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Ethnic Variations in the Relationship Between Income and Fertility

by

(C) Tina Wai-Ching Leung

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled Ethnic Variations in the Relationship Between Income and Fertility submitted by Tina Wai-Ching Leung in partial fulfilment of the requirements for the degree of MASTER OF ARTS.

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Abstract

Based on the 1981 Census of Canada, the extent of fertility differentials and the possible sources of variations in reproductive behaviour of the Chinese and the Portuguese are studied. Traditional explanations of fertility differences among ethnic groups are the characteristic-assimilationist thesis, the minority group status hypothesis and the ethnic subculture explanation. A further explanation of fertility is provided by the microeconomic model. This thesis seeks to integrate the microeconomic model with the minority status hypothesis and to explain the extent of fertility differentials as due to socioeconomic variables, minority insecurity and/or other subcultural aspects of the ethnic groups.

The results of this analysis suggest that microeconomic principles vary among the different age cohorts and social status classes of the ethnic minorities. Minority insecurity and socioeconomic factors are responsible for the fertility differentials of young minority couples, while ethnic subculture is responsible for the variations in family size of the older minority respondents. Another important finding is that insecurity varies by social strata. Ethnic minorities who have a more favorable socioeconomic position will experience less insecurity, while a less favorable socioeconomic condition accentuates feelings of insecurity, which translates into relatively lower level of childbearing.

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Chapter 1

Introduction

1.1 Statement of the Problem

How couples decide the size of their families has been the subject of much interest. Human fertility is a function of societal influences and the social-psychological process in decision-making between the husband and wife. Very often, individuals in society are subjected to different societal influences and go through social-psychological events that condition the decision-making process of childbearing. Due to this fact, there are variations in fertility among subgroups in society.

Demographers generally study fertility differentials on the basis of differences in structural variables, such as income, education and occupation, as well as cultural variables, like ethnicity, religion and other relevant factors. The study of fertility differentials among ethnic groups usually involves the analysis of intergroup relationships between a dominant and subordinate groups within society. Canada, like many other developed countries, shows an increasing homogenization of fertility within and between groups (Lapierre-Adamcyk, in Veevers, 1983). The structural variables which have been traditionally relevant for fertility differentials seem to have become less important in causing the differences. The remaining differentials in terms of cultural factors will be of

interest sociologically and politically (George, in Veevers, 1983). Krishnan (in Veevers, 1983) argued that the persistence of even small differences can be theoretically significant.

Canada is a land of immigrants which makes it a rich ground for the study of ethnic fertility differentials. The 1981 Census data show variations in fertility among the different ethnic groups (Table 1.1). This thesis will explore the possible explanations for ethnic fertility differentials. Due to the cultural diversity in Canada, we cannot study every ethnic group. Hence, three ethnic groups, namely, the British, the Chinese and the Portuguese, will be investigated in this thesis. Studies on fertility differentials among Canadian ethnic groups are mostly concentrated on European ethnic groups (Beaujot, *et al.*, 1982; Trovato, 1981). Current research has attempted to study the fertility patterns among Asian minorities in Canada (Halli, 1985). The Chinese fertility has seldom been studied extensively by Canadian researchers. The Portuguese are relatively new to Canada. The majority of them immigrated to Canada between the 1950s and 1970s. No systematic inquiry of the Portuguese has been carried out.

1.2 Theoretical Framework of the Thesis

Generally speaking, ethnic fertility differentials are the result of minority group status, ethnic effects, and/or unaccomplished assimilation. This thesis will concentrate on

the contributions of these three factors that cause variations in fertility. One explanation of ethnic fertility dissimilarity is the minority group status effect which claims that feelings of insecurity and perceived discrimination of minority members account for fertility differentials. Another explanation suggests characteristic discrepancies on socioeconomic and social demographic variables between the minority and the majority groups as being responsible for their variations in fertility. In other words, it is the differences in educational attainment, occupational prestige and income levels that determine fertility variations. However, assimilation will bring about convergence of socioeconomic distinctions between the dominant and the subordinate groups, and in turn, fertility differentials. The third explanation lies in ethnic effects that account for the existing fertility dissimilarity of the ethnic groups. In other words, it is cultural variations *per se* that cause the differences in family size.

Another explanation of human childbearing is provided by the microeconomic framework of fertility analysis. From this perspective, fertility differences emanate from economic factors and individual household decision making. This theoretical framework presupposes that the demand for children is a function of income, costs and utility maximation by couples. Some findings (Becker, 1960; Easterlin, 1969) showed a positive association between

income and completed fertility. Children are viewed as consumer durables that are sources of psychic satisfaction. Hence, any increase of income will enable the couples to have more children and spend more on the average. This is a phenomenon which is still being evaluated empirically (Becker, 1960; Easterlin, 1969; 1978; Leibenstein, 1974).

The members of a minority group may exhibit a different pattern of relationship between microeconomic variables such as income and fertility compared with those in the majority group. For example, in contrast to the expected overall positive relationship between relative income and fertility (Bean and Wood, 1974), this relationship may be inverse in some ethnic groups. Members of certain minority groups face greater social-structural barriers to social mobility, and may therefore, experience a greater feeling of economic insecurity which will discourage them to consciously opt for a relatively large number of children. On the other hand, the pro-natalist subculture of a group may encourage members who have higher relative income to form larger families. Similarly, in accordance with van Heek (1951), if a minority group is aiming to increase their numerical representation in a society, higher relative income will enable them to actualize larger family sizes. Unfortunately, investigations of ethnic differences in income and fertility are few (Bean and Wood, 1974; Reed *et al.*, 1975; Jiobu and Marshall, 1977; Johnson and Lean, 1985); and no such specific investigation has been undertaken within Canadian sociocultural groups; in

spite of the ethnic heterogeneity of this country.

Studies of ethnic fertility differentials fall in two streams of research in sociology: the microeconomic framework of fertility and the minority group status/characteristic-assimilationist hypotheses. An investigation of ethnicity, income, and fertility must consider several theoretical frameworks, namely, assimilation theory, minority and race relations, and microeconomics. This thesis will incorporate these perspectives in order to identify the extent to which differences in fertility are due to socioeconomic variables, subculture, and/or other aspects of minority groups that affect their members' decision-making, on reproduction. We will integrate the three explanations of fertility analysis to explain the fertility differentials of the ethnic minorities in this study.

1.3 Outline of the Thesis

Chapter two extracts from the literature what is known about ethnic differentials in fertility and develops a theoretical and empirical basis for this inquiry. In chapter three, the microeconomic framework of fertility is introduced and discussed in the context of a majority-minority relationship. The possibility of the integration of the microeconomic model and the minority group status hypothesis is also undertaken in the same chapter. In chapter four, two ethnic minority groups, the

Chinese and the Portuguese, are chosen for analysis. The theoretical relevance of these two groups to the synthesis of the microeconomic model and the minority group status hypothesis will be elaborated with an overview of their immigration history in Canada. These two groups are compared with the dominant group, the British. In the same chapter, we will also elaborate on the objectives of the present inquiry, the methodology and the research hypotheses. Chapter five will present the empirical results, while chapter six provide a discussion and suggestions for the further inquiry.

Table 1.1
Children Ever Born Among Selected Canadian Ethnic Groups, 1981

Ethnic Groups	Mean	S.D.	Cases
Canada	2.0	1.5	30797
British	2.0	1.5	11942
French	2.0	1.6	8546
Chinese	1.9	1.4	436
Portuguese	2.2	1.5	325
Dutch	2.4	1.9	553
German	2.1	1.5	1640
Italian	2.2	1.4	1115
Polish	1.9	1.4	319
Scandinavian	2.2	1.5	386
Ukrainian	1.9	1.4	716

Source: 1981 Public Use Sample Tape--Household File, Special Tabulation

Chapter 2

Literature Review: Minority Status and Fertility

2.1 The Formation of Ethnic Groups

After the two World Wars, large influxes of immigrants came to North America. In response to this newly emerged population, American sociologists, such as Park (1950), Wirth (1945), Thomas (1966), studied the adjustment problems of immigrants. These theorists tried to explain the formation of ethnic groups, and how the groups interacted with each other in the new society. They believed that the assimilation is the ultimate consequence of interaction with the host society.

How do ethnic groups form? It has been argued that any group formation must involve the needs or interests of the members in order to encourage participation to the group. In other words, there must be incentives and advantages to induce participation. The advantages can be of many different forms.

Basically, there are two main types of interests that facilitate ethnic group formation. They are instrumental and expressive interests (Reitz, 1980). Instrumental interests are material or practical. Members of the group can gain material rewards by participating in the group. Their standard of living may be improved. They may earn more money as a result of their involvement to the group. In other words, it is the economic conditions that lead to the ethnic

group formation. The second type is expressive interest. It refers to an individual's need for socio-emotional support, the expressive side of human beings who have a need for community. Members of the ethnic group will gain support from their friends with whom they share cultural and historical commonalities, thus maintain their identity through participation.

Research has been directed into the determination of the factors that sustain the ethnic groups (Reitz, 1980). Two relevant questions are:

(1). Do the two kinds of interests, economic and cultural, tend to be equally shared by members in the same ethnic group?

(2). Are some ethnic groups more likely united by shared economic interests while others are united more by cultural commonalities?

Perhaps, the conditions that are conducive to the preservation of ethnic groups are also responsible for their fertility differentials. If an ethnic group is united mainly by economic needs, it is likely that the members develop distinctive interests and values distinct from other groups. Likewise, if the ethnic group is sustained predominantly by cultural interests, culture elements are likely to reinforce the members' behaviour.

Social demographic explanations of ethnic fertility differentials have tended to emphasize three theses, namely, the characteristics explanation, the minority group status

hypothesis, and the subcultural norms hypothesis. The characteristic-assimilationist explanation emphasizes the socioeconomic condition of the ethnic group which account for the fertility differentials. The minority group status thesis stresses the interaction between minority status and socioeconomic position, while the subcultural norms hypothesis attributes variations in fertility to unique cultural features of the group.

If an ethnic group is sustained mainly by economic interest shared by its members, it will be likely that the fertility level of the group is due to its socioeconomic characteristic and/or its minority group status. But if an ethnic group is based mostly on common cultural interest, ethnicity *per se* is likely to be an important factor in determining the group's fertility level.

The following section will discuss explanations for ethnic variation in fertility and how each hypothesis is linked to fertility differentials. It is beyond the scope of the present inquiry to review all the literature concerning ethnic fertility differentials. Only those theoretically related to this thesis will be included.

2.2 Minority Status and Fertility Differentials

2.2.1 The Characteristic-Assimilationist Hypothesis

The characteristic explanation predicts that ethnic differentials in fertility are due to their differences in

socioeconomic status. Socioeconomic differences between the majority group and the minority group account for the above average fertility of the minority group. The assumption is that once minorities assimilate, fertility is expected to converge with that of the majority group (Goldscheider and Uhlenberg, 1969; Johnson, 1979).

Essentially, this hypothesis follows the assimilationist perspective. It argues that the distinct fertility of minority group members at any point in time merely reflects a matrix of social, demographic, and economic attributes which characterize the minority groups (Goldscheider and Uhlenberg, 1969). The basic idea is that the dominant group is in better socioeconomic positions than the minorities. It is the socioeconomic attributes *per se* of the minorities that determine their fertility levels, trends and differentials. It has been well documented that socioeconomic status is negatively related with fertility. Generally, people of higher social class are likely to have access to effective birth control techniques. They find a large family costly to maintain and incompatible with their living style. For example, blacks in the United States have above average fertility whereas Jews have below average fertility. Presumably, the high fertility of blacks in the United States is a result of their low social and economic status. They are not motivated to have small family. However, once they attain socioeconomic parity with the majority, their fertility level will converge (Petersen,

1961; Thomlinson, 1965). The Jews are better off in socioeconomic status than the overall population. Therefore, their fertility reflects their social, demographic and economic attributes. They emphasize the quality, rather than the quantity of children. Presumably, the majority population will exhibit similar fertility pattern to the Jews if the majority resembles the Jewish socioeconomic characteristics (Petersen, 1961; Thomlinson, 1965).

From this characteristic-assimilationist hypothesis, it can be inferred that once minorities assimilate to the host society, that is, when their socioeconomic characteristics are similar, differences in fertility will disappear. Therefore, the fertility differential is assumed to be only a temporary phenomenon.

There is an implicit assumption that the assimilation of the minority group will be attained eventually. This explanation for the fertility differentials raises a few questions. First of all, is the assumption that assimilation is the ultimate consequence valid? Is there a possibility of permanent (or at least long term) survival of ethnic groups? This possibility is quite likely given the policy of multiculturalism in Canada. If we do believe that assimilation will be attained ultimately, the question is when such moment will come. In the meantime we need to concern ourselves with the possible factors that operate to determine fertility differentials until such moment arrives. Secondly, is the characteristic-assimilationist hypothesis

itself valid? It has been argued that this explanation becomes less significant in explaining ethnic fertility differentials because of the universal use of contraceptive devices regardless of socioeconomic differences. In fact, we have mentioned in chapter one that perhaps, the cultural component is more important to account for the differential in fertility nowadays. The next two hypotheses may help to clarify this issue.

2.2.2 The Minority Group Status Thesis of Fertility Differentials

The minority group status hypothesis is based on ethnic and minority group relations and the immigration history of minority groups. There are two versions of this hypothesis. The first predicts below average fertility for the minority. The second variant predicts minorities to have above average fertility in relation to the majority group.

In the words of Goldscheider and Uhlenberg (1969:369):

> "membership in, and identification with, a minority group which does not have a normative system encouraging large families, and which does not prohibit or discourage the use of efficient methods of contraception, depresses fertility below majority levels".

The minority group responds in such a way because of the marginality and insecurity that are associated with minority status. Being a member of a minority group usually implies

difficulty in attaining social mobility; therefore members delay the gratification of early marriage, and having large families, in order to achieve their mobility aspirations, or to maintain their attained level of socioeconomic status. The desire for assimilation and social mobility affects the members to either defer childbearing or have fewer children (Goldscheider and Uhlenberg, 1969; Kennedy, 1973; Ritchey, 1975; Marcum and Bean, 1976).

Goldscheider and Uhlenberg (1969) suggested that the minority group status effect is strongest and significant among the middle-class segment of minorities. For working-class members, in low paying jobs, or ethnically segregated work setting, the pressure of being in a minority status is less perceived than their middle class counterparts who are qualified for jobs that connote higher status, and yet, because of their minority status, are denied many mobility opportunities. There is evidence of ethnic inequalities in the Canadian mosaic (Porter, 1965; Reitz, 1980). Some of the ethnic groups, like the Chinese and the Jews, are better off in terms of education, yet, they have been generally barred from many avenues of social mobility. Accordingly, they will have the strongest feeling of being minorities and hence, the significance of the minorities group status effect magnifies among them. Goldscheider and Uhlenberg (1969) suggested that such people would have small families.

Another possible response among members of the minority group is to have higher fertility than the majority. Van Heek (1956), and Day (1968), argued that if the minority group is homogeneous and has little chance for individual social mobility, the members will be conscious about their inferior minority position. The concern about their numerical representation will encourage them to have higher number of births than the majority. Therefore, it is not Catholicism *per se* that encourages fertility among the Catholics. Day suggested that Catholic ethnocentrism coupled with the feeling of being threatened as a group leads to above average fertility for this religious group. In other words, the Catholic subculture encourages and maintains high natality only in certain contexts: any pro-natalist consequence of this subculture will be possible only if the group is consciously aware of their significant minority status, and their numerical as well as political importance (Day, 1968). Kennedy (1973) used the Irish situation to examine the conditions under which minority group status exerts an independent effect on fertility. He put forth four conditions under which minority group status has independent effect on fertility, namely, (1) the minority is relatively large; (2) its size is politically important; (3) the minority group is economically disadvantaged; and (4) the cohesiveness of the group is strong.

2.2.3 Subcultural Effects As An Explanation Of Fertility Differentials

The third explanation of ethnic differences in fertility relates to values and norms that are specific to a particular ethnic group. This explanation is labelled the particularised ideology hypothesis (van Heek, 1956; Day, 1968) or subcultural effect. In general, the particularised ideology of a given minority group can work either to depress or to promote fertility. (Beaujot, *et al*., 1982). For instance, the Jews perceive children as a blessing. The relationship between parents and children is based on the unconditional love of the parents, expressed through boundless suffering and sacrifice, and the Jews emphasize the future achievement of the children. They will attend to all the needs of their children. In order to do so, they will plan their families carefully (Latowsky, 1971). Such emphasis on the quality of childrearing among the Jews acts to depress their fertility because they would rather increase their expenses on a small number of children than to have large families. Catholic doctrine, however, has a pro-natalist ideology which encourages large families and discourages the use of efficient contraceptives. In accordance with this doctrine, pregnancy is purely God's plan.

In addition to the pro-natalist ideology, there may also be some other cultural norms or practices, such as norms governing age at marriage, extended family,

inheritance, etc, that directly and indirectly influence the fertility pattern of a given ethnic group (Davis and Blake, 1956). For example, traditional Chinese families used to be an extended type which encouraged high fertility. Celibacy, which is common among the Irish, acts to lower fertility. Therefore, the subcultural components or the membership *per se* in an ethnic group will play a significant part in determining reproduction.

There are two underlying mechanisms that create the subculture of the minority groups. First, the cultural orientation that is inherent in the group may be based on autochthonous norms and values concerning family size. For example, traditional Chinese society valued an extended type of family and therefore created a normative structure in support of high fertility values. The second source of subculture is created by the minorities as a response to outside pressure (e.g. discrimination). The blacks and the Native Indians may create unique subcultural norms about family size in response to their sociohistorical experience. With persisting discrimination against them, blacks and the Native Indians, may not perceive small families as being an advantageous means to social mobility (Kennedy, 1973; Ritchey, 1975). The subcultural effects developed as a consequence of ethnic interactions are actually the minority status effects which we have discussed in the previous section. In section 2.4, we discuss the methodological difficulties in distinguishing the social-psychological

insecurity and the inherent culture of the minority groups (Trovato, 1981).

2.3 Ethnic Fertility Differentials in the Context of Assimilation

All three explanations, the characteristic-assimilationist hypothesis, the minority group status hypothesis and the particularised ideology hypothesis, ascribe different degrees of importance to the assimilation patterns of minority groups.

2.3.1 The Concept of Assimilation---An Overview

In his book, Gordon (1964) reviewed various definitions of assimilation. He concluded that the concept of assimilation is multidimensional. Without going into all the details of these definitions, we can generally conclude that assimilation is a social process occurring between the majority group and the minority group as they come to acquire the same sense of peoplehood (Gordon, 1964). The various definitions denote the idea of full structural participation and cultural integration of minorities into the host society. Eventually, there should not be any distinction between majorities and minorities; the society will become a fully integrated entity.

Gordon (1964) distinguished different dimensions or sub-processes of assimilation. Each of the sub-processes constitutes a particular stage or aspect of assimilation. An

ethnic minority group will be completely assimilated to the host society only if its members accomplish seven sub-processes. Cultural or behavioural assimilation refers to the extent to which the minority has absorbed the cultural or behavioural aspects of the host society (e.g. customs, art, religion, diet, language, etc). Structural assimilation refers to the process by which the members in the minority groups enter into the social, occupational and political structure of the host society. Amalgamation occurs when there is inter-marriage and interbreeding between the members of the minority and majority groups. Identificational assimilation relates to the sub-process whereby the minority group develops a sense of peoplehood based exclusively on the host society. During this process, the minority group will lose its identity as a separate entity. Behaviour receptional assimilation and attitude receptional assimilation take place in the absence of discrimination and prejudice respectively. The minority group is fully accepted by the dominant group. Finally, civic assimilation leads to the absence of value and power conflict between the minorities and the majorities. This means that values in civic issues of the ethnic group are altered sufficiently to avoid conflict with the dominant group and power is available to the minority members irrespective of their ethnicity. Gordon asserted that once structural assimilation has occurred, all the other sub-processes will follow. Under the circumstances of

complete assimilation, the minority will no longer be regarded as a subordinate group. The members that originated from this group and the individuals in the host society will have the same sense of peoplehood.

2.3.2 Ethnic Fertility Differentials and the Process of Assimilation

The three explanations of ethnic fertility differentials discussed in the previous section present different aspects of assimilation. However, it is empirically difficult to distinguish and test for each dimension of assimilation.

The characteristic-assimilationist hypothesis generally refers to structural assimilation. However, the differences in socioeconomic status may also be a consequence of prejudice and discrimination against ethnic minorities. Similarly, the minority group status hypothesis is very much a result of prejudice and discrimination as well as inequalities in the socioeconomic structure of the society. The particularised ideology thesis implies incomplete cultural assimilation. But as discussed before, the development of a particularised ideology can be a response to structural conditions associated with the minority's interaction with the majority group. Hence, full interpretation of the three hypotheses should note the intricate and interdependent nature of assimilation, discrimination and minority status.

Previously, we questioned the validity of the assumption that total assimilation is the ultimate outcome of ethnic interaction. Whether this stage is possible is still disputable. The concept of assimilation is intricate and the task involved is too complex to discuss in the present context. For the present inquiry, assimilation is regarded as a social process. To use a Weberian term, complete assimilation of all dimensions is treated as an ideal type that serves to ascertain analytically similarities and deviations in concrete cases. Our inquiry will explain the existing differentials in fertility, under the assumption that assimilation will be ultimately attained.

A similar conceptionalisation of assimilation is adopted by Ritchey (1975). He tested for attitude receptional assimilation and behaviour receptional assimilation in discerning the structural and ecological contexts within which minority groups will consciously alter their fertility. He constructed measures of racial inequity to examine the black-white differences in fertility under situations of low, medium and high level of discrimination against blacks. His findings showed that in the area of high or low racial inequity, the structurally assimilated Blacks have lower fertility than the Whites. Thus, structural milieu is necessary for correct interpretation and assessment of the minority status effect on fertility. The different degree of racial inequity in an area will play a

part in determining the ethnic differentials in fertility. Ritchey concluded that the minority status argument is confirmed, but his conclusion is in contradiction to Goldscheider and Uhlenberg (1969) who believed that the minority status effects persist. Ritchey suggested that with the assimilation of the minorities, the fertility of the majority group and the minority groups will converge. Thus, Ritchey saw the minority status effect as temporary. Its effect on fertility will disappear when assimilation is accomplished. Ritchey's study pointed out that the minority group status effect is important in determining fertility differential. In addition, one should also note the importance of assimilation, primarily attitude receptional and behaviour receptional assimilation, in affecting ethnic reproductive behaviour. From Ritchey's study, we can conclude two points:

1. minority group status represents the social-psychological aspects of ethnic relations. If the ethnic group experiences inequity, the minority group status effect is likely to be strong.
2. the presence of ethnic fertility differentials is partly a consequence of incomplete assimilation. Hence, assimilation, a process which the characteristic hypothesis implies, is an important concept in the analysis of ethnic relations.

Another study by Sly (1970) corroborated the characteristics-assimilationist argument and suggested the

necessity to modify the minority group status thesis. He tested the minority status hypothesis by using simple descriptive statistics and he found the results supporting the minority group status hypothesis. Sly extended his investigation into the relationships of education, income and occupation with fertility within four main regions of the United States for Whites and Negroes. His findings showed that education, income and occupation are inversely related to fertility, with the exception of educated Negroes, who have higher fertility than the Whites. However, the Southern region of the United States proved to be an exception to the general black-white pattern. In the South, blacks have actually experienced lower fertility than whites. In order to test the validity of the minority group status hypothesis; Sly employed a three way analysis of variance. He hypothesized that if the minority status effect has an independent effect on fertility, the main effect of race and its interaction terms with the socioeconomic variables should be significant. The results indicated that the minority status argument did not stand when applied to Negro-White fertility differences. In conclusion, Sly stated that structural assimilation should be taken into consideration in explaining racial differential in fertility or the minority group status hypothesis should at least be reformulated to take account the assimilationist perspective. Again, Sly's studies prompted the necessity to incorporate the assimilationist explanation and the minority

group status hypothesis in explaining the fertility patterns of the ethnic minority groups.

Despite the empirical evidence for the characteristic-assimilationist hypothesis in Sly's research (1970), Sly has neglected two significant points in his study (Ritchey, 1975). First, he failed to explain in what manner the findings for the South (which are actually consistent with the minority group status hypothesis) are explained by the characteristic-assimilationist argument. Second, he discarded the substantial amount of childlessness among the Negro cohort of 35 to 44 years old in 1960, especially outside the Southern region. In other words, the fertility differences between the Negroes and the Whites may be due to their differences in childlessness instead of socioeconomic differences. Sly failed to account for the possibility of childlessness in his analysis. Therefore, Sly's acceptance of the characteristic-assimilationist explanation for fertility differentials among different ethnic groups should be taken with caution.

Beaujot *et al.* (1982) used survey data to test the relation of cultural and marital assimilation with fertility level. Their findings suggest that the particularized ideology hypothesis is strongly supported when intermarriage is used as the measure of assimilation. Cultural assimilation, measured by language use, and marital assimilation, measured by intermarriage, are inversely related with fertility differences between the majority

group and the minority group. They concluded that even though ethnic differences in fertility are small nowadays, the differences are not completely removed even when controls for other relevant variables, such as education, income and residence are considered simultaneously. There should be other factors that account for the differences. They suggested that the persisting family size differences were a component of given ethnic identities because the fertility level of the less assimilated individuals generally involves an accentuation of the behaviour which is typical to their own ethnic group. As long as the members of the ethnic group still have a sense of ethnic identity, the process of assimilation is not completed and ethnic differences in fertility should persist.

Given the limitation of this data, none of the studies mentioned was able to measure assimilation in all the dimensions. The researcher must state clearly which dimension of assimilation is being examined. The characteristic-assimilationist hypothesis explains the above average fertility of the minority group, but fails to account for the situation where a structurally assimilated ethnic group, such as the Jews, has below average fertility. It also fails to explain the mechanism that conditions the differences in fertility before the stage of complete assimilation. It is under such circumstances that the minority group status hypothesis may provide an important link in ascertaining fertility differentials.

Goldscheider and Uhlenberg (1969) analyzed fertility differentials of Blacks, Catholics, Jewish and Japanese Americans using 1960 census data. They argued that there should be three underlying mechanisms for differential fertility to occur:

> "A minority will experience below average fertility when (1) acculturation of minority group members has occurred in conjunction with the desire for acculturation; (2) equalization of social and economic characteristics occurs, particularly at middle and upper social class levels, and/or social and economic mobility is desired; (3) no pro-natalist ideology is associated with the minority group and no norm discourages the use of efficient contraceptives." (Goldscheider and Uhlenberg, 1969:372)

Controlling the factors of residence, race, age and education, they found that educated Blacks, Jewish and Japanese Americans have lower levels of fertility than the Whites at equivalent levels of education, whereas Catholics show a pattern of higher than average fertility. The three mechanisms fit the Jewish and Japanese cases very well and provide an explanation for the Catholic situation. Feelings of insecurity and a desire for acculturation presumably act to depress fertility among the Jews and Japanese, whereas pro-natalist ideology of Catholics encourages large families. The struggle for social mobility appears to be

harder for the minority group members. Among the low fertility groups, the minorities will withstand the difficulties by limiting childbearing in order to attain their goal of social mobility. For Catholics, specific church doctrines regarding family size and contraceptive methods tend to raise fertility.

2.4 Methodological Difficulties in Generalising the Minority Group Status Hypothesis

Thus far, we have discussed the necessity of incorporating the three explanations of ethnic fertility differentials. We argued that before the stage of total assimilation, the three explanations will be responsible in contributing ethnic differentials in fertility. However, in empirical analysis, there is methodological difficulties in distinguishing the effects that account for the differentials.

Trovato (1981) pointed out the issue of generalizability of the minority group status hypothesis. The case of the Blacks poses an interesting example of this problem. According to Goldscheider and Uhlenberg (1969), the independent ethnic effect serves to raise fertility among the less educated Blacks, and the interaction term of

ethnicity and education serves to lower fertility. Trovato (1981:59) argued that the problem lies in determining when

> "a significant multiplicative effect of structural variables with ethnicity reflects insecurities and when such a term is a function of specific normative orientations about family size inherent in the minority."

The situation of the Blacks is straightforward since it is generally known that they do not possess a pro-natalist ideology. Thus, high fertility among the less educated Blacks must be a consequence of discrimination. Ritchey (1975:252) said,

> "if discrimination markedly reduces the potential for social mobility, minority couples would be less likely to plan rationally to have small families."

