half of the decline in the total fertility rate could be attributed to the lengthening of the interval between marriage and the first birth (Henripin et al., 1974).

Knowledge about the age pattern of Canadian fertility and the dynamics behind the decision to delay the first birth could be particularly useful for public planners and policy makers, those who are concerned with the improvement of the status of women, health organizations, etcetera.

The Canadian Fertility Survey provides a unique opportunity to begin a micro-level inquiry into fertility patterns of married Canadian women. Such an inquiry has been proposed by many researchers but has been restricted by the lack of information on vital aspects of the procreative behaviour of Canadians.

CHAPTER II

LITERATURE REVIEW

MICRO-ECONOMIC THEORY OF FERTILITY

The formal introduction of economics into fertility research was first attempted by Becker (1960), who developed a micro-economic model of the demand for children based on the theory of consumer choice. Until the 60's the analysis of fertility was considered to be outside the scope of economic theory. However, the high degree of fertility control achieved by increasing numbers of couples indicated that household members engage in rational decision-making regarding their fertility. This tempted Becker to suggest that micro-economic factors are as important to household fertility decisions as other resource allocation decisions. In this context, fertility related decisions are treated by consumers as any allocation problem under resource constraint.

In the light of economic theory, the household members try to maximize their lifetime utility given a variety of goods, their prices and its own resources. The demand then for children is viewed as a matter of choice among a variety of consumption alternatives. Household members making

fertility decisions are assumed to weight the psychic rewards and costs associated with children against the rewards and costs involved in the consumption of alternatives. Accordingly, couples have to consider some "trade-offs" between fertility (timing, number and spacing of children), on the one hand, and other activities (career, recreation, consumption of goods) on the other.

Micro-economic theory has mainly focused on the number and spacing of births. However, the two-child norm which emerged in developed countries in the last decade or so indicates that timing decisions may be considerably more important than decisions about completed fertility. Delayed first births, which reflect rational decision-making, could be studied in the context of the economic theory.

According to Becker's theory, the demand for children is a function of three factors: the prices of children relative to goods, the total income available and the preferences or tastes for children over other goods. The relationship between these factors and fertility decision-making are discussed next along with the main assumptions of the theory.

Prices

A fundamental assumption of the economic theory is that the prices of children are identical for all parents. Yet, while the prices of children as well as the prices of alternatives are set by the market place, some households obtain additional utility by devoting more of their resources to their children. Becker argues that "the price of children to rich parents is the same as that to poor parents even though rich parents spend more on children. The rich simply choose higher quality children as well as higher quality of other goods" (1960:214). Notably, the term 'high quality' does not imply moral superiority but, rather, it is used to denote the amount of resources allocated to a child. In other words, the quality of children relates directly to the amount spent on them.

The perceived prices of children have an important bearing upon timing decisions. Couples, rationally thinking, have to weigh the perceived prices of children at a given time and accordingly would make decisions about the timing of the first birth. Prospective parents who are mostly concerned about the quality of children, might as well decide to delay their first birth, until a desired economic level and other personal and occupational pursuits have been achieved. Most of their increased resources,

then, would be allocated to improve child quality.

In sum, the price of children is perceived by Becker to be a function of quality and the price variable is treated as a decision variable in the fertility decision-making. Becker's view has received severe criticism by economists (Duensenbury, 1960:Okun, 1960) and sociologists alike (Blake, 1968), who doubt if child quality is a matter of parental choice. However, the price variable was revised later by economists to include another component, namely, the time costs associated with children. This however, will be discussed later in this section.

Income

Another assumption of the economic theory holds that children are analogous to consumer durable goods. As a rise in income encourages consumers to buy more of most goods, it is assumed that couples would behave accordingly by demanding more children. Hence, this theory posits that income has a positive effect on number of births in the family. Yet, since more couples now want two children, decisions about the timing of the first birth are more pertinent than decisions about completed fertility. Thus, the income-completed fertility analogy can be extended to timing decisions as well.

Becker proposes that an increase in income should increase both the quantity and the quality of children but, the quality income elasticity is greater compared to quantity income elasticity. In other words, as stated earlier, most of the household's increased resources would be devoted to increase the quality of children.

Regardless, the major proposition of this theory is that income has a positive effect on number of births. As children are assumed to be like consumer durable goods, they are more likely to be demanded when the household's resources are high. Extending this logic to timing decisions, it would be expected that low income families, other things equal, would decide to delay their first birth until a desired economic level had been reached.

Tastes

The emphasis of the economic theory is on income and price variables largely ignoring the role of tastes (or preferences). According to Cain and Weininger (1973:207), "tastes, is a broad category of factors which is intended to represent the preference of the decision-maker". With respect to the timing of fertility, these preferences would have an impact on the couple's decision about an early or late first birth.

Becker makes the assumption that tastes are homogeneous across couples. In his theory, tastes are perceived as analogous to psychological needs and motivations associated with fertility, assumed to remain unchanged across the economic strata. A review of the literature reveals that tastes have not been included in empirical analyses of economic research on fertility (Becker, 1960, Willis, 1973), but, rather, have been treated as a constant factor.

The failure of the economic theory to model tastes has been criticized by many economists (Turchi, 1975a, Easterlin, 1975, 1969: Leinbenstein, 1974). Those economists have made significant contributions to improve the traditional economic theory of fertility by introducing a variety of social and normative factors in their analyses. Regarding tastes, they suggest that they are not homogeneous across couples but differ with income changes.

Specifically, Turchi (1975, 1975a), has developed a model where normative and other non-economic factors have been added to micro-economic ones in the analysis of fertility. He feels that the effect of income on fertility varies systematically depending upon the influence of societal norms, non-economic factors and other social-psychological processes within the household. In criticizing micro-economic theory's assumption of

homogeneity of preference structures, he expresses the view that

> childbearing represents both quantitatively and qualitatively an allocation problem of an entirely different magnitude, and failure to account for socio-psychological factors both in theory and in empirical work may well lead to a distorted view of the fertility process (1975a:114).

Leinbenstein (1974), has introduced a number of social determinants on fertility. Those determinants account for processes within the household. In his model, activities performed by family members are based on historical and socio-cultural factors which, in turn, influence fertility preferences. The formation of tastes then, is argued to be an important factor in the analysis of fertility.

Easterlin (1969, 1975), attempted to integrate economic theory with theories proposed by sociologists and demographers. He feels that

> the greatest obstacle so far to the development of a unified socio-economic theory of fertility, and correspondigly the most promising opportunity for advance, lies in the subject of tastes (1969:133).

It is important to note that despite the theoretical emphasis of the above-mentioned economists on the importance of tastes in fertility research, they have not yet presented any specific model of taste formation. On the other hand, as Michael and Becker claim,

> for economists to rest a large part of their theory of choice on differences in tastes is disturbing since they have no useful theory on the formation of tastes, nor can they rely on a well developed theory from any other discipline in social sciences, since none exists (1973:380).

However, it is reasonable to expect that tastes for children would be important determinants of decisions concerning the timing of the first birth. In recent years, there have been significant social changes regarding family and other institutions. The educational levels of women have increased dramatically and combined with increasing proportions of married women entering the labour force, have produced changes in fundamental social values by encouraging non-familial roles. As a result, the perceived values of children diminish in importance, while priority is given to non-familial activities. Espenshade, defines the value of children as "the functions they serve or the needs they fulfill for parents" (1977:16). He distinguishes between non-economic and economic values. The non-economic ones correspond to the psychic satisfactions parents obtain from children or to the psychological motives for wanting them. The most important economic value of children is related to the financial security at old ages. However, as Espenshade points out,

> as society modernizes and achieves higher levels of economic and social development, the economic value of children decreases in importance. To the extent that social security becomes institutionalized in such programs as public health and welfare measures, pension plans and

> life insurance programs, parents can relax their dependence on children as a source of old age support (p.17).

Concerning the above argument, it seems reasonable to expect that couples might choose to delay childbearing until certain needs, such as personal freedom, high education and career establishment have been fulfilled. Decisions concerning the timing of the first birth would depend largely upon the couple's subjective preferences, which may vary differentially across couples.

Revisions of the Economic Theory

Becker's cost benefit analysis has been widely used in fertility analyses. It should be noted however, that his initial model failed to take into account the possible effect of female labour force participation on fertility decision-making.

A significant revision on Becker's theory was made by Mincer (1962), who introduced the concept of "opportunity costs" in the analysis of fertility. Mincer suggested that the price of a child consists not only of market goods and services but also of the opportunity costs of foregone earnings especially those of the wife. Accordingly, the higher the opportunity costs, the lower the household's utility associated with children. Regarding the timing of

first births, an increase in the wife's earnings potential would increase the opportunity costs of childbearing and would result in postponement of the first birth. Understandably, the timing of the first birth should be analyzed in terms of costs and rewards. If the costs of bearing a child outweigh the perceived rewards of parenting, then the date of the first birth is more likely to be postponed for a later time. As Grindstaff (1982) stresses, at some point within the reproductive life, after education, career and recreation, the opportunity cost of having a child is no longer so great, so a birth is more likely to occur.

However, despite the well documented evidence that the wife's opportunity costs play a major role in fertility decisions, there is not a concensus among economists regarding the measurement of the opportunity costs of the wife's time. Specifically, Leinbenstein (1974), feels that the opportunity cost of the mother's time is not what she would have earned had she been able to work but, the cost of servants or other persons who could substitute the mother in child care activities.

Similarily, Easterlin (1969), though he recognizes that the time required in childbearing and childrearing is relevant to fertility decisions, doubts that the best price

to attach to this time is the wife's potential earnings. Instead, he expresses the view, that "a substantial proportion of the work of child care may be performed by domestic help" (p.133). It is then the opportunity cost of that member of the family who cares for the children that is relevant to fertility decisions.

Mincer's concept of opportunity costs is a significant contribution to economic theory of fertility. Subsequent works of economists developed the theory even further (Lancaster, 1966), and Becker himself (1965) expanded on his original formulation with a paper on "The Allocation of Time". This refers to changes in working and non-working time and it is known as the "household production function" approach, which is an integration of both, the original and the revised versions of the economic theory of fertility. This approach has influenced numerous studies in fertility (Willis, 1973: Ben-Porath, 1973: Michael, 1973). The term 'economic theory of fertility' refers to the works of those scholars who have been inspired by Becker's papers (1960, 1965).

Central to this approach is the assumption that "households combine time and market goods to produce more basic commodities that directly enter their utility function" (Becker, 1965:495). In other words, household

members are regarded as trying to maximize utility while, at the same time they constitue a producing unit. Specifically, the time costs associated with children are explicitly recognized in the theory as constraints on fertility decision-making, although only the wife's time is seen compatible with child care practices. It is important to note that Mincer's analysis of the value of the wife's time, assumes that only women bear the costs of household production since they are expected either to never enter the labour force or to leave it in order to rear children. Childbearing, then, and labour force participation are seen as competing activities for women. Further research based on the household production function approach takes into account the wife's available time for childrearing relative to time in the labour force (Becker, 1965: Willis, 1973).

The time costs associated with children are considered very important for the analysis of the timing of fertility given the high proportions of married women entering the labour force. Certainly, employment disruptions are costly both economically and in terms of career advancement. Since mothers are expected to stay home with young children and since many of the married women are involved in careers, their potential earnings are of great importance in the decision about the timing of the first birth. Increasing rates of involvement of married women in the labour force,

especially of highly educated ones, are likely to precipitate increased rates of delayed births.

In sum, as stated above, the "household production function" approach integrates both the original and revised versions of the economic theory of fertility and embraces all variables relevant to fertility decisions under three basic concepts: prices, income and tastes. The main assumption of this theory is that the price of children would be higher for higher income families given that forgone earnings would be greater for this group. Also central remains to the theory that time costs associated with children have a bearing upon women only. The husband's time is assumed to be unproductive within the household.

Closely related to this assumption is the view that only the husband's income is relevant to fertility decisions since the wife's employment disruptions would affect the household's intertemporal income distribution. In this framework, decisions about the timing of the first birth are expected to be negatively affected by husband's income. In other words, the timing of the first birth is more likely to be delayed when the husband's income is low.

Empirical Studies

According to the economic theory, fertility related decisions are determined by three factors: prices, income and tastes. This section deals with empirical studies relevant to fertility decision-making in general and the timing of the first birth in particular, which have focused on those three factors.

Although most of the studies which have been conducted within the micro-economic framework have focused on completed fertility, their findings are relevant to timing decisions as well. Throughout economic theory, fertility behaviour is treated as a rational process. We can assume that delayed parenthood, which reflects rationality of behaviour, is also constrained by the same factors that affect decisions about completed fertility. Thus, perceived costs of children, both direct and indirect such as the opportunity costs, the income flow available to the family and the preferences for children relative to goods are expected to affect timing decisions.

Prices

Prices of children are defined in terms of the costs faced by parents in rearing a child. The price variable, as

reformulated by Becker (1965), incorporates the price of the parents' time and is treated as a constraint on fertility decision-making rather than a decision variable as initially meant.

Most studies which have been conducted on fertility have used as a major component of the cost variable the opportunity cost of earnings forgone by the mother (Mincer, 1963; Cain and Weininger, 1973; Kyriazis, 1979, 1982). Opportunity costs reflect the opportunities parents forego when rearing children (Espenshade, 1977). Mincer (1963), tried to test empirically the role of the wife's time to fertility behaviour by using the wife's full-time earnings to measure opportunity costs. The results supported his hypothesis that a rise in the value of the wife's time tends to affect fertility negatively.

The opportunity cost of having a child rises proportionately with the wife's earnings. The economic incentive for working is very strong for women, and especially the more highly educated ones. The wife's labour force participation has been found to be strongly related to the decision concerning the timing of the first birth. As Waite and Stolzenberg (1976) stress, women who plan to work also plan to delay their first birth. Women in occupations where promotion and seniority are very important, may find

motherhood competing with their advancement opportunities and may choose to delay their first birth.

In addition, in a study by Happel et al., (1984), it is shown that women in high skill occupations tend to have their first child later than women in low skill occupations. It seems reasonable to believe that married women working in high skill occupations might decide to devote more time to acquire the necessary skills by delaying the first birth. The wife's employment status then, increases the value of the time at home and could be used as an indicator of opportunity costs.

Another variable that has been used as an indicator of opportunity costs in fertility decision-making is wife's education. In a study by Kyriazis (1979), wife's education was used as an indicator of her potential earnings and hence, her opportunity costs. Regarding the timing of fertility, the results have shown that an increase in the wife's potential earnings, as estimated by education, controlling for husband's current income, tends to delay the timing of the first birth. Similarily, a study by Happel et al., (1984), where the effect of the opportunity costs on the timing of the first birth is examined, indicates that women with high opportunity cost of time spent in the household have an incentive to delay the first birth.

The value of time used in childbearing activities would include another economic component such as the "job interruption effect" (Mincer and Polachek, 1974). Since women are supposed to devote more time to childbearing and childrearing activities than their male partners, women suffer greater loss of skills than men. Goyder stresses that differences in income between men and women in Canada are not at all related to educational or occupational status differences. Rather, "the important component of inequality are differences between the sexes in part-time versus full-time work and the tendency for women to have interruptions during their careers" (1981:336).

However, while the emphasis of the economic theory is on the opportunity cost of the mother's time (indirect cost), the direct costs such as food, clothing, education, etc., have not been included in studies on fertility. Mincer (1963: 76), states that "the cost variable receives no attention in cross-section data, except in the rural-urban comparisons, presumably because prices are fixed in cross-sections". Espenshade (1972:209) also points out that, "the basic reason for the reliance upon the opportunity cost concept in empirical studies is the general inadequacy of data on cost of children other than opportunity cost". In addition, some researchers have expressed the need for research on the expeditures on goods

that may compete with children, for better explaining the relationship between costs of children and fertility decision-making (Espenshade, 1972; Kyriazis, 1982).

Income

The role of income in fertility decision-making has been a matter of controversy among researchers. As already mentioned, a major proposition of the economic theory is that an increase in income, other things been equal, would affect fertility positively. However, as reported by Simon (1974), studies conducted on completed family size have released contradictory results with income having no consistent positive effect on fertility.

In the literature there appears to be more than one definition of income. Economists argue that 'current' income is an inappropriate measure of the income variable in fertility research. Willis (1973: s48) feels that, "the income variable relevant to childbearing decisions presumably involves the shape and the height of the husband's lifetime income profile as the family expects it to be at the time these decisions are taken". Instead, 'permanent' income was suggested. Most studies which have been carried out by economists have employed 'permanent' income as a measure of the income variable (Gardner, 1973;

DeTray, 1973; Wilis, 1973).

Studies conducted by Hout (1978) and Kyriazis (1979), where husband's income at age 40 was used as a measure of permanent income, indicated that the relationship between income and fertility differs by parity, having a positive effect on the first two parities only, while it was consistently negative at higher parities. These findings refute the static assumption of the economic theory of constant positive effects of income on fertility and suggest that, when the normative family size has been achieved, additional income increases substitution of other goods for children (Kyriazis, 1979). In the same study Kyriazis employed current income alternatively to permanent income and observed that current income is a more relevant constraint on the timing of fertility whereas permanent income flow could better determine subsequent births. Considering the recent tendency of couples to have small families, the constraining role of income on fertility decision-making becomes equally important on decisions about the timing of the first birth as on completed fertility decisions. Since there are few, if any, Canadian studies which examine the relationship between income and delayed parenthood, it is important to examine in the light of more recent Canadian data the ways by which income influences the decision to delay the first birth.

Tastes

A review of previous research on fertility has indicated that tastes have not been included in empirical studies conducted by economists but, rather, have been assumed to be stable across couples. For example, Willis (1973), in his study on completed fertility used wife's education to measure her stock of human capital while the possible effect of education on tastes was ruled out by assumption. However, tastes about the number and timing of births could be influenced by a variety of independent variables. It has been suggested that background characteristics such as education, place of residence and religion could be used as indicators of tastes (Kyriazis, 1982, Turchi, 1975a, Easterlin, 1969). These variables could either independently or simultaneously influence birth timing decisions.

One of the most important factors affecting this decision is the increased interest of women in higher education. The positive relationship between education and the timing of the first birth is strongly documented in most studies done on delayed parenthood, where educational aspirations are considered to be related to fertility preferences. Rindfuss et al.(1980), found that each additional year of schooling results in a delay of the first

birth by approximately three quarters of a year.

Similarily, Wilkie's study (1981) indicates that the most important factor influencing changes in birth timing preferences is the increased educational opportunities for women. In her model, it is better educated women who accounted for most of the delay in the timing of the first birth.

Yet, as it has been indicated earlier, education could also serve as an indicator of opportunity costs. Kyriazis (1979, 1982) suggests that education is primarily an indicator of opportunity costs in fertility decision-making.

Place of residence has also been included in studies focusing on completed fertility to account for differences in tastes for children (Kyriazis, 1982), and in studies on childlessness (De Jong and Sell, 1977). Yet, only few, if any, studies examining the determinants of the timing of fertility have included urban-rural comparisons in their analyses.

Religion has been widely employed in fertility studies and, specifically, Protestant-Catholic fertility differentials have been extensively examined. There is a consensus among researchers that those differentials have

declined in the last two decades (Kyriazis and Henripin, 1982, Kyriazis, 1979, Collishaw, 1976). Kyriazis and Henripin (1982), report a study by Henripin and Lapierre-Adamcyk (1974) where, it was found that differences between Protestants and Catholics in the number of children ever born per 1, 000 women have been narrowed, with Catholic women actually having fewer children than Protestants.

However, while religion has been included in most studies where completed fertility size is considered, it has been omitted in studies conducted on the timing of the first birth. Moreover, the possible effect of religion on the timing of fertility has not been examined yet in a Canadian context. What is interesting then, is to determine if religion influences the timing of family formation among Canadian religious groups.

THE SOCIOLOGICAL APPROACH TO FERTILITY

Sociologists emphasize the constraining role of societal norms on fertility behaviour. According to Sweet, (1982), "norms are shared beliefs concerning what is appropriate behaviour".

Regarding fertility, norms suggest specific rules about family size, timing of births, forms of parental care and control. Robertson (1981:60), stresses that "this function of norms is so important that there is always strong social pressure to conform".

The reliance of the sociological approach on the influence of norms is justified by the view that reproductive behaviour is in fact a form of social behaviour and as such is conditioned by widely accepted normative standards which impose guidelines on individuals' behaviour for their implementation. The role of norms in fertility behaviour is strongly supported by Blake, who stresses that "not only are individuals under strong institutional pressure to marry and start a family, but the decision to do so, even in the face of economic difficulties, receives widespread moral encouragement" (1968:16).

Other sociologists as well share Blake's view about the effects of norms on fertility. Specifically, Callan (1986:261), stresses that "parenthood is described by society as normative behaviour. The low rates of childlessness across cultures testify to a socialization process that makes all aware that parenthood is an accepted normal feature of the adult role".

Norms are not likely to change rapidly since they are " 'built into' the social structure of a society and into the personalities of its members" (Sweet, 1982). However, as the rising proportions of couples having fewer than two children indicate, norms themselves have changed in the past two decades. Many researchers support the notion that there is a fundamental cultural change in social norms in North American societies regarding fertility behaviour. The increased educational levels of women, the increasing proportion of women in the labour force and the advances in birth control technology, have produced changes in the values placed on children while, at the same time, have encouraged non-familial activities (Sweet, 1982). In the light of those changes in societal norms and values about reproduction it is evident that "motherhood is becoming less a matter of obligation and more a matter of preference" (Ryder, 1979:361).

However, despite the widely accepted influence of normative standards on fertility behaviour, sociologists have not yet developed any formal theory about the normative influence on fertility patterns. Specifically, the ways through which norms affect fertility have not been successfully outlined and formulated. On the other hand, variables considered by sociologists as factors relevant to fertility decision-making contribute significantly in fertility research by indicating specific norms that could constrain individual families in their reproductive behaviour. For example, age norms for marriage and childbearing act as constraints on fertility decision-making. The last two decades have been marked by an upward shift in both, the age of marriage and the timing of first birth. Pebley (1981:171) emphasizes that the impact of changing norms on decisions about the timing of first births is so strong that "teenage childbearing has come to be viewed as a violation of the normative schedule". In addition, norms have become more flexible regarding the acceptance of women working outside the home in gainful employment. These changing norms might contribute significantly in a couple's decision to place priority on personal and occupational pursuits while delaying the first birth.

SOCIAL-PSYCHOLOGICAL THEORIES OF FERTILITY

The study of human fertility has also been a research subject for psychologists while some approaches have emerged claiming to add insight into fertility behaviour.