Among highly educated Blacks, the feeling of marginality is strong and the desire for upward mobility depresses reproduction. Thus, as Trovato put forth, low fertility among the educated Blacks is the result of insecurities and nothing else. Yet it will be difficult to determine whether the significant multiplicative interaction effect of socioeconomic variables and ethnicity is a result of insecurities or is a function of the specific subculture about fertility e.g. Jews (Figure 2.1). The fertility pattern of the minority group can be a consequence of either the insecurity effect and/or its subcultural norms. It is impossible to distinguish the two effects by solely

referring to the multiplicative interaction term of socioeconomic variables and ethnicity. Others have assumed that this multiplicative interaction term actually reflects insecurity effects (Goldscheider and Uhlenberg, 1969; Jiobu and Marshall, 1977). However, being members of the minority group, not only signifies insecurity, but also represents the influence of the culture of the group. Trovato concluded that in future studies, researchers have to state in advance if the particular minority group does or does not have specific norms about fertility and then proceed to test the competing explanations.

In the later part of their discussion, Goldscheider and Uhlenberg (1969) also admitted that the minority groups they studied have experienced social and cultural changes at various rates. Also at different points in American history, each group has had its own unique experiences which may ultimately affect fertility. In response to this problem of generalizability, recent studies have been directed toward specific ethnic groups (Marcum and Bean, 1976; Johnson, 1979; 1980; Lopez and Sabagh, 1980; Bean and Swicegood, 1985).

Lopez and Sabagh (1978) used survey data to study Chicano couples in Los Angeles. They suggested two possible fertility outcomes under the situation of great ethnic integration when members of the minority group have close contact with their own ethnic community. (1) ethnic members can increase their awareness of discrimination against them

and therefore limit their childbearing. (2) greater integration to the ethnic community can also mean greater exposure to autochthonous subcultural norms for large families, thus contributing to high fertility. Their findings indicate that in actuality, ethnic integration is associated with reduced fertility. Hence, there is evidence of minority group status effect which operates even among a high fertility ethnic group. Lopez and Sabagh's study is significant because for the first time, researchers incorporated or accounted for the possibility that the independent minority status effect can be decomposed into a structural component---e.g. insecurity, discrimination, and a subcultural component (Trovato and Burch, 1980).

Jiobu and Marshall (1977) followed a similar reasoning. They attempted to decompose the observed fertility differentials between the majority group and two minority groups. Accordingly, observed fertility differences reflect the combined effects of assimilation, the interaction of minority status with structural variables and the main effect of minority status with a built-in error term. Jiobu and Marshall's attempt to estimate each of the component effects is innovative in that they were able to account for the simultaneous effects of the three sources of fertility variation above. Their reasoning corresponds to Ritchey's thesis (1975) that minority status effect is probably temporary. Before the stage of complete assimilation of the minority ethnic groups, minority insecurity effects and main

ethnic effects are also responsible for causing fertility differentials. Jiobu and Marshall's results indicate that cultural plurality is a persisting characteristic of the American society. Even though ethnic groups have been socially mobile, their members still retain key cultural traditions and psychological traits that define a distinct ethnic identity. In Canada, multiculturalism is the state policy. It is reasonable to presume that members of the various ethnic groups entail their ethnic identity. Therefore, family size differentials should be regarded as the result of an interplay between structural and cultural assimilation. However, it is important to note that Jiobu and Marshall's methodology may not adequately estimate the separate effects of subcultural norms and structural insecurities. Like others (e.g. Sly, 1970), they assumed that the interaction term reflects the consequence of insecurity experienced by minorities. Therefore, among the Filipinos, the higher their educational level, the lower their fertility relative to that of the whites. Trovato and Burch (1980) pointed out that without direct measures, it is impossible to fully verify whether the interaction term reflects the influence of insecurities and/or subcultural norms that relate to family size. Such an interpretation fails to account for the possibility of high fertility among the educated minorities. Moreover, the effect of membership *per se* denoted by Jiobu and Marshall as the difference in intercepts, does not necessary mean the effect of

subcultural norms only; it can be a mixture of membership *per se* and the effect of insecurity. Unless there is a direct measure of the two components of ethnic effects, namely, the feeling of insecurity and discrimination as well as the subcultural norms, they will be confounded in the total ethnic effect of minority status (Trovato, 1981).

Despite the methodological difficulties in their analysis, and in the absence of survey data appropriate for complete operationalization of all effects, Jiobu and Marshall's decomposition approach is fruitful. They estimated the various components that are responsible for the observed differential in fertility when more detailed data are unavailable to allow for a precise operationalization of relevant effects. Methodological difficulties can be palliated by stating the subculture of the minority group in advance (Trovato, 1981); and as stated before, any refutation of the assimilationist argument has to state clearly which dimension of assimilation one is referring to. Many of the studies mentioned are actually the test of structural assimilation and fertility. In accordance with the different definitions and dimensions of assimilation put forth by Gordon, assimilation refers to an on-going process. Before the end of this process (complete assimilation), there should be differences between the majority and the minority groups in various aspects, including reproductive behaviour. The ethnic effect, or the minority status effect which is suggested in the studies

cited (Goldscheider and Uhlenberg, 1969; Sly, 1970; Kennedy, 1973; Marcum and Bean, 1976; Jiobu and Marshall, 1977; Lopez and Sabagh, 1978), actually denotes incomplete assimilation among the minorities. In the case of complete assimilation, the members of the minority group no longer have any characteristics identifying them with their former culture, and rivalries between the majority and minority groups should also disappear. In other words, it is not only the minority groups that are no longer aware of their minority status, but also the majority group should accept the intergration of these minority groups into the host society. Any cultural component that causes different fertility levels between the majority and minority groups should disappear. In the absence of direct data on the matter, the decompositional approach suggested by Jiobu and Marshall (1977) serves to give an estimate of the degree of structural assimilation and, to a certain extent, cultural assimilation as well as discrimination from the host society in the context of minority-majority fertility differences.

2.5 The Time Factor in the Process of Assimilation

The study of ethnic relation and degree of assimilation will not be completed without considering the group life-cycle. Generally, the degree of assimilation is assumed to accelerate for the second and beyond generations of the minorities. Current immigrants, especially those coming from places which are different in terms of culture and

socioeconomic circumstances from Canada, are assumed to be the least assimilated. The present concern is when the minorities experience the feeling of insecurity. In other words, when will the minority group status effect become predominant in affecting fertility?

Marcum and Bean (1976) developed contrasting hypotheses about the influence of racial and ethnic group membership on the relationship between mobility and fertility. They found that the expected negative relation between intergenerational mobility and fertility does not take place until the third generation. They argued that the feeling of insecurity by minorities will be mitigated among the new immigrants by the significantly improved standard of living. In other words, the new immigrants may not have sufficient experience and understanding in the host society to aspire to assimilation. After one or two generations, the desire for assimilation may develop. At which time these minorities become more conscious of their minority status which leads to feelings of insecurity.

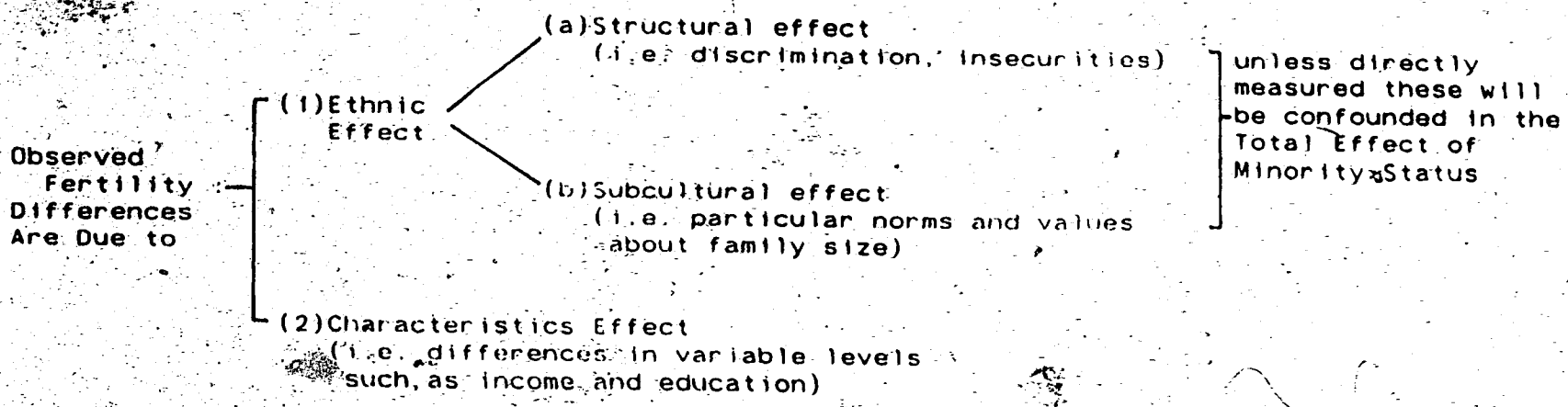
An opposite argument to Marcum and Bean's thesis is that the first generation immigrants, instead of the second or the third generation immigrants, should experience the

greatest minority group status-insecurity effect. The first generation immigrants come to a new country, they need to make great efforts to adjust to the new environment. In his analysis of socialization, Parsons (1964:203) maintained that

> "the mechanisms of adjustment are the processes by which the individual actor deals with elements of strain and conflict in his relations to objects, that is, to the situation of action."

In a modern society, an individual finds himself in an infinite number of such situations. An new immigrant is in an especially difficult position when he is faced with conflicting role expectations in the host society and in his ethnic community. They are consciously aware of their minority status in the host society. Hence, their effort of adaptation and adjustment to the new environment may override their desire to bear children. This possibility corresponds with Lopez and Sabagh's (1978) hypothesis. When new immigrants face conflicting role expectations, they become aware of their inferior status which encourages them to plan childbearing very carefully. Nonetheless, Marcum and Bean's research raises the idea that the minority group status effect may vary across different generations of the ethnic group.

Figure 2.1 Possible Effects in the Study of Ethnicity and Fertility



Source: Trovato, F., "Canadian Ethnic Fertility", Sociological Focus Vol. 14(1), 1981 p.61

Chapter 3

Minority Status and the Microeconomic Framework of Fertility Analysis

Another major stream of studies on fertility differentials bases on the microeconomic framework. Trovato (1981) suggested that the characteristic-assimilationist hypothesis is actually a derivative of the microeconomic model. The characteristic-assimilationist hypothesis argues that the socioeconomic differences between the majorities and the minorities affect their respective reproductive behaviour and thus account for their fertility differentials. Similarly, Sociologists would argue that the microeconomic model of fertility explain reproductive behaviour as a function of taste, price and income. Taste, price and income are determined by the socioeconomic status of the individuals.

The minority group status hypothesis also has common elements with the microeconomic model. It recognises the insecurity feeling among the ethnic minorities whereas the microeconomic model emphasizes the concept of relative deprivation which affects human decision on reproductive behaviour. Relative deprivation is very much like the feeling of marginality and inequity against the minorities.

Before we discuss the integration of the two frameworks, namely the minority status framework and the microeconomic model, a brief review of the latter will be given in the following section.

3.1 The Microeconomic Framework of Fertility

Beginning in the mid-1950s, fertility research has been focusing on the economic framework of fertility differentials. Economists and non-economists alike have been trying to analyse human fertility from the point of view of economic theory. Increasing emphasis on human rationality, leisure and quality of life shape the economic approach to fertility. The development and spread of knowledge about contraceptives during the last century greatly widened the choice of family size decision-making. Parenthood is no longer inevitable in a marriage. Many couples proceed to bear and rear children who are an important part to the living standard of most families. On the other hand, there are sacrifices and investments made by parents, such as child care, education of their children, etc. Investments in childbearing form a substantial part of a family's deliberate decision making.

The microeconomic model of fertility was mainly derived by Leibenstein (1957) and Becker (1960) who applied the theory of consumer behaviour to childbearing decisions. Following these two authors, Easterlin (1966,1969,1973,1975), Freedman (1963) and many others have continued to work in this area of fertility analysis. They modified the theory by integrating economic and sociological considerations on reproductive behaviour. Human fertility is not solely dependent on income effects, as the economists used to claim. Sociological factors also affect human

fertility.

3.1.1 Relevancy of the Economic Approach to Fertility

Generally speaking, the economic approach to fertility developed by Becker (1960), Freedman (1963), Easterlin (1966, 1969, 1973, 1975) and many others encompasses four basic ideas: (1) the investment of human capital; (2) the allocation of human time; (3) household reproduction function; (4) and household as a unit of consumer choice. First, the investment of human capital postulates that certain expenditures are made deliberately to the productive stocks so that the stocks can provide services in the future. Children are a form of human capital. They are sources of psychic satisfaction and old age security to the parents. The second idea relates to the allocation of human time to market and non-market activities which has a strong linkage with the investment of human capital. It should be noted that the concept of human time is not restricted to work in the market. It implies work in the household as well. Couples invest in their children monetary costs, and also time costs. Childbearing is labor intensive. Usually, housewives are required to allocate a significant section of their time in rearing children. The third idea is the treatment of household production which is a form of non-market activity. The household production function is the extension of investment of human capital and allocation of human time. Consumers not only allocate their time in

choosing and acquiring goods, but also put effort to alter and prepare these goods for consumption. The household is a production unit and children are the production. This production will depend on the amount of time as well as the quantity and quality of investment put forth on these goods (Schultz, 1973). The amount of human time and expenditures on the children are subjected to the couples' decision-making. The fourth idea treats the family as a decision-making unit. It encompasses the first three ideas. The household chooses to maximise its utility in consumption. It also decides the allocation of time and investment in household production. Childbearing is regarded as a form of household production which takes up certain amount of time and resources from the couples, and in return, the couples view children as some kind of utility that they want to maximise. Hence, with all the possible constraints, couples will go through a rational decision-making process before they engage in the childbearing activity.

In spite of the criticism of the microeconomic analysis of fertility, this approach has distinguished the rational component of human behaviour. Lesthaeghe (1983) postulated that human thinking was rational. The underlying ideational system of society has changed. Secular individualism emerges. New norms about quality of life are being developed. The secular decline of fertility is related to the shift in ideational system in society (Lesthaeghe,

1983). There is a redefinition of parenthood. The whole society has been restructured based on a common goal, economic prosperity and individual achievement. The economic approach may have its relevance to such a reformalised mode of thinking in modern society. This approach explains, to a certain extent, the reason for the rapid adoption of the pill. It accounts for the demographic transition in modern time and explain how the economic and social changes affect the family behaviour which in turn, bring forth the secular decline of fertility.

3.1.2 Literature Review of the Microeconomic Approach to Fertility Analysis

It is far beyond the scope of this thesis to review thoroughly all the available publications on the microeconomic framework of fertility analysis. Yet the ones that are relevant and crucial to the present study are discussed in this section.

There have been many studies concerned with the relation of socio-economic status and fertility. Some of the studies are longitudinal analyses of reproductive behaviour whereas some of them are based on cross-sectional data.

Becker's model of fertility is derived from consumer theory. A consumer buys some material in order to gain satisfaction. His decision on what to consume is based on profit maximization. Through his rational calculation, he maximises his profit and therefore he is satisfied. Becker

applied this framework to study human fertility by saying that a person decides to have a child in order to gain satisfaction. A child is considered to be similar to other consumer durables. The utility of a child depends on its qualities. If the utility of a child is high, that is, if the child's qualities (such as psychic comfort, and guarantee of old age security to parents) are preferred by the parents, they will likely "consume" or in other words, have a child. On the other hand, if the utility of the child is perceived to be low, the parents will decide not to have the child. Therefore, the decision-making process of childbearing must also take into account the comparison of the utility derived from children with that derived from other durable goods via a utility function or a set of indifference curves.

The shape of the indifference curves, accordingly, is determined by the "relative preference for children, or, in other words, by tastes" (Becker, 1960:211). Whereas, the formation of tastes is determined by a family's religion, race, age and the like.

A person will demand specific qualities from consumer durables, children in this case. A couple may like to have their children enjoy certain qualities, such as nursery school, college education, or music lessons, and so forth. The set of qualities for children that parents require will be determined by their tastes as well as their income level.

Economists postulated that any increase of income will enable the couple to consume more and spend more on the average. Becker (1960) used the same principle to describe childbearing decisions. An increase in income will enable couples to have more children and to spend more on each child. However, the quantity elasticity of childbearing is small compared to the quality elasticity of children. In other words, couples with high income tend to increase the quality of their children instead of merely increasing the number of children to their satisfaction.

Certainly there are expected expenditures on childrearing. Social pressure force the rich parents to spend more on their children for they are expected to provide better food, living environment, college education, and so forth. This explains the smaller effect of quantity elasticity than the quality elasticity effect.

Using data from the Indianapolis survey in the United States, Becker (1960) found that income and fertility are negatively related. However, such evidence is not strong enough to refute the hypothesis of a positive relationship between income and fertility. The observed negative relationship between income and fertility may be due to unevenly distributed knowledge of contraceptives, and the secular increase of child costs (Becker, 1960).

Willis (1973) stressed the tradeoff between the quality of children as an explanation for the insignificant relationship between income and fertility. Higher income

will presume higher quantity and quality of children. Both the quantity and quality elasticity functions increase with income. Yet, increased expenditures on children reduce the resources for having additional children. In other words, the quality elasticity is greater than the quantity elasticity. Hence, the quantity-quality tradeoff of children discourages higher fertiliy (Freedman and Coombs, 1966; Thornton, 1979).

The economic approach to explain fertility has come under attack. One of the chief critics of Becker's model is Judith Blake (1968). Her criticism falls into two categories. Firstly, the assumption of rationality is questioned. Secondly, Becker's model discounted the social context of reproduction.

Specifically, Blake (1968) questioned the basic analogy of children to consumer durables. First of all, the acquisitive behaviour of the consumer with respect to material goods is different from the acquisition of children. The acquisition of material goods must be limited to the consumer's credit rating or the actual financial capabilities, whereas, childbearing is not. Couples who cannot afford may still have children. Secondly, being parents is irrevocable. Thirdly, children of a particular quality are beyond control and unpredictable. Lastly, parents are not free to use or possess their children as they like, whereas a consumer has absolute right to manipulate his or her durables.

Blake's criticism have led to modification of Becker's original theory of fertility. Easterlin (1969) modified Becker's model of human fertility. He stated that the concepts of income and prices needed further discussion. More attention is required for the taste phenomenon. Finally, methods of fertility control need to be assimilated to the theory of consumer choice.

Accordingly, income measured at one point in time may not be a valid measure of income relevant to household decisions. Childbearing is a decision that involves long-term commitment. Therefore, Easterlin (1969) suggested that "permanent income" seemed to be a more appropriate measure.

> "The permanent income concept can be viewed as emphasizing that it is the potential income flow through time that is pertinent to household decision-making, and that observed income may be an unreliable proxy for this" (Easterlin, 1969:129).

In addition, the income concept should include the earning capacity of wives. The price or cost of children, according to Becker, is the actual expenditures of children. Easterlin reformulated the price concept by taking into consideration the opportunity cost of parents as well as other expenditures incurred in childbearing and rearing, such as costs for baby-sitting, costs required for goods and services to the children, etc.

Mincer (1963) stressed the concept of opportunity costs in empirical research. The costs of childbearing include not only those of goods and services directly required for it, but also the imputed cost of the time required for childbearing. Hence, the working wife's opportunity cost of childbearing will be relatively high. To have a child will take away the potential earnings of the wife in the market place. The higher the potential earnings of the wife, the greater the opportunity cost of the child, and thereby, tends to discourage fertility. Yet, the wife's earnings will contribute to the household potential income and in turn, affect fertility in a postive way. Mincer (1963) estimated the relative strength of the income effect and the opportunity cost effect. He concluded that the effect of the opportunity cost outweighs the favorable income effect. So, the higher the wife's earnings, the higher the price of childbearing, and consequently, the smaller the family size.

The greatest obstacle to develop a unified socioeconomic theory of fertility lies in the subject of tastes (Easterlin, 1969). According to the economists, the nature of tastes is a function of one's preference embraceing all combinations of satisfaction-yielding objects and income-price constraints. In other words, tastes depend on the relative preference for material goods and the income-price constraints of the household. Similarly, the preference for having a child will be evaluated in the context of the household's attitudes towards other goods,

given the constraint of household income.

Sociologists are assumed to be in a better position to discuss the formation of tastes. A person's preference system is molded by his culture, past and present environment. Hence, one's religion, color, nativity, place of residence, and education enter into the shaping of tastes. A person's preference system is formed over time and changes rather slowly.

Easterlin (1969) criticised Becker that his treatment of birth control is inconsistent with the rest of the analysis. According to Becker (1960), birth control is not in the framework of consumer choice, rather, it is based on "supply" of the household. Due to the unevenly distribution of contraceptive knowledge among the population, couples may produce more children than desired. Rich families are likely to have access of birth control methods and thus off-set the positive effect of income on fertility. Implicitly, if there is universal spread of contraceptive knowledge and constant tastes of family size, income may be positively related with fertility.

Easterlin (1969) modified Becker's model by introducing a consumer-choice approach to contraceptives. The consumer decides not only the family size and other material goods, but also the fertility control methods. In other words, it is the household's decision-making process that results in a certain level and distribution of fertility control practices. The technique and knowledge about contraceptives

is a different notion from the motivation in the adoption of birth control techniques. Researchers should keep that in mind when they study birth control behaviour and fertility.

Easterlin's modification on the notion of birth control has different implication to the economic framework of fertility. In Becker's framework, any increase in income will tend to increase fertility by relaxing the budget constraint. However, Easterlin suggested that an increase in income will enable the couples to use effective contraceptives and hence will decrease the chances of unwanted pregnancy. Similarly, education is directly related to knowledge of birth control techniques. Educated couples are better informed about contraceptive techniques and their costs of unwanted pregnancy are likely to be high because of their relative preference for other material goods. This explains why educated couples have smaller families. The use of birth control is a matter of motivation on the part of the consumer.

Easterlin (1966, 1973) tested his theory by investigating the fertility patterns and characteristics of young adults in the United States. In general, the total fertility rates declined in the 1920s, then they reached an all time low during the Great Depression (1933-1939). After the War, total fertility rates moved upward, reaching a peak in 1957. Subsequently, the rates turned down in the 1960s and 1970s. Easterlin concluded that the dramatic swing since the 1930s in the fertility of young adults was due primarily

to a corresponding movement in the relation between the income earning possibilities of young men and their desired living standards. He termed the relationship as "relative economic status" of young persons (Easterlin, 1973). Accordingly, the material aspirations of young person were formed in their parents' households.

Easterlin's contribution to the socio-economic framework of fertility is that he incorporated the concept of taste formation. The tastes for material and childbearing activities are formed largely in the parents' households. He also suggested the important role of relative economic status in determining fertility. Relative economic status is a function of the income and labor force experience of the sons relative to that of their fathers. A rise in the relative economic status of the sons, such as that occurred between 1930s and 1950s, encourages earlier marriage and childbearing. Conversely, a decline in relative economic status between 1950s and 1960s, discourages marriage and childbearing. Hence, relative income is hypothesed to be positively related to fertility. By comparing the earning power of the fathers and the sons, one can also take into account the economic socialization of the sons. Such socialization process will certainly be an significant factor shaping the formation of tastes. The higher the son's income relative to his father, that is higher relative income, the more likely that the son can achieve his living aspiration and hence, the more likely that the son will

pursue another child. On the other hand, if the son's income is low relative to his father, he will have difficulty in achieving the desired living aspiration which is acquired during his childhood, and therefore, he will likely to have fewer births.

Freedman (1963) operationalised the concept of living aspiration of the household. She compared the association with fertility of two income variables, namely, husband's actual income and husband's income relative to that which might be expected on the basis of his occupation, education, age and residence. Her findings concluded that

> "..... husband's income does make a difference over the longer childbearing period if it is considered in relation to the average income for the husband's occupational status and age. An income which is above the average for one's status is associated with more children, but being in a higher absolute income class means fewer children if the higher income is only what is usual for the husband's age and occupational status" (Freedman, 1963:422).

Freedman also pointed out the importance of female labor force participation in affecting total family size and spacing of childbearing.

Similar conclusions are found in other studies. Kunz (1965) used the 1960 United States census data to study the relation of income and fertility. A five percent national sample of urbanised women are studied. His

operationalisation of relative income was the same as Freedman (1963). He found that couples with more relative income when compared with others of similar education, occupation and age were able to afford the same life style and had money for more children.

However, not all the empirical studies of the relationship between relative economic status and fertility support Easterlin's theory. MacDonald and Rindfuss (1978) used micro data from the 1970 National Fertility Study to examine the behavioural components of Easterlin's hypothesis. They used multiple regression to analyse the once-married currently married couples. They found no support for the hypothesis that relative economic status influences fertility.

Thornton (1978) investigated the relationship between childbearing and several different income concepts, including husband's income, relative income, subjective well-being and optimism about future economic conditions. His findings showed that there is no consistent evidence for the positive effect of income on fertility.

3.1.3 Factors That Affect the Income-Fertility Relationship

Demographers have tried to justify the inconsistent findings of the positive effect of income on fertility. It is felt that the income concept in most of the microeconomic researches of fertility is inappropriate (Easterlin, 1973). Some have suggested the omission of the opportunity cost

variable in such studies (Mincer, 1963). Simon (1974) and Namboodiri (1972) suggested that the income-fertility relationship varies with parity. We suggest that minority insecurity effects and ethnic effects will affect the tenets of the microeconomic framework.

Becker (1960) would argue that the unsupportive evidence of an income effect on fertility is due to variation in contraceptives use across income groups. However, studies continue to show little positive association between income and fertility, even when contraceptive effectiveness is taked into account (Westoff and Ryder, 1977).

Easterlin (1973) suggested that the appropriate concept is relative income and potential income. This concept takes into account the fact that human fertility is an act of long term consequences. Relative income is the balance between consumption aspirations and resources of the couples. It is also conceptualised as the individual's current income as compared with others of the same ethnicity, age, educational level and occupation. The consumption aspirations of the couples play a significant role in determining fertility. Couples with rising incomes are expected to have certain material goods so as to maintain their social positions relative to others of the same social reference groups (Leibenstein, 1975). Hence, it is only when the couples have higher income relative to their reference groups that they feel financially secure to consume an additional child.

Failure to use an appropriate income concept will affect the income-fertility relationship.

While studies generally supported the positive relation of potential income and fertility (Bean and Wood, 1974), empirical testing of the hypothesis that relative income positively causes fertility continues to have inconsistent results. Thornton (1979) found a negative relationship between material aspirations and fertility, whereas Freedman (1963) showed a positive effect of material aspirations on fertility.

Another possible underlying factor in affecting the income-fertility relationship is the opportunity cost of childbearing. As mentioned earlier, the wife's opportunity cost, and hence the price of child care, varies directly with fertility (Mincer, 1963). Thus, the greater the earning capacity of the wife, the higher the opportunity cost. The negative effect associated with child care prices will largely offset the positive effect of income on fertility. Empirical studies of the opportunity cost of childbearing show a strong negative association between wife's income and fertility (Crimmins-Gardner and Ewer, 1982; 1978). When husband's income, wife's potential income, and relative status were used as predictors of current fertility and desired family size, only the wife's subjective assessment of relative status was consistent and significantly related to fertility in the expected direction (Crimmins-Gardner and Ewer, 1982; 1978).

Crimmins-Gardner and Ewer's investigation underscores the significant role of the wife's earning capacity in determining family size. Studies of the income-fertility relationship often use the husband's income as predictor of family size. However, a complete socio-economic approach to fertility should take the wife's potential income into account. The role of women has changed from traditional housewife to a dual role, in the labor market, and in the household. Women have become active in the labor market. The nature of marriage has changed. The traditional role of husband as the sole wage-earner and the wife as dependent has changed to a new model, the dual-income family (Veevers, 1983).

It is not the cost of children *per se* which is critical in affecting childbearing. The dual-income family is reluctant to give up the economic assets from the wife's working (McVey, in Veevers, 1983). Thus, failure to include the wife's potential income in the analysis of income-fertility relationship would leave out a very important concept in the microeconomic model of fertility analysis, the opportunity cost of childbearing.

The other possible reason for the inconsistent positive association between income and fertility in the literature is the failure to distinguish the nature of the relationship at different parity levels. Simon (1974) and Namboodiri (1972) found that parity level affected the income-fertility relationship. Yet, their findings concerning the nature of

the relationship at specific parities had been disparated.

Of all the studies cited, none investigated the income-fertility relationship among different ethnic groups. The concept of culture is difficult to define. Krishnan (in Veevers, 1983) concluded that in spite of some pioneering works, it has not been possible for demographers to define what the cultural component of fertility is. Basicallly, the culture of different ethnic groups shape the fertility norms, or taste for a certain family size, which in turn affect the level of fertility. Culture, then is treated as a residual category. When socio-economic factors, such as income, fail to account for observed fertility differences, cultural factors are relied on as an explanatory factor.