The central point in these approaches is that economic and social variables alone could not adequately explain fertility behaviour since the latter is not only the result of observable social facts, but also, the result of psychological processes related to the individual decision-maker. Hence, the needs, motives, desires and other personality characteristics of individuals are recognized as important determinants of fertility. These psychological processes may affect fertility decision-making by influencing attitudes regarding the timing, spacing and number of births.

Early studies on the impact of psychological variables on fertility behaviour did not reveal any significant relationship between fertility and psychological characteristics of individuals. The famous Indianapolis study (Kieser and Whelpton, 1958), was an attempt to explain differential fertility and family planning behaviour by employing social and psychological factors. However, despite the efforts to minimize the impact of social class

by limiting the sample to urban, white, Protestant women of eight or more years of education, social class proved to be the most important expanatory variable, while the social and psychological variables provided little explanatory power. Similarily, another attempt by Bumpass and Westoff to analyse the relationship between personality and attitudinal variables and fertility provided "...little encouragement for the use of these variables at least as they [were] measured" (1970:103).

The past failure of psychological variables to explain fertility is attributed by Bagozzi and VanLoo (1978), among others, to the following reasons: First, the survey methods and correlational techniques used are particularly hazardous in psychological research so the problem lies on the procedures used to analyze data rather than on the failure of the psychological variables themselves. Second, the measurement and scaling of variables was not properly taken care of, given that psychological concepts contain greater amounts of measurement error than other demographic variables. Furthermore, Fishbein notes that "most of the large scale survey studies in the family planning area have been restricted to the testing of often unrelated hypotheses and are not based on any organized theory" (1972:215).

On the other hand, some other studies have indicated

that social and psychological correlates of fertility play a major role in determining reproductive behaviour. A significant contribution is that of Rainwater. His two exploratory studies (1960, 1965) indicate that family size is influenced by psychological processes such as processes of goal formation, motives that operate to condition family size goals, the choice of methods to achieve these goals as well as the psychological needs of the individuals and the existing norms about family size. His inquiry is directed toward the questions of why couples have the number of children they do and what are the psychological processes involved influencing decisions about family size.

The value of children to parents and the psychological needs for having them are cited by Rainwater in the following examples: Children are seen by lower class white parents as a source of self-fullfilment and purposefulness. For lower class men, children are a proof of 'potency' and masculinity. In addition, lower class men's interest in having a large family is related to their need for repeated evidence of potency. For lower class women, their children represent a source of affection and love that they are deprived of by their husbands. For those women, "motherhood is more completely the reason for being than it is for the middle class woman who is taught the value of outside interests for establishing her validity as a person"

(1960:82).

Decisions about the timing of fertility could be influenced by the same psychological processes which influence decisions about the number of children. When high value is placed on children by couples and the perceived psychic rewards outweigh the perceived costs of having them, then an early timing of the first birth would be expected.

Rainwater (1965), also emphasizes the role of norms in determining family size. He feels that although there is no hard norm in American society about a particular number of children in the family, some sort of sanctions are exercized by significant others. For example, having fewer children than one can afford might express selfishness or ill health. On the other hand, having a large family, is often described as a manifestation of irresponsibility. Rainwater's reference to societal norms as determinants of fertility is in accord with the sociologists' emphasis on the constraining role of norms on fertility decision-making.

Rainwater, further, distinguishes between two patterns of sex relationships within marriage that influence fertility. One pattern is that of mutuality and the other is that of rejection. Couples who experience mutuality in their sexual relationship, as opposed to those who reject

sexuality as a meaningfull activity, tend to communicate better with each other, are more affectionate and caring and are more likely to come to agreement on family planning goals.

Further, Rainwater (1965) observed that women in marital relationships that tend to be egalitarian, as measured by the levels of companionship and sharing between spouses, are more involved with their husbands in common interests and activities than women in less egalitarian relationships, who seek large families as a source of validation as women and mothers. The degree of egalitarianism in the marital relationship might also influence decisions about the timing of the first birth. Couples who experience high levels of mutuality in the course of their social exchange, might choose a lifestyle that does not include parenthood in its immediate objectives. Such couples might decide to delay their first birth until certain occupational and recreational objectives have been achieved.

Other approaches in social psychology regard fertility related behaviour as a process of social exchange. Approaches reflecting that view are based on Homans' (1961) theory of human exchange. In this, Homans tries to explain the behaviour of individuals in their interpersonal

relations. He uses principles and concepts taken from behavioural psychology and elementary economics such as positive and negative reinforcement, cost and reward. In this context, human beings provide positive or negative reinforcement to one another in the course of their interaction thereby mutually influencing one another's behaviour. Fertility related behaviours are treated as the outcome of a series of interpersonal relationships and exchanges between the husband and wife as they are influenced by social factors and other psychological processes.

Departing from Homans'theory of human exchange, Beckman (1978), presents a rational-type model of fertility decision-making. Important in this model is the role of motivations. Motivation for parenthood is defined as "the strengh of the tendency to have a first or an additional child" (p. 60). The strengh of motivation for or against a/another child depends on the perceived satisfaction and costs of having an nth child, as compared to various goods or services alternative to children.

In the model, socio-demographic factors, personality characteristics and situational factors (such as income, opportunity costs) are hypothesized to affect perceived rewards and costs, hence, motivation for parenthood. The

positive or negative motivation for parenthood, expressed as preference for a/another child or preference for alternative roles, influences the joint decision-making process of the couple through the strength of the wife's and husband's fertility intentions. Then, decisions about fertility affect indirectly the number and spacing of children, the dependent variable, through contraceptive use. Although Beckman's model has not been tested yet, there is strong empirical support for many of the interrelationships in her model. For example, Beckman's own study (1974) on the motivation for motherhood of 600 married women in Los Angeles, was compared with motivation for the alternative for employment or a career. In her findings, employment appeared to influence fertility in a way that currently employed women had lower motivation for a/another child than did unemployed women. In addition, the relationship between the fertility decision-making process and contraceptive use has been supported empirically in studies by Rainwater (1960, 1965). In those studies, open forms of communication between couples were related to successful fertility regulation.

Beckman's model is important in that it incorporates a wide variety of economic, social and psychological variables to explain fertility decision making. A difficulty, though, with this model lies in the fact that the interrelationships

between components of the social interaction between the husband and wife have not been adequately modelled, although there is considerable theoretical elabouration. However, further specification of the model would help it to be useful in studies concentrating on the timing of family formation where, motivations and exchange patterns between the couples are important correlates of their fertility related decisions.

Another paradigm, termed 'exchange theory', has been proposed by Bagozzi and VanLoo (1978). This theory, which is also based on Homans' theory, treats fertility as a process of social exchange. The general hypothesis is that fertility is the direct function of various psychological processes within the family and an indirect function of situational (social and economic) factors, which impose constraints on family size.

In the model it is proposed that there are two broad psychological processes within the family. The first posits that "the shared, socially constructed attitudes or tastes of household members influence family size". The second suggests that "social exchanges transpiring between husband and wife affect fertility" (1978:301-302).

The attitudes of family members are further

conceptualized as exhibiting three distinct taste components: the affective component (as manifested by the positive or negative feelings of family members toward children), the behavioural component(as manifested by the actions and choices of family members related to the decision to have children) and, the cognitive component(referring to beliefs related to the implications of the decision to have children). Social exchange between the couple is expressed through power, conflict, decision making and social influence. Bagozzi and Van Loo suggest that social exchange is shaped by the nature of social influence related to the spouses. Social influence is then defined as the way by which the needs and desires of spouses are communicated to each other. As a result, husband and wife attempt to achieve mutual satisfaction by exchanging rewards and punishments as those are shaped by the nature of their communication, that is, their social influence.

Social influence is operationalized by the authors through the power, conflict and role egalitarianism existing between the spouses. Their main hypothesis is that

> the more balanced the power, the less the conflict, and the greater the egalitarianism, on the one hand, the greater the probability that the couple will pursue joint careers, desire a lifestyle and mode of consumption at odds with producing a large family, engage in fertility planning and the use of contraceptives, and, in general, be susceptible to antinatalistic social, economic and attitudinal constraints, on the other hand (1978:308).

The model proposed by Bagozzi and Van Loo departs from the economic theory but maintains that economic variables affect fertility indirectly through endogenous psychological processes contrary to economic theory which suggests a direct effect of those variables on fertility. Hence, perceived costs and rewards of children, as constrained by income and prices of other goods and services, affect fertility through their impact on the attitudes of family members. Similarily, these perceived rewards and costs of children are subject to communication between husband and wife in the context of their social exchange.

In addition, social determinants are hypothesized to affect fertility indirectly through attitude formation and social exchange within the family, rather than directly as has been emphasized in the sociological theory of fertility.

The model recognizes two broad categories of social determinants that is, social norms and socio-economic status. The authors tested their model using data from two samples, one in Ankara, Turkey, and the other in Mexico City. For the most part the findings supported the hypotheses indicating that couples in more egalitarian sex role relationships and more modern attitudes are more likely to decide upon smaller family size. In addition, the explanatory power of the variables proved to be higher than

previous socio-economic models on fertility which employed the same data.

Moreover, the same model was tested recently by Chapman and Balakrishnan (1984) using data from the Canadian Fertility Survey. The purpose of this study was to determine the existence of a relationship between sex role egalitarianism and fertility. The focus of the study was on the husband-wife relationships as a unit of analysis, while fertility decisions were viewed as the outcome of the social-psychological processes between husband and wife. Their analysis, among others, supported the hypothesis proposed by Bagozzi and Van Loo (1978) that sex role egalitarian attitudes are negatively related to completed family size. The most important findings of this study were the interaction effects between sex roles and labour force participation of women on completed fertility. The significant interaction effects of these variables on fertility indicate that, when employment is considered, the role of sex role egalitarianism decreases in importance in fertility decision-making.

Exchange theory departs from the economic theory of fertility and challenges it by indicating that traditional economic and social variables could only be significant correlates of fertility insofar as they affect the

decision-making process indirectly through the formation of attitudes. In fact, the model presents a significant pattern of attitude formation, its antecedents and its interrelationship with forms of social exchange among family members.

Although the variables representing constructs of social exchange within the family are not considered exhaustive by the researchers, and some interrelationships have to be further explored, the model appears to have many advantages over other models proposed by economists as well as by other researchers in social-psychology.

It is important to mention however, that social-psychologists have directed their attention to the relationship between social-psychological factors and completed fertility whereas other fertility processes such as the timing and the spacing of births have not been examined yet. As a result, there is a need to investigate the impact of the same social-psychological determinants of completed fertility on the couple's decision to delay the first birth.

Summary

Fertility behaviour has been the subject of considerable research in many fields of social sciences such as economics, sociology and social psychology. Specifically, economists emphasize the role of income and prices on the demand for children and postulate a direct relationship between economic variables and fertility. However, although the role of other non-economic variables (such as tastes) has been recognized theoretically in economic literature, these variables have not been included in empirical tests.

Sociologists are mostly concerned with the constraining role of norms on fertility decision-making. Fertility behaviour is viewed as a form of social behaviour, and as such, is conditioned by normative standards. Though various studies have included a wide range of socio-demographic and economic determinants of fertility, psychological correlates of fertility have not been extensively analyzed. Most important, sociologists have not developed, to date, any formal theory of fertility behaviour.

In view of the failure of economic and sociolocical models to explain considerable variation in fertility, social psychologists and psychologists have introduced

various models for studying fertility behaviour. Numerous psychological factors have been added to economic and social ones in the models proposed. Thus, desires, motives, needs and other personality characteristics of individuals have been suggested as determinants of fertility.

Social-psychologists view fertility as a form of human behaviour that is shaped by various psychological processes which are determined by situational and normative factors. The social-psychological theories of fertility provide new direction in the study of human fertility although there is not any unified social-psychological theory of fertility yet.

The general implication of the literature is that empirical studies have mostly focused on completed family size, while little research interest has been addressed to the timing of fertility. Even fewer such studies have been based on Canadian data. The review of the literature then, indicates that there is a need for investigation into the timing of fertility of Canadian women in their late reproductive years as well as the need for integrating the different approaches proposed in a single model in order to delineate the interrelationships between various independent variables and the decisions to delay the first birth.

The theoretical model used in the present study embraces concepts drawn from both the economic and the social exchange approaches to fertility, and extends the one proposed by Bagozzi and Van Loo (1978). Thus, decisions to delay the first birth are assumed to be the outcome of social-psychological processes between the husband and wife in the course of their interaction, which, in turn, are constrained by economic factors and socio-demographic variables.

The economic approach to fertility is recognized as a useful framework to be used in the analysis of the timing of the first births for many reasons: economic considerations are prevalent in most facets of social life. Regarding fertility behaviour, the bulk of research indicates that people do make plans as to how many children to have, when to have them and in what intervals the births should occur. Also, changes in the roles women occupy within the social context, such as increases in both, educational levels and labour force participation, have increased the opportunity costs of children and might have affected negatively their preferences for children, by providing options alternative to childbearing. These options may encourage women to give priority to non-familial activities by delaying the timing of the first birth. As a result, the timing of fertility becomes a matter of choice between children, on the one

hand, and other activities on the other. This choice becomes feasible with advances in contraceptive technology which enable women to make concious choices about the number and timing of their births.

A drawback though in the application of economic theory to fertility analysis lies in the subject of tastes. As already stated, economists do not incorporate tastes in their empirical studies as determinants of fertility. However, the theoretical and empirical levels of the literature provide evidence that tastes are an important factor to consider when studying fertility patterns (Kyriazis, 1982; Turchi, 1975; Easterlin, 1969).

The role of tastes in fertility decision-making is enhanced by the social exchange theory, which suggests that the attitudes or tastes of family members and the nature of the husband-wife interaction influence the demand for children, while other social and economic variables operate as constraints on these processes.

The usefulness then of the model employed in the present study lies in the fact that attitudinal considerations are added to socio-economic factors, to better explain the decision-making process of those who decide to delay their first birth. Bagozzi and Van Loo

emphasize the importance of a model which departs from the economic theory but treats economic factors as influencing fertility indirectly through social-psychological processes within the household. In their words,

> such a model, better meets the standard set in the philosophy of science which states that theories of human behaviour must model both the relationships between the actions of individuals and the meanings these actions have for those people under study (1978:308).

The next section will deal with the specification of the model. The variables which are used as indicators of the concepts will be discussed and the proposed hypotheses will be stated.

CHAPTER III

MODEL SPECIFICATION

The model employed in the present study focuses on the decision of married women to delay their first birth. This decision is considered to be affected by economic determinants as emphasized by the economic theory, social-psychological processes within the household as emphasized by the social-psychological theory and selected socio-demographic factors.

The wife's age at the birth of the first child, which is the only dependent variable, is considered to be a function of the following independent factors: wife's labour force participation, wife's education, husband's income, attitudes toward children, sex role attitudes, sex role behaviour, age at marriage, wife's age, place of residence and wife's religion. Important in this study is the testing for direct effects of economic variables on timing decisions, as proposed by economists, against the proposition of exchange theorists that these variables have only an indirect effect on fertility decision-making through the formation of attitudes.

Also, of particular interest in this study is the identification of a possible pattern of delayers through the investigation of the impact of the above factors on the decision to delay the first birth.

Economic Constraints and Timing of the first Birth

The model, based on the economic theory of fertility employs variables which reflect opportunity costs, potential earnings and income.

Opportunity Costs

Economic research supports the view that couples, making fertility decisions, weigh the perceived costs and rewards of children against the perceived costs and rewards of consumption alternatives. The utility associated with children decreases in importance when the perceived costs of childbearing outweigh the perceived rewards of parenting.

This study examines the effect of the wife's opportunity costs, as measured by employment status, on the decision to delay the first birth. The increased involvement of married women in the labour force has provided them with options alternative to childbearing. In the light of those alternative opportunities provided, the opportunity costs of children increase while the perceived

rewards of childbearing decrease in importance. Extending this reasoning to timing decisions it is expected that the opportunity costs associated with the wife's employment would lead many women to delay their first birth. It is then hypothesized that employment status has a positive effect on first birth timing. Employed women are expected to decide upon a later timing of the first birth than their non-employed counterparts. It is also expected, that among employed women, those with longer involvement in the labour force, would be more likely to decide upon a later timing of the first birth.

Potential Earnings

It is well documented in the economic research that as educational level advances, the possibility of getting a quality job increases proportionately (Bowen and Finegan, 1969). Better educated women, who face high potential earnings are encouraged to substitute time on their jobs for time they might have spent at home rearing children. It is then hypothesized that the wife's educational level has a positive effect on the timing of the first birth.

While some researchers have suggested that education could be used in fertility research to reflect relative preferences for children, (Turchi, 1975: Namboodiri, 1972), studies have shown that education is a reliable measure of

potential earnings (Kyriazis, 1982: Willis, 1973).

Income

Consistent with the economic theory of fertility the present study directs attention to the impact of the household's resources (as measured by husband's income), on decisions about the timing of the first birth. Economists emphasize a constant positive effect of income on number of births. However, dynamic analyses have shown that the positive effect holds for the first two parities only (Kyriazis, 1982: Hout, 1974), while negative or non-significant effects have emerged on higher parities. These findings suggest that an increase in the household's income leads many couples to allocate much of their increased resources on child quality and/or, to begin childbearing earlier than lower income couples. Hence, the hypothesis put forward is that husband's income has a negative effect on first birth timing. It is expected that low income families would be more likely to delay their first birth until a satisfactory economic level has been achieved, relative to high income families.

Social-psychological Factors and First Birth Timing

Models proposed by social-psychologists emphasize the

role of social and psychological factors in fertility decision-making. Accordingly, the attitudes of family members toward children and the husband and wife interaction in their social exchange are viewed as determinants of fertility.

Attitudes toward children

These attitudes are formed by balancing the perceived costs and rewards of children relative to consumption alternatives. In this study, attitudes toward children are operationalized by means of an index. Positive or negative attitudes toward children express the strength of motivation for parenthood or motivation for alternative roles. Couples who perceive the rewards of parenting as outbalancing its costs, thus having positive attitudes toward children, are more likely to begin childbearing earlier in their lives. Attitudes toward children are, then, hypothesized to have a negative effect on delayed first births.

The formation of attitudes toward children should be analysed also in terms of the alternative roles available. Specifically, the participation of married women in the labour force, which provides them with options alternative to childbearing, might influence attitudes toward children. It is further hypothesized that negative attitudes toward children will be more prevalent in the sub-sample of

employed than non-employed women.

Sex role egalitarianism

Social exchange theory posits that, along with attitudes, the nature of the social influence associated with the spouses in their social exchange, affect directly fertility decisions. Spouses are assumed to arrive at fertility decisions by communicating their personal orientations and expectations to each other. The quality of their social exchange is determined by the degree of egalitarianism in the marital relationship. Marriages with relatively bilateral interpersonal influence (operationalized as sex role egalitarianism) tend to be more egalitarian.

In the present study two indexes are included to measure the degree of egalitarianism within marriage, operationalized by egalitarian attitudes toward child care and household activities and, egalitarian behaviour toward household activities. It is hypothesized that sex role egalitarianism exerts a positive effect on timing decisions. It is expected that couples with egalitarian sex role attitudes and sex role behaviour would be more likely to give priority to the pursual of interests alternative to childbearing by delaying the first birth.

Considering evidence from previous research of interaction effects on completed fertility between sex roles and labour force participation, (Chapman and Balakrishnan, 1986), the effects of the attitudinal variables on timing decisions will be tested separately for employed and non-employed women.

Socio-demographic Factors and First Birth Timing

The present model employs two demographic variables, age at marriage and wife's age, which past research has used as controls in the analysis of fertility.

Age at marriage

Late age at marriage has been found to be strongly associated with late first births (Teakman and Polonko, 1985: Marini and Hodsdon, 1981) and with rates of childlessness (Veevers, 1979: De Jong and Sell, 1977: Ritchey and Stokes, 1974).

The marked increase of the median age of marriage in recent years is considered to be partly due to the increasing educational and occupational aspirations of women. It is expected that late age at marriage would interfere with changes in the wife's preferences about the timing of the first birth relative to preferences for

non-familial activities. A positive effect of age at marriage on first birth timing is hypothesized.

Present age of the wife is included in the analysis as a control variable to facilitate the interpretation of the effects of other independent variables included in the model.

Place of residence and religion

Two additional variables included in the model are place of residence and religion.

Place of residence is included to account for differences in preferences for children relative to consumption alternatives. The hypothesis put forward is that place of residence has a positive effect on first birth timing. Couples residing in urban settings are expected to have their first births later relative to those who live in rural areas, given the greater availability of alternative roles and lifestyles associated with urban settlement.

Religion is included in the analysis as a classificatory variable to account for tastes related to the timing of the first birth. It is hypothesized that Catholics may start childbearing earlier than Protestants. However, a weak or non-significant correlation between

religion and first birth timing is expected on the basis of recent findings that fertility differentials between Catholics and Protestants have narrowed over the last decade.

The hypothesized effects of selected variables on the decision of married women regarding the timing of the first birth are summarized as follows:

Age at marriage is hypothesized to have a positive effect on timing decisions.

Wife's age is hypothesized to have a positive effect on timing decisions.

Wife's education is hypothesized to have a positive effect on the timing of the first birth.

Wife's employment status is hypothesized to have a positive effect on the timing of the first birth.

Husband's income is expected to exert a negative influence on the decision to begin childbearing.

Place of residence:

Urban residence (CITY), is hypothesized to have a

positive effect on timing decisions. Women residing in urban areas are expected to have higher probability to delay the first birth.

Rural residence (FARM), is hypothesized to have a negative effect on timing decisions. Women residing in rural areas are expected to have lower probability to delay the first birth.

Religion: Both categories of religion (CATH, OTHREL), are expected to show weak or non-significant positive effects on first birth timing.

Attitudes toward children are expected to exert negative effect on delayed first births. In other words, women having positive attitudes toward children are the less likely to dely the first birth.

Egalitarian sex role attitudes are expected to have a positive effect on timing decisions. Egalitarianism in sex role attitudes is expected to promote delayed first births.

Similarily, egalitarian sex role behaviour is expected to have positive effect on the timing of the first birth.

Economic variables are hypothesized to have an independent direct effect on timing decisions.

Compared to attitudinal variables, economic variables are hypothesized to have a stronger effect on the decision to begin childbearing.

CHAPTER IV

METHODOLOGY

Data

The data used in the present study are provided by the Canadian Fertility Survey (Balakrishnan, Krotki and Lapierre-Adamcyk, 1984). This survey was carried out by means of in-depth telephone interviews and is the first fertility survey conducted on a national level. It contains the complete fertility history of 5,135 women between the ages of 18 and 49 (including single women). In addition, useful information on attitudes about childbearing as well as sex roles attitude, detailed labour force histories and other demographic and socio-economic characteristics of those women is provided.