However, income can interact with cultural factors in affecting fertility. In other words, the other possibility for the inconsistent positive income-fertility relationship may be due to the failure to control for cultural factors in the analysis. In the literature, it often postulated that in addition to the socio-economic factors, which determine fertility of minority ethnic groups, there is also the possibility that minority insecurity and other ethnic factors influence fertility. There are only a few attempts to integrate these sources of fertility differentials (Reed, *et al.*, 1975; Bean and Wood, 1974; Beaujot, Krotki and Krishnan, 1978; Johnson and Lean, 1985). This thesis proceeds to examine the effects of income on the fertility of couples belonging to three ethnic groups in Canada.

3.2 The Minority Status Hypothesis in the Context of the Microeconomic Framework

Given that there may be a subcultural component within minority groups, income variables may affect fertility in differing ways. In this section, we attempt to incorporate minority status and microeconomic frameworks of fertility analyses.

Bean and Wood's study (1974) is an application of the microeconomic model to the examination of ethnic differentials in fertility. They investigated the relationship between relative income and fertility among samples of Mexican Americans, Anglos and blacks. The results reveal different patterns of relationship by ethnicity between measures of income and measures of fertility. The effects of the income measures, potential and relative income, on completed fertility are positive for Anglos and negative for blacks, whereas in the case of Mexican Americans, the effect of potential income on fertility is negative and the effect of relative income on fertility is positive. Their results suggest that different measures of income relate to cumulative fertility in different ways within the ethnic groups. Minority insecurity is observed among the blacks, while both minority insecurity and pro-natalist subculture are implied from the Mexican Americans. Bean and Wood's research is particularly significant because they followed the tradition of the microeconomic model while also incorporating the

assimilationist perspective, thus combining key element of the minority-characteristics theses and the microeconomic framework of fertility. Their measures of income are key variables in the microeconomic model, and income is also an important index of structural assimilation. Their findings suggest that relative income relates to fertility differently among various groups. The achievement of a relatively high income increases the likelihood of having a higher number of births for a racial majority, but will decrease the chance of having large families for the minorities. Another significant contribution of their study is the use of parity progression ratios. They reasoned that income measures should have different effects by birth order for different ethnic groups. The results corroborate their previous findings, although there are somewhat different patterns at different birth orders, especially among the Anglos.

Bean and Wood's study (1974) suggested the possibility of various relationship between income measures and fertility among different ethnic groups. In other words, income may not directly relate to fertility. Ethnicity may be a variable that affects and conditions both income and fertility.

According to Easterlin (1973), the perceived economic hardship or relative deprivation of the individuals is the core determinant of fertility. Being members of minority group are likely to experience discrimination and hence have

difficulty in economic achievement. In other words, the minority individuals are relatively deprivated as compared with the majorities. Therefore, this perceived hardship may depress their fertility. Potential and relative income can be proxies of perceived economic status. Potential income connotes the idea of anticipated income of the individuals. Relative income denotes the idea of comparison with individuals of similar background.

Various ethnic groups have different perceptions on potential and relative income, which affect fertility differently. The microeconomic framework, together with the minority status hypothesis, encompass testing for the possibility of a spurious relationship between income and fertility once ethnicity (minority group) is introduced as a third source of fertility variation.

Another study of how race conditions the relationship between income and fertility was undertaken by Reed *et al.* (1975). They used two definitions of relative income. The first definition is the ratio of the husband's actual income to the median family income of others of his own race and city. The second definition refers to the ratio of the husband's actual income to the mean family income of respondents of his own race, educational levels and occupational groups. It was found that both definitions of relative income are positively associated with black fertility.

The most recent attempt to study racial variations in the relationship between income and fertility is by Johnson and Lean (1985). Their inquiry adds support to the argument that minority group status may condition the effect of relative income on fertility. They looked at relative income and fertility among the Chinese and the Japanese in Hawaii (where the Chinese and the Japanese are the majorities) and, in California (where the Chinese and the Japanese are the minorities). In Hawaii, the fertility of Chinese and Japanese women, whose husbands' income is high relative to either whites or non-whites, is higher. In California, a high relative income has no statistically significant effect on Japanese, Chinese or black fertility. Johnson suggested that the economic theories of fertility must be extended to explain how minority group status conditions the effect of relative income on fertility in a minority group. They asserted that the effect of relative income on fertility will be positive only if there are few barriers attached to the minority group's attainment of high incomes (as in the case in Hawaii). Johnson and Lean's inquiry adds support to the argument that in some cases minority group status conditions the effect of relative income on fertility.

In addition, the subcultural component of the minority group can affect the individuals' decision-making in childbearing and family planning. The cultural component not only affects the income-fertility relationship, it also influences the individual's taste and price of childbearing.

Easterlin (1969) argued that one's heredity, race, religion and place of residence are crucial in the formation of taste. The cultural component contributes to the taste formation and hence, members of different ethnic background will vary in their taste of childbearing and possibly the taste for birth control. There are also wide variations of parental expenditures of time and money on childbearing observed from culture to culture. For Catholics who have a pro-natalist subculture, increased potential or relative income may encourage reproduction since higher income will enhance their ability to afford large families. Among Jews for example, increased potential and relative income means better quality children not more children necessarily.

The characteristic-assimilationist hypothesis is actually a derivative of the microeconomic model. Moreover, the minority status hypothesis shares the social psychological elements of the microeconomic model. The characteristic-assimilationist thesis emphasizes socioeconomic characteristics in shaping reproductive behaviour, whereas the minority status hypothesis posits that deprivation experienced by minorities forms their fertility preferences. The characteristic-assimilationist hypothesis cannot explain the ethnic differentials in fertility completely. In most studies the effect of minority

group status is generally found to be also important. A recent emphasis concerning ethnic differentials in fertility has been the combination of minority group status and the microeconomic hypothesis of fertility.

Chapter 4

Methodology and Hypotheses

The purpose of the present research is to extend the work of Bean and Wood, Reed *et al.*, Jiobu and Marshall, and Johnson and Lean discussed previously. The three explanations on ethnic fertility differentials, the assimilationist-characteristic hypothesis, the minority group status and the particularised norms hypothesis, are tested for two ethnic minority groups. On overview of their migration history in Canada and of their specific culture is needed.

4.1 A Profile of the Two Ethnic Minority Groups

4.1.1 Chinese.

4.1.1.1 Chinese Immigrants---A Brief History

Not all immigrants have been equally welcomed to Canada, but the Chinese were probably the most harshly treated ethnic group in Canadian immigration history. They have been victims of abuse and discrimination.

Early Chinese immigrants were mainly from the Southern provinces of mainland China. The problem of overpopulation was especially acute in southern China. Western imperialism intensified the economic pressure for the Chinese in China. Hence, migration to overseas served as an opportunity to enhance the family economy among many Chinese. The Western powers also perceived

Chinese immigration as profitable because the Chinese served as cheap labour. These early Chinese migrants were predominantly male. They worked in low-paid seasonal and menial jobs.

In the late nineteenth and twentieth century, Chinese Canadians experienced enormous discrimination. Of all the immigrant groups seeking new life in Canada, they were the only ones required to pay head tax to gain admission into Canada. The Chinese Immigration Act (1923) effectively prohibited Chinese immigration until 1947. As a consequence of restricted immigration against them, Chinese men were unable to bring their wives and children to Canada, making the early Chinese community male dominant. These Chinese immigrants had no intention to stay in Canada. They planned to accumulate their wealth and then return home for retirement (Hoe, 1976). Therefore, they had no desire for assimilation. They had little education and knew little English. By and large, the Chinese have been labelled as "middleman minorities", meaning that Chinese are incapable of full-scale assimilation into the mainstream value of the Canadian society (Verma, *et al.*, 1980). Therefore, during the early stages of this nation, Chinese were considered to be the least preferable immigrant group in Canada (Ferguson, 1975; Tan and Roy, 1980).

Because of intensive racial discrimination, Chinese were conscious of their minority status. They tended to

live together in Chinatowns where they could foster their cultural and emotional ties with the old country. Chinatown served as a basis for social services. For most white Canadians, Chinatowns were mysterious places. However for the Chinese, they were places where racial hostility against them was absent.

4.1.1.2 The Socioeconomic Status of the Chinese

Despite the dim picture of the early Chinese community in Canada, racial tension is becoming relatively nonexistent nowadays. After the 1960s, the Immigration Act was changed to release the restrictive measures of the immigration policy imposed upon the Chinese. Consequently, Chinese immigrants came to Canada in increasingly large numbers. Today young Chinese have been doing well in terms of education, occupation, and income.

The Chinese firmly believe that education is the means to upward mobility and success. It has been put forth in the literature that Chinese immigrants or local-born Chinese Canadians have higher motivation to seize educational opportunities (Verma, *et al.*, 1980). The Chinese-Canadians generally have higher level of education than the British (Table 4.1). According to the 1981 PUST census data, on the average, the Chinese have 13.2 years of formal education while the British have 12.4 years of education. Over 30 percent of the Chinese finished secondary education and 56.3 percent of the

Chinese husbands in the sample have at least some university training. For the British, 46.4 percent had secondary schooling, but a smaller percent (31.4 percent) of them attained university training.

The socioeconomic background of the Chinese immigrants has changed ever since the early stage of the Chinese immigration to Canada. Ethnic job segregation still exists among the Chinese (Reitz, 1980). Some of them still work as unskilled labour, such as restaurant work; however, a significant number of them are able to attain upward mobility. They are professionals and self-employed entrepreneurs, mainly employed in services, sales and white collar occupations (Verma, *et al.*, 1980; Tan and Roy, 1980). Some of them are in natural sciences, medical or health related services and in managerial and administrative work. Those in clerical positions and jobs related to machining, construction, and transportation are underrepresented (Verma, *et al.*, 1980). Table 4.1 shows that the proportion of Chinese in a managerial category is significantly greater than that of the British. (38 percent for the Chinese compared with 30 percent for the British). The figures clearly show that the Chinese are doing better than the British in terms of education and occupational status.

Improved occupational status and education do not seem to bring forth equalised income return with the British. In terms of average income, despite their

higher labor force participation and higher level of education, Chinese-Canadians earn less than most Canadians (Verma, *et al.*, 1980). The Chinese husbands have significantly lower current income than the British. Chinese income relative to their fellowmen is similar to the British relative income. However, Chinese income relative to the British of similar socioeconomic background is significantly lower than the British (Table 4.1). This difference in income between the Chinese and the British may suggest discrimination.

Table 4.1 shows that on the average, Chinese females have higher incomes than the British wives. This phenomenon can be a consequence of higher female labor force participation among the Chinese wives, as reflected in the considerable difference in the rate of labour force participation in relation to overall Canadians: 52 percent of Chinese as compared with 40 percent of the average population (Statistics Canada, quoted by Verma, *et al.*, 1980). Such difference indicates that Chinese females are no longer merely housewives as they were in traditional families. Since it is well documented that female labour force has an inverse relationship with fertility (Balakrishnan, *et al.*, 1979; Clifford, *et al.*, 1977), a high female labour force participation rate among the Chinese may discourage large family sizes. Data from the 1981 census shows that Chinese had 1.96 children on the average,

while for Canadians this was 2.09 (Table 4.1).

4.1.1.3 The Chinese Heritage

The Chinese-Canadians retain a strong sense of ethnic heritage, partly due to the multicultural policy in Canada, but mostly due to their unique culture, which is quite distinct from the dominant Anglo culture.

Most Chinese today do not live in Chinatowns. They prefer a middle-class lifestyle, and many of them are now in the suburbs. However, Chinatowns remain popular places for Chinese entrepreneurs to set up business there. Chinatowns businesses are prosperous and provide the major ethnic services to the Chinese. Reitz (1980) concluded in his studies that the ethnic economic interest enhances the cohesiveness among the Chinese. The strong economic interest shared by the Chinese directly contributes to the survival of Chinese ethnicity. Thus economic interest indirectly helps to retain a sense of cultural heritage among the Chinese. But the existence of Chinatowns seem to be beneficial both economically and culturally for the group in remaining virtually intact.

Although the young Chinese are becoming increasingly structurally assimilated to the Canadian society, their ties with their origin are still strong. Their interest in Chinese literature, arts and history is a reflection of their quest to regain their roots.

Despite the fact that Chinese-Canadians are doing well socioeconomically, they still occupy a minority status in Canada. They are a visible minority living their reality in a white society (Tan and Roy, 1980).

Their cohesive ethnic community serves as a buffer against prejudice and discrimination. Reitz (1980) found that their middle-class ethnic cohesion is obvious:

> "Minority group ties are being retained as a consequence of concrete experiences of discrimination. Middle-class status does not end the risk of discrimination" (Reitz, 1980:184).

Being a member of a minority group and being middle-class, one will often experience "status disequilibrium" (Reitz, 1980), meaning that economic status and ethnic status are unequal dimensions. This creates a sense of injustice, or relative deprivation. Hence, the perceptions of, and the dissatisfactions with, discrimination could become critical aspects of the Chinese's reality.

The Chinese situation fits well with the Goldscheider and Uhlenberg (1969) thesis as well as Reitz's (1980) argument of middle-class ethnicity. Such feeling of marginality and insecurity associated with minority status may have an independent effect on fertility. In the case of Chinese-Canadians, it is

anticipated that minority status will act independently to depress fertility since there is no evidence that they have pro-natalist norms nor values that discourage the usage of effective birth control. There is possibility that the Chinese will defer marriage or have lesser number of children in order to attain social mobility.

In summary, discrimination against Chinese immigrants in the early stages of their experience in Canada is well documented. Chinese subculture has remained influential for Chinese-Canadians. Although they have gained considerable degrees of socioeconomic status over the years, they continue to be a minority in Canadian society. Therefore, in accordance with Goldscheider and Uhlenberg's thesis (1969), the minority group status effect among the Chinese-Canadians will depress their fertility.

4.1.2 Portuguese

4.1.2.1 Portuguese as Recent Immigrants

Sometimes, emigration occurs in poor regions or countries where the infrastructure is incapable of absorbing the available labour potential. People in these areas tend to be attracted to other regions where economic opportunities are better.

The above description captures to a certain extent the situation of Portuguese immigrants in Canada. The

are recent immigrants to Canada. The earliest wave came around 1950 (Anderson and Higgs, 1976). The prime motive for them to migrate is based on economic reasons. Anderson (1974) found that the Portuguese immigrants came to Canada in quest of better living conditions, income and job opportunities. They were mainly of poor and rural origins from continental Portugal, the Azores and Madeira. The economy in Portugal after World War II was so bad that unemployment rate was extremely high. Education was reserved for the privileged class in Portugual. In order to escape from conditions of poverty, unemployment and lack of social mobility in the rural area of the Azores and Madiera, many Portuguese sought a new life in Canada. As in the case of Chinese, in the early days, the majority of the Portuguese immigrants were male and their main concern was to make their fortune here and go home. Some did go home, but the majority of them remained in Canada, joined later by their wives and children.

4.1.2.2 Socioeconomic Conditions of Portuguese-Canadians

The majority of adult Portuguese who immigrated to Canada between the 1950s and the 1970s had very little formal education. Ferguson (quoted by Anderson and Higgs, 1976) found that in the early 1960s, the average length of formal education for Portuguese immigrants in Toronto was 3.7 years for men and 2.8 years for women. The 1981 PUST data shows that 62.2 percent of the

Portuguese adult have 5 years of formal education at the maximum; 25.7 percent of them finished secondary schooling and 12.1 percent of them had some university training (Table 4.1). These figures are significantly lower than those of British respondents.

Many Portuguese immigrants cannot speak English nor French. Hence, they rely on friends and relatives to find employment. They usually end up working as manual labor, such as construction work for men and janitorial jobs for women. Table 4.1 shows that only 6 percent of the Portuguese husbands work as professional. As a consequence of little formal education, the average Portuguese husband earns less than the other two groups, the British and the Chinese. However, when relative income is considered, the overall Portuguese husbands enjoy similar mean relative income with the other two groups. Interestingly enough, when the British is the reference group, the Portuguese husbands have significantly higher relative income than the British of similar characteristics. In other words, the Portuguese husbands enjoy higher relative income than the British of similar characteristics. This phenomenon can be attributed to the job nature of the majority of the Portuguese. Most of them work as manual workers, such as construction workers. This kind of job does not possess high social status; yet, the rates of income return to these jobs are usually high. Consequently, the

Portuguese husbands enjoy relatively high income levels, inconsistent with their education and occupational statuses.

4.1.2.3 The Portuguese and Their Ethnic Networks

Among Portuguese immigrants, their social network is a significant phenomenon. They are one of the most cohesive ethnic groups among South Europeans in Canada. Economic interest is believed to be a major reason for their community's cohesiveness (Reitz, 1980), which enhances the integrity of Portuguese culture. According to Anderson (1974), Portuguese immigrants come to Canada, for the most part, through the specific influence of other Portuguese immigrants with whom they already have some contact. Upon arrival, these Portuguese always rely on the same individuals to find jobs and many of them find jobs through kin or friendship networks. Seldom will they find the jobs through impersonal means, such as through advertisment. As a result, the Portuguese are highly segretated in terms of industry and occupations.

There are strong sentiments for kin and family among the Portuguese. They emphasize the importance of the family as a whole. The family is regarded as an entity in itself (Anderson and Higgs, 1976). The family is the complement of each individual member. The activities of the Portuguese are integrated in the family. Large segments of their activities involve

family, friends, and relatives. Therefore, the Portuguese in Canada are often regarded as clannish.

The majority of the Portuguese are Catholic (96 percent) (Statistics Canada, 1981). Roman Catholicism is an integral component of Portuguese popular traditions and culture (Anderson and Higgs, 1976). Religious beliefs, ceremonials and devotions are interwoven with many aspects of their life. In fact, the clergy is the chief organising force of most social and recreational services in the community. The clergy are often community leaders. Anderson and Higgs (1976) argue that religious activities are important affirmations of the place of religion in the community life of Portuguese. Overall, Roman Catholicism has a significant influence on the Portuguese's way of life.

4.1.2.4 Assimilation Among the Portuguese

Their incompetence in English and little formal education forces them to depend on each other. Their marginal position in Canada, the nostalgia about their homeland, and their family oriented sentiment, as well as the ethnic networks, instigate the formation of strong Portuguese communities in Canada. Such close-knit families of the Portuguese and their self-contained lifestyle will definitely inhibit their integration into Canada. The question then is whether the subculture of the Portuguese and/or their socioeconomic characteristics affect their fertility pattern.

The Portuguese settlement in Canada is different from the Chinese, it has only been since the 1950s that there are major Portuguese settlements in Canada. They are regarded as a cohesive ethnic community due mostly to their common economic needs and interests (Reitz, 1980). Economic interests seem to be an important factor that ties this group together. A lot of the Portuguese immigrants earn their living through ethnic segregated jobs. If economic reason enhances ethnic group cohesion among the Portuguese, it will raise an interesting question of the strength of ethnic group ties among the middle-class Portuguese and the second generation Portuguese who have their education in Canada (Reitz, 1980). Will the Portuguese have a similar pattern of fertility once they assimilate to the dominant culture? The survival of Portuguese ethnicity becomes questionable with assimilation, once they are no longer bound together by economic interest. In such circumstance, it can be anticipated that influence of the Portuguese subculture on fertility will be weakened as well.

The first generation is now approaching retirement age as the younger generation Portuguese are ready to enter the marketplace. The new generation represents a transitional group. Anderson and Higgs (1976) stated that most of these Portuguese are engaged in establishing themselves in the workforce, improving

their living standard and raising their families; therefore, it will be too soon to examine the assimilation process for this ethnic group. Nonetheless, the Portuguese situation can be a test of the assimilationist hypothesis. The fact that Portuguese are recent settlers in Canada deserves investigation. There has been no systematic examination of the Portuguese fertility in Canada.

Marcum and Bean (1976) found that new immigrants are likely to use their origin as a frame of reference, and therefore, are less sensitive to assimilation. The Portuguese-Canadians can represent a good example of this thesis. They have strong emotional ties with their homeland and Roman Catholicism is a significant part of their culture. Improved economic condition may actually encourage them to have larger families. There is evidence that some Portuguese have turned away from Catholicism to begin some other type of worship, such as Jehovah Witness (Anderson and Higgs, 1976). Will the Portuguese fertility pattern change in the case of assimilation and hence a decline of Catholic influence? If, according to Reitz (1980), stronger group ties for the Portuguese is generated by institutions based primary in the economically segregated segments of their community, will structural assimilation affect ethnic cohesion and hence their reproductive behaviour? Should the younger Portuguese experience minority status

insecurity when they come to the process of assimilation? The study of Portuguese-Canadians will yield valuable insight on how fertility is affected under the situation when an ethnic group is experiencing a transitional period in the new society.

4.2 Objectives of the Present Inquiry

The first objective of this thesis is to test the three explanations of ethnic fertility differentials. The Chinese have high motivations for assimilation and social mobility. This motivation, associated with feelings of insecurity and deprivation, may discourage high fertility. We know little about the Portuguese. They are relatively new to Canada. Many of them are still emotionally tied to their homeland. Even though their economic situation has been improving over the years, signs of large scale assimilation has not been evidenced yet. Will they exhibit greater fertility than the average Canadians? If assimilation occurs in the future, will the Portuguese experience marginality, and therefore have lower than average expected fertility?

The second objective is to examine the income effects on fertility of these two ethnic groups. Two measures of income are used, namely, potential income and relative income in the separate models. In accordance with Easterlin (1969; 1975), lifetime, or potential income, is argued to be the variable of theoretical relevance for fertility behaviour. Another key measure is relative income. Freedman

(1963) introduced this concept on the ground that most couples are likely to compare their economic status with others of the same education, occupation and race, and this comparison may affect their decision-making concerning family planning. The idea is that income will be positively associated with fertility only for couples with high relative income. Moreover, different age cohorts should go through different social-psychological events comprising the decision-making in childbirth. Perception based on relative and potential income should also vary across age cohorts. The younger cohort (aged 15 to 34) should exhibit different tastes and values of material goods and childbearing as compared with the older cohort (aged 35 to 49). Likewise, ethnicity may condition the effect of potential and relative income on fertility. The second objective of the present research is to examine how the different measures of income affect the fertility levels of the two minority groups, within their different age cohorts, hoping that it may enrich our knowledge about the microeconomic model of fertility and its applicability to ethnic groups in Canada.

Marcum and Bean (1976) argued that the minority group status effect should vary across the different generations of immigrants. A similar study by Bean and Swicegood (1982) found the same phenomenon. Based upon data for Mexican Americans, they found that current and cumulative Mexican American fertility decrease both with increasing exposure to the host society (measured by generation) and increasing

socioeconomic status. The third objective of the present research will test the generation effects on fertility. According to Marcum and Bean's thesis, there should be differences in the minority group status effect between newly arrived immigrants and those belonged to second and beyond generations. This analysis can also give some idea of when the sub-processes of assimilation are likely to take place. If Marcum and Bean's, as well as Bean and Swicegood's theses are correct, the later generation immigrants are likely to undergo complete assimilation, while the first generation will experience only incomplete patterns of assimilation.

4.3 Data and Methodology

The data for this study are derived from the Public Use Sample Tapes, Household File of the 1981 Canadian Census. The household file is used because it enables us to take account the husband's characteristics in our analysis along with the wives. Two ethnic minority groups, the Chinese and the Portuguese, are compared with the British, who will serve as a standard for comparative purposes. In Porter's (1965) study, the British group was considered to be the dominant charter group in Canada. Within the elite structure of society, the British are still considered the dominant group in this nation (Clement, 1975).

4.3.1 Unit of Analysis

The unit of analysis is the once and currently married female aged 15 to 49 (Appendix A). These women are within their biological span of childbearing. They are chosen because their marriages are not interrupted by separation, nor divorce (Marcum and Bean, 1976), therefore, allowing for a more accurate analysis of fertility.

4.3.2 Dependent Variable

The dependent variable is cumulative fertility of the respondents, measured by number of children ever born to wives aged 15 to 49. This cumulative fertility represents the total past fertility of wives in the age cohorts of 15 through 49.

4.3.3 Independent Variables

Two different measures of income are the independent variables. They are relative and potential income, which will be used in two separate models.

4.3.3.1 Potential Income

In the absence of a direct measure in the census data set, of the construct potential income, the best proxy for husband's potential income is his current income. Crimmins and Ewer (1982) showed tht there is a high correlation between husband's current income and his lifetime potential income.

4.3.3.2 Relative Income

Husband's relative income is operationalised as the ratio of his actual income to the estimated income. Estimated income is computed on the basis of a regression equation of actual income on occupation, education and age. The regression coefficients of occupation, education and age in the regression equation are used to compute the estimated income. Husband's income is estimated separately for the ethnic groups as a linear composite using the unstandardised coefficients for occupation, education and age (Freedman, 1963; Bean and Wood, 1974). This approach assumes that members of one's own ethnic group are a more salient socioeconomic reference persons than are members of other ethnic groups. It is also assumed that members of different ethnic groups will have different rates of return (income) from occupation and education.

Other studies (Johnson and Lean, 1985) constructed relative income in a different way. Relative income of the majority group is usually defined as the ratio of the income of the minorities to that of the whites with similar educational and job characteristics. In other words, this approach uses the dominant group as reference. The present inquiry will also compute this version of relative income and study its importance in understanding ethnic fertility differentials (shown in Appendix A). Relative income and potential income

(measured by husband's current income) are highly correlated. It is therefore statistically redundant to include both income measures in the same equation (Bean and Wood, 1974). However, since the two concepts are theoretically different and important in the microeconomic framework, they will be studied separately.

4.3.3.3 Wife's Income

Relatively few studies have investigated the impact of wife's income on fertility (Crimmins-Gardner and Ewer, 1982). The microeconomic framework of fertility has emphasized husband or household income which are believed to be the core segment of monetary resources. Nonetheless, with today's increasing female labor force participation, the wife's income may contribute a significant portion of the household earnings and therefore affects decision-making concerning childbearing and other matters.

Even though husband's income may enhance the consuming power of the family and to have more children, wife's earnings has a negative effect on childbearing. The more the wife earns, the more that she has to give up in order to pursuit the role of motherhood.

While the opportunity cost of the wife generally has a negative impact on fertility, such relationship may vary across ethnic groups. Minority wives, who in general earn less than the women of the dominant group,

have less to give up. In addition, pro-natalist culture, such as Catholicism among the Portuguese, may not discern it to be sacrificial to take up the role of motherhood.

Our present model will include the wife's income. It is presumed that ethnicity interacts with income and fertility.

4.3.3.4 Wife's Educational Level

Education is a measure of structural assimilation. To avoid high collinearity between husband's income and education, only the wife's educational level, instead of husband's education, is used in this inquiry (see Appendix A).

4.3.3.5 Husband's Occupation

In the Public Use Sample Tape, occupations are coded into Major Groups. Pineo and Porter (1977) pointed out that the types of occupations classified within each category are not homogeneous in socioeconomic standing. Therefore, occupational prestige based on Major Groups coding is not a good code. They concluded that it would be desirable to reorganize Unit Groups (a more refined grouping of occupational types) into some alternate poolings. In the present study, we are confined to the limitation of the data set; occupational grouping is based on Major Groups only. We could not disagregate the existing census codes (Appendix A). Husband's occupation

will be coded as a dummy variable (1=managerial 0=non-managerial).

These three variables are proxy measures for tastes for material goods and children, opportunity cost of childbearing, as well as the indicators of the structural assimilation variables of the ethnic groups.

The individuals' educational attainment and occupational prestige are indicators of structural assimilation. According to Gordon (1964), structural assimilation refers to the process by which the members in the minority groups enter into the social, occupational and political structure of the host society. Education and occupation are the important determinants that affect one's integration into the host society.

Studies involving characteristic-assimilationist hypotheses use education and occupation as controls (e.g. Goldscheider and Uhlenberg, 1969; Johnson, 1979). Moreover, education and occupation are also considered to be determinants of tastes for material goods and children, as well as of opportunity costs of childbearing.

Wife's education is also a measure of the value she places on her time in non-market pursuits (Turchi, 1975). The higher the educational level the wife has attained, the more the likelihood that she involves herself in the labor force. To give up her opportunity

in the market-place in order to rear children will constitute financial and possibly psychic costs to the wife. The costs of childrearing are not all monetary; it involves time and attention on the part of the couples. The decision on childbearing will therefore involve the calculation of all these monetary and psychic costs. The higher the social status, the greater the likelihood that the couples's activities and interests are incompatible with a large family size (Freedman, 1963).

If the husband's occupational prestige is high, he and his wife will likely engage in other social activities which have negative effects on fertility. The couple's socioeconomic reference group can also affect their tastes and values of material goods and children (Freedman, 1963). Given the social status of a family, there is a certain standard of living on which the couple expects. The expenditures for a child is also expected to conform to the socioeconomic standards of the parents. Therefore, the higher the socioeconomic status of the parents, the higher their demand on expenditures of childrearing and material goods will be. Hence, tastes and values of material goods and children depend on one's socioeconomic position.

Even though Becker (1960) argued that income should be positively related to fertility, the analysis of fertility differentials based on income will not be completed without consideration of the costs of

childbearing, as well as the tastes and values of material goods and children. To study the relationship between income and fertility, structural variables, such as income, education and occupation, have to be controlled simultaneously.

4.3.4 Control Variables

4.3.4.1 Religion of Wife

This variable is coded as a dummy variable, 0=non-Catholic, 1=Catholic.

Previous researches (Blake, 1967; Day, 1968) show that there is a differential between Catholic and non-Catholic fertility. According to Blake (1967), Catholic fertility is expected to differ from non-Catholics not simply because their church has a pro-natalist doctrine, but because Catholicism generates within it a group of clergy who are highly motivated to exert pressure concerning procreation. The clergy are motivated to enforce this issue for cogent organizational reasons. The practice of celibacy among the clergy is highly honored. Therefore, the act of marital intercourse requires justification; and procreation is the justification given as the ends of marriage (Blake, 1967).

Recent studies (Jones and Westoff, 1979) argued for the end of Catholic fertility. They believed that

Catholicism has almost ceased to be an important differentiating factor in fertility in the United States. Is this phenomenon also true in Canada? Burch (1966) compared the fertility of Catholics in the United States and Canada. He concluded that there was a convergence between the fertility of Catholics and Protestants in Canada. His conclusion was later confirmed by similar study (Krotki and Lapierre, 1968). Catholicism is the dominant religion in Portugual where most of the Portuguese in Canada have emigrated from. Despite the convergence between the fertility of Catholics and Protestants in Canada, the Portuguese are current immigrants, it is reasonable to assume that Catholicism still has a strong impact on the Portuguese-Canadians.

4.3.4.2 Wife's Age at First Marriage

Given the fact that the sample is once-married women, wife's age at first marriage is conceptualised as the years of exposure to the risk of pregnancy. Since most fertility occurs within marriage, the longer the women is in the state of marriage, the greater the risk of pregnancy. The age of first marriage of the women will vary due to different circumstances. Some women will delay their marriage because of prolonged education and engagement in the labor force, or some other reasons. Hence, it is important to control for this variable (Jiobu and Marshall, 1977).

4.3.4.3 Age of Wife

The age of the wife is a significant social biological factor that affects fertility, therefore, as in most social demographic studies, it is used as an important control variable.

4.4 Hypotheses

In this section, we discuss the decompositional analysis that will be utilized to study the fertility differentials and to partial out the relevance of the various hypotheses elaborated earlier. There are a variety of decompositional models. Appendix B is a detailed discussion of these models and their theoretical implications. Our present inquiry will basically use Coleman *et. al*'s regression decomposition model (1971). The equation of decomposition analysis in this inquiry is:

$$(Y_d - Y_r) = (a_d - a_r) \qquad A$$

$$+1/2\ \Sigma(\beta_{i,d}+\beta_{i,r})(\bar{X}_{i,d}-\bar{X}_{i,r}) \qquad B$$

$$+1/2\ \Sigma(\beta_{i,d}-\beta_{i,r})(S_{i,d}+S_{i,r}) \qquad C$$

$$+1/2\ \Sigma(\beta_{i,d}-\beta_{i,r})(\bar{X}_{i,d}-S_{i,d}+\bar{X}_{i,r}-S_{i,r}) \qquad D$$

where:

a_d: intercept of the regression equation of the dominant group;

a_r: intercept of the regression equation of the

subordinate group;

$\beta_{i,d}$: regression coefficient of the ith variable of the dominant group;

$\beta_{i,s}$: regression coefficient of the ith variable of the subordinate group;

$\bar{X}_{i,d}$: mean of the ith variable of the dominant group;

$\bar{X}_{i,s}$: mean of the ith variable of the subordinate group;

$S_{i,d}$: standard deviation of the ith variable of the dominant group;

$S_{i,s}$: standard deviation of the ith variable of the subordinate group;

A: the effect of ethnic membership *per se* on the fertility differential ($Y_d - Y_s$);

B: means differences;

C: coefficients differences;

D: differences due to unmeasured variables.

4.4.1 Test for the Minority Group Status Hypothesis

The minority group status hypothesis is derived from the theoretical framework suggested by Goldscheider and Uhlenberg (1969), as well as Day (1966). Fertility behaviour is predicted to be different for the three ethnic minority groups chosen for this inquiry for the following reasons.

4.4.1.1 Minority Group Status Effect Among the Chinese

There are no pro-natalist norms in the Chinese ethnic group. Among the Chinese-Canadians, 56.8 percent claim to have no religious preference, only 14.8 percent of them are Catholic. Traditional Chinese families are of extended type, with many offspring. However, this traditional lineage and kinship system, which are functional to rural economic structure, were not transplanted overseas. The members of this Canadian ethnic group generally seem to seek social mobility and acculturation to Canadian society. Thus, insecurities associated with minority group membership will lower their fertility when compared with that of the majority, net of any structurally differences between the Chinese and the British. Hence, it is anticipated that the ethnic main effect and the interaction term of the minority membership and socio-economic variables of the Chinese will be significant and negative in accounting for variance in fertility.

4.4.1.2 Subcultural and Structural Effect Among the Portuguese

The Portuguese should have higher fertility than the British. The Catholic pro-natalist ideology encourages them to have large families, while discouraging the use of effective contraception. In addition to their subculture which encourages fertility, their socioeconomic characteristics are so different

from the British that the socioeconomic status will affect fertility independently. It is predicted that they have above average fertility, again net of any socio-economic differences and interaction effects. Assimilation of the Portuguese will bring along similar fertility to that of the British.

4.4.2 Ethnic Variations in the Relationship Between Measures of Income and Fertility

4.4.2.1 The General Pattern of Income-Fertility Relationship

Easterlin (1969) argued that couples plan their fertility based on their lifetime potential income, that is, the anticipated net flow of household income over time. Others have found that when couples have higher relative income, they will have more children on the average (Freedman, 1963; Easterlin, 1969; Leibenstein, 1974; Bahr *et al.* 1975). Therefore, potential income and relative income are predicted to relate positively with cumulative fertility. In a husband-wife household, the husband is usually the head of the household and the chief breadearner. Studies have also showed that husband's potential and relative income are proxies of household potential and relative income (Crimmins-Gardner and Ewer, 1982; Bean and Wood, 1974). The microeconomic framework emphasizes the opportunity costs of childbearing. The cost of childbearing involves

material costs, but the opportunity costs is argued to be crucial as well. Wife's income can be a proxy of opportunity costs. Studies (Crimmins-Gardner and Ewer, 1982) show that wife's income consistently affects fertility. The higher the wife's earning, the higher the opportunity cost of childbearing, and hence, the lower the fertility.

4.4.2.2 Income Factors Affect Fertility Negatively Among the Chinese

Due to the minority group status effect among the Chinese, high relative income (as compared with the majorities) will not be positively related to their cumulative fertility. Their desire for social mobility is presumed to be high, in order to attain the living standard of the dominant group, the Chinese will plan not to have large families, despite of the anticipation to have high lifetime income. Hence, potential income should also be negatively associated with cumulative fertility. Likewise, wife's income is predicted to affect fertility negatively.

4.4.2.3 Positive Effect of Income on Fertility Among the Portuguese

The Portuguese are recent immigrants; their living condition has improved since they came to Canada. In addition, their Catholic pro-natalist values will encourage them to have larger families. Hence, relative

income and potential income are hypothesized to facilitate their attainment of higher fertility. Yet, the opportunity cost of childbearing will affect fertility negatively.

Trovato (1981) has argued that as the minority group members attain higher a socioeconomic level, their tastes and values for material goods and children may assimilate to that of the host society. Therefore, assimilation of the minority groups will lead them to exhibit a similar pattern of relationship between income and fertility to that of the dominant group. However, we may have difficulty in distinguishing the effect of minority group status (e.g. effect of pro-natalism) on income and fertility, from the income main effect on fertility. In order to palliate this problem, ethnicity is controlled in the relevant regression analyses. Controlling for income, ethnicity is predicted to be positively significant and R^2 will increase when it is added to the regression equation containing income. In addition, the interaction term of ethnicity and income will also be significant.

4.4.3 Decompositional Analysis of Ethnic Fertility Differentials

Jiobu and Marshall's decompositional analysis includes four components, the ethnic main effect, the assimilation effect, the insecurity effect and the residual term, that

account for fertility differentials between the minority groups and the dominant group.

4.4.3.1 The Main Ethnic Effect

The main ethnic effect of the Chinese is hypothesized to be negatively related to fertility compared with that of the British, net of compositional differences. Despite the fact that the Chinese are virtually structurally assimilated, their perception of discrimination is acute, especially among the middle-class. Hence, the ethnic main effect is predicted to play a significant part in shaping fertility behaviour.

The main ethnic effect of the Portuguese is predicted to encourage fertility. The main ethnic effect component in the decompositional analysis is a measure of the difference between the intercepts of the majority and each of the two minorities. Hence, for the Chinese, the value of this component will be positive, whereas the Portuguese will show a negative value.

4.4.3.2 Hypotheses on the Assimilationist Perspective

As regard to the assimilationist hypothesis, the major reason for fertility differential is the compositional differences between the minority ethnic groups and the dominant group. The previous review has established that the two ethnic groups, the Chinese and the Portuguese, are not completely assimilated into the

Canadian mainstream. Therefore, the value of the assimilationist component will be positive. A value of zero will represent complete structural assimilation. Though the Chinese are generally more educated than the majority group, there is still income discrepancy between the Chinese and the British. The Portuguese are experiencing a transitional period since immigration. It is predicted that the assimilation effect accounts for fertility differential of the ethnic groups. Nonetheless, since the Chinese are structurally more assimilated than the Portuguese, the differences in assimilation are less for the Chinese than for the Portuguese.

4.4.3.3 Hypotheses on the Insecurity Component

The minority status hypothesis implies a significant effect of insecurity. Among the Chinese, the effect of insecurity, which is thought to be the dominant factor, is hypothesized to be greater than the majorities. It implies that the Chinese are experiencing anxiety because of being members of an upwardly mobile minority group. A positive value indicates that the net effect of differences in the regression coefficients is to raise the minority fertility. Insecurity among the Chinese is predicted to be negatively related to their fertility. A negative value of this component represents that the net effect of minority group status is to discourage fertility among the Chinese. The Portuguese

should experience relatively little insecurity. Their living standards have been improved since they immigrated to Canada. They have strong emotional ties with their homeland. Therefore, the minority status effect (insecurity effect) is predicted to be relatively small as compared with that of the Chinese. Thus, the value of this component should be positive.

Intuitively, component (A) is the difference of fertility between the two groups due to membership *per se*. It is usually interpreted as the main ethnic effect. This component $(a_d - a_s)$ is hypothesized to be positive for the Chinese and negative for the Portuguese.

Component (B) $(1/2 \Sigma(\beta_{i,d}+\beta_{i,s})(\bar{X}_{i,d} - \bar{X}_{i,s}))$, is the difference due to means differences. This component is predicted to be positive simply because the dominant group is assumed to have higher values in terms of the structural variables than the subordinate groups.

Component (C) $(1/2 \Sigma(\beta_{i,d}-\beta_{i,s})(S_{i,d}+S_{i,s}))$, represents the difference in slopes. For the Chinese, their coefficients are hypothesized to be larger than the British because of the presumed preponderance of their minority status (insecurity). In other words, the slopes for the Chinese are predicted to be steeper than that of the British. The feeling of insecurity among the Chinese leads them to react more intensely to their increased socioeconomic status. Hence, for a unit increase in the structural variables, such as income,

there will be a greater effect on fertility among the Chinese than among the British. The Portuguese are influenced by their pro-natalist culture. Any increase in income may not have such a great negative effect on fertility than that of the British. Therefore, the slopes for the Portuguese are assumed to be less step than the British.

4.4.4 Generational Differences in Minority Status Effect

Since we cannot distinguish the first generation Portuguese immigrants from the second generation Portuguese immigrants, the testing of Marcum and Bean's thesis has to be confined only to the Chinese.

According to Bean and Swicegood (1982), the minority group status effect should be greater among the second generation immigrants than the first generation immigrants. The new immigrants will look back to the origin country and may feel that their condition has improved because of immigration, thus mitigating the feeling of insecurity. Only after the couples have been in the new country for some time will they shift their frame of reference to the new society. Hence, it is hypothesized that the minority group status effect in the first generation Chinese Canadians is smaller than that in the second and beyond generation. Since the first generation Chinese are relatively less integrated to Canadian mainstream as compared with the second and beyond generation Chinese, higher relative or potential income will

encourage them to have higher fertility. For the second generation Chinese, their relative income will effect fertility negatively.

Table 4.1
Means and Standard Deviations of the Study Variables

	BRITISH		CHINESE		PORTUGUESE	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Household income	29757.21	16594.52	28917.32	18832.85	25243.42*	11261.57*
Wife 's actual income	6466.85	7555.43	8405.90*	7846.34	6023.60*	4975.58
Husband's actual income	21868.69	13058.66	18929.99*	13525.53	17341.81*	8494.42
Husband's relative income1	1.04	.54	1.01	.66	1.05	.49
Husband's relative income2	n.a.		.82*	.54	1.18*	.62
Husband's education	12.4	3.6	13.2*	4.2	7.3*	3.8
Wife 's education	12.3	3.0	11.8*	4.0	6.9*	3.5
Proportion managerial work	.30	.46	.38*	.49	.06*	.24
Children ever born to wife	2.09	1.53	1.96+	1.46	2.23+	1.51
Age of wife	34.3	8.1	34.7	7.1	34.6	8.0
Age at first marriage of wife	21.0	3.2	23.4*	3.9	21.3*	3.7
Proportion husband's secondary education	46.4%		31.1%		25.7%	
Proportion husband's university education	31.4%		56.3%		12.1%	
Proportion Catholics	19%		21%		97%	

Source: 1981 PUST Tabulation
Husband's relative income1: using own ethnic group as reference
Husband's relative income2: using British as reference group
*Significantly different from the British at .05 level
+Significantly different from the British at .10 level
Proportion managerial work (1=managerial work, 0=non-managerial work)

Chapter 5

Findings

In this chapter, we present the results of our inquiry. The two minority groups are compared with the British standard group. Over 95 percent of the Portuguese are Catholics. The fact that there is little variation in the data for the wife's religion makes the regression coefficient of this variable insignificant for our regression models. Thus, wife's religion is deleted from all the regression models in the following analyses. Since Catholicism is the Portuguese seubculture, it is assumed that the effect of their pro-natalist subculture will be captured by the ethnic main effect of the regression decompositions.

5.1 Preliminary Analysis

5.1.1 Chinese

5.1.1.1 T-Statistics for the Overall Chinese Group

The t-statistics (Table 4.1) support our argument that the Chinese are generally at a better socioeconomic position than the British. In terms of the husband's educational level and the proportion of managerial occupation, the Chinese are found to be significantly better off than the British. Yet, their income is significantly lower than the British.

The average number of children is lower for the Chinese, but the difference is not statistically significant at .05 level. The lower fertility among the Chinese could be a result of their socioeconomic situations or a consequence of the minority group status effect.

A higher income will enable the household to have more children (Easterlin, 1969). Having lower levels of current and relative income, the Chinese might therefore lower their number of children in comparison with the British. The greater proportion of educated husbands and professionals among the Chinese explains their lower average family size. These people probably live a middle-class lifestyle and emphasize quality of children as opposed to large families. The average income of the Chinese wives is significantly higher than that of the British. It is therefore reasonable to assume that the high opportunity costs for Chinese wives may have inhibited them to have large families.

The age at first marriage is significantly older for the Chinese than the British. Older age at first marriage among the Chinese is responsible for a shorter time span to the risk of conception. Hence, on the average, Chinese families tend to be smaller. As a result of their socioeconomic characteristics, lower income, higher price of childbearing and greater opportunity costs, the Chinese are characteristically a

low fertility group in Canada.

An important question is to what extent do socioeconomic characteristics affect Chinese fertility, and to what extent are the above findings a reflection of minority group status. Is the smaller family size of the Chinese a consequence of their socioeconomic characteristics, or is it a result of a minority status effect? This question will be assessed later with appropriate multivariate techniques.

5.1.1.2 T-Tests for the Chinese, Conditioning on Husband's Education

Reitz (1980) suggested the phenomenon of middle-class ethnicity, and Goldscheider and Uhlenberg (1969) proposed the possible interaction between social class and ethnicity in affecting fertility. In view of these studies, the sample was partitioned into two groups. Husband's education was used as proxy for social class and hence served as the basis for dividing the sample. The first group is the respondents with husbands having at least 14 years of formal training, while the second group consists of respondents with husbands having at the maximum 13 years of schooling (Table 5.1).

Generally speaking, the pattern of the differences in socioeconomic status between the British and the Chinese is similar to that in the previous analysis. The British have significantly higher income than the Chinese. The Chinese wives generally marry at a later

age than the British.

Among the more educated Chinese, their average family size is significantly lower than the British (Table 5.1). However, the family size of the less educated Chinese is significantly higher than the British of similar educational background (Table 5.1). This phenomenon holds good for the two age cohorts (Table 5.2, 5.3). The pattern of the differences seems to provide support for the Goldscheider and Uhlenberg argument calling for an interaction effect of social class and ethnicity in determining fertility.

Being a member of middle-class minorities, the educated Chinese experience insecurity and have smaller families. Less educated Chinese are structually less assimilated and hence exhibit a higher average fertility preference than the British. Among the more educated couples, Chinese show a lower income level despite their similar educational background with the British. This is usually a determinant of status disequilibrium. Ideally, such couples would enjoy equal income because of their superior qualifications. The relatively low rate of income returns from their educational and occupational status produces a feeling of marginality which may be strong enough to influence such Chinese couples to consciously opt for a relatively smaller family size.

The less educated Chinese fit the assimilationist-characteristic explanation of fertility

differentials. Being less assimilated to the dominant culture, this group of Chinese shows a higher than average fertility level. The differences in socioeconomic background between the British and these Chinese may be responsible for the development of differentials in the taste for children, hence leading to significant discrepancies in average family size. Such couples may be less motivated to have a small family size because the price and opportunity costs of childbearing are relatively small when compared with the better educated.

5.1.1.3 Concluding Remarks

From the t-statistics, the Chinese fertility pattern seems to conform with the literature. The Chinese generally have below average fertility. This phenomenon is pronounced among middle-class Chinese, who experience the greatest amount of social psychological insecurity. The fertility level of the less educated Chinese are consistent more with the assimilationist explanation in that their socioeconomic characteristics are the main determinants of their reproductive behaviour.

While the t-statistics appear to suggest the fertility differential of the Chinese, there are remaining questions to be raised. First, to what extent is it true that the fertility behaviour of the Chinese is really due to a minority status effect, or due to

their socioeconomic characteristics? The smaller families of the less educated couples can be a consequence of status disequilibrium and/or socioeconomic factors. Are there cultural factors that affect their fertility? Second, how do the income factors affect the reproductive behaviour of Chinese? Is there a different pattern of income-fertility relationship in the context of minority status? These questions will be taken up later in the multivariate analysis sections.

5.1.2 Portuguese

5.1.2.1 T-Statistics for the Overall Portuguese Group

The t-statistics (Table 4.1) are consistent with the notion that the Portuguese socioeconomic situation is significantly different than that of the British group in Canada.

Despite the differences in socioeconomic conditions between these two groups, the Portuguese family size is rather similar to the British. This phenomenon is not in agreement with the assimilationist-characteristics explanation of fertility differentials. Accordingly, a lower educational level of the wife is thought to be related to a higher taste for childbearing simply because the opportunity costs and the price of children is presumed to be relatively low. Possessing a generally pro-natalist culture, along with relatively low

socioeconomic characteristics (implying lower opportunity costs of childbearing with higher income), it seems reasonable to assume that the Portuguese would have higher than average fertility.

5.1.2.2 T-Statistics for the Portuguese, Conditioning on Husband's Education

Table 5.1 shows that the Portuguese are not structurally assimilated even among husbands with relatively high educational backgrounds. Among those who have at least 14 years of schooling, the Portuguese are underrepresented in managerial work. The wives have significantly lower education than the British.

A slightly different pattern is found among the educated Portuguese. They do not enjoy a significantly higher relative income than the British (relative income using British as reference is 1.0). Instead, their relative income level is similar to the British. Given their similar income level to the British, a lower opportunity costs of childbearing and their pro-natalist subculture, it is reasonable to assume that the Portuguese have larger families. However, these educated Portuguese couples show a lower but insignificant fertility than the British.

Among those having at the maximum 13 years of schooling, again, Portuguese couples are doing less well in terms of occupational status and wife's educational background. Portuguese husbands have lower absolute

income but enjoy significantly higher relative income (relative income using British as references is 1.21). Nonetheless, this fact does not seem to encourage them to have high fertility. Their family size is similar to that of the British (family size is 2.3).

5.1.2.3 Concluding Remarks

The Portuguese's socioeconomic characteristics do not suggest any impact on their family size. What remains to be ascertained is to what extent socioeconomic conditions affect the Portuguese fertility pattern and to what degree Catholic subculture contributes to their childbearing behaviour.

5.2 Multivariate Analysis

Preliminary interpretation, using the t-statistics, suggested that the Chinese socioeconomic characterisitcs are consistent with Goldscheider and Uhlenberg's argument for a minority group status effect. The possibility of the insecurity effect seems even more prominant among the educated Chinese. The Portuguese are not assimilated to the dominant society. However, despite the contrast in their socioeconomic status with the British, their family size is similar to that of the British.

In order to explain the fertility differential among the Chinese and the fertility pattern of the Portuguese, a multivariate analysis is executed in this section. The advantage of analysizing the data with a multivariate model

is that it allows us to introduce controls when testing alternative hypotheses. Let us first inspect bivariate correlations.

5.2.1 Bivariate Correlation of Fertility with the Variables in the Multivariate Model

Appendix C.2, C.3 and C.4 show the bivariate correlation of the variables in the models for the three groups. Generally speaking, the relationship between fertility and the other variables in the models is similar, both in direction and magnitude, across the three ethnic groups. The only exception is the association between relative income using British as references and fertility among the Portuguese (-.075). The Portuguese have significantly higher average relative income than the British (see Table 4.1). But their high relative income seems to discourage their fertility. Such pattern of relationship can be a sign of minority effects. The associations among fertility and the other variables in the analysis agree with the microeconomic framework of fertility analysis.

Husband's income, both potential and relative, generally shows a positive relationship with family size. The wife's income have a negative effect on fertility. The wife's income to a certain extent reflects her working status. If her income is high, it is likely that the wife works. The opportunity cost of childbearing is great among

the working mothers. Being a worker in the managerial category has a negative effect on family size. The wife's educational level also affects negatively family size.

It was mentioned previously that middle-class couples usually emphasize the quality of children and hence develop a lifestyle which is incompatable with having a large family. The negative association between fertility and wife's education as well as between managerial worker and fertility to a certain extent support this argument.

5.2.2 Test for the Two Versions of Minority Status Hypotheses

5.2.2.1 Minority Group Status Effect of the Chinese

A minority group status effect is evidenced among the Chinese, but the result is different from our original prediction. Table 5.4 shows the regression model with ethnicity coded as a dummy variable (Chinese=1, British=0). The relationship of the characteristics variables with fertility is similar to the bivariate correlations observed earlier. Husband's relative income has a positive effect on family size while wife's income, the husband's occupation, and the wife's education all have negative effects on fertility.

In a preliminary analysis, the ethnicity term originally showed a negative relationship with fertility (Appendix C.5). However when the other variables in the model were controlled, the ethnicity term had a positive

impact on family size (Table 5.4). When age at first marriage of the wife was controlled, the sign of the ethnicity term changed from negative to positive. The negative zero order correlation between ethnicity and fertility is due to the fact that Chinese marry at later ages and hence have smaller families (Appendix C.5). Thus when age at first marriage is held constant, Chinese ethnicity shows a positive effect on family size. The unstandardised regression coefficient of the ethnicity term was .17. On the average, the British family had 2.0 (Y-intercept) children while the Chinese family had 2.17 children when the other variables were controlled in the equation.

We divided the sample into two groups, the younger cohort (age of wife smaller than 34 years) and the older cohort (wife's age at 35 years and beyond). The ethnic main effect is significant in explaining the family sizes of the younger couples, but it appears to be statistically insignificant among the older couples. Chinese ethnicity shows a negative zero order correlation with fertility, but it shows a positive effect on family size in the regression models (Table 5.4). Again, it was detected earlier that age at first marriage of the wife was responsible for the negative zero order correlation between Chinese subculture and fertility. Chinese married at relatively later ages and hence their ultimate family size is smaller on the

average. When the age factor was controlled, Chinese subculture in fact reverses in showing a positive impact on their family size.

From the t-statistics (Table 5.1), we speculated that there was middle-class ethnicity. In the multivariate analysis, we divided the sample into two groups, those having at least 14 years of formal education, and those having 13 years of schooling at the most. The regression equations of these two groups are shown in Table 5.4. On the average, the educated British and Chinese couples, have smaller family sizes. When all the variables are controlled, the average number of children of those having at least 14 years of schooling are 1.5 and 1.6 for the British and Chinese respectively. As can be seen in the table, Chinese ethnicity remains positive in determining fertility.

In conclusion, the minority insecurity hypothesis, calling for a negative effect of Chinese ethnicity on fertility, was not supported by the multivariate models. In fact, Chinese subculture induces a positive main effect on childbearing. The positive subcultural effect is also evidenced among the younger couples. Even when educational level of the husband is considered, a positive ethnic main effect was found across the two groups (Table 5.4).

5.2.2.2 Subcultural and Structural Effect for the Portuguese

From the regression model of the Portuguese, a minority group status effect is detected. Contrary to our prediction, minority status serves to discourage having large families among the Portuguese.

Table 5.5 shows the regression model with ethnicity coded as a dummy variable (Portuguese=1, British=0). Husband's relative income is positive in association with family size, while the wife's income and education, as well as the husband's occupation, have negative effects on ferility.

The Portuguese ethnic effect was predicted to be positive because of their presumed Catholic pro-natalist subculture. The bivariate correlation between ethnicity and fertility was positive (Appendix C.6). However, when the other variables were controlled in the regression models, being a Portuguese has a negative effect on actural family size. The unstandardised regression coefficient is -.12, thus on average, the Portuguese family size would be .12 children less than the British (Table 5.5).

When the sample was partitioned into two age cohorts (Table 5.5), the minority insecurity effect among the Portuguese failed to reach statistical significance. Eventhough the ethnicity terms are shown to be negative for both age cohorts, the coefficients

are not significant. We divided the sample based on a further dimension: those having at least 14 years of education, and those having 13 years of training at the maximum (Table 5.5). Generally, the educated couples have a smaller family size (1.6), while the less educated couples have larger families (2.4 children). The minority group status insecurities effect is significant among the educated Portuguese couples only.

In conclusion, the minority insecurity effect was detected only among the total Portuguese sample. Being a Portuguese has an overall negative effect on family size. However, when two broad age cohorts were inspected, the minority insecurity factor is not statistically significant. When couples of two social classes are studied, the educated Portuguese exhibit signs of minority status insecurity.

5.2.2.3 Conclusion for the Testing of the Minority Status Hypothesis

We tested the minority group status hypothesis with the regression model including the ethnicity term. Chinese subculture showed a significant influence in determining their fertility. But instead of a predicted negative effect, Chinese ethnicity influenced their fertility in a positive way. For Portuguese, we originally predicted an enhancing effect on childbearing. Contrary to the prediction, Portuguese ethnicity subculture influenced their childbearing in a

negative way. Yet, the influence was not decisive because when we conditioned on wife's age, Portuguese ethnicity is insignificant for the two age groups whereas Chinese ethnicity is only significant for the younger age group.

In this section, we test the minority status hypotheses by means of dummy variable regression models. We may infer minority effects from the ethnic dummy coefficients. We consider the conclusions from this section as tentative because the test of hypotheses from the dummy variable regression is not comprehensive. First, minority status effects might also be manifested through the other variables. As we have discussed in the previous chapters, ethnic minorities may exhibit a different pattern of income-fertility relationship (Bean and Wood, 1974; Johnson and Lean, 1982). Second, the dummy regression model fails to test the assimilationist-characteristics hypothesis and the minority status effect simultaneously. In the light of the possibility of the minority effect on the income-fertility relationship, we will now proceed with a series of regression models for the three groups separately. The decompositional analysis which we used in section 5.3 is capable of handling the limitation of using dummy variables. The decompositional models are the final test of the hypotheses for fertility differentials in the present inquiry. The models test

the hypotheses simultaneously, taking the account of all three possible sources of the differentials, namely, main ethnic effects, assimilationist effects and social psychological insecurity (Details of the decompositional model will be discussed in section 5.3 and in the technical note in the Appendix B).