For the purpose of the present study, only married women in first marriages, living with the husband were selected. In focusing upon the decision-making process involving the timing of the first birth and the determinants of that decision, women without children were excluded from the analysis. As a result, the present analysis is based on a sub-sample of 2,692 married women between the ages of 18 to 49 who have given birth to at least one child.

Variable Measurement

Wife's Age at the Birth of the First Child

Wife's age at the birth of the first child (AGEBIR1), which is the dependent variable in the analysis, was calculated by subtracting the respondent's date of birth from the date of birth of the first child.

Labour Force Participation

Employment status was measured by using information provided on the wife's age at the birth of the first child, the wife's age at marriage as well as her age at the beginning of her first three jobs (if applicable) and at the end of her first two jobs (if applicable). Information on employment status was considered only for those respondents who had worked on a regular basis in full-time and part-time jobs excluding work during full-time studies or summer jobs.

Due to the concern with the effect of employment status on the probability of a first birth, it is necessary to establish temporal ordering between the timing of the first birth and employment. Hence, the employment status variable was formulated to specify whether or not the wife was employed during the period between the date of marriage and the date of the first birth. Accordingly, on the basis of

information provided on the mother's employment history, a new variable was computed to calculate the proportion of married life employed (PROP).

While the survey provides information on employment for the first two job intervals, it does not provide employment information beyond the beginning of the third job (if applicable). Hence, for those respondents who reported that they had started a third job before the birth of their first child an assumption was made that they had never stopped working on that job before the date of the birth of the first child.

Wife's Education

The wife's education (EDUCWF) was measured on the basis of the following item: "In total, how many years of education did you complete? "

The categories included in the survey are:

00 -none (no education)

00 to xx years

Place of Residence

Place of residence (RESID) was measured by the following item: "Do you currently live in a city, small town

or on a farm? "

1 -City, town

2 -Small city

3 -Farm

4 -Reservation

5 -Suburb

These categories were recoded to create dummy variables as follows:

City Residence (CITY)

0 -All other residence

1 -City residence

Farm Residence (FARM)

0 -All other residence

1 -Residence in a farm

Religion

Wife's religion was measured on the basis of the following item: " What is your present religion? "

Different categories of religion were recoded to create dummy variables. The variables used in measuring the influence of religious preferences on the timing of the first birth are:

Catholics (CATH)

0 -All other religions/no religion

1 -Roman Catholic, Ukrainian Catholic, Apostolic Catholic, New Apostolic.

Other Religions (OTHREL)

0 -Catholics/Protestants

1 -Other religions, no religion

Age of Wife

The present age of the wife (AGEWF) was calculated by subtracting the respondent's month and year of birth from the month and year of the survey.

Age at Marriage

Age at Marriage (AGEMAR) was calculated by subtracting the respondent's date of birth from the date of marriage.

Husband's Income

" What is your husband's gross annual income before taxes and deductions? "

In the sample, 21.4% of all married women failed to

report their husband's income. Hence, husband's income was estimated for all missing cases.

The variables used in estimating income were measured as follows:

Husband's Age (AGEHUSB)

Husband's age was measured on the basis of information on the husband's year of birth.

Husband's Education (EDUCHB)

In measuring EDUCHB the following item was used: " In total, how many years of education has your husband completed? "

00 -none
01 -to xx

Managerial Occupations (MANG)

0 -all other occupations
1 -all occupations categorized as "Managerial, Administrative and Related Occupations", according to the Canadian Classification and Dictionary of Occupations", Edition 1982.

Professional Occupations (PROF)

0 -all other occupations

1 -all occupations categorized in the C.C.D.O. as "Occupations in Natural Sciences, Engineering and Mathematics", "Occupations in Social Sciences and Related Fields", "Occupations in Medicine and Health", "Occupations in Religion", "Artistic, Literary, Performing Arts and Related Occupations"

Primary Occupations (PRIMARY)

0 -all other occupations

1 -all occupations categorized in the C.C.D.O. as "Farming, Horticultural and Animal-Husbandry Occupations", "Fishing, Trapping and Related Occupations", "Forestry snd Logging Occupations" and, "Mining and Quarrying, Including Oil and Gas Field Occupations".

Urban Residence (CITY)

0 -all other residence

1 -residence in a city or town

Other Residence (OTHRES)

0 -all other residence

1 -residence in a small city or suburb

The structural form of the equation utilized in calculating the husband's income for all the reported cases is as follows:

INCHUSB = a + b (AGEHUSB) + b (EDUCHB) + b (MANG) + b (PROF) + b (PRIMARY) + b (CITY) + b (OTHRES)

where: a = constant
b = unstandardized regression coefficient

On the basis of the above regression, husband's income was estimated for all missing cases by using the constant and the unstandardized regression coefficients. To obtain this estimation, the income variable was regressed (for all cases where income was reported) on husband's education, present age, occupation, language spoken and place of residence. The husband's occupation, husband's language and place of residence were recoded to create dummy variables. From the occupational categories included in the regression equation only three were statistically significant and were used in the estimation of income for the missing cases. The non-significant ones were used as the reference category in the analysis. Both categories representing the husband's language were not correlated with husband's income at the predetermined level of statistical significance and were not included in the estimation of income.

Table 1 presents the results of the regression utilized in calculating husband's income for all cases where income was reported. The regression equation utilized in the estimation of income has the following structural form:

INCOME= -.596 + 3.873 (AGEHUSB) + 13.641 (EDUCHB) + 84.66 (MANG) + 26.157 (PROF) + 84.26 (PRIMARY) + -41.106 (CITY) + -45.779 (OTHRES)

The results of this regression equation indicate that the mean income for the full sample, after the estimation of income for the missing cases, was $30,356 with a standard deviation of 144.53. These results are acceptably close to the ones obtained for the subsample of respondents who had actually reported income, where the mean income was found to be $30,054 with a standard deviation of 157.41. In addition, the proportion of explained variance (R2= .264) is an indication that the estimates utilized in calculating income for the missing cases could be considered accurate.

Table 1:
Unstandardized Coefficients (B) of the Regression Analysis of Husband's Income (INCHUSB) on AGEHUSB, EDUCHB, MANG, PROF, PRIMARY, CITY and OTHRES.

Independent Variables	B	
AGEHUSB	3.873	*
EDUCHB	13.641	*
MANG	84.66	*
PROF	26.157	*
PRIMARY	84.26	*
CITY	-41.106	*
OTHRES	-45.779	*
Constant	-.596	
R2	.217	
N	2,692	

Note: * significant at the .01 level

Attitudes Toward Children

In order to measure the effect of the attitudes toward children (CHILDATT) on the decision to delay the first birth, a Guttman scale was constructed by the following two items:

Item 1: "Having a child provides a goal in life that nothing else can replace".

1: Strongly agree

2: Agree

3: Disagree

4: Strongly disagree

Item 2: "Having a child provides an irreplaceable source of affection".

(categorized as above)

In computing the scale, the first two categories of the above items were classified as positive attitudes toward children while the last two were classified as negative.

Table 2, demonstrates the correlation matrix for the scale which represents attitudes toward children (CHILDATT). In evaluating the reliability of the scale, the following two coefficients were considered: First, the coefficient of

reproducibility, that measures the extent to which a respondent's scale score is a predictor of one's response pattern. A coefficient of reproducibility higher than .9 is considered to indicate a valid scale. Second, the coefficient of scalability, which measures the extent to which the scale is truly unidimensional and cumulative. A coefficient of scalability above .6 is required. In this scale, the coefficient of reproducibility of .94 and the coefficient of scalability of .69 indicate a reliable scale.

Table 2:
Item Total Correlations of the CHILDATT scale

Items	Part-whole Correlations *
Child as a source of purposefulness	.41
Child as a source of affection	.48

Coefficient of Reproducibility= .94
Coefficient of Scalability= .69
N= 2,563

---

* Coefficients are Bi-Serial

Attitudes toward children (CHILDATT) are categorized as follows:

0 -Positive (did not provide a negative response for either item)

1 -Moderately negative (provided a negative response on one item)

2 -Negative (provided a negative response for both items)

Sex Role Attitudes

In order to measure sex role attitudes a Guttman scale was constructed with the following items:

Item 1: " Do you think that looking after the children should be done only by the woman, mostly by the woman, equally shared by both partners or done mainly by the man? "

1. Only by the woman
2. Mostly by the woman
3. Don't know
4. Equally shared by both partners
5. Mainly by the man

Item 2: "Do you think that household chores such as cooking or the housework should be done only by the

woman, mostly by the woman, equally shared by both partners, or done mainly by the man?"
(categorized as above)

In computing the scale, the first three categories of the above items were classified as traditional attitudes while the last two were classified as egalitarian.

Table 3 presents the correlation martix for the scale representing sex role attitudes (SROLEATT). In this scale also, the coefficient of reproducibility (.97) and the coefficient of scalability (.86) indicate a reliable scale.

Table 3:
Item Total Correlations of the SROLEATT scale

Items	Part-whole Correlations *
Child care element	.55
Housework element	.42

Coefficient of Reproducibility= .97
Coefficient of Scalability= .86
N=2,563

*Coefficients are Bi-Serial

SROLEATT is cateorized as follows:

0 -Traditional (did not provide an egalitarian response on either item)

1 -traditional-egalitarian (provided an egalitarian response for one item)

2 -egalitarian (provided an egalitarian response for both items)

Sex Role Behaviour (SROLEBEH)

The effect of sex role behaviour (SROLEBEH) on the decision to delay the first birth was measured by means of a Guttman scale developed by the following items:

Item 1: "Would you say that it is always you, mostly you, equally you and your husband or mainly your husband who does the cooking?"

1. Always you
2. Mostly you
3. Equally
4. Mainly partner

Item 2: "Would you say that it is always you, mostly you, equally you and your husband or mainly your husband who does the housework?" (categorized as above)

In computing the scale, the first two categories of the above items were classified as traditional behaviour while the last two categories were classified as egalitarian. The following table presents the correlation matrix for the scale which represents sex role behaviour (SROLEBEH). In this scale also, the coefficient of reproducibility (.93) and the coefficient of scalability (.68) indicate a reliable scale.

Table 4:
Item Total Correlations of the SROLEBEH.

Items:	Part-whole Correlations *
Cooking Element	.56
Housework element	.51

Coefficient of Reproducibility= .93

Coefficient of Scalability= .68

N=2,563

---

* Coefficients are Bi-Serial

SROLEBEH is categorized as follows:

0 -Traditional (did not provide an egalitarian response on either item)

1 -traditional-egalitarian (provided an egalitarian response for one item)

2 -egalitarian (provided an egalitarian response for both items)

Method of Analysis

The method of analysis selected for the present study is step-wise regression. Regression solutions, which are performed in steps (i.e., explanatory variables are entered into the equation in a predetermined order), make this procedure particularly useful in determining the importance of a given variable (or a set of variables) in contributing to the total explained variance in the model. Of particular interest in this analysis is the testing of the hypothesis proposed by Bagozzi and Van Loo (1980), that socio-economic variables affect fertility decisions only indirectly through the formation of attitudes. Hence, due to the concern with the influence of each group of variables (socio-economic, demographic and attitudinal) on the decision to begin childbearing, step-wise regression could be considered a useful procedure in determining the relative contribution of each set of variables in the explained variance of the model.