5.2.3 Findings for the Microeconomic Framework of Fertility

In this section, the income-fertility relationship is examined in the context of minority group status by means of three separate regression equations. We try to observe the influence of minority group status on different patterns of relationships between income measures and fertility.

Results of the regressions are presented in Table 5.6. The form of relationship between independent and dependent variables seems to follow the general pattern anticipated by the basic tenets of the microeconomic model of fertility.

Husband's relative income has a positive influence on family size across the three groups. Relative income is significantly related to family size for the British, and while it is insignificant for Chinese and Portuguese, it shows a positive effect as well. The findings from the British regression equation support Easterlin's hypothesis concerning the income-fertility relationship. We predicted that relative income of the Chinese would relate to their family size negatively due to the marginality they experience as a group. However, the findings do not support

this hypothesis. For the Portuguese, husband's relative income was hypothesized to relate to their fertility in a significant and positive way because of their pro-natalist Catholic subculture. The regression coefficient of the Portuguese do not bear support for this interpretation in that the effects are insighificant. Concerning lifetime potential income, similar forms of the previous relationship emerge (Appendix C.8 potential income model). Even though relative income and lifetime potential income are different concepts, their regression models are quite similar as can be seen from the tables in the Appendices (Appendix C.8-C.17). Since the results of the three husband's income (relative income using own ethnic groups as reference, relative income using British as references and potential income) are similar, we will not discuss them all. Our discussion will concentrate on the models using the first version of relative income.

The pattern of relationship among the dependent and the other structural variables follow our predictions. The wife's income--as a measure of the opportunity cost of childbearing, the wife's educational level, and the husband's occupation, as another measures of the opportunity cost and taste of material goods, have negative effects on childbearing. The structural variables do not show significant impacts on Portuguese fertility. The other two variables, age of wife and age at first marriage of the wife, are consistent in determining the couple's family size

significantly.

We conclude in this section that both potential and relative income influence reproductive behaviour positively. The findings support the microeconomic model of fertility. Chinese's income factor is originally predicted to have negative impact on fertility due to their social psychological insecurity, whereas Portuguese income is hypothesized to relate to fertility positively because of their pro-natalist subculture. The findings do not corroborate our original predictions. However, one should be cautious in drawing substantive conclusion from the present findings. These regression models study the income-fertility relationship in a minority context fail to test the hypothesis simultaneously. From the decompositional analysis which we are going to pursue in the later section, we will be able to incorporate the dominant group in the comparison for the differentials.

5.2.3.1 Findings for the Microeconomic Framework of Fertility, Conditioning on Two Age Cohorts

In this analysis, we divided the sample into two subgroups, namely age of the wife below 34 years, and 35 years old and above (Table 5.7). This is done on the premise that different age cohorts might exhibit a different taste for childbearing. The second group, to a large extent, has reached their completed childbearing stage. Easterlin (1969) suggested that one's income at age 35-44 is the best proxy for his potential lifetime

income. Hence, the current income of the older cohort will be a better proxy of potential lifetime income.

The Portuguese Model

The husband's relative and potential income have positive and significant effects on the young Portuguese's fertility (Table 5.7 and Appendix C.9). But among the older Portuguese, the income factors have no significant impacts on family size. The wife's current income shows a significant effect for the younger couples.

The Chinese Model

Both relative and potential income are insignificant in determining Chinese family size. The wife's education is also insignificant for the young Chinese couples (Table 5.7 and Appendix C.9).

The results from the regression coefficients seem to corroborate the characteristics explanation of fertility for the two minority groups. However, the constants of the equations are consistent with the minority group status thesis: The expected average family sizes of the Chinese and the Portuguese are smaller than that of the British. To estimate the separate effects of socioeconomic characteristics and minority status on the fertility differentials, we will utilize the decompositional model in the next section.

But before we proceed with the decompositional analysis, we will first focus on the regression model of middle-class minorities.

5.2.3.2 Regression Model for the Middle-Class Minorities

The sample was divided into two groups on the basis of the husband's educational level. The husband's educational level is to a certain extent a reflection of the social class to which the couples belong. The sample size of the Portuguese couples with the husband's education of 14 years or above was too small (N=27) to provide a meaningful analysis. Hence, the Portuguese of 14 years education was excluded for the analysis. (Appendix C.10 presents the potential income model of the Chinese. Appendix C.11 shows the regression equations of the Portuguese).

Table 5.8 shows the regression model of the couples with husband's education at 14 years or above. The impact of the variables on completed family size is rather small. Concerning the form of the relationship, no major deviation from the microeconomic model is found. Both the British and the Chinese equations confirm to the microeconomic theory. The Chinese relative income has a greater effect on their family size than the British. Nonetheless, the most decisive factors affecting the family size are the wife's age and her age at first marriage. The other socioeconomic factors show relatively small impacts on fertility.

In the subsequent analysis, we further divided the middle-class Chinese into two groups based on the wife's age. The first group includes the couples with husband's education at 14 years or above, and the wife's age at 34 or below. The second group consists of the couples with husband's education at 14 years or above, and the wife's age at 35 years or above.

5.2.3.3 Couples with the Husband's Education at 14 Years or Above and the Wife's Age at 34 Years or Below

Contrary to what we have found thus far, the Chinese relative income shows a negative impact on their family size. This result suggests minority insecurity. Yet, the coefficient is statistically insignificant. Another piece of evidence for the minority insecurity hypothesis is the small average family, as reflected in the intercepts, among these Chinese couples (Table 5.8).

5.2.3.4 Couples with the Husband's Education at 14 or Above and the Wife's Age at 35 Years or Above

The Chinese relative income has a significant and positive influence on fertility. When compared with the British, the influence of the Chinese income factor is greater. The other socioeconomic variables, such as the wife's income, and educational level, and the husband's occupation, are all statisticaly insignificant.

5.2.3.5 Regression Model of the Couples with Husband's Education Level of 13 Years or Below

In the present analysis, we concentrate on the couples with husbands having at the most 13 years of schooling. The majority of the Portuguese are in this category (N=265).

The socioeconomic characteristics show no significant impact on the Portuguese couples as a whole (Table 5.9). Only the age factors are statistically significant in determining family size. For the younger Portuguese couples, in additon to the two age factors, the wife's current income is also statistically significant. Relative income has a positive influence on family size. It is interesting to note that the constant of the Portuguese equation is a little greater than that of the British. On the average, the Portuguese young couples have virtually a similar family size than the British. Contrary to the younger Portuguese, the older Portuguese couples show a negative association between relative income and fertility. Their average family size is smaller than the British (intercepts).

There is support for both the assimilationist explanation and the marginality argument among Chinese couples. The wife's current income and the two age factors are significant in their impact on fertility. The constant (1.3) is smaller than that of the British. When the age of the wife is considered, two of the

socioeconomic characteristics, namely the relative income and the wife's income, proved to be important for the younger couples. Interestingly enough, the Chinese's income has greater effects on fertility than the British. But the average family size of the Chinese is considerably smaller than that of the British. Among the older Chinese couples, the husband's income shows a negative and yet insignificant influence on fertility. Their average family size is again less than the British's (The potential income models are presented in Appendix C.12 and C.13).

5.2.3.6 Concluding Remarks for the Multivariate Analysis

In this section, we tested the hypotheses by means of the multivariate analysis. We tested the assimilationist and the two versions of the minority group status hypothesis in two stages. First of all, we studied the regression model with ethnicity as dummy variable. The number of children born to the wife was regressed on the various independent variables and on the dummy variable representing membership in each group. The membership term was positive and significant for the Chinese, and negatively significant for the Portuguese. Subsequently, we divided the sample into two subgroups based on the wife's age and the husband's educational level. The ethnic membership term had a significant impact on the younger Chinese couples. When the husband's educational level was considered, Chinese

ethnicity exhibited positive and significant influence on reproductive behaviour. Concerning the Portuguese, additional partitioning of the sample did not enhance further our understanding of their fertility behaviour.

Our tentative conclusion from the dummy variable regression model suggested support for the minority group status hypothesis. Both the Chinese and the Portuguese ethnicity have independent effects on fertility. Yet, contrary to our original prediction, a minority insecurity effect was evidenced not for the Chinese, but for the Portuguese. A pro-natalist subculture effect was inferred among the Chinese. The regression models suggest that ethnicity is responsible in explaining fertility. However, these models by no means explain the assimilationist hypothesis of fertility differentials. Conclusion for the ethnic effects on the fertility of the two minority groups was taken with caution because the ethnic effect of each group is rather small. Subsequently, we proceeded to the second stage of the inquiry. Family size was regressed on the independent variables for each group separately.

We looked at the microeconomic framework of fertility in a majority-minority context. We hypothesized a negative impact and a positive impact of income on fertility for the Chinese and the Portuguese respectively. The minority insecurity effects will restrain the Chinese to have large families while the

pro-natalist subculture encourages the Portuguese to opt for larger families. But the results were not as predicted. Findings from the regression models for the three separate groups generally supported the microeconomic model of fertility. Both relative and potential income are positively related to fertility across the three groups.

Another interesting result worth noting is the effects of wife's income on fertility. While wife's income generally shows consistent and significant effects on fertility, the strengths of the effects vary across social status. Among the less educated young Chinese couples, wife's income has a stronger impact on fertility (standardised coefficient is -.41) as opposed to their older counterparts (standardised coefficient is -.05). An opposite pattern is shown among the educated couples. The strength of wife's income is similar for the older cohort and the younger cohorts. As wife's income is a proxy for the opportunity costs of childbearing, such results can imply that opportunity costs vary among different social strata and age cohorts.

We argued in the previous chapters that all the three sources, namely, the assimilationist-characteristics hypothesis, the minority status effect and the ethnic main effect, are conducive to the existence of fertility differentials. Our final

test of these hypotheses of fertility differentials lies in the decompositional analysis which is able to assess all these sources for the differentials and to estimate the magnitude of each component simultaneously.

5.3 Decompositional Analysis of the Fertility Differentials

The results from the multivariate analysis were not unequivocal because it fails to test the three explanations simultaneously and to incorporate the dominant-subordinate groups in the comparison. In this section, the regression equations were re-computed excluding the non-significant terms. To allow the comparison required by the decompositional model, the same variables were deleted for the British, which is the standard group.

5.3.1 Chinese

5.3.1.1 Overall Chinese

From the equation (Appendix C.18), we know that the Chinese's actual family size is smaller than the British's. The difference is .13 child per family. We decomposed this difference into four components (Table 5.11).

Considering the minority group status hypothesis, we predicted that the Chinese's fertility would have a greater response to the independent variables because of their insecurity feeling. Hence, the variable effects (Component C) would be negative. The results support our

prediction. Each individual variable shows a greater effect on the Chinese's fertility than on the British's, and the value of Component C is negative. It means that the Chinese go through social psychological insecurity and any standardization between the Chinese and British regression coefficients will serve to raise the fertility of the Chinese. But at the present situation, Chinese minority status acts to discourage their fertility.

We hypothesized that Chinese subculture was not pro-natalist, hence, they would not have a larger family than the British once the other variables are controlled in the analysis. Component A, the intercept difference, would be positive for the Chinese. This second version of minority status is supported. The effect of minority status *per se*, independent of any assimilation and interaction effects, lowers the fertility of the Chinese by 1.05 children per family. The Chinese ethnic effect serves to lower their fertility.

We examined the assimilationist argument of fertility differentials. The assimilationist component was operationalised by the effects of differences in the average levels of the independent variables. The component (B), indicates that the minority is not fully assimilated along variables which affect fertility. In terms of wife's income, Chinese are better off than British. If the Chinese wives have similar income levels

as the British, they will consequently have larger families. Differences in educational level between the Chinese and the British wives cause their fertility variance by a small amount (-.048). If the Chinese wives have equal schooling to the British, their family sizes will decrease by .048 children. Of all the four variables that contribute to the differentials, wife's age at first marriage is the most important factor. Chinese women marry at much later age than British. So, if Chinese get married at similar age with British, their family sizes will raise by .597 children. Overall, differences in average levels actually enhance Chinese fertility by .281 of a child.

The last component (D), is an estimate for unmeasured variables responsible for the differentials. A negative value means that these unmeasured factors serve to decrease the fertility of the minority.

From the decomposition model, the argument for minority insecurity among the Chinese is supported. Moreover, the incomplete assimilation of the Chinese, as indicated by the means differences component, also contributes to the differentials. The insecurity effect and the effects of independent variable are similar, in magnitude but not in sign. The Chinese subculture (Component A) is mostly responsible for the differences by approximately 4 times vis-a-vis Components (B) and (C).

5.3.1.2 Decompositional Model for the Chinese Conditioning on Wife's Age

We divided the Chinese sample into two cohorts (Table 5.10). Among the younger couples, only wife's income and the two age factors were influential to Chinese fertility. The wife's income, educational level and the two age factors are significant among the older cohort. There is evidence of a minority group status effect for both the younger and the older cohort: The actual fertility is lower for the Chinese (.09). The main ethnic effect is 1.81 for the younger cohort and 2.06 for the older cohort, meaning that Chinese subculture serves to lower fertility. There is also evidence of minority insecurity. In Component C, the variable effects are greater among the Chinese couples suggesting that the feeling of marginality affects Chinese fertility.

The means differences component is not equal to zero. All individual mean differences were found to be negative for the younger cohort. The Chinese wives have greater income than the British wives, and such difference in income cause the Chinese to restrain from having larger families. The Chinese women on the whole married at later ages than the British and hence they had a shorter period of exposure to pregnancy; therefore, the Chinese couples have smaller levels of reproduction.

Considering the magnitude of each component, the younger Chinese couples are affected to a greater degree by their minority status. When age was not controlled, the magnitudes of the insecurity effect and the means differences effect were similar. The degree of insecurity effect outweighs that of the assimilationist factor for the younger couples. However, the magnitudes of these two components are similar for the older couples. Neither the minority insecurity effects nor the assimilationist effects has distinctive influence on their fertility differentials. The most important impact on the fertility variations is the Chinese subculture. There is a strong subculture effect among the Chinese couples. The main ethnic effect outweighs the means differences component by almost 8 times, and the insecurity term by 5 times for the younger cohort. The main ethnic effect is also pronounced for the older couples. The subcultural term is greater than the other two components, the insecurity term and the assimilationist component, by approximately 7 times.

5.3.1.3 Test of Middle-Class Ethnicity

In this section, we looked at the decompositional model of the Chinese couples with the husbands having at least 14 years of education.

Table 5.12 shows the decompositional model of couples with husbands having at least 14 years of education. Concerning the minority group status

hypothesis, the main ethnic effect from this model is .97 and the insecurity component is -.27. We accept the hypothesis that minority group status effects contribute to Chinese fertility. This group of Chinese couples is better off in terms of wife's income, the husband's relative income (though only a very little difference), and the wife's educational level. The assimilationist component is .44. The socioeconomic characteristics of these relatively educated Chinese couples are significant in determining their reproductive behaviour.

As a consequence of high socioeconomic status and the minority effect, these Chinese couples have lower actual family sizes than the British couples. Average family size of these Chinese couples is 1.55, while the British have 1.86 children per family.

The main ethnic effect (.97) is the most important component in causing family size differentials. This component is greater than the assimilationist and the insecurity terms by approximately 2 times and 3.5 times respectively. The assimilationist component outweighs the variable effects by about 1.6 times.

Contrary to the previous decomposition models of the Chinese, socioeconomic status, instead of social psychological insecurity seems to be more important in determining fertility among these more educated Chinese couples. From the T-statistics of these relatively educated couples (Table 5.1), we speculated that there

was evidence of middle-class ethnicity. Yet, the differences in means are not accurate enough to infer the argument for middle-class ethnicity. We went on to regress fertility on the independent variables and we hypothesized that the husband's relative income would relate to family size negatively if there was middle-class ethnicity. Contrary to this prediction, husband's relative income significantly encouraged the Chinese's fertility (Table 5.8). The coefficient of the Chinese relative income outweighed that of the British by .03 unit (Table 5.8). From the regression model, we rejected the hypothesis of minority status effect. Now, the decompositional model confirms our conclusion. Even though there was evidence of a minority effect, the socioeconomic characteristics appear to be more important in explaining the fertility differentials.

We proceeded to divide this group of Chinese into two age cohorts (see Table 5.12). Generally, the main ethnic effect is strong for the two cohorts. Chinese ethnic effects are consistent to be the most crucial factor that determine the differentials. Being Chinese will have smaller family.

Interestingly enough, the importance of Components (B) and (C) vary between the two cohorts. In the younger cohort model, the insecurity component is more important in determining fertility differentials than the socioeconomic factors. The young Chinese experience

insecurity and that affects their fertility pattern. Middle-class ethnicity is evidenced among young Chinese couples. This is in agreement with the regression model in Table 5.8. The coefficient of the Chinese's relative income is negative, meaning that the higher the husband's relative income, the less likely that these Chinese couples have large families.

Considering the older age cohort, the socioeconomic characteristic are more important in causing the fertility differentials. The means differences component outweighs the minority status component by about 2 times. The effect for middle-class ethnicity was not decisive among the older Chinese. Again, the corresponding regression model in Table 5.8 agrees with this conclusion. Relative income relates to family size positively among the Chinese couples, and the strength of the coefficient outweighs the British.

We concluded that the middle-class ethnicity hypothesis is confirmed by the young Chinese couples. Minority insecurity affects their fertility. The assimilationist hypothesis is supported among the older Chinese couples.

5.3.1.4 Decompositional Analysis for the Chinese with Husbands Having at the Most 13 Years of Education

In this section, we investigate the decompositional model of Chinese couples with husbands having at the maximum 13 years of education (Table 5.13)

In the overall sample, the wife's income, together with the two age factors are largely responsible for the fertility differentials. Similar to our previous findings, there is evidence of a minority status effect: The main ethnic component has a positive value, meaning that Chinese subculture serves to produce a smaller average family size than the British. The insecurity component (variable effects) is negative, meaning that the independent variables have a stronger impact in discouraging the Chinese's fertility than the British. The unmeasured variables serve to decrease the family size of the Chinese in relation to British (Table 5.13).

Concerning the magnitude of each component, the opposite pattern is found among this group of Chinese as compared with their relatively educated counterparts. The later group shows support for the assimilationist hypothesis, while the former group suggested support for the minority status thesis. Among the relatively educated Chinese, the magnitude of the means differences component is greater than the insecurity component. Their socioeconomic characteristics play a strong part in explaining the differentials. The opposite is true among the less educated couples in that the insecurity component is more important in determining fertility differentials. Its magnitude outweighs the means differences term by almost 4 times. It seems from these results that the minority insecurity feeling is more

pronounced among the less educated Chinese.

We divided this group of Chinese into two cohorts (Table 5.13). The main ethnic effects are strong for both the young and older cohorts, 2.26 and 3.33 respectively. The Chinese subculture was hypothesized to have lower fertility than the British. Both the assimilationist and minority insecurity theses are supported.

Among the educated couples (husbands having at least 14 years of schooling), we find that minority insecurity is more important among the younger couples while socioeconomic status discrepancies are more significant among the older couples. Such pattern is not found among the less educated Chinese. Minority insecurity is evidenced to be important for both age cohorts. The insecurity component was greater than the socioeconomic component by 4 times for the older cohort, and almost 9 times for the younger cohort.

Contrary to Reitz's (1980) argument for middle-class ethnicity, our data shows that minority effect is not only confined to the middle-class, as the less educated Chinese consistently experience minority insecurity. Perhaps, it is this subgroup of the Chinese that experiences the greatest degree of discrimination. They have limited resources to gain social mobility. They are likely to confine themselves to ethnic segregated jobs. Ethnic group segregation enhances their

minority status. Hence, the minority status effect is supposed to contribute significantly to their reproductive behaviour (Lopez and Sabagh, 1978). The effect of minority insecurity is even more prominent for the younger couples. Similar to the educated young Chinese, the less educated young couples also experience a certain degree of insecurity which contributes significantly to their fertility differential.

In sum, the analysis shows that a minority status effect is responsible in accounting for the fertility differentials among the less educated Chinese, for both age groups. The magnitude of the insecurity component is more prominent for younger couples. Generally, minority insecurity affects the reproductive behaviour of younger Chinese, regardless of their educational level.

5.3.2 Portuguese

From the regression equations, we concluded that the socioeconomic characteristics did not have a significant impact on the Portuguese fertility. Contrary to our hypothesis, it was not their socioeconomic aspect that caused the Portuguese to have higher fertility. In fact, the regression equations showed that the average family size of the Portuguese was smaller than the British when the other variables were controlled. We concluded from the previous findings that instead of the assimilationist hypothesis, the minority group status effect is responsible for their

fertility differential. In this section, we use the regression decompositional model to estimate the magnitude of each component, assimilation, insecurities, and ethnic effects (Table 5.14)

5.3.2.1 Overall Portuguese

Table 5.14 shows the decompositional model of the Portuguese fertility. The components generally are in disagreement with our original hypotheses, and are consistent with the findings obtained earlier from the regression models (Table 5.9).

Considering the main ethnic effect, we predicted that the Portuguese subculture serves to raise their fertility because they a mostly Catholics. This component is shown to be positive. In fact, the results showed that in relation to the British, the Portuguese subculture actually discourages high fertility. We therefore reject the hypothesis concerning the pro-natalist influence of the Portuguese subculture.

Since the socioeconomic characteristics, namely, the income factors and the wife's education, were insignificant in the regression equation, only the two age variables are used to decompose the fertility differentials between Portuguese and British. Accordingly, the effect of Component (B) is quite small (.03). There is not much differences in terms of wives' age and their age at first marriage between British and Portuguese. At least with respect to these two

variables, the Portuguese couples are similar to the standard group. We originally believed that the Chinese were more assimilated than the Portuguese and hence the value of this component would be smaller for the Chinese than for the Portuguese. It would be difficult to evaluate this point from our present findings because the two decompositional models (Table 5.11 and Table 5.14) are actually incomparable because they do not contain the same variables. It was only reasonable to compare the magnitude of each component within the model. Nonetheless, according to the result, there is some evidence of assimilationist effects. But the magnitude of its impacts is very small.

Again, any conclusion for the testing of the minority insecurity hypothesis has to be taken with caution because there are only two age variables in the decompositional model. The value of this component is negative, indicating that the Portuguese couples experience minority status anxiety. We hypothesized that the Portuguese couples are less likely to experience insecurity and would have larger family size because of their improved living standard and their pro-natalist culture. We reject such hypothesis, and we also conclude that the effect of minority status is small.

The estimate for the unmeasured variables is quite pronounced (-.45). It implies that Portuguese fertility is mostly determined by other unmeasured variables which

play an important part in discouraging their fertility, as the sign of this term is negative. Our study could not control for the effect of Portuguese migration on fertility. Temporary family disruption is common among the Canadian Portuguese because in the early stage of their immigration to Canada, it is mostly the husbands who come first and are joined by their wives later. This temporary separation between husbands and wives can have negative effects on their completed fertility. Moreover, it is not possible to determine whether the Portuguese's fertility occurred prior or after migration to Canada.

Overall predicted family size is greater for the Portuguese. On the average, the Portuguese have .17 more children per family than the British. Nonetheless, the differential is small to conclude that the Portuguese have a substantially larger family size.

5.3.2.2 Models for the Two Portuguese Age Cohorts

We divided the Portuguese sample int two age cohorts. The decomposed results are slightly different for the two age cohorts (Table 5.14).

Predicted family size of both age cohorts are larger for the Portuguese than the British. However, the amount of difference between the majority group and the minority is small.

The ethnic main effect serves to discourage the fertility of younger Portuguese but enhances it among the older Portuguese. Among the young, their ethnic

subculture acts to decrease their family size once other variables are controlled. Among the older Portuguese, however, their subculture increases family size even when other variables are controlled. It seems that younger Portuguese consciously restrict their fertility. We predicted previously that Portuguese ethnic effects act to encourage fertility because of their pro-natalist subculture. The older cohort supports this prediction. However, we cannot find the similar ethnic effects from the younger cohort.

The means differences component (B) of the younger cohort is negative, implying that these Portuguese are not doing as well as the British socioeconomically. Assimilation along these variables will decrease the Portuguese fertility by .048 of a child. However, only relative income and age at first marriage behave as predicted and the effects of this component are rather small. The data fail to provide unequivocal support for the assimilationist hypothesis for the differentials. The older cohort has a positive value in Component (B), meaning assimilation along the two age variables will serve to raise their fertility by .187 of a child. This cohort of Portuguese generally marry at later age and are slightly older than the British. Concerning the magnitude of this component, the differences in means only contribute a small amount to the fertility variance among the young couples whereas it explains mostly the

differentials for the older couples.

The minority insecurity effect explains a substantial part in the fertility differentials of the younger couples. Minority status, independent of the compositional differences (Component B) has an effect on the Portuguese fertility. Social psychological insecurity discourages their reproductive behaviour. We therefore reject the prediction that the variables effect serves to encourage Portuguese fertility. However, the minority insecurity effect is small among the older couples, thus the finding among older couples is in agreement with our argument that the Portuguese experience relatively little insecurity, with respect to childbearing. The findings from component (C) corresponds to the results from component (A), the main ethnic effect.

The unmeasured variables discourage the fertility of the young couples but enhances childbearing of older couples, who generally tend to have larger families than the younger Portuguese.

In sum, partitioning the Portuguese sample into two age cohorts enhanced our understanding of their reproductive behaviour. Generally younger couples restrict their family size. Minority insecurity contributes their differentials in fertility. These young Portuguese do not possess pro-natalist subculture. The ethnic main effects serve to discourage fertility.

The fertility of the older couples, on the other hand, manifested very little minority status insecurities effects. They manifest pro-natalist subculture. The unmeasured variables serve to raise their fertility and therefore they are inclined to have larger families.

5.4 Generational Differences in Minority Status Effect

Our last section deals with generational differences in minority status effect. Unfortunately, our present data do not have a sizable population of Canadian born minorities. As Table 5.15 shows, there are only 8 Chinese who are Canadian born. T-statistics of the study variables between these Canadian born Chinese are similar to the foreign born Chinese and the British. The sample of the second generation minorities is therefore too small to make any meaningful analysis.