Explanatory variables are entered into the regression

equation in the following order: First, the demographic variables, wife's age and wife's age at marriage are entered. Second, wife's religion and place of residence are added at step 2, in order to test for their contribution to the explained variance in the model. Third, economic determinants, represented by the husband's income, the wife's employment status and wife's education, are entered in the equation in order to separately examine the effect of economic factcrs on the decision to delay the first birth.

In the final step, the three indices measuring attitudes toward children, sex role attitudes and sex role behaviour are entered. As stated above, due to the concern with the effect of attitudinal variables on timing decisions, these variables are entered in the last step in order to examine their contribution to the full model in terms of explained variance.

The structural form of the regression equation for the full model is as follows:

AGEBIR1 = a + b AGEMAR + b AGEWF + b CATH + b OTHREL
+ b CITY + b FARM + b INCHUSB + b PROP +
b EDUCWF + b CHILDATT + b SROLEATT + b SROLEBEH

where: AGEBIR1 = Wife's age at the birth of the first child

a = constant

b = unstandardized regression coefficients

Steps:

1). AGEMAR = Age at marriage

AGEWF = Age of wife

2). CATH = Catholics

OTHREL = Other religions, no religion

CITY = Urban residence

FARM = Farm residence

3). INCHUSB= Husband's income

PROP = Proportion of married life employed

EDUCWF = Wife's education

4). CHILDATT = Attitudes toward children

SROLEATT = Sex role attitudes

SROLEBEH = Sex role behaviour

CHAPTER V

EMPIRICAL FINDINGS

Sample Characteristics:

Before interpreting the results from the analysis of the determinants of the timing of the first birth, it is important to present the characteristics of the respondents included in the sample. Table 5 illustrates the means and standard deviations of the variables.

Beginning with the dependent variable, the age of the mother at the birth of the first child (AGEBIR1), the obtained mean indicates that, on the average, Canadian married women have their first birth at the age of 23.7. The reported mean age of marriage of those women (AGEMAR), is found to be 21.7 years, while the mean age of the respondents included in the sample (AGEWF), is 35.79 years.

An analysis of the background characteristics of the respondents revealed that 49.1% of all women reported to be Catholic (CATH), while 10.8% reported having other religious preferences or no religion (OTHREL). Not appearing on the

table is the proportion of respondents (40.4%), who reported to be Protestants. This category is used as the reference

Table 5.
Sample Means and Standard Deviations of All Variables Included in the Model.

Variables	Mean / Standard Deviation ()
AGEBIR1	23.74 (3.91)
AGEMAR	21.7 (3.19)
AGEWF	35.79 (7.5)
CATH	.491 (.50)
OTHREL	.108 (.31)
CITY	.564 (.496)
FARM	.095 (.293)
INCOME	303,647 (145,091)
PROP	39.986 (44.102)
EDUCWF	12.19 (2.89)
SROLEATT	1.655 (.5997)
SROLEBEH	.431 (.7198)
CHILDATT	.555 (.860)

category in the analysis. Regarding the place of residence of the respondents, 56.4% of them reported living in urban areas (CITY), while only 9.5% reported living in rural areas (FARM).

Also not appearing on Table 5 is that 48.3% of all respondents included in the sample have never been in the labour force during the reference period (from the date of marriage to the date of the birth of the first child), while 15.8% of them worked throughout the reference period. With respect to the proportion of married life employed (PROP), respondents, on the average, have been working for 39.98% of their married life.

The reported mean educational level of the respondents is found to be 12.19 years, while the reported mean income for the husbands of women included in the analysis is found to be $30,365.

The index measuring attitudes toward children (CHILDATT), revealed a mean of .555 reflecting strong positive attitudes toward children. Of particular interest are the mean responses of the indexes representing sex role attitudes (SROLEATT) and sex role behaviour (SROLEBEH). For the former, a mean response of 1.655 reflects egalitarianism in sex role attitudes, while for the latter a mean response of .431 reflects traditionalism in the actual sex role behaviour of the respondents. This suggests that there is a gap between sex role attitudes and actual behaviour among Canadian married women.

Sub-sample Characteristics of Early and Late Childbearers:

The Profile of the Delayers.

Due to the particular interest of the present study in identifying a possible pattern of characteristics for women who have decided to begin childbearing after the age of 30,

all respondents were further divided into two sub-samples. The first sub-sample includes women who gave birth for the first time before the age of 30, while the second includes women who gave birth to their first child after the age of 30. Table 6 presents the means and the standard deviations of all the independent variables included in the model, separately for each sub-sample.

A comparative examination of the contents of Table 6 indicates that indeed, there is a pattern emerging regarding the characteristics of the delayers. Specifically, as expected, women who gave birth to a first child after the age of 30 have been married at a much older age (mean age at marriage, 27.68 years), than women who have had the first birth before the age of 30 (mean age at marriage 21.23 years).

The examination of the background characteristics of the respondents indicated that a higher proportion of women who have delayed their first birth are living in cities (70.6%), as compared to 55.4% of the early childbearers. Regarding religion, a lower proportion of delayers were reported Catholics (48%), as compared to early childbearers (49%).

Table 6.
Means and Standard Deviations of the Sub-samples of Early Childbearers and Delayers.

Variables	Means/Standard Deviations First Birth <30	First Birth >30
AGEMAR	21.23/ (1.77)	27.68/ (3.83)
AGEWF	35.5/ (2.96)	40.02/ (5.48)
CATH	.49/ (.5)	.48/ (.5)
OTHREL	1.05/ (3.07)	1.48/ (.356)
CITY	.554/ (.497)	.706/ (.457)
FARM	.096/ (.299)	.025/ (1.56)
INCOME	300.004/ (144.54)	6.23/ (143.40)
PROP	38.63/ (43.82)	59.68/ (43.59)
EDUCWF	12.05/ (2.79)	14.23/ (3.56)
SROLEATT	1.665/ (.60)	1.66/ (.60)
SROLEBEH	.553/ (.86)	.580/ (.86)
CHILDATT	.437/ (.724)	.470/ (.73)

Considering household resources, the mean husband's income reported by the delayers was found to be higher ($35,623), than that reported by the early childbearers ($30,004). Also, women who gave birth after the age of 30, have spent on average a much higher proportion of their married life employed (nearly 60%), than women who have had the first birth before the age of 30 (38.6%). In addition, on average, delayers have obtained higher education (14.23 years), than early childbearers (12.05 years), while, as should be expected, the mean number of children born to women in the sub-sample of delayers is lower (1.73), than to women who began childbearing early in their reproductive lives (2.43).

The nearly identical means of the variables representing attitudes toward children and the degree of sex

role egalitarianism in both attitudes and behaviour, merit some discussion. It was expected that delayers would show a greater degree of egalitarianism in both attitudes and behaviour toward childcare and household activities. Also, delayers were expected to show less positive attitudes toward children compared with early childbearers. The obtained mean responses suggest that all women in both sub-samples are not at all different in terms of role attitudes and behaviour and attitudes toward children. This might indicate that, either these variables do not have any differential effect upon the decision of women in the two sub-samples regarding the timing of the first birth, or the observed similarity could be attributed to the presence of an interaction effect between employment status and sex roles on the timing of the first birth. Earlier studies have reported evidence of interaction effects between role egalitarianism and labour force participation on completed fertility (Chapman and Balakrishnan, 1986: Bagozzi and Van Loo, 1980). It may be that differences in sex role attitudes and behaviour are more evident among groups of solely employed and non-employed women.

Overall, the comparative examination of the means of the two sub-samples indicates that the profile of an average delayer is a woman who marries at a relatively older age, is an urban dweller, has at least college education, has been working for the most part of her married life, is married to

a high income husband, has decided upon fewer children and has lower probability to be a Catholic than an early childbearer.

Findings

Table 7 presents the results from the regression analysis of the determinants of the timing of the first birth for the full sample of once married Canadian women.

Support is provided for the hypothesized positive relationship between age at marriage and age of the mother at the birth of the first child. This is consistent with earlier discussed research, which has indicated that age at marriage is strongly associated with slower first birth timing (Teackman and Polonko, 1985: Marini and Hodsdon, 1981). The strong positive effect of this demographic variable on the timing of the first birth might suggest that women who marry at a late age have adopted a certain lifestyle, which provides them satisfaction and fulfillment distinct from that of parenting. Those women have children, (fewer than women who marry early, as the reported means indicate), but they have them on their own terms, after other personal and professional goals have been achieved.

Table 7.
OLS Regression Coefficients of the Determinants of AGEBIR1 for Married Once, Canadian Women, Aged 18-49.

Independent Variables	b / Standard error	Beta
AGEMAR	.8222 *** (.0157)	.6704
AGEWF	.0443 *** (.0066)	.0849
CATH	1.6154 *** (1.2136)	.0172
OTHREL	1.0077 *** (1.8748)	.0067
FARM	-2.9259 (2.0262)	-.0183
INCOME	.0113 ** (.004)	.0350
PROP	.2089 *** (.0130)	.1964
EDUCWF	2.493 *** (.2161)	.1538
SROLEATT	-.0066 (.9627)	-.0000
CHILDATT	-1.358 * (.774)	-.0209
Constant	8.0533	
R2	.682	

* significant at the .05 level
** significant at the .01 level
*** significant at the .001 level

As expected, present age of the wife, the second demographic variable included in the analysis, is found to have a positive effect on the timing of the first birth.

Additional support was uncovered for the hypothesized positive relationship between wife's education and first birth timing. The statistically significant effect of education, which is used in the analysis as an indicator of the wife's potential earnings, provides further support to existing fertility research. Kyriazis' study (1979), has indicated that an increase in the wife's potential earnings, estimated by education, tends to delay the timing of the first birth. Higher education, coupled with the possibility of getting a quality job (Bowen and Finegan, 1969), increase the potential earnings of women who are encouraged to

substitute more time in a high paying job for time they might have devoted to childrearing.

Support is also uncovered for the hypothesized positive effect of the wife's employment status on the timing of the first birth. Employment status, which is used in the analysis as an indicator of opportunity costs, is found to have a strong and statistically significant effect on the decision of married women to delay the first birth. This renders support to similar findings of previous research on the topic, which has indicated that women faced with higher opportunity costs of time spent in the household, have an incentive to delay the first birth (Happel et al., 1984: Waite and Stolzenberg, 1976). The positive sign of the coefficient indicates that commitment to gainful employment by Canadian women provides them with rewarding opportunities (in both the economic sense and in the area of personal fulfilment), alternative to childbearing, which increases the wife's value at home. It should be emphasized that the weak correlation between wife's education and wife's employment status (.3) justifies the inclusion of both variables in the same equation. However, this low correlation also indicates that the two variables should not be considered as indicators of the same concept, i.e. opportunity costs. As a crude indicator, labour force participation represents the time constraint in relationship to children and, therefore, may be more appropriate as a

measure of this concept. On the other hand, education is a multidimentional variable and may, in this analysis, capture the impact of tastes. In light of these findings, it appears that opportunities associated with the involvement of married women in the labour force operate as constraining factors on the timing of family formation among Canadian households.

Household resources (measured by husband's current income), are hypothesized to have a negative effect on first birth timing. Economic means are expected to facilitate an early timing of family formation. However, the uncovered positive income effect is counter to expectations. The weak, but statistically significant effect of income indicates that the current economic situation is of little importance on the decision of married couples to begin childbearing. In the analysis, higher income couples do not appear likely to begin childbearing earlier than lower income couples, contradicting the hypothesized negative relationship between economic means and first birth timing.