Table 5.1
Means, Standard Deviations and T-tests for the Studied Variables by Husband's Education ≤13 and 14+

	BRITISH				CHINESE				PORTUGUESE			
	14+		≤13		14+		≤13		14+		≤13	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D	Mean	S.D.
Household income	33854	17627	26445	14942	31627	19011	25173	18595	30517	11357	24850	11078
Husband's actual income	25476	14409	19006	11123	21830*	14467	14920*	11443	22757	10864	16925*	8076
Husband's relative income1	1.00	.50	1.06	.57	1.00	.60	.98	.71	1.2*	.58	1.04	.48
Husband's relative income2	n.a.		n.a.		.83*	.51	.82*	.60	1.0	.50	1.21*	.63
Wife's actual income	7380	8346	5655	6717	9310*	8425	6986*	6840	7257	5565	5841	4842
Wife's education	13.7	2.4	11.2	3.0	13.9	2.7	9.0*	4.0	10.7*	4.0	6.4*	3.2
Proportion managerial work	.49	.50	.14	.35	.56*	.50	.11	.32	.19*	.40	.05*	.21
Age of wife	34.0	7.5	34.8	8.5	33.4	6.7	36.6*	7.3	33.4	6.4	34.8	8.1
Age at first marriage of wife	21.7	3.1	20.5	3.2	24.4*	3.7	22.0*	3.9	21.0	3.1	21.4*	3.7
Children ever born to wife	1.9	1.4	2.3	1.6	1.5*	1.2	2.6*	1.6	1.7	.80	2.3	1.5

Husband's relative income1: using own ethnic group as reference
Husband's relative income2: using British as reference group
*T-statistics significantly different from British at .05 level

Table 5.2
Means, Standard Deviations and T-tests for the Studied Variables for Husband's Education 14+ by Age 15-34 and 35-49

	BRITISH				CHINESE				PORTUGUESE			
	15-34		35-49		15-34		35-49		15-34		35-49	
	Mean	S.D	Mean	S.D	Mean	S.D.	Mean	S.D	Mean	S.D.	Mean	S.D.
Household income	28924	13917	40330	19769	27994	17863	37515	19436	30173	8886	30709	14742
Husband's actual income	21816	11712	30285	16111	19330*	13322	25880*	15384	21306	8120	24013	14306
Husband's relative income1	.98	.49	1.1	.51	.97	.63	1.1	.63	1.18	.45	1.3	.80
Husband's relative income2	n.a.		n.a.		.80*	.50	.90*	.51	1.06	.42	.96	.59
Wife's actual income	7102	7688	7741	9120	8650*	8118	10366*	8846	8866	5832	5339	5268
Wife's education	13.7	2.3	13.6	2.4	14.0	2.4	13.6	3.2	11.5*	3.3	9.6*	4.6
Proportion managerial work	.42	.49	.57	.50	.59	.49	.52	.50	.19*	.40	.20*	.42
Age of wife	28.5	3.8	41.1	4.4	29.1*	3.4	40.3	4.4	28.4	4.0	40.3	3.6
Age at first marriage of wife	21.3	2.7	22.2	3.5	23.6*	2.9	25.5*	4.6	20.4	2.7	21.6	3.7
Children ever born to wife	1.4	1.1	2.5	1.4	1.1*	1.0	2.2*	1.3	1.6	.87	1.9*	.74

Husband's relative income1: using own ethnic group as reference
Husband's relative income2: using British as reference group.
*T-statistics significantly different from British at .05 level

Table 5.3
Means, Standard Deviations and T-tests for the Studied Variables for Husband's Education ≤13 by Age 15-34 and 35-49

	BRITISH				CHINESE				PORTUGUESE			
	15-34		35-49		15-34		35-49		15-34		35-49	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D	Mean	S.D.
Household income	22324	11416	30473	16774	19941	13338	29300	21029	23017	9742	26598*	11991
Husband's actual income	17230	9471	20741	12285	13921*	9269	15708*	12901	17112	8421	16661*	7713
Husband's relative income1	1.11	.59	1.02	.55	1.03	.69	.94	.73	1.05	.50	1.03	.46
Husband's relative income2	n.a.		n.a.		.85*	.58	.80*	.63	1.40*	.68	1.03	.51
Wife's actual income	5068	5983	6229	7320	5949	6041	7803*	7341	5905	4903	5877	4852
Wife's education	11.5	2.7	10.9	3.2	9.8*	3.8	8.4*	4.0	7.0*	3.5	6.0*	3.0
Proportion managerial work	.11	.31	.18	.38	.07	.27	.15	.36	.7	.25	.03*	.17
Age of wife	27.5	4.5	42.0	4.5	29.5*	3.1	42.3	4.1	27.6	4.1	41.6	4.3
Age at first marriage of wife	20.0	2.6	20.9	3.7	21.9*	3.2	22.1*	4.4	20.2	2.7	22.6*	4.2
Children ever born to wife	1.6	1.2	3.0	1.8	1.9*	1.3	3.1	1.5	1.6	1.0	2.9	1.7

Husband's relative income1: using own ethnic group as reference
Husband's relative income2: using British as reference group
*T-statistics significantly different from British at .05 level

Table 5.4
Regressions of Children Ever Born for the Chinese and the British Group

	Total Sample	Regressions with Different Conditions on the Sample			
		Age of Wife		Husband Education	
		15-34	35-49	≤13	14+
Husband's relative income	.07** (.02)	.07** (.03)	.003 (.001)	-.02 (-.01)	.19*** (.07)
Wife's actual income	-3.1E-05*** (-.15)	-4.1E-05*** (-.25)	-2.0E-05*** (-.10)	-3.4E-05*** (-.14)	-2.9E-05*** (-.18)
Wife's Education	-.05*** (-.10)	-.04*** (-.10)	-.06*** (-.13)	-.06*** (-.11)	-.03*** (-.06)
Proportion managerial work	-.02 (-.01)	-.06* (-.02)	-.03 (-.01)	-.07 (-.01)	-.04 (-.01)
Age of Wife	.11*** (.56)	.15*** (.54)	.07*** (.20)	.10*** (.55)	.11*** (.58)
Age at First Marriage of Wife	-.13*** (-.29)	-.14*** (-.34)	-.13*** (-.31)	-.14*** (-.28)	-.13*** (-.30)
Ethnicity	.17** (.02)	.12* (.02)	.18 (.02)	.20+ (.02)	.12+ (.02)
Intercept	2.0	1.0	3.5	2.4	1.5
R SQR	.41	.46	.20	.38	.43
Total N	8667	4658	4009	4121	3860

Standardized coefficients are in parentheses.
Ethnicity dummy variables: Chinese=1 British=0
*** Coefficients significant at .001 level
** Coefficients significant at .01 level
* Coefficients significant at .05 level
+ Coefficients significant at .10 level

Table 5.5
Regressions of Children Ever Born for the Portuguese and the British Group

	Total Sample	Regressions with Different Conditions on the Sample			
		Age of Wife		Husband Education	
		15-34	35-49	≤13	14+
Husband's relative income	.06** (.02)	.07** (.03)	-.01 (-.002)	-.02 (-.01)	.18*** (.07)
Wife's actual income	-3.1E-05*** (-.15)	-4.2E-05*** (-.25)	-2.0E-05*** (-.10)	-3.3E-05*** (-.14)	-2.9E-05*** (-.18)
Wife's Education	-.05*** (-.10)	-.04*** (-.11)	-.06*** (-.13)	-.06*** (-.12)	-.03*** (-.05)
Proportion managerial work	-.02 (-.01)	.06+ (.02)	-.03 (-.01)	-.07 (-.01)	-.04 (-.01)
Age of Wife	.10*** (.56)	.14*** (.53)	.07*** (.20)	.10*** (.55)	.10*** (.57)
Age at First Marriage of Wife	-.13*** (-.28)	-.14*** (-.33)	-.14*** (-.31)	-.14*** (-.28)	-.13*** (-.29)
Ethnicity	-.12* (-.02)	-.10 (-.02)	.17 (.02)	-.12 (-.02)	-.34* (-.02)
Intercept	2.1	1.0	3.6	2.4	1.6
R SQR	.41	.45	.19	.38	.42
Total N	8578	4595	3983	4537	3661

Standardized coefficients are in parentheses
Ethnicity dummy variables: Portuguese=1 British=0
*** Coefficients significant at .001 level
** Coefficients significant at .01 level
* Coefficients significant at .05 level
+ Coefficients significant at .10 level

Table 5.6
Regression Analysis of Children Ever Born for Three Ethnic Groups in Canada

	BRITISH			CHINESE			PORTUGUESE		
	(coeff) (std. coeff)	R SQR	Sig F	(coeff) (std. coeff)	R SQR	Sig F	(coeff) (std. coeff)	R SQR	Sig F
Husband's relative income†	.06 (.02)**			.13 (.06)			.07 (.02)		
Wife's actal income	-3.1E-05*** (-.15)	.04	.000	-2.6E-05*** (-.14)	.02	.012	-2.7E-05+ (-.09)	.02	.056
Wife's education	-.05*** (-.10)			-.05* (-.11)			-.02 (-.04)		
Proportion managerial work	-.02 (-.005)	.09	.000	-.09 (-.03)	.16	.000	.46 (-.07)	.04	.027
Age of wife	.10*** (.56)			.12*** (.59)			.10*** (.55)		
Age at first marriage of wife	-.13*** (-.28)	.41	.000	-.11*** (-.31)	.48	.000	.13*** (-.33)	.30	.000
Constant	2.1			1.0			1.8		
Total N	8276			391			302		

*** Coefficients significant at .001 level
** Coefficients significant at .01 level
* Coefficients significant at .05 level
+ Coefficients significant at .10 level

Table 5.7
Regressions of Children Ever Born for Three Ethnic Groups Broken Down by Age Cohort

	BRITISH		CHINESE		PORTUGUESE	
	15-34	35-49	15-34	35-49	15-34	35-49
Husband's relative income†	.06* (.03)	.001 (3.9E-04)	.12 (.07)	.03 (.01)	.35* (.17)	-.19 (-.05)
Wife's actual income	-4.2E-05*** (-.25)	-2.0E-05*** (-.10)	-3.2E-05*** (-.21)	-2.5E-05* (-.14)	-3.9E-05** (-.20)	-2.1E-05 (-.06)
Wife's education	-.04*** (-.10)	-.06*** (-.13)	-.01 (-.03)	-.06* (-.17)	-.02 (-.07)	-.02 (-.03)
Proportion managerial work	-.06* (-.02)	-.02 (-.01)	-.18 (-.06)	-.14 (-.04)	-.004 (-.001)	-1.2 (-.13)
Age of wife	.15*** (.54)	.07*** (.20)	.24*** (.68)	.10*** (.29)	.10*** (.41)	.07*** (.19)
Age at first marriage of wife	-.14*** (-.31)	-.13*** (-.31)	-.19*** (-.51)	-.09*** (-.28)	-.10*** (-.27)	-.14*** (-.35)
Constant	1.0	3.6	-.90	1.6	.87	3.4
R SQR	.46	.19	.35	.31	.32	.15
Total N	4442	3834	216	175	153	149

Standardized coefficients are in parentheses
*** Coefficients significant at .001 level
** Coefficients significant at .01 level
* Coefficients significant at .05 level
†Age cohorts base on wife's age

Table 5.8
Regressions of Children Ever Born for Two Ethnic Groups: Husband's Education of 14+ Years

	BRITISH			CHINESE		
	Total Sample	15-34	35-49	Total Sample	15-34	35-49
Husband's relative income	.18*** (.07)	.09* (.04)	.21*** (.08)	.21* (.11)	-.05 (-.03)	.44* (.21)
Wife's actual income	-2.9E-05*** (-.18)	-4.1E-05*** (-.27)	-1.6E-05*** (-.11)	-2.1E-05** (-.14)	-1.7E-05* (-.14)	-2.8E-05+ (-.19)
Wife's education	-.03*** (-.05)	-.04*** (-.09)	-.02 (-.04)	-.05* (-.12)	-.02 (-.05)	-.06 (-.15)
Proportion managerial work	-.04 (-.01)	-.05 (-.02)	-.07 (-.02)	.03 (.01)	-.06 (-.03)	-.14 (-.05)
Age of wife	.10*** (.57)	.14*** (.49)	.08*** (.26)	.13*** (.67)	.23*** (.80)	.09*** (.31)
Age at first marriage of wife	-.13*** (-.29)	-.14*** (-.33)	-.13*** (-.33)	-.11*** (-.32)	-.18*** (-.54)	-.09*** (-.31)
Constant	1.6	.95	2.2	.66	-.79	1.4
R SQR	.43	.45	.20	.51	.53	.41
Total N	3634	2063	1571	226	140	86

Standardized coefficients are in parentheses
*** Coefficients significant at .001 level
** Coefficients significant at .01 level
* Coefficients significant at .05 level
+ Coefficients significant at .10 level

Table 5.9
Regressions of Children Ever Born For Three Ethnic Groups: Husband's Education ≤13 Years

	BRITISH	CHINESE	PORTUGUESE
	15-49	15-49	15-49
Husband's relative income	-.02 (-.01)	.05 (.02)	.08 (.03)
Wife's actual income	-3.3E-05*** (-.14)	-3.5E-05*** (-.15)	-2.5E-05*** (-.08)
Wife's education	-.06*** (-.11)	-.02 (-.06)	-.02 (-.03)
Proportion managerial work	-.06 (-.01)	-.34 (-.07)	-.35 (-.05)
Age of wife	.10*** (.55)	.11*** (.55)	.11*** (.56)
Age at first marriage of wife	-.14*** (-.28)	-.11*** (-.27)	-.14*** (-.34)
Constant	2.5	1.3	1.8
R SQR	.38	.35	.31
Total N	4272	149	265

Standardized coefficients are in parentheses
*** Coefficients significant at .001 level
** Coefficients significant at .01 level
* Coefficients significant at .05 level
+ Coefficients significant at .10 level

Table 5.10
Regressions of Children Ever Born For Three Ethnic Groups: Husband's Education ≤13 Years

	BRITISH		CHINESE		PORTUGUESE	
	15-34	35-49	15-34	35-49	15-34	35-49
Husband's relative income	.03 (.01)	-.13* (-.04)	.56** (.28)	-.36 (-.17)	.27 (.13)	-.13 (-.03)
Wife's actual income	-4.5E-05*** (-.23)	-2.5E-05*** (-.10)	-9.3E-05*** (-.41)	-9.5E-05 (-.05)	-4.3E-05** (-.20)	-1.4E-05 (-.04)
Wife's education	-.04*** (-.10)	-.08*** (-.15)	.02 (.06)	-.06 (-.15)	-.02 (-.06)	-.01 (-.03)
Proportion managerial work	-.12* (-.03)	-.04 (-.01)	.20 (.04)	-.37 (-.09)	-.03 (-.01)	-.75 (-.07)
Age of wife	.15*** (.57)	.06*** (.16)	.26*** (.59)	.12*** (.33)	.11*** (.41)	.07* (.18)
Age at first marriage of wife	-.14*** (-.32)	-.15*** (-.31)	-.20*** (-.46)	-.07*** (-.21)	-.12*** (-.32)	-.14*** (-.35)
Constant	1.2	4.6	-1.7	.52	1.3	3.5
R SQR	.45	.18	.58	.21	.32	.14
Total N	2135	2137	67	82	130	135

Standardized coefficients are in parentheses
*** Coefficients significant at .001 level
** Coefficients significant at .01 level
* Coefficients significant at .05 level

Table 5.11
Regression Decomposition Models for the Chinese

	Wives aged 15-49	Wives aged 15-34	Wives aged 35-49
Actual Difference (British-Chinese)°	2.08-1.95= .13	1.47- 1.38 = .09	2.78-2.68= .10
Differences due to			
A. Ethnic Main Effect	2.22-1.17= 1.05	.89-(-.92)=1.81	3.68-1.62=2.06
B. Means Differences			
Wife's income	.103	.133	.100
Wife's education	-.048		-.137
Age at 1st marriage	.597	.844	.545
Age of wife	- 090	-.518	.058
Subtotal=	.562/2= .281	.458/2= .229	.566/2= .283
C. Coeff. Differences			
Wife's income	-.110	-.207	.105
Wife's education	-.084		-.069
Age at 1st marriage	-.122	.260	-.353
Age of wife	-.274	-.741	-.263
Subtotal=	-.589/2= -.295	-.687/2= -.344	-.580/2= -.290
D. Unmeasured Term			
Wife's income	.004	.008	-.002
Wife's education	-.206		-.138
Age at 1st marriage	-.633	1.70	-1.55
Age of wife	-.970	-4.92	-2.23
Subtotal=	-1.81/2= -.903	-3.21/2= -1.60	-3.910/2= -1.96
Total	.134	.091	.096

Differences between total and actual difference is due to rounding error

Table 5.12
Regression Decomposition Models for the Chinese With Husband's Education 14+ Years

	Wives aged 15-49	Wives aged 15-34	Wives aged 35-49
Actual Difference (British-Chinese)	1.86-1.55= .31	1.38- 1.09 = .29	2.54-2.23= .31
Differences due to			
A. Ethnic Main Effect	1.63- .66= .97	.76-(-1.17)=1.93	2.00- .330=1.67
B. Means Differences			
Hus. rel. income1	-.004		-.040
Wife's income	.097	.100	.141
Wife's education	.015		
Age at 1st marriage	.638	.772	.788
Age of wife	.136	-.223	.169
Subtotal=	.881/2= .441	.648/2= .324	1.06/2= .529
C. Coeff. Differences			
Hus. rel. income1	-.041		-.324
Wife's income	-.136	-.341	.337
Wife's education	.103		
Age at 1st marriage	-.157	.167	-.235
Age of wife	-.309	-.621	-.227
Subtotal=	-.542/2= -.271	-.794/2= -.397	-.448/2= -.224
D. Unmeasured Term			
Hus. rel. income1	-.033		-.301
Wife's income	.0005	.001	.001
Wife's education	.448		
Age at 1st marriage	-.903	1.18	-1.15
Age of wife	-1.170	-4.33	-1.89
Subtotal=	-1.66/2= -.830	-3.15/2= -1.57	-3.34/2= -1.67
Total	.310	.282	.306

Differences between total and actual difference is due to rounding error

Table 5.13
Regression Decomposition Models for the Chinese With Husband's Education ≤13 Years

	Wives aged 15-49		Wives aged 15-34		Wives aged 35-49	
Actual Difference (British-Chinese)	2.32-2.57=	-.25	1.59- 1.88 =	-.29	2.98-3.12=	-.15
Differences due to						
A. Ethnic Main Effect	1.91-1.07=	.84	.94-(-1.32)=	2.26	3.34- .007=	3.33
B. Means Differences						
Wife's income	.100		.093			
Age at 1st marriage	.427		.668		.298	
Age of wife	-.400		-.806		-.043	
Subtotal=	.126/2=	.063	-.045/2=	-.022	.254/2=	.127
C. Coeff. Differences						
Wife's income	-.075		.063			
Age at 1st marriage	-.256		.185		-.549	
Age of wife	-.159		-.852		-.435	
Subtotal=	-.490/2=	-.245	-.605/2=	-.302	-.983/2=	-.492
D. Unmeasured Term						
Wife's income	.005		-.005			
Age at 1st marriage	-1.27		1.16		-2.38	
Age of wife	-.556		-5.59		-3.86	
Subtotal=	-1.82/2=	-.912	-4.43/2=	-2.22	-6.24/2=	-3.12
Total		-.254		-.285		-.154

Differences between total and actual difference is due to rounding error

Table 5.14
Regression Decomposition Models for the Portuguese

	Wives aged 15-49	Wives aged 15-34	Wives aged 35-49
Actual Difference (British-Portuguese)	2.08-2.25= -.17	1.46- 1.54 = -.08	2.78-2.84=-.06
Differences due to			
A. Ethnic Main Effect	1.78-1.43= .35	.82- .66 = .16	2.87-3.13=-.26
B. Means Differences			
Hus. rel. income1		-.008	
Wife's income		.007	
Age at 1st marriage	.100	-.133	.336
Age of wife	-.047	.037	.037
Subtotal=	.053/2= .026	-.097/2= -.048	.373/2= .187
C. Coeff. Differences			
Hus. rel. income1		-.319	
Wife's income		-.046	
Age at 1st marriage	-.165	-.299	-.070
Age of wife	-.016	.383	-.436
Subtotal=	-.181/2= -.091	-.281/2= -.140	-.026/2= -.013
D. Unmeasured Term			
Hus. rel. income1		-.325	
Wife's income		-.007	
Age at 1st marriage	-.851	-1.95	-.326
Age of wife	-.058	2.18	.372
Subtotal=	-.909/2= -.455	-.099/2= -.049	.457/2= .023
Total	-.169	-.078	-.064

Differences between total and actual difference is due to rounding error

Table 5.15
Means, Standard Deviations and T-tests for the Studied Variables

	BRITISH		CANADIAN BORN CHINESE		FOREIGN BORN CHINESE	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Husband's actual income	21868.69	13058.66	23168.75	10518.55	18844.57	13576.07
Husband's relative income1	1.04	.54	1.2	.58	1.01	.66
Husband's relative income2	n.a.		.96	.45	.82	.54
Wife's actual income	6466.85	7555.43	15231.00*	13866.67	8268.36a	7645.25
Wife's education	12.3	3.0	11.38	3.3	11.9	4.5
Proportion managerial work	.30	.46	.25	.46	.39	.49
Age of wife	34.34	8.1	42.75**	7.1	34.57a	7.0
Age at first marriage of wife	21.0	3.2	25.0***	5.8	23.33	3.8
Children ever born to wife	2.1	1.5	1.6	.92	2.0	1.4
Total N	8396		8		397	

Husband's relative income1: using own ethnic group as reference
Husband's relative income2: using British as reference group
*T-statistics significantly different from British at .05 level
**T-statistics significantly different from British at .01 level
***T-statistics significantly different from British at .001 level
a T-statistics significantly different from Canadian Born Chinese at .05 level

Chapter 6

Conclusion

The primary purpose of this research has been to advance our understanding of the microeconomic framework of fertility in a minority status context, and to test the assimilationist-characteristics hypothesis and the minority status effect. We concentrated on two specific ethnic minorities in Canada, namely, the Chinese and the Portuguese.

We chose the Chinese and Portuguese because they are minorities in Canada. Their cultural and socioeconomic characteristics seem to agree with Goldscheider and Uhlenberg's (1969) thesis of minority status. Minority marginality was hypothesized to influence the Chinese fertility while pro-natalist subculture was predicted to affect the Portuguese's reproduction. Different statistical procedures were executed to test the hypotheses. Yet the focus was on the decompositional analysis which allows validation of the three sources of fertility differentials simultaneously.

6.1 Summary and Discussion

With respect to the microeconomic model of fertility, the two minority groups showed positive and insignificant fertility-income relationship. When the sample was divided into two age groups, younger Portuguese demonstrated a positive income-fertility relationship. Income-fertility

relationship of the educated older Chinese followed the expected patterns based on the microeconomic framework. Husband's income shows a negative but insignificant impact on the educated younger Chinese. An opposite pattern of income-fertility relationship is found among the less educated Chinese. Income has a positive effect on the family size of the younger couples but shows a negative insignificant impact on the fertility of the older couples. Wife's income generally has a negative impact on the fertility of Chinese and younger Portuguese.

Dividing the Chinese sample into two groups based on husband's educational level, enhances our understanding of the microeconomic framework in a minority status context. Prolonged schooling defers the childbearing activities of the educated couples. Less educated Chinese tend to bear more children at a relatively younger age. These couples married earlier and the opportunity costs of childbearing are likely to be less than their educated counterparts (Bean and Swicegood, 1985). The regression coefficient of husband's relative income is positive among these less educated young couples. However, these are the couples who may experience the greatest degree of discrimination. Ethnic segregation in the workplace intensifies ethnic consciousness. Minority insecurities serve to discourage their fertility. Hence, husband's relative income has a negative effect on their completed family size. The fertility pattern of the educated couples shows an opposite

picture. In their early stages of family formation, these educated couples may restrict their reproductive behaviour in order to establish a desired lifestyle. Hence, husband's income is negatively related to fertility. But they are at a better socioeconomic position which allows them to live a middle-class lifestyle. Hence, completed fertility, as demonstrated by the older cohort, relates to income positively. In other words, insecurity varies by social status, in a manner such that a more favorable socioeconomic position eases insecurity and a less favorable condition accentuates it (Bean and Wood, 1974). Such patterns of insecurity effects can be inferred through the two age cohorts which somewhat reflect different stages of the family life cycle.

Our findings suggest that the principles of the microeconomic model of fertility may vary among ethnic minorities. In light of the results, it is necessary to think further about the specific conditions under which income effects are likely to appear and vary. Not all ethnic groups maximise their utilities in the fashion as suggested by the microeconomic framework of fertility. The microeconomic model of fertility only explains the economic dimension of reproductive behaviour. However, it does not take sufficient consideration of the social aspect of fertility. Some ethnic groups, with their own normative constraints and their interaction with the dominant society, can have independent impacts on their reproductive

behaviour, beyond microeconomic effects.

Results which we did not discuss in the main text are worth mentioning here briefly. Bivariate correlations of the two versions of relative income, namely, income relative to the own ethnic members and income relative to the dominant group, are high, suggesting that the effects of income relative to the dominant group are not substantively different on fertility. In Canada where multiculturalism is promoted and racial barriers are assumed to be relatively few, minority group members do not typically view the dominant group members as role models.

The opportunity costs of childbearing seem to vary among social strata and age cohorts. Bean and Swicegood (1985) looked at the possibility of different outcomes with respect to whether greater or lesser access to societal resources will increase the negative education-fertility relationship. Wife's education is operationalised as the opportunity costs of childbearing in their studies. Accordingly, the minority group status framework implies that the relationship will be strongest under conditions of more restricted access; the differential opportunity costs framework suggests that it wil be strongest under conditions of more open access (Bean and Swicegood, 1985).

Our present inquiry uses wife's actual income as proxy for opportunity costs. The results of our analysis suggest support for the minority status framework of opportunity costs. The less educated young Chinese experience restricted

access to societal resources. The wife's income can be a significant contribution to the family's financial circumstances. Most of them would begin their labor market experience at an early age. Hence, wife's actual income shows a strong impact on the young couples' reproductive behaviour. However, the less educated wives are not likely to remain in the labor force throughout all of their reproductive span. The opportunity costs of childbearing may be substantially less among older minority women because of greater labor market discrimination at lower socioeconomic status levels, making it more difficult for these women to hold satisfactory employment (Bean and Swicegood, 1985; Bean and Marcum, 1978; Marcum and Bean, 1976). Many of them will therefore resume the role of housewife. Hence, wife's income has smaller effects on fertility among the older couples.

The differential opportunity cost argument inherent in the microeconomic model hypothesizes strong negative relationship between opportunity costs and family size among those who have better access to societal resources. This situation does not seem to be evinced from our findings. Wife's income has smaller effects on fertility among the educated young Chinese. The magnitudes of wife's income are similar for the two age groups among the educated couples. Perhaps, the educated wives who are better qualified in terms of vocational training will remain in the labor market longer than the less educated wives. Hence, opportunity costs of childbearing are the same in spite of their ages.

Our findings suggest differential opportunity costs across social strata of minorities. We conclude that the integration of a minority group status perspective with the microeconomic model contributes to a deeper understanding of fertility patterns and differentials among minority groups.

With respect to the decompositional analyses, ethnic subculture is mostly responsible for fertility differentials. Social psychological insecurity is observed among the less educated Chinese and the young educated Chinese. This result confirms our previous conclusion from the multivariate regression models. Reitz's (1980) argued for middle-class ethnicity in his analysis. Our finding suggests that both the middle-class and those at a less favorable socioeconomic position experience psychological insecurity which determines the fertility differentials. Although the less educated couples have higher actual family sizes than the British, the differences decrease for the older cohort presumably due to marginal insecurity.

Educated upwardly mobile couples restrict their fertility at the early stages of family formation. Once they establish a middle-class lifestyle, their reproductive behaviour is influenced by their socioeconomic characteristics (e.g. tastes). Hence, assimilation is mainly responsible for the observed fertility differentials of the educated older couples.

Minority insecurity is evidenced among the young Portuguese. They do not seem to be influenced by Catholic

pro-natalist subculture. Being a young Portuguese serves to have a depressing effect on reproductive behaviour. However, older Portuguese do exhibit a pro-natalist subculture effect, which is mostly responsible for their observed fertility.

Overall, the findings suggest that young Chinese and Portuguese are conscious about their subordinate status and such feeling is strong enough to exert a significant influence on their reproductive behaviour. Minority insecurity effects were shown to always outweigh social demographic differences effects among the young couples. The older minorities are likely to have been influenced by ethnic traditions, hence it was found that minority insecurity tends to be outweighed by ethnic effects and socioeconomic characteristics differences.

Differential length of exposure to the countries of origin for both Chinese and Portuguese may confound the importance of each of the components of fertility variation. Older couples will have spent most of their youth in their original countries. Their value systems have been well formed before they migrated to Canada. Many of them had probably completed their families in their places of origin before migrating to Canada. Hence, it is reasonable to assume that much of their reproductive behaviour is influenced by traditional values. The young migrated to Canada during their youth. Part of their socialization, therefore, occurs in the Canadian context. The bonds to

their native country are weaker than their older counterparts. Being young and ambitious, young couples have strong motivations to establish their careers and families in their newly adopted land. However, their minority status often restricts them from many opportunities. Hence, young couples are more likely to experience minority status insecurities effects.

Nonetheless, ethnic main effects were shown to have a consistent and significant influence on their fertility differential in relation to the British group. Gurak (1978) argued that fertility differentials are largely the result of institutionalised behaviour patterns rooted in the cultural heritage of a particular ethnic group. This notion is supported because for all the decompositional models, ethnic main effects are important in explaining fertility differences.

We conclude that fertility differentials may result from at least three basic sources, namely, the differences in the levels of social characteristics, the differences in group norms and the behaviour modifications induced by minority insecurity effects. Fertility differentials between the British and other ethnic groups cannot be explained by simple reference to either social characteristics or to the minority status thesis alone. As shown in this study, the strength of each component may vary across age groups and social strata.

Our findings do not show consistent support for a minority status insecurity effect among the Chinese. There are possible explanations for these results. First, our data may not be fully representative of Chinese who are second generation or beyond. It has been suggested that a minority status effect is pronounced among the second generation immigrants because the Canadian born of immigrant parents will shift their frame of references to the new society and away (Bean and Swicegood, 1982). The limitations of our data unfortunately do not allow us to control for generational effects, and hence limits our ability to monitor further the underlying insecurity mechanisms.

Second, most of the studies suggesting social psychological insecurity are done for American sub-populations (Bean and Wood, 1974; Jiobu and Marshall, 1977; Johnson and Lean, 1982). We studied the majority-minority situation in the Canadian context which emphasizes cultural pluralism. For the two groups studied in this research, minority status insecurities do not appear to be strong enough to exert consistent impacts on reproductive behaviour. As Gurak (1978) argued, the persistence of ethnic differentials does not require the assumption that a minority status mechanism is operating; minority insecurity may have played an historic role in shaping the ethnic subculture, but these insecurities may be totally absent in the present. Therefore, ethnic subcultures become a routine source of influence rather than a source of marginality.

This possibility partly explains the consistent and important influence of the ethnic main effects noted here across different decompositional models.

6.2 Suggestions for Future Research

Our research is an attempt to test three sources of fertility differentials in the Canadian setting. While characteristics like education and income continue to be relevant in explaining differential fertility, social-psychological aspects of childbearing have gained attention in the literature. The minority status thesis is one attempt to deal with social-psychological aspects. Our study is by no means definitive because the data (census data) is not the most suitable to deal with this aspect of fertility analysis. A few limitations of this inquiry may be taken care of in future research.

One major criticism is the use of cross-sectional data instead of longitudinal data in the inquiry. We assumed that socipeconomic status is going to converge in the future and hence the fertility differentials will disappear. We were able to test this hypothesis by means of statistical controls. However, such procedure implies that the historical status of the group is irrelevant in affecting the current fertility patterns. Rindfuss (1980) argued that the current fertility patterns are actually consequences of the present and historical status of the group. Statistical standardization is only a hypothetical scenario that is

assumed will occur in the future. Hence, validations of the assimilationist-characteristic hypothesis and the minority status thesis require either time-series or longitudinal data. A similar argument was put forth by Gurak (1978). He believed that only longitudinal data is capable of assessing convergence patterns among ethnic groups.

Longtudinal data is also appropriate for a full validation of the microeconomic model. Most inquiries (Becker, 11968; Bahr, *et al.*, 1975) studied the impact of income on fertility. However, childbearing may negatively affect income and relative economic status (Ewer and Crimmins-Gardner, 1978). Also, the positive relationship between income and fertility is true only if the husband is able to maintain high relative income throughout the couples' reproductive behaviour. Then, they will be able to both afford a desired lifestyle and care for additional children in the same manner as their reference group. Under such circumstances, longitudinal data is required to have a thorough understanding of human fertility. Cross-sectional data, taking its measurements at a single point in time, will either ignore or inaccurately measure the vagaries of social mobility.

In future research, it is advisable that we examine situational factors, such as, disruption of childbearing due to migration (which may likely be the case for the Portuguese). Separation of married spouses due to migration may cause them to exhibit smaller than expected family sizes

in Canada even after the whole family is reunited. Future study should investigate this possibility by focusing on the relationship between period of separation with completed fertility among first generation immigrants in Canada.

The Portuguese are a relatively recent immigrants group in Canada. The 1981 PUST is a sampled data. Hence, there is insufficient data to allow analysis of generational differences and minority status effects among this group. In order to study generational effects, we need more specific generational data for both the Chinese and the Portuguese.

Another limitation of the present inquiry relates to measurement issues. The concept of relative income measures individuals' perception of their economic status. We operationalised relative income by estimating one's actual income to his expected income based on occupation, education and age. Such operationalization of relative income may not directly capture the full meaning of the concept.

Another problem is husband's occupation which is coded in the census tapes in major group codings which are unable to reflect occupational prestige of respondents. We coded the husbands who are in major groups 1 and 2 as involved in managerial work. However, this is not a true measure of the construct, social prestige. The accuracy of using this variable in constructing relative income and the fertility analysis is therefore limited, but no other better alternative was possible given the constraints of the data set.

While most Canadian couples opt for small families, there are still ethnic differences in fertility. It is therefore important to understand the mechanisms that relate to fertility variation and the conditions under which minorities restrict or enhance their family sizez. Research concerning such topics will not only add to our knowledge of human reproductive behaviour as a form of decision making, it will also provide an assessment of the multicultural policy in Canada because ethnic differentials in fertility will to a certain extent indicate how well this policy functions to preserve ethnic uniqueness in the future.

Bibliography

Agresti, Alan and Barbara Finlay Agresti. 1979. Statistical Methods for the Social Sciences. U.S.A.: Dellen Publishing Company.

Althauser, Robert P. and Michael Wigler. 1972. "Standardization and Component Analysis", Sociological Methods and Research 1(1)97-135.

Anderson, Grace M and David Higgs. 1976. A Future to Inherit Canada: McClelland and Stewart.

Anderson, Grace M. 1974. Networks of Contact: The Portuguese and Toronto. Ontario, Canada: Wilfrid Lauier Unversity.

Bahr, Stephen J., Bruce A. Chadwick and Joseph H. Stauss. 1975. "The Effect of Relative Economic Status on Fertility", Journal of Marriage and The Family 37(May):335-343.

Balakrishnan, T.R., G.E. Ebanks and C.F. Grindstaff. 1979. Patterns of Fertility in Canada, 1971. Ottawa: Statistics Canada, Catalogue No. 99-759E; 1971 Census Monograph.

Bash, H.H. 1979. Sociology, Race and Ethnicity. London: Gordon and Breach Science Publishers Inc.

Bean, Frank D. and Jeffrey A. Burr. 1984. "Female Employment and the Minority Group Status Hypothesis: A Research Note", Population Research Center The University of Texas at Austin, Study Paper No. 6.027.

Bean, Frank D., Ruth M. Cullen, Elizabelth H. Stephen and Gray Swicegood. 1983. "Generational Differences in Fertility Among Mexican Americans", Population Research Center The University of Texas at Austin, Study Paper No. 5.023.

Bean, Frank D., Gray Swicegood. 1985. Mexican American Fertility Patterns. U.S.A., Austin: Mexican American Monograph Number 10 The Center for Mexican American Studies. The University of Texas at Austin.

Bean, Frank D., Gray Swicegood and John P. Marcum. 1983. "Minority Group Status and Patterns of Mexican American and Black Fertility", Population Research Center The University of Texas at Austin, Study Paper No. 5.018.

Bean, Frank D. and Gray Swicegood. 1982. "Generation, Female Education and Mexican American Fertility", Social Science Quarterly 63(1):131-144.

Bean, Frank D. and John P. Marcum. 1978. "Differential Fertility and the Minority Group Status Hypothesis: An Assessment and Review", In Frank D. Bean and W. Parker Frisbie (eds.), The Demography of Racial and Ethnic Groups. New York: Academic Press.

Bean, F.D. and C.H., Wood. 1974. "Ethnic Variations in the Relationship Between Income and Fertility", Demography 11:629-640.

Beaujot, R.P., Karol J., Krotki, and P., Krishnan. 1982. "Analysis of Ethnic Fertility Differentials Through the Consideration of Assimilation", International Journal of Comparative Sociology 23(1):52-59.

Beaujot, R.P., Karol J., Krotki, and P., Krishnan. 1978. "Socio-cultural Variations in the Applicability of the Economic Model of Fertility", Population Studies 32(1):319-325.

Becker, G.S. 1960. "An Economic Analysis of Fertility", pp 209-231 In Universities--National Bureau of Committee for Economic Research, Demographic and Economic Change in Developed Countries. Princeton: Princeton University Press.

Blake, Judith. 1968. "Are Babies Consumer Durable?" Population Studies 22(March):5-25.

Blake, Judith. 1967. "Income and Reproductive Motivation", Population Studies 21(3):185-206.

Blinder, A.S. 1976. "On Dogmatism in Human Capital Theory", Journal of Human Resources 11(Winter):8-22.

Blinder, A.S. 1973. "Wage Discrimination: Reduced Form and Structural Estimates", Journal of Human Resources 8(Fall):436-455.

Blishen, B. and H. McRoberts. 1976. "A Revised Socioeconomic Index for Occupation in Canada", Canadian Review of Sociology and Anthropology 13(1):71-79.

Blishen, Bernard R. 1967. "A Socio-Economic Index for Occupations in Canada", Canadian Review of Sociology and Anthropology 4(1):41-53.

Blishen, Bernard R. 1958. "The Construction and Use of an Occupational Class Scale", Canadian Journal of Economics and Political Science 24(Nov):519-531.

Burch, T.K. 1966. "The Fertility of North American Catholics: A Comparative Overview", Demography. 3:174-186.

Clement, Wallace. 1975. The Canadian Corporate Elite

Toronto: Macmillan.

Clifford, William B. and Patricia L. Tobin. 1977. "Labor Force Participation of Working Mothers and Family Formation: Some Further Evidence", Demography 14(3):273-284.

Chaudhury, Rafiqul Huda. 1977. "Relative Income and Fertility", Demography 14(2):179-195.

Coleman, J.S., Z.D. Blum, A.B. Sorensen and P.H. Rossi. 1972. "White and Black Careers During the First Decade of Labor Force Experience. Part I: Occupational Status", Social Science Research 1:243-270.

Coleman, J.S., C.C. Berry and Z.D. Blum. 1971. "White and Black Careers During the First Ten Years of Occupational Experience", John Hopkins: University Center for Social Organization of Schools Report 76.

Cohen, Jacob and Patricia Cohen. 1983. Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences. U.S.A.: Lawrence Erlbaum Associates, Inc.

Crimmins-Gardner, Eileen and Phyllis A. Ewer. 1982. "Relative and Potential Income and Fertility", Canadian Studies in Population Vol. 9:95-108.

Crimmins-Gardner, Eileen and Phyllis A. Ewer. 1978. "Relative Status and Fertility", In Julian L. Simon (ed.) Research in Population Economics. Vol. 1, pp 247-259 Connecticut: JAI Press, Inc.

Davis, Kingsley and Judith Blake. 1956. "Social Structure and Fertility: An Analytic Framework", Economic Development and Cultural Change 4(3):211-235.

Day, L.H. 1984. "Minority-Group Status and Fertility: A More Detailed Test of the Hypothesis", The Sociological Quarterly 25:456-472.

Day, L.H. 1968. "Natality and Ethnocentrism: Some Relationships Suggested by an Analysis of Catholic-Protestant Differentials", Population Studies 22:27-50.

Duncan, Otis Dudley. 1961. "A Socioeconomic Index For All Occupations", In Albert J. Reiss (eds.), Occupations and Social Status. New York: The Free Press of Glencoe, Inc.

Easterlin, R.A. 1975. "An Economic Framework for Fertility Analysis," Studies in Family Planning 6:54-63.

Easterlin, R.A. 1973. "Relative Economic Status and the American Fertility Swing", In Sheldon, Eleanor Bernert (ed.), Family Economic Behaviour: Problems and Prospects. Philadelphia: J.B. Lippincott Co.

Easterlin, R.A. 1969. "Toward a Socio-Economic Theory of Fertility: A Survey of Recent Research on Economic Factors in American Fertility". In Samuel J. Behrman, L. Corsa, Jr., and R. Freedman (eds.), Fertility and Family Planning: A World View , Ann Arbor: The University of Michigan Press.

Easterlin, R.A. 1966. "On The Relation of Economic Factors to Recent and Projected Fertility Changes", Demography 3:131-153.

Ewer, Phyllis A. and Eileen Crimmins-Gardner. 1978. "Income in the Income and Fertility Relationship", Journal of Marriage and the Family May:291-299.

Ferguson, T. 1975. A White Man's Country Toronto: Doubleday Canada Ltd.

Fisher, M.A. and Marcum, J.P. 1984. "Ethnic Integration, Socioeconomic Status, and Fertility Among Mexican Americans", Social Science Quarterly. Vol.65(2):583-593.

Freedman, Deborah S. and Arland Thornton. 1982. "Income and Fertility: The Elusive Relationship", Demography 19(1):65-78.

Freedman Deborah S. 1963. "The Relation of Economic Status to Fertility", The American Economic Review 53(June):414-426.

Freedman, Ronald and Lolagene, Coombs. 1966. "Childspacing and Family Economic Position", American Sociological Review 31:631-648.

Goldscheider, C. 1971. "Religion Minority Group Status and Fertility" in his Population, Modernization and Social Structure, pp. 270-298.

Goldscheider, C. and P.R., Uhlenberg. 1969. "Minority Group Status and Fertility", American Journal of Sociology 74:361-372.

Gordon, M.M. 1964. Assimilation in American Life: The Role of Race, Religion and National Origins. New York: Oxford University Press.

Gurak, Douglas T. 1978. "Sources of Ethnic Fertility Differences: An Examination of Five Minority Groups", Social Science Quarterly 59(2):295-310.

Halli, Shiva. 1984. Asian Ethnic Fertility in Canada: An Application of the Minority Status Hypothesis. Doctoral Dissertation, The University of Western Ontario, London, Ontario.

Higgs, David. 1982. The Portuguese in Canada. Saint John: Keystone Printing and Lithographing Ltd.

Hoe, Ban Seng. 1976. Structural Changes of Two Chinese Communities in Alberta, Canada. Ottawa: National Museums of Canada.

Iams, Howard M. and Arland Thornton. 1975. "Decomposition of Differences: A Cautionary Note", Sociological Methods and Research Vol;3(3):341-352.

Janssen, S.G. and Robert M. Hauser. 1981. "Religion, Socialization and Fertility", Demography 18(4):511-528.

Jiobu, R. and H. Marshall. 1977. "Minority Status and Family Size: A Comparison of Explanations", Population Studies 31:509-517.

Johnson, Nan E. and Suewen Lean. 1985. "Relative Income, Race, and Fertility", Population Studies 39:99-112.

Johnson, N.E. 1980. "Minority Group Status and Chinese and Japanese Fertility", American Journal of Sociology 86(3):496-510.

Johnson, N.E. 1979. "Minority-Group Status and the Fertility of Black Americans, 1970: A New Look", American Journal of Sociology 84(6):1386-1400.

Jones, Frank E. 1980. "Skill As A Dimension of Occupational Classification", Canadian Review of Sociology and Anthropology 17(2):176-183.

Jones, E. and Westoff, C. 1979. "The End of Catholic Fertility", Demography 16:209-217.

Jones, F.L. and Jonathan Kelley 1984. "Decomposing Differences Between Groups: A Cautionary Note on Measuring Discrimination", Sociological Methods and Research Vol.12(3):323-343.

Kennedy, R.E. Jr. 1973. "Minority Group Status and Fertility: The Irish", American Sociological Review 38:85-96.

Keyfitz, Nathan. 1977. Applied Mathematical Demography . New York: John Wiley and Sons,

Krotki, Karol J. and Evelyne Lapierre. 1970. Translation of the article "La fecondite au Canada, selon la religion, l'origine ethnique, et l'etat matrimmonial", Population.(Paris) 23(5): 815-834, September-October, 1968.

Kunz, Phillip R. 1965. "The Relation of Income and Fertility", Journal of Marriage and the Family Nov:509-513.

Latowsky, Evelyn. 1971. "Family Life Style and Jewish Culture". In Ishwaran, K. (ed.), The Canadian Family. Canada: Holt, Rinehart and Winston of Canada, Ltd.

[redacted]e, E.S. and Roberts, R.E. 1981. "Ethnic Fertility Differentials in the Southwest: The Case of Mexican Americans Reexamined", Sociology and Social Research 65(2):194-210.

Leibenstein, H. 1974. "An Interpretation of the Economic Theory of Fertility: Promising Path or Blind Alley?", Journal of Economic Literature 12:457-479.

Leibenstein, Harvey. 1957. Economic Backwardness and Economic Growth. Chapter 10. New York: Wiley.

Lesthaeghe, Ron. 1983. "A Century of Demographic and Cultural Change", Population Development Review 9:411-435.

Lopez, D. and Sabagh, G. 1978. "Untangling Structural and Normative Aspects of the Minority Status-Fertility Hypothesis", American Journal of Sociology 83:1491-1497.

MacDonald, Maurice M. and Ronald R. Rindfuss. 1978. "Relative Economic Status and Fertility: Evidence From A Cross-Section", In Julian L. Simon (ed.), Research on Population Economics Vol.1 pp291-307. Connecticut:JAI Press, Inc.

Manyoni, Joseph R. 1978. "Ethnics and Non-Ethnics: Facts and Fads in the Study of Intergroup Relations", In M.L. Kovacs (ed.), Et Canadians: Culture and Education. Regina: Canadian Plains Research Center, University of Regina.

Marcum, J.P. and F.D. Bean. 1976. "Minority Group Status as a Factor in the Relationship Between Mobility and Fertility: The Mexican American Case", Social Forces 55(1):135-148.

Marques, Domingos and Joao Medeiros. 1980. Portuguese Immigrants--25 Years in Canada. Toronto: Marquis Printers and Publishers, Inc.

Mincer, Jacob. 1963. "Market Prices, Opportunity Costs and Income Effects". In Christ, Carl F. (eds.), Measurement in Economics. Stanford, Calif.: Stanford University Press.

Namboodiri, Krishnan. 1974. "Some Observations on the Economic Framework for Fertility Analysis", Population Studies 26(2):185-206.

Oaxaca, R. 1973. "Sex Discrimination in Wages", pp. 124-151. In O. Ashenfelter and A. Rees (eds.), Discrimination in Labor Markets. Princeton, N.J: Princeton University Press.

Park, R.E. 1950. Race and Culture. Glencoe: Free Press.

Parsons, Talcott. 1964. The Social System. New York: The Free Press of Glencoe.

Peterson, William. 1961. Population. New York: Macmillan Co.

Pineo, Peter C., John Porter and Hugh A. Mcroberts. 1977. "The 1971 Census and the Socioeconomic Classification of Occupations", Canadian Review of Sociology and Anthropology 14(1):91-102.

Pineo, Peter C. and John Porter. 1967. "Occupational Prestige in Canada", Canadian Review of Sociology and Anthropology 4(1):24-40.

Porter, John. 1965. The Vertical Mosaic. Toronto: University of Toronto Press.

Pryor, E.T. 1983. "Highlights of the 1981 Canadian Census", Statistics Canada: Canadian Statistical Review July:25-31.

Reed, Fred W., J. Richard Udry and Maxine Ruppert. 1975. "Relative Income and Fertility: The Analysis of Individuals' Fertility in a Biracial Sample", Journal of Marriage and the Family 37(4):799-805.

Reitz, Jeffrey G. 1980. The Survival of Ethnic Groups. Toronto: McGraw-Hill Ryerson Ltd.

Richmond, Anthony H. and Ravi P. Verma. 1978. "Income Inequality in Canada: Ethnic and Generational Aspects", Canadian Studies in Population Vol.5:25-36.

Rindfuss, Ronald R. 1980. "Minority Status and Fertility Revisited--Again: A Comment on Johnson", American Journal of Sociology Vol.86(2):372-375.

Rindfuss, Ronald R., Larry Bumpass and Craig, St. John 1980. "Education and Fertility: Implications for the Roles Women Occupy", American Sociological Review Vol.45(June):431-447.

Ritchey, P.N. 1975. "The Effects of Minority Group Status on Fertility: A Reexamination of Concepts", Population Studies 29:249-258.

Roberts, R.E. and E.S. Lee. 1974. "Minority Group Status and Fertility Revisited", American Journal of Sociology 80:503-523.

Schultz, Theodore W. 1973. "The Value of Children: An Economic Perspective", Journal of Political Economy 81:S2-13.

Simon, J. 1974. The Effect of Income on Fertility . Chapel Hill: Carolina Population Center. University of North Carolina.

Sly, D.F. 1970. "Minority Group Status and Fertility: An Extension of Goldscheider and Uhlenberg", American Journal of Sociology 76:443-459.

Sobagh, G. and Lopez, D. 1980. "Religiosity and Fertility: The Case of Chicanas", Social Forces 59(2):431-439.

St. John, Craig and Harold G. Grasmick. 1985. "Decomposing the Black/White Fertility Differential", Social Science Quarterly 66(1):132-146.

St. John, C. 1982. "Race Differences in Age at First Birth and the Pace of Subsequent Fertility: Implications for the Minority Group Status Hypothesis", Demography 19(3):301-314.

Dominion Bureau of Statistics 1971. Occupational Classification Manual, Census of Canada, 1971. Vol. 1 Ottawa Catalogue No. 12-536.

Statistics Canada 1981 Census of Canada, Public Use Sample Tapes--User Documentation Ottawa: Statistics Canada Catalogue No. 8-1200-609.

Statistics Canada, 1984. Canada's Native People. Ottawa: Statistics Canada Catalogue No. 99-937.

Tan, Jin and Patricia E. Roy. 1980. The Chinese in Canada. Ottawa: Canadian Historical Association Booklet No. 9 ISBNO-88798-110-0.

Thomas, W.I. 1966. "Assimilation: Old World Traits Transplanted". pp.195-214. In M. Janowitz (ed.), W.I. Thomas: On Social Organization and Social Personality. Chicago: University of Chicago Press.

Thomlinson, Ralph. 1965. Population Dynamics. New York: Random House.

Thornton, Arland. 1978. "The Relationship Between Fertility and Income, Relative Income, and Subjective Well-Being". In Julian L. Simon (ed.), Research in Population Economics. Vol. 1 pp261-290. Connecticut: JAI Press, Inc.

Thornton, Arland. 1979. "Fertility and Income, Consumption Aspirations, and Child Quality Standards", Demography 16:157-175.

Trovato, F. 1981. "Canadian Ethnic Fertility", Sociological Focus 14(1):57-77.

Trovato, F. and Burch, T.K. 1980. "Minority Group Status and Fertility in Canada", Canadian Ethnic Studies 12:1-18.

Turchi, Boone A. 1975. "Microeconomic Theories of Fertility: A Critique", Social Forces 54(Sept):107-125.

van Heek, F. 1956. "Roman Catholicism and Fertility in the Netherlands: Demographic Aspects of Minority Status", Population Studies 10:125-138.

Verma, Ravi, Kwok Chan and Larry Lam. 1980. "The Chinese Canadian Family: A Socio-Economic Profile". In Ishwaran, K. (ed.), Canadian Families: Ethnic Variations. Toronto, Canada: McGraw-Hill Ryerson Ltd. p138-156.

Veevers, Jean E. 1983. Demographic Aspects of Vital Statistics: Fertility. Ottawa: Statistics Canada. Catalogue No. 84-X-501E.

Westoff, C.F. and N.B. Ryder. 1977. The Contraceptive Revolution. Princeton: Princeton University Press.

Willis, Robert J. 1973. "A New Approach to the Economic Theory of Fertility Behaviour", Journal of Political Economy . Vol. 81(2) part II: p.14-64.

Wirth, L. 1945. "The Problem of Minority Groups". pp. 347-372. In R. Linton (ed.), The Science of Man in the World Crisis. New York: Columbia University Press.

Appendix A

Computing Procedures for Sample Selection, Coding Scheme Used for the Variables and Computation of the Income Variables

About the Data

The data used in the present analysis is the Public Use Sample Tapes, Household File of the 1981 Census. The data are representative samples of household records from the data collected during the 1981 Census. The primary sample size is one-in-a-hundred households.

Listing of Variables Selected for the Inquiry

Mnemonic	Title
AGEHMLP	Age of Husband
AGEWFLP	Age of Wife
AFMWFLP	Age at First Marriage of Wife
MARCFHW	Comparison of Date of First Marriage of Husband and Wife
BABIES	Number of Children Ever Born to Wife
OCC81M	Occupation (1981 Classification basis) of Husband
CFINC	Total Income - Census Family
CFHTOTIN	Total Income - Husbands in Census Family
CFWTOTIN	Total Income - Wives in Census Family
LSCHMLP	Highest Level of Schooling of Husband
LSCWFLP	Highest Level of Schooling of Wife
RELIGF	Religion of Wife
ETHHMLP	Ethnic Origin of Husband
ETHWFLP	Ethnic Origin of Wife

Unit of Analysis

1. To select the once-married, currently married wives, aged 15-49:

   SELECT IF MARCFHW = 2 (Spouse present, and month and year of their first marriage are the same) AND AGEWFLP 15 THRU 49

   Note: It is assumed that if husband and wife get married once and on the same date, their marriage has been intact

2. To select the Chinese couples:

   SELECT IF ETHWFLP AND ETHHMLP = 3 (Chinese)

3. To select the Portuguese couples:

   SELECT IF [ETHWFLP = 10 (Other Single Response) and BIRWFLP = 24 (Portugal)]
   AND [ETHHMLP = 10 and BIRHMLP = 24]

   Note: Since there is no Portuguese breakdown with the ETHWFLP and ETHHMLP variables, we identify the Portuguese by those who were born in Portugal and do not belong to any ethnic origin in the ETHWFLP and ETHHMLP variables.

4. To select the British couples:

   SELECT IF ETHWFLP AND ETHHMLP = 1 (British)

TRANSFORMING THE MEASUREMENT SCALE OF THE VARIABLES

1. LSCWFLP and LSCHMLP:

LSCHMLP and LSCWFLP (highest level of schooling of husband and wife) are used as measures of the husband and wife's educational level. The original coding from the PUST is not in actual coding. With reference to the 1981 Census Dictionary, the original coding has been transferred to actual coding which is based on the best estimate of the actual year of schooling.

a. Original Coding:

Elementary-Secondary only

01 Less than Grade 9 (no schooling or kindergarten only)
02 Grades 9-10
03 Grade 11
04 Grades 12-13
05 Secondary (high) school graduation certificate
06 Trades Certificate or Diploma

Other non-university education only

07 Without Trades or Other Non-university Certificate or Diploma
08 With Trades Certificate or Diploma
09 With Other Non-university Certificate or Diploma
University
10 Without Certificate, Diploma or degree

11 With Certificate or Diploma below Bachelor Level

12 With Bachelor's degree(s)

13 With Certificate or Diploma above Bachelor Level

14 With Degree in Medicine, Dentistry, Veterinary Medicine or Optometry

15 With Masters Degree(s)

16 With Earned Doctorate

b. Transformed Coding used in the Analysis:

4.5 Less than Grade 9

9.5 Grades 9-10

11 Grade 11

12.5 Grades 12-13

12.5 Secondary (high) School Graduation Certificate

11 Trades Certificate or Diploma

13.5 Without Trades or Other Non-university Certificate or Diploma

14 With Trades Certificate or Diploma

14.5 With Other Non-university Certificate or Diploma

15 University (Without Certificate, Diploma or Degree)

15.5 University (With Certificate or Diploma below Bachelor Level)

16 University (With Bachelor's Degree(s))

17 University (With Certificate or Diploma above Bachelor Level)

19 With Degree in Medicine, Dentistry Verterinary Medicine or Optometry

19 With Masters Degree(s)

21.5 With Earned Doctorate

2. OCC81M:

a. Original Coding:

01 Managerial, administrative and related occupation

02 Occupations in natural sciences, engineering and mathematics

03 Occupations in social science and related fields

04 Teaching and related occupation

05 Occupations in medicine and health

06 Artistic, literary, recreational and related occupations

07 Clerical and related occupations

08 Sales occupations

09 Services occupations

10 Farming, horticultural and animal husbandry occupations

11 Other primary occupations

12 Processing occupations

13 Machining and product fabricating, assembling and repairing

14 Construction trades occupations

15 Transport equipment operating occupations

16 Other occupations

b. Transformed Coding used in the Analysis

01 and 02 = 1 (Managerial work)

03 thru 16 = 0 (non-managerial work)

Computation of husband's relative income

Husband's relative income is operationalised as the ratio of his actual income (CFHTOTIN) to the estimated income. Estimated income is computed on the basis of a regression of actual income ono occupation (coded as dummy variable), educational level and age. The regression coefficients of occupational category, educational level and age are used to compute the estimated income.

Two versions of relative income are computed. The first version is based on Bean and Wood (1974). The first approach assumes that members of one's own ethnic group are more salient socioeconomic reference persons than are members of other ethnic groups. Hence, estimated income is computed for individual ethnic groups. The second version is based on Johnson and Lean (1985). They argued that minority members are likely to compare themselves with the majority members.

We presented the computation equations for both versions of relative income.

1. First Approach of Relative Income:

a. British:

HESTI= -4971.30+5977*Occupation
+884.21*Education+366.76*Age

b. Chinese:

HESTI= -1451.03+7064.14*Occupation
+506.59*Education+283.14*Age

c. Portuguese:

HESTI= 13950+1561*Occupation
+264*Education+16*Age

HRINCOME=CFHTOTIN/HESTI

It is worthwhile to mention that the rates of income return to the variables are different across the three groups. The Portuguese has the lowest rates of income return to the variables among the three groups. Being a Portuguese makes a difference to the amount of money earned. For one year increase in education, there will be $270 increase in income for the average Portuguese. While educational level, occupation and age do not have great influence on the Portuguese's income, the intercept of the equation ($13950) shows that the Portuguese still makes relatively large amount of income when the education, occupation and age are controlled. The coefficients in the Portuguese equation correspond to our findings on their socioeconomic characteristics. Portuguese has less education and works mostly at manual job. In other words, their income does not depend on

whether they work at managerial positions nor whether they have high education.