It should be emphasized that the uncovered positive effect of income refers only to the current financial position of the household. It is possible that couples take into consideration their long-term economic situation in deciding upon the timing of family formation. Yet, while economic research supports the view that 'permanent income'

is a more relevant measure of the income variable in analysing completed fertility (Kyriazis, 1982: Turchi, 1975: Willis, 1973), evidence exists as of the relevance of current income when timing decisions are examined (Kyriazis, 1982). Due to methodological difficulties involved in estimating 'permanent income', this analysis could not examine first birth timing decisions in light of long-term economic considerations.

As shown in Table 7, income has the lowest standardized coefficient (beta) among economic variables included in the analysis. The weak effect of income in explaining timing decisions, coupled with the unexpected positive sign of the coefficient, give rise to the possibility that employment status differences play a more important role on the decision to begin a family. The possibility of interaction effect between income and wife's employment on timing decisions will be examined separately for the sub-samples of employed and non-employed women.

The effects of the remaining variables, which are included in the model, are further examined. Place of residence is employed in the analysis as an indirect measure of preferences for children relative to consumption alternatives. Couples residing in urban settings are hypothesized as being more likely to decide upon a late time of the first birth than couples living in smaller towns or

suburbs. Also, couples living in rural areas are expected to be less likely to decide upon a late time of the first birth. The results presented in Table 7 provide support for both hypotheses. The positive and statistically significant effect of urban residence on first birth timing shows that urban dwellers are more likely to have their first birth later in their reproductive lives, while couples living in rural areas are the least likely to have delayed first births. Mainly, differences in preferences for early or late first births between respondents of different residential backgrounds, should be considered a reflection of the available roles and lifestyles associated with each setting.

Regarding the role of religion in influencing timing decisions, the results provided support to the hypothesized non-significant effect of this variable in explaining fertility differentials. The findings are consistent with previous research, which has shown that differences between Catholics and Protestants in the number of children ever born have declined in the last two decades (Kyriazis and Henripin, 1982: Kyriazis, 1979: Collishaw, 1976).

Attitudes toward children (CHILDATT), operationalized as positive and negative attitudes toward children, are hypothesized to have a negative effect on first birth timing. The results provide support for the stated

hypothesis. In the sample, women expressing more positive attitudes toward children tended to have their first birth earlier than women who perceive the costs of parenting as outbalancing its rewards. Egalitarian sex role attitudes (SROLEATT) and egalitarian sex role behaviour (SROLEBEH), are hypothesized to have a positive effect on the decision to delay the first birth. Yet, the negative coefficients of both variables are counter to expectations. Role attitudes have a non-significant effect on timing decisions while sex role actual behaviour, which approaches statistical significance (P=.06), is found to be a more relevant factor in timing decision-making than sex role attitudes. Regarding actual behaviour, the unexpected negative coefficient would indicate that couples who exert bilateral social influence within the marital relationship, where the degree of give-and-take between spouses is more balanced, tend to decide upon an earlier timing of the first birth.

Due to the lack of research on the effect of the attitudinal factors on timing decisions, it is possible only to comment on the observed relationship between these variables. While attitudes toward children and sex role behaviour appear to be more relevant factors in the planning of family formation than sex role attitudes, a question arises as to whether the observed relationship between attitudinal variables and timing decisions is masked by the effect of other variables included in the analysis. Since

there is evidence of interaction effects between labour force participation and sex roles on completed fertility (Chapman and Balakrishnan, 1986: Bagozzi and Van Loo, 1980), the effects of attitudinal variables on the timing of the first birth will be examined separately for the sub-samples of employed and non-employed women.

Table 8 presents the standardized slopes (Betas) of all explanatory variables included in the analysis. Variables are rank ordered according to their contribution to the total explained variance in the model from those with the strongest to those with the weakest effect.

Table 8.
Rank-ordered OLS Standardized Coefficients for the Regression of AGEBIR1 on All Independent Variables.

Variables	Betas
AGEMAR	.6704
PROP	.1964
EDUCWF	.1538
AGEWF	.0850
CITY	.0418
INCOME	.0350
SROLEBEH	-.0229
CHILDATT	-.0209
CATH	.0172
OTHREL	.0067
FARM	-.0009
SROLEATT	-.0000

R2 = .68
N = 2400

As shown in Table 8, age at marriage is ranked first explaining the greatest proportion of variance in the model, making this variable the strongest single factor influencing the timing of the first birth. This impact of age at marriage is understood as reflecting preferences for a late first birth among late marriers. Age of the wife, the second demographic variable, which serves as a control variable in the analysis, is found to have a less important effect on first birth timing than age of marriage.

Considering the impact of economic variables (PROP, EDUCWF, INCOME), employment status of the wife (PROP) appears to have the strongest effect on the decision to begin childbearing, while husband's income (INCOME) ranks last with the weakest effect. These findings suggest that the opportunity costs associated with the wife's employment, play a more important constraining role on timing decisions than the husband's income available to the family. However, given that these two variables were hypothesized to have opposite effects on timing decisions, the unexpected positive effect of income gives rise to the question if current income is indeed an appropriate measure of the income variable in the analysis of the timing of the first birth. Along with this, the possibility of an interaction effect between wife's employment status and husband's income is also considered.

Wife's education (EDUCWF), an indirect measure of her potential earnings, also ranks high in terms of explanatory power. High education, which increases the wife's earning power, is considered one of the most important factors influencing her decision to delay the first birth. These findings demonstrate the importance of economic variables in fertility decision-making as proposed by economists. Specifically, concepts such as 'opportunity costs' and 'potential earnings' employed in economic research, are found to be important determinants of the timing of family formation.

In moving on, the effects of the respondents' background characteristics are briefly examined. Among the dummy variables representing different categories of place of residence and religion, urban residence (CITY) appears to have the strongest effect. It seems likely that roles and lifestyles provided within urban settings have a constraining role on the decision to delay the first birth. Other categories of these variables have a negligible effect on timing decisions. Specifically, as hypothesized, the weak effect of religion shows the declining importance of this variable in explaining fertility decisions. With respect to the effects of attitudinal variables, Table 8 indicates that these variables have a very weak impact on the decision of Canadian married women as of the timing of the first birth. Specifically, attitudes toward children

(CHILDATT) and sex role behaviour (SROLEBEH) are ranking lower than demographic and economic variables, while sex role attitudes (SROLEATT) is the least important variable in the equation. Among variables representing sex roles, role behaviour appears to be a more relevant factor in timing decision-making than sex role attitudes. It seems likely that the degree of give and take between the couple, and the nature of their social influence is more important to the decision to begin childbearing than egalitarian attitudes.

Further, Table 9 demonstrates the contribution of each group of variables (demographic, social, economic, attitudinal) to the total explained variance in the model. As hypothesized, economic variables have a stronger effect on timing decisions than sex roles and attitudes toward children, while social variables reflecting background characteristics of the respondents, have a minimal impact.

As should be expected, the higher proportion of variance is explained by the demographic variables age at marriage and wife's age. This indicates the direct association between the wife's present age, her age at marriage and the timing of the first birth.

The inclusion of social variables, place of residence and religion, in the equation, produces only minimal change in the R2 value when controlling for demographic variables.

The negligible effects of social variables provide support to the hypothesized declining importance of such variables on fertility decision-making.

Table 9.
Analysis of R2 Change at Each Step of the Step-wise Regression of AGEBIR1 Due to Demographic, Social, Economic and Attitudinal Variables.

Variables in Steps		R2*
Demographic:		
AGEMAR		
AGEWF		.6098
Social:		
CATH		
OTHREL		.61616
CITY	additional	(+ .0063)
FARM		
Economic:		
INCOME		
PROP		.6809
EDUCWF	additional	(+ .0648)
Attitudinal:		
CHILDATT		
SROLEATT		.68188
SROLEBEH	additional	(+ .0009)

* R2 values are cumulative.

Considering the proportion of explained variance by economic factors, Table 9 shows, that this set of variables produces the most significant change in the R2 value indicating the importance of economic considerations on the decision of the timing of family formation.

Attitudinal variables were entered last in the equation in order to test the magnitude of their contribution to the total explained variance in the model when controlling for

all other factors. As shown in Table 9, these variables have accounted for the lowest R2 change among all groups of variables. Comparing the R2 changes produced by economic and attitudinal variables, the results provide support for the hypothesized greater effect of economic determinants on timing decisions relative to attitudinal factors.

Overall, the step-wise procedure used as the method of analysis provides further support for the hypothesized contribution of each group of variables to the total explained variance of the model. The importance of economic variables on timing decisions is highlighted by the results indicating that contemporary Canadian married couples are rational decision-makers, who weigh the costs and rewards of parenting before beginning childbearing. Their decision is based mostly on economic considerations rather than by social forces or social-psychological factors such as attitudes toward children and sex roles.

Interaction Effects

This section deals with the testing for interaction effects on first birth timing between husband's income and wife's employment status on the one hand, and between attitudinal variables and wife's employment on the other.

The effects of income and attitudinal factors on timing decisions for the sub-sample of employed women is compared to the effects for the sub-sample of non-employed women. Table 10 presents the standardized regression coefficients (betas) for income and sex role indexes for both sub-samples.

Beginning with the effect of husband's income on timing decision-making for each sub-sample, the coefficients presented in Table 10 indicate the presence of interaction effects between income and wife's employment status. Among non-employed women, income is found to have a positive and statistically significant effect on first birth timing. This implies that among non-employed women, the higher the husband's income the higher the probability of a delayed first birth. For the sub-sample of employed women though, husband's income is found to be unrelated to timing decisions. The positive but non-significant effect of income among employed women indicates that the effect of employment status holds greater importance in explaining timing decisions, than the husband's economic contributions to the family.

For the sub-sample of employed women, the positive but non-significant effect of income might indicate that timing decisions are largely affected by the benefits associated with the wife's employment (eithr economic or non-economic),

rather than the husband's income per se. In dual income families, the time costs associated with children, such as the opportunity costs stressed by economists, are far more important in the consideration of the appropriate time to begin a family than the husband's income.

Table 10.
OLS Standardized Coefficients of Husband's Income and Attitudinal Factors Included in the Sub-samples of Employed and Non-employed Married Women.

Independent Variables	Beta / (level of significance) Employed	Non-employed
AGEMAR		
AGEWF		
CATH		
OTHREL		
CITY		
FARM		
EDUCWF		
INCOME	.0249 (.187)	.0489 (.007)
CHILDATT	-.0487 (.007)	-.0119 (.912)
SROLEATT	-.0131 (.482)	.0338 (.059)
SROLEBEH	-.0125 (.497)	-.0312 (.079)
N	1291	1215
R2	.65	.61

Overall, the results enhance the role of 'opportunity costs' of children in fertility decision-making, providing support to the economic theory of fertility. However, the uncovered positive effect of income on timing decisions runs counter to the fundamental proposition of the economic theory. As stated earlier, the present analysis is limited to the examination of husband's current income due to the constraints imposed by the data in estimating permanent

income. In light of these constraints, further research should be directed towards the impact of income on timing decisions by employing alternative measures of the income variable.

Regarding the effect of attitudes toward children on the timing of the first birth, it was hypothesized that attitudes toward children have a stronger effect for the sub-sample of employed women. Participation of married women in the labour force which provides women opportunities alternative to childbearing is expected to affect negatively atitudes toward children. The results presented in Table 10 support this expectation. The values of the standardized slopes indicate that negative attitudes toward children are more prevalent in the sub-sample of employed women. Most important, the relationship between child attitudes and timing decisions is found to interact with employment status. The statistically significant effect of attitudes toward children for the sub-sample of employed women (P=.007) turns out to be highly irrelevant to timing decisions (P=.912) for the sub-sample of non-employed women. The uncovered interaction effect between child attitudes and employment status in explaining timing decisions shows that for Canadian women employment represents a context of opportunities alternative to childbearing where the relative rewards associated with children are highly questioned.

Testing for interaction effects on timing decisions between sex role egalitarian attitudes, actual behaviour and employment status, the following pattern of effects is uncovered. For the sub-sample of non-employed women, sex role egalitarian attitudes have a positive effect on timing decisions. Non-employed women with egalitarian attitudes toward child care and housework appear to be more likely to delay the first birth than non-employed women adhering to more traditional attitudes.

Contrary to expectations though, sex role actual behaviour appears to have a negative effect on timing decisions of non-employed women. The results indicate that couples who exert bilateral social influence in the course of their social exchange are more likely to come to an agreement upon an earlier timing of the first birth by sharing the responsibilities of parenting.

Of particular importance are the uncovered effects of role egalitarianism for the sub-sample of employed women. Both variables, sex role attitudes and actual behaviour have non-significant effects on timing decisions for employed women. These results indicate that for these women, employment status considerations are more important in the decision to begin childbearing than the degree of egalitarianism in the role relationship.

Overall, the pattern of effects of sex role egalitarianism on timing decisions, as appears in the two sub-samples, indicates that employment status interacts with sex roles.

The pattern of effects of sex role egalitarianism in both attitudes and behaviour of Canadian women on timing decisions could be summarized as follows: for the sub-sample of non-employed women, the different signs of the coefficients of attitudes and actual behaviour indicate the lack of homogeneity among Canadian non-employed women regarding sex role attitudes and actual behaviour. The differing effects of these two variables on timing decisions show that, while egalitarianism in role attitudes tend to induce delayed first births, more bilateral social influence between the spouses tend to facilitate early childbearing due to agrement on sharing the responsibilities of raising a child.

For the sub-sample of employed women, the weak and non-significant effects of sex roles on timing decisions indicate that these variables interact with employment status in considering the timing of the first birth. The results show that rewards associated with involvement of married women in gainful employment override attitudinal considerations, which play a less salient role in the planning of family formation. Similar results have been

uncovered by Chapman and Balakrishnan (1986) who found interaction effects on completed fertility between labour force participation and sex roles.

The emerged pattern of effects of the attitudinal variables on timing decisions provide only partial support to exchange theory which posits that sex role egalitarianism affects fertility decision-making. Since there are no reported studies examining the relationship between role egalitarianism and timing decisions, the comments presented above could only be considered speculative. However, given that the original questionnaire instrument used in the Canadian Fertility Survey was not originally designed to index sex roles (Chapman and Balakrishnan, 1986:15) implying that less than optimal indicators were used to measure attitudes and behaviour of respondents, exchange theory could be considered a valid context to analyze timing differences. It should be noted that the indicators available as measures of sex role attitudes and behaviour may, in fact, misrepresent traditional couples as egalitarian and vice versa. For example, if the husband and wife have agreed to divide household tasks so that the husband is primarily responsible for housework and the wife for cooking, the couple will appear egalitarian on one indicator and traditional on the other. However, the actual division of labour that exists within this household implies an egalitarian relationship. It is clear that further

research is needed across this line of inquiry.

CHAPTER VI

CONCLUSION

This study has been an investigation of the timing of the first birth of married women in Canada and the factors influencing their decision to delay the first birth. The data used were provided by the Canadian Fertility Survey, the first of its kind on a national level.

A model comprised of two theoretical approaches, the micro-economic and the social exchange, was designed to test two differing propositions of the above approaches. Consequently, micro-economic theory's proposition of direct effects of economic variables on fertility decisions was tested against exchange theory's proposition of indirect effects of socio-economic factors on fertility decisions, through the formation of attitudes. Accordingly, the specification of the model was tested by using step-wise regression which allowed the examination of the effects of explanatory variables separately for each group of variables.

It is important to note that existing fertility research, based either on economic theory or on exchange theory, has focused mainly on completed fertility, while research on the timing of the first birth is largely lacking. In applying these theories to the analysis of the

timing of the first birth, a simplifying assumption was made, that factors influencing decisions about completed fertility could be important determinants of timing decisions as well.

The results of the analysis highlight the importance of economic variables in the decision of the timing of family formation. Economic factors included in the model were found to have a direct effect on timing decisions, providing support for the stated hypothesis. The effects of the wife's employment status and education and the husband's income remained unchanged when indexes measuring sex roles and attitudes toward children were included in the analysis.

Among economic variables, employment status proved to be the strongest constraining factor in the decision to delay the first birth. In the analysis, women with the higher committment to the labour force were more likely to have delayed first births. It appears that opportunities provided within the context of the wife's employment (economic or non-economic), increase both, the wife's value at home and her reproductive consciousness. It is clear that the birth of a child consumes a great deal of time and resources of parents and especially of mothers. In situations where the mother is committed to a career or to a quality job, the opportunity costs of raising a child are the most important constraining factor in her decision to

begin childbearing.

The results also provided support to the hypothesized positive effect of wife's education on the timing of the first birth. Advanced education, which increases a woman's earning power, appears to encourage Canadian women to delay their first birth. Since education requires long periods of time to be obtained, its effect on timing decisions could reflect postponement of the first birth until a desired educational level is completed. Yet, having age of the wife and age at marriage controlled for in the analysis, it appears certain that the constraining role of education on timing decisions is based on the consideration of the wife's earning power associated with high education.

Considering the effect of husband's income on the decision to begin childbearing, the results revealed that this variable is less important in the household's fertility decision-making than wife's employment and education. The possibility of an interaction effect between husband's income and wife's employment on timing decisions was tested by examining the effect of income separately for the sub-samples of employed and non-employed women. The uncovered interaction effects of these variables indicate that, among employed women, the decision of the timing of the first birth is largely affected by the perceived rewards associated with the wife's employment rather than the

husband's financial contribution to the family. This indicates that in dual-income families, the opportunity costs of children, as stressed by economists, are more important in the consideration of the appropriate time to have the first birth than the husband's current income. This also suggests that the costs of children have a bearing upon women only, who are supposed to undertake the responsibility of childcare.

Yet, the most striking result in this analysis remains the positive effect of income on the timing of the first birth, which runs counter to the fundamental proposition of the micro-economic theory. It was hypothesized that high income would facilitate early first birth timing. However, economic means were found to play a constraining role on the decision to begin a family. In light of these results, it remains uncertain if current income is a reliable measure of household resources in analysing timing decisions. Yet, due to the constraints imposed by the data in estimating permanent income, this possibility is left open to future research, where alternative measures of income should be employed.

In considering the effects of demographic factors, the results indicated that age at marriage is the most important factor in the analysis, influencing the timing of the first birth. While age at marriage and age of the wife represent

indirect measures of tastes for children, their role as important controls in the analysis is highlighted.

Variables reflecting background characteristics of the respondents appeared to be of secondary importance in timing decision-making. While urban residence was found to have a moderately strong effect, residence in rural areas and religion appeared to be unrelated to timing decisions. These results render support to existing research, which has indicated that such factors are no longer relevant to contemporary fertility decision-making.

Considering the effects of attitudes toward children and sex roles, the results have indicated that these variables have the weakest impact on the decision of married Canadians to begin childbearing. Yet, support was provided to the hypothesis, that positive attitudes toward children would facilitate an early first birth. In examining the effects of sex roles, role behaviour appeared to be a more relevant determinant of first birth timing than role attitudes. However, contrary to the stated hypothesis, egalitarianism in actual role behaviour was found to facilitate early first births. This indicates that in marriages where spouses exert bilateral social influence and where the degree of sharing is more balanced, an agreement on early first birth is more likely to occur.

In order to delineate the relationship between attitudes toward children, sex roles and wife's employment, and testing for the hypothesized interaction effects between these variables and timing decisions, respondents were further divided into two sub-samples of employed and non-employed women. The obtained results provided support to the hypothesized interaction effects, being consistent with previous research carried out by exchange theorists.

As hypothesized, negative attitudes toward children were found to have a significant impact on timing decisions only for employed women. Among non-employed ones, such attitudes were not related to their decisions about the timing of the first birth.

Regarding the effect of sex roles on timing decisions, both indexes were found to interact with employment status. The presence of interaction effects is more clearly indicated in comparing the coefficients for the sub-samples of employed and non-employed women. While egalitarianism in both attitudes and behaviour appeared to be related to timing decisions of non-employed women only, its effect was found to be masked by the effect of the wife's employment status for solely employed women. These results indicate that rewards associated with the wife's employment are more important in the decision of married Canadian women to delay the first birth than sex role egalitarianism.

Of particular concern in this analysis was the identification of a possible pattern of characteristics of those women who have decided to have their first birth relatively late in their reproductive lives. For comparative purposes, respondents were further divided into two sub-samples of early bearers (women who have had their first birth before the age of 30) and delayers (women who have had their first birth after the age of 30). A comparison of the reported means helped to identify the profile of a married woman who has decided to begin childbearing at an age at which, most women in her age group have, for the most part, completed their fertility.

Accordingly, an average delayer, as compared to an average early childbearer, was found to have higher education, has spent a higher proportion of her married life in the labour force, is an urban dweller, has been married at an older age, is less likely to be a Catholic, is married to a high income husband and, is more likely to have fewer children.

The present study could be considered limited in scope and the list of explanatory variables is far from being complete. Yet, some restrictions were imposed by both the availability of data and by fundamental assumptions on which this study was based. Data restrictions have contributed to the inability of this study to fully examine the

relationship between husband's income and the timing of the first birth (due to difficulties in estimating permanent income). The availability of more complete data could help to furter clarify this relationship.

Another factor which could be of help in the analysis of the timing of the first birth is knowledge about the availability of day care centers and the extent to which such facilities could compensate for the mothers time, in light of the increasing involvement of married women in the labour force. Although there is increasing political intervention and planning by the Canadian government for improving and extending day care facilities, data related to the role of these centers on family planning are not available.

Also, while it remains outside of the scope of the present study, it is interesting to directly examine the effect of a woman's income on the timing of the first birth by focusing on a sample of solely employed women.

With respect to the issue of rationality in fertility decision-making, as employed by economic theory, while it remains unclear to what extent timing decisions made by contemporary Canadian couples reflect rational decisions, the reported highly effective means of contraception utilized by Canadians contribute to the fact that, in most

cases, the birth of a child is the result of rational choice. As far as delayed births are concerned, it is obvious that having a child at an older age, is in fact a matter of choice.

Generally, in view of the lack of research on the timing of first births, the findings of this study could provide a starting point for individuals involved in this kind of research in the Canadian context. As stated earlier, the timing of first births, and especially delayed first births, have far reaching implications for population growth, with subsequent effects for the size of labour markets, women's roles and relations among generations. In low fertility societies, such as Canada, knowledge about the dynamics behind the decision of married women to delay the first birth, would help in better planning of ways to encourage fertility and to reduce the costs of childbearing. It is hoped, that this study has contributed to the understanding of the age pattern of Canadian fertility and the determinants of married women to delay their first birth.

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