The Chinese has a high motivation for education, Chinese believe that education is the means to upward mobility and success. Despite the fact that the Chinese generally have higher education, they suffer a lower rate of income return to education when compared with the British. Being a Chinese does not earn the same amount of money with the British of similar educational background. For those Chinese who work at managerial positions, they enjoy a better rate of income return than the British. We mentioned in chapter four that ethnic job segregation still exists among the Chinese. Only the small proportion of Chinese in managerial positions enjoy a high rate of income return.

Under the circumstance of total assimilation, the rates of income return for the minority groups and the majority should be similar, if not the same. Based on the above equations, we concluded that being a Portuguese shares lower rates of income return to education and occupation. For the Chinese, the rate of income return to occupation is higher than the British. But the rate of return to education is

lower than the British.

2. Second Approach of Relative Income:

It has been argued that the minorities may take the dominant group as consumer model (Johnson and Lean, 1985). Hence, it is suggested that the appropriate concept for relative income should use the dominant group as references. We also use this approach of relative income in our analysis.

We take the British equation for husband's estimated income (HESTI) as the denominator. Relative income of the minoritiy members is the ratio of their actual income (CFHTOTIN) to the British estimated income

BHRINC = CFHTOTIN/HESTI

where HESTI is the British estimated income.

note: As shown in the Appendices in Chapter Five, the second version of relative income (BHRINC) does not have significantly different results from the first version of relative income.

Appendix B

Technical Note on the Decompositional Analysis

Research often aims to explain differences in some behaviour between groups. Comparable applications of regression techniques have been developed to partition observed differences means between groups (Coleman, *et al.*, 1972; Althauser and Wigler, 1972). The various procedures to analyse group differences are commonly known as standardization and component analysis based on regression analysis. Since the research problem is to explain the differences in fertility and to partition the observed variation into different components, this approach is also called decompositional analysis. The present inquiry uses this approach to explain the fertility differentials among the three groups, namely, the British, the Chinese and the Portuguese. By decomposing the observed differences, we can estimate the magnitude of the factors that account for the fertility differentials.

Suppose we are interested in comparing the mean fertility of the British with the minorities, as a study of the determination of such family size by one or more independent variables (e.g. relative income, wife's income, wife's education, and the like). Having utilized a linear regression procedure, we might come up with separate

equations for the majority group and the minority groups

$$Y_d = a_d + \beta_{i,d} X_{i,d} \quad \ldots\ldots(1)$$

$$Y_s = a_s + \beta_{i,s} X_{i,s} \quad \ldots\ldots(2)$$

where Y_d : estimated fertility of the dominant group

Y_s : estimated fertility of the subordinate group

X_i : the ith independent variable

a : the intercept

β_i : regression coefficient for the ith independent variable

We could calculate various standardised solutions for the fertility difference. For example, we could substitute the means of the independent variables of the dominant group into the regression equation of the minority group, and thus yield a standardised fertility level of the minority group. Alternatively, we could weigh the fertility of the dominant group with the means of the independent variables of the minority group. Intuitively, we attempt to judge the impact of differences in the mean independent variables of the dominant group and the minority groups on the differences in their mean family size.

The choice of an appropriate comparison point, that is, whether the dominant or the minority means of independent variables as weights, bears different conclusion. Based on the intuitive meanings of the different comparison point, Jones and Kelley (1984) distinguished the "privilege" model and the "deprivation" model. We will discuss in further

detail these two models as well as other modifications after an overview of the decompositional model.

Our research problem is to account for the mean differences in family size. Hence, we can express the difference as:

$$\bar{Y}_d - \bar{Y}_n = (a_d - a_n) + (\beta_d \bar{X}_d - \beta_n \bar{X}_n) \quad \ldots\ldots(3)$$

Another way to express the difference is:

$$\bar{Y}_d - \bar{Y}_n = (a_d + \beta_d \bar{X}_d) - (a_n + \beta_n \bar{X}_n) \quad \ldots\ldots(4)$$

We express the regression coefficient(s) for the dominant group as a sum of two parts, the regression coefficient(s) of the minority group plus the difference between the coefficient(s) for the two groups.

$$\beta_d = \beta_n + (\beta_d - \beta_n) \quad \ldots\ldots(5)$$

Similarly, we express the mean for the independent variables for the dominant group as the sum of the mean for the minority group plus the difference between the two groups.

$$\bar{X}_d = \bar{X}_n + (\bar{X}_d - \bar{X}_n) \quad \ldots\ldots(6)$$

Equation (5) and (6) can be substituted into equation (1). When we have more than one independent variable, we can sum the terms.

$$\begin{aligned} \bar{Y}_d &= a_d + \Sigma[\beta_{i,n} + (\beta_{i,d} - \beta_{i,n})][\bar{X}_{i,n} + (\bar{X}_{i,d} - \bar{X}_{i,n})] \\ &= a_d + \Sigma\beta_{i,n}\bar{X}_{i,n} + \Sigma\beta_{i,n}(\bar{X}_{i,d} - \bar{X}_{i,n}) + \Sigma\bar{X}_{i,n}(\beta_{i,d} - \beta_{i,n}) \\ &\quad + \Sigma(\beta_{i,d} - \beta_{i,n})(\bar{X}_{i,d} - \bar{X}_{i,n}) \quad \ldots\ldots(7) \end{aligned}$$

Substracting equation (2) from equation (7), we get the decomposed differences between the two groups.

$$
\begin{aligned}
Y_d - Y_* = {} & [a_d + \Sigma\beta_{i*}\bar{X}_{i*} + \Sigma\beta_{i*}(\bar{X}_{id} - \bar{X}_{i*}) + \Sigma\bar{X}_{i*}(\beta_{id} - \beta_{i*}) \\
& + \Sigma(\beta_{id} - \beta_{i*})(\bar{X}_{id} - \bar{X}_{i*})] - [a_* + \Sigma\beta_{i*}X_{i*}] \\
= {} & (a_d - a_*) + \Sigma\bar{X}_{i*}(\beta_{id} - \beta_{i*}) + \Sigma\beta_{i*}(\bar{X}_{id} - \bar{X}_{i*}) \\
& + \Sigma(\beta_{id} - \beta_{i*})(\bar{X}_{id} - \bar{X}_{i*}) \\
= {} & (a_d - a_*) + \Sigma\beta_{i*}(\bar{X}_{id} - \bar{X}_{i*}) + [\Sigma\bar{X}_{i*}(\beta_{id} - \beta_{i*}) \\
& + \Sigma(\beta_{id} - \beta_{i*})(\bar{X}_{id} - \bar{X}_{i*})] \\
= {} & (a_d - a_*) + \Sigma\beta_{i*}(\bar{X}_{id} - \bar{X}_{i*}) \\
& + [\Sigma(\bar{X}_{i*} + \bar{X}_{id} - \bar{X}_{i*})(\beta_{id} - \beta_{i*})] \\
= {} & (a_d - a_*) + \Sigma\bar{X}_{id}(\beta_{id} - \beta_{i*}) + \Sigma\beta_{i*}(\bar{X}_{id} - \bar{X}_{i*}) \quad \ldots\ldots\ldots (8)
\end{aligned}
$$

We now partition the observed differences between the dominant group and the minority group into three components. The first term, $(a_d - a_*)$, is interpreted as the unexplained differences in family size due to group membership. It is the main ethnic effect on family size.

The second term represents the difference between the slopes of the two groups, weighted by the majority group means of the independent variables. In substantive term, it is the amount by which the mean difference in Y (family size) will be lessened if the slope of the minority group equals to that of the dominant group. In other words, it is the difference in rate of response of the dependent variable to the independent variables. It has been argued that this component, differences in slopes, represents the minority insecurity effect (Jiobu and Marshall, 1977). When the minority members experience the feeling of marginality, they

respond to the change of the independent variables in greater magnitude than the majority group. Unit increase in income will cause greater decrease of family size among the minorities than the majorities. It is the insecurity feeling that account for the greater rate of response.

The third component is the difference between the means of the independent variables of the two groups. This term represents the assimilationist elements. It estimates the amount of difference in family size due to the differences of the independent variables between the two groups. If there is no difference in levels of the independent variables, this term will approach zero. Under the stage of complete structural assimilation, this term will equal to zero.

Overview of the Alternate Decompositions of the Difference Between Two Groups

There are other approaches to the decompositional analysis (Table 4.2). We will discuss briefly their differences.

The first alternate approach is the interaction model developed by Althauser and Wigler (1972) and Iams and Thornton (1975). Basically this model takes into account the statistical interaction. The model is four-fold decomposition. The first component is the difference of intercepts between the two groups. Intuitively, it is the differences due to membership *per se*. The second component is the coefficients *per se* difference, weighted by the mean(s) of the minority independent variables. The third component is the mean *per se* difference, weighted by the coefficient(s) of the minority group. The last term is the statistical interaction, that is, the differences due to coefficient(s) and mean(s).

Another approach is developed by Blinder (1973). Blinder's treatment of the differences due to membership and differences due to the coefficient(s) is the same as the interaction model (Althauser and Wigler, 1972; Iams and Thornton, 1975). But Blinder's approach has no interaction term. He combined the interaction term with the term for means *per se*

$$\Sigma\beta_{i*}(\bar{X}_{id}-\bar{X}_{i*})+\Sigma(\beta_{id}-\beta_{i*})(\bar{X}_{id}-\bar{X}_{i*})$$
$$=\Sigma(\beta_{i*}+\beta_{id}-\beta_{i*})(\bar{X}_{id}-\bar{X}_{i*})$$
$$=\Sigma\beta_{id}(\bar{X}_{id}-\bar{X}_{i*})$$

This model is distinguished as the "privilege" model. Blinder took the difference in the mean(s) of the independent variables and value it at the high rates of response of the privilege group. Substantively, the model concerns the amount by which the value of the dominant group independent variables would be decreased in order that the two groups do not differ in their Y values. In terms of policy implication, this model is to eliminate the privilege of the dominant group. In practical sense, this policy is questionable.

In response to this problem of policy implication, Oaxaca (1972) and Blinder (1976) developed the "deprivation" model. The coefficient(s) term is added to the interaction term.

$$\Sigma\bar{X}_{i*}(\beta_{id}-\beta_{i*})+\Sigma(\beta_{id}-\beta_{i*})(\bar{X}_{id}-\bar{X}_{i*})$$
$$=\Sigma(\bar{X}_{i*}+\bar{X}_{id}-\bar{X}_{i*})(\beta_{id}-\beta_{i*})$$
$$=\Sigma\bar{X}_{id}(\beta_{id}-\beta_{i*})$$

The policy implication of this model would be the amount by which the value of the minority group independent variables would be increased in order that the two groups have the same value of Y. In other words, the policy is to raise the standard of the deprived group, instead of eliminating the privilege of the dominant group. The

mathematical procedures of the deprivation model is discussed in the previous section.

Thus far, the approaches to decompositional analysis discussed utilizes weights from just one of the groups. Coleman *et al.* (1970) took a different approach. The feature which distinguishes Coleman's approach from the previously mentioned is that the weights used with each component are averages. Coleman *et al.* (1970) used the average of means as weight for the coefficient *per se* term. The average of the slopes is used as weight for the mean *per se* term. Using the average of the two groups as weight corresponds to the intuitive idea that the difference in the dependent variable is due to difference in average levels of the two groups.

Coleman *et al.*'s (1970) approach is appropriate to the present inquiry. Since complete assimilation is an effort from both groups, the dominant and the subordinate, it implies that both groups contribute to the developement of a unique culture. By taking the average of the two groups as weights, it expresses the idea that both groups are responsible for the difference in the dependent variable. The average of the two groups as weights denotes the hypothetical condition of equal society.

Coleman *et al.*'s approach is revised (1971) in response to the problem of a meaningful zero point. The coefficient *per se* term is originally multiplied by the average of the mean difference of the independent variables, $1/2\ (\bar{X}_d+\bar{X}_s)$. However, meaningful zero point(s) may affect the value(s) of

the mean(s) of the independent variable(s). To make the change of Y independent of the zero points of the independent variables, Coleman *et al.* (1971) multiplied the coefficient *per se* term with some standard amount of variation in the independent variables. The standard amount of variation is the average of the standard deviations of the independent variables of the two groups

The revised version of the coefficients component is:

$$1/2\Sigma(\beta_{i.d}-\beta_{i.s})(S_{i.d}+S_{i.s})$$
$$=1/2\Sigma(\beta_{i.d}S_{i.d}+\beta_{i.d}S_{i.s}-\beta_{i.s}S_{i.d}-\beta_{i.s}S_{i.s})$$

The first subcomponent, $\beta_{i.d}S_{i.d}$, represents the change of the Y value corresponding to the standard deviation of the dominant group due to the rate of change of the dominant group. The last subcomponent, $\beta_{i.s}S_{i.s}$, is the change of Y corresponding to the standard deviation of the minority group. These two subcomponents reveal the present situation of the two groups.

The second subcomponent, $\beta_{i.d}S_{i.s}$, is the hypothetical situation. It indicates the change of Y corresponding to the standard deviation of the subordinate group, using the rate of change of the dominant group. This term estimates the change of the Y values of the minority group if they have the rate of change of the dominant group.

The third subcomponent, $\beta_{i.s}S_{i.d}$, denotes the hypothetical situation of the change in Y corresponding to the standard

deviation of the dominant group using the rate of change of the minority group. This term measures the change of the Y value of the majority group if they have the rate of change of the minority group.

Another feature of Coleman *et al.*'s (1971) revised approach to decompositional analysis is the unexplained component. Unmeasured variables that affect the difference of Y values between the two groups are summed as an error term.

$$1/2\Sigma(\beta_{i,d}-\beta_{i,s})(\bar{X}_{i,d}+\bar{X}_{i,s})$$
$$=1/2\Sigma(\beta_{i,d}-\beta_{i,s})(S_{i,d}+S_{i,s})$$
$$+1/2\Sigma(\beta_{i,d}-\beta_{i,s})(\bar{X}_{i,d}-S_{i,d}+\bar{X}_{i,s}-S_{i,s})$$

where $1/2\Sigma(\beta_{i,d}-\beta_{i,s})(\bar{X}_{i,d}-S_{i,d}+\bar{X}_{i,s}-S_{i,s})$ is the estimate for unmeasured variables that affect the difference of Y values between the two groups. Coleman *et al.* (1971) included the intercepts of the two regression lines as the unmeasured elements. Hence, the error term is summed over zero.

The present thesis will use Coleman *et al.*'s approach (1971) to utilize the average of the two groups as weights. To avoid the problem of meaningful zero point, the average of the standard deviations is used as weight for the coefficients component. To modify Coleman *et al.*'s (1971) model, the intercept component will remain in the model. This component is interpreted as the difference due to membership *per se* of the two groups. Hence, the equation of decompositional analysis in this inquiry is:

$$(\bar{Y}_d - \bar{Y}_s) = (a_d - a_s) \qquad \text{A}$$

$$+1/2\ \Sigma(\beta_{i,d} + \beta_{i,s})(\bar{X}_{i,d} - \bar{X}_{i,s}) \qquad \text{B}$$

$$+1/2\ \Sigma(\beta_{i,d} - \beta_{i,s})(S_{i,d} + S_{i,s}) \qquad \text{C}$$

$$+1/2\ \Sigma(\beta_{i,d} - \beta_{i,s})(\bar{X}_{i,d} - S_{i,d} + \bar{X}_{i,s} - S_{i,s}) \qquad \text{D} \quad \ldots\ldots\ldots (9)$$

A: membership *per se*

B: means differences

C: coefficients differences

D: differences due to unmeasured variables

Table 4.2 Alternate Decompositions of the Difference Between Two Groups

1. Interaction Model	$(\alpha_d - \alpha_s)$ membership	$\sum_{i=1}^{n} (\beta_{id} - \beta_{is}) \bar{X}_{is}$ coefficients per se	$\sum_{i=1}^{n} (\bar{X}_{id} - \bar{X}_{is}) \beta_{is}$ means differences	$\sum_{i=1}^{n} (\beta_{id} - \beta_{is})(\bar{X}_{id} - \bar{X}_{is})$ interaction
2. Privilege Model	$(\alpha_d - \alpha_s)$ membership	$\sum_{i=1}^{n} (\beta_{id} - \beta_{is}) \bar{X}_{is}$ coefficients per se	$\sum_{i=1}^{n} (\bar{X}_{id} - \bar{X}_{is}) \beta_{id}$ means differences+interaction	(none)
3. Deprivation Model	$(\alpha_d - \alpha_s)$ membership	$\sum_{i=1}^{n} (\beta_{id} - \beta_{is}) \bar{X}_{id}$ coefficients per se + interaction	$\sum_{i=1}^{n} (\bar{X}_{id} - \bar{X}_{is}) \beta_{is}$ means differences	(none)
4. Coleman et al. (1970)	$\frac{1}{2} \sum_{i=0}^{n} (\bar{X}_{id} + \bar{X}_{is})(\beta_{id} - \beta_{is})$ membership + coefficents per se		$\frac{1}{2} \sum_{i=1}^{n} (\beta_{id} + \beta_{is})(\bar{X}_{id} - \bar{X}_{is})$ means differences	
5. Coleman et al. (1971)		$\frac{1}{2} \sum_{i=1}^{n} (\beta_{id} - \beta_{is})(S_{id} + S_{is})$ cefficients per se	$\frac{1}{2} \sum_{i=1}^{n} (\beta_{id} + \beta_{is})(\bar{X}_{id} - \bar{X}_{is})$ means differences	$\frac{1}{2} \sum_{i=0}^{n} (\beta_{id} - \beta_{is})(\bar{X}_{id} - S_{id} + \bar{X}_{is} - S_{is})$ unmeasured term + intercept
6. Model for Present Inquiry (Equation 9)	$(\alpha_d - \alpha_s)$ membership	$\frac{1}{2} \sum_{i=1}^{n} (\beta_{id} - \beta_{is})(S_{id} + S_{is})$ coefficients differences	$\frac{1}{2} \sum_{i=1}^{n} (\beta_{id} + \beta_{is})(\bar{X}_{is} - \bar{X}_{is})$ means differences	$\frac{1}{2} \sum_{i=1}^{n} (\beta_{id} - \beta_{is})(\bar{X}_{id} - S_{id} + \bar{X}_{is} - S_{is})$ unmeasured variables

1. Althauser and Wigler 1972
2. Blinder, 1973
3. Oaxaca, 1972; Blinder, 1976
4. Coleman et al., 1970
5. Coleman et al., 1971
6. Jiobu and Marshall, 1977

Appendix C

Table

Appendix C.1
Means, Standard Deviations and T-tests for the Studied Variables, Age 15-34, 35-49

	BRITISH				CHINESE				PORTUGUESE			
	15-34		35-49		15-34		35-49		15-34		35-49	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Household income	34564	18743	25553	13081	33083	20310	25448	16779	26607*	12250	24021	10015
Husband's actual income	19537	10751	25081	14599	17889	12208	21054	14696	17654	8558	17251	8270
Husband's relative income1	1.04	.54	1.00	.53	1.00	.65	1.00	.66	1.06	.50	1.04	.48
Husband's relative income2	n.a.		n.a.		.82*	.50	.82*	.52	1.35*	.67	1.00	.51
Wife's actual income	6130	6907	6876	8078	8009*	7586	9266*	8199	6234*	5084	5825*	4871
Husband's education	12.0	4.0	12.8	3.1	12.3	4.7	14.0*	3.5	6.9*	3.6	8.0*	4.0
Wife's education	12.6	2.7	12.1	3.1	12.6	3.5	11.1*	4.4	7.5*	3.7	6.2*	3.2
Proportion managerial work	.26	.44	.34	.47	.42*	.50	.34	.47	.08*	.27	.04*	.20
Age of wife	27.9	4.2	41.6	4.4	29.2*	3.3	41.3	4.3	27.8	4.1	41.4	4.2
Age at first marriage of wife	20.6	2.7	21.4	3.6	23.0*	3.1	23.9*	4.7	20.1	2.1	22.6*	4.1
Children ever born to wife	1.5	1.1	2.8	1.6	1.4	1.2	2.6	1.4	1.6	1.0	2.8	1.7
Total N	4442		3834		216		175		153		148	

Husband's relative income1: using own ethnic group as reference
Husband's relative income2: using British as reference group
*T-statistics significantly different from British at .05 level

Appendix C.2
Zero Order Correlation for the Studied Variables, British

	1	2	3	4	5	6	7	8	9
Children ever born to wife	1.00								
Husband's relative income1	.035***	1.00							
Husband's relative income2	n.a.	n.a.	1.00						
Husband's actual income	.107***	.829***	.829***	1.00					
Wife's actual income	-.188***	-.011	n.a.	.075***	1.00				
Wife's education	-.269***	.039***	n.a.	.203***	.262***	1.00			
Proportion managerial work	-.041***	-.016+	n.a.	.356***	.122***	.302***	1.00		
Age of wife	.511***	.006	n.a.	.263***	.057***	-.090***	.116***	1.00	
Age at first marriage of wife	-.240***	-.043***	n.a.	.082***	.140***	.279***	.184***	.167***	1.00

Total N: 8276
Husband's relative income1: using own ethnic group as reference
Husband's relative income2: using British as reference group
***T-statistics significant at .001 level

Appendix C.3
Zero Order Correlation for the Studied Variables, Chinese

	1	2	3	4	5	6	7	8	9
Children ever born to wife	1.00								
Husband's relative income1	.073	1.00							
Husband's relative income2	.080	.993***	1.00						
Husband's actual income	.082	.887***	.888***	1.00					
Wife's actual income	-.102+	.303***	.302***	.341***	1.00				
Wife's education	-.388***	.025	-.003	.192***	.246***	1.00			
Proportion managerial work	-.172***	.012	.059	.339***	.136***	.401***	1.00		
Age of wife	.560***	.085*	.094*	.182***	.144***	-.240***	-.092*	1.00	
Age at first marriage of wife	-.280***	-.036	-.044	.033	.110***	.302***	.084***	.137***	1.00

Total N: 391
Husband's relative income1: using own ethnic group as reference
Husband's relative income2: using British as reference group
***T-statistics significant at .001 level
*T-statistics significant at .05 level
+T-statistics significant at .10 level

Appendix C.4
Zero Order Correlation for the Studied Variables, Portuguese

	1	2	3	4	5	6	7	8	9
Children ever born to wife	1.00								
Husband's relative income1	.045	1.00							
Husband's relative income2	-.075+	.850***	1.00						
Husband's actual income	.029	.986***	.780***	1.00					
Wife's actual income	-.130*	.015	.011	.017	1.00				
Wife's education	-.145***	-.050	-.149**	.034	.138**	1.00			
Proportion managerial work	-.046	.076+	-.087+	.153**	-.025	.131*	1.00		
Age of wife	.438***	.036	-.262***	.031	-.054	-.217***	-.028	1.00	
Age at first marriage of wife	-.105*	-.027	-.083+	-.041	.022	-.111*	-.128*	.387***	1.00

Total N: 302
Husband's relative income1: using own ethnic group as reference
Husband's relative income2: using British as reference group
***T-statistics significant at .001 level
**T-statistics significant at .01 level
*T-statistics significant at .05 level
+T-statistics significant at .10 level

Appendix C.5
Zero Order Correlations for the Study Variables.

	1	2	3	4	5	6	7	8
Children ever born to wife	1.00							
Husband's relative income	.037***	1.00						
Wife's actual income	-.185***	.006	1.00					
Wife's education	-.274***	.038***	.258***	1.00				
Proportion managerial work	-.048***	-.015+	.124***	.307***	1.00			
Age of wife	.512***	.010	.061***	-.098***	.107***	1.00		
Age at first marriage of wife	-.242***	-.043***	.146***	.272***	.182***	.164***	1.00	
Ethnicity@	-.021+	-.008	.058***	-.034***	.038***	.009	.152***	1.00

@British=0 Chinese=1
*** Coefficients significant at .001 level
** Coefficients significant at .01 level
* Coefficients significant at .05 level
+ Coefficients significant at .10 level

Appendix C.6
Zero Order Correlations for the Study Variables.

	1	2	3	4	5	6	7	8
Children ever born to wife	1.00							
Husband's relative income1	.036***	1.00						
Wife's actual income	-.187***	-.010*	1.00					
Wife's education	-.255***	.033***	.247***	1.00				
Proportion managerial work	-.043***	-.014+	.120***	.310***	1.00			
Age of wife	.508***	.005	.055***	-.092***	.112***	1.00		
Age at first marriage of wife	-.234***	-.042***	.136***	.240***	.173***	.176***	1.00	
Ethnicity@	.018+	.002	-.011	-.327***	-.097***	.005	.020***	1.00

@British=0 Portuguese=1
*** Coefficients significant at .001 level
** Coefficients significant at .01 level
* Coefficients significant at .05 level
+ Coefficients significant at .10 level

Appendix C.7
Zero Order Correlations between the Ethnic Dummy Variables and the Other Characteristics Variables

	Pearson Correlations with Different Conditions on the Sample								
	(Chinese=1 British=0)					(Portuguese=1 British=0)			
	Total Sample	Age of Wife		Husband Education		Total Sample	Age of Wife		Husband Education	
		15-34	35-49	≤13	14+		15-34	35-49	≤13	14+
Children ever born to wife	-.021*	-.021+	-.019	.028*	-.060***	.018+	.026*	.005	.003	-.011
Husband's relative income1	-.008	-.017	.002	-.018*	.003	.002	.005	-.001	-.009	.033*
Wife's actual income	.058***	.057***	.060***	.043***	.056***	-.011	.003	-.025	.006	-.006
Wife's education	-.034***	-.001	-.069***	-.133***	.019	-.319***	-.311***	-.328***	-.345***	-.107***
Proportion managerial work	.038***	.075***	-.002	-.015	.036*	-.097***	-.076***	-.121	-.067***	-.051***
Age of wife	.009	.066***	-.015	.038***	-.019	.005	-.006	-.010	.001	-.006
Age of wife at first marriage	.152***	.180***	.135***	.088***	.198***	.020*	-.034**	.062	.073***	-.020
Total N	8667	4658	4009	4421	3860	8578	4595	3983	4537	3661

*** Coefficients significant at .001 level
** Coefficients significant at .01 level
* Coefficients significant at .05 level
+ Coefficients significant at .10 level

Appendix C.8
Regression Analysis of Children Ever Born for Three Ethnic Groups in Canada

	BRITISH			CHINESE			PORTUGUESE		
	(coeff) (std. coeff)	R SQR	Sig. F	(coeff) (std. coeff)	R SQR	Sig. F	(coeff) (std. coeff)	R SQR	Sig. F
Husband's actual income	2.4E-06* (.02)			8.1E-6+ (.08)			2.3E-06 (.01)		
Wife's actal income	-3.1E-05*** (-.15)	.05	.000	-2.6E-05t** (-.14)	.03	.006	-2.7E-05+ (-.09)	.02	.068
Wife's education	-.05*** (-.10)			-.04* (-.11)			-.02 (-.04)		
Proportion managerial work	-.04 (-.01)	.12	.000	-.16 (-.05)	.18	.000	-.46 (-.07)	.04	.028
Age of wife	.10*** (.55)			.12*** (.58)			.10*** (.55)		
Age at first marriage of wife	-.13*** (-.28)	.41	.000	-.11*** (-.31)	.49	.000	.14*** (-.33)	.30	.000
Constant	2.1			1.1			1.8		
Total N	8276			391			302		

Standardized coefficients are in parenthneses
*** Coefficients significant at .001 level
** Coefficients significant at .01 level
* Coefficients significant at .05 level
+ Coefficients significant at .10 level

Appendix C.9
Regressions of Children Ever Born for Three Ethnic Groups Broken Down by Age Cohort

	BRITISH		CHINESE		PORTUGUESE	
	15-34	35-49	15-34	35-49	15-34	35-49
Husband's actual income	2.6E-06* (.02)	4.0E-08 (3.7E-04)	1.7E-06 (.02)	7.4E-06 (.08)	2.0E-05* (.17)	-1.4E-05 (-.07)
Wife's actual income	-4.2E-05*** (-.26)	-2.0E-05*** (-.10)	-2.9E-05*** (-.19)	-2.8E-05* (-.16)	-3.9E-05** (-.20)	-2.1E-05 (-.06)
Wife's education	-.04*** (-.10)	-.06*** (-.13)	-.01 (-.03)	-.06* (-.17)	-.02 (-.08)	-.01 (-.03)
Proportion managerial work	-.08* (-.03)	-.02 (-.01)	-.21 (-.09)	-.22 (-.07)	-.05 (-.01)	-1.1 (-.13)
Age of wife	.15*** (.53)	.07*** (.20)	.24*** (.68)	.09*** (.28)	.10*** (.41)	.07* (.19)
Age at first marriage of wife	-.14*** (-.33)	-.13*** (-.31)	-.20*** (-.52)	-.09*** (-.28)	-.10*** (-.27)	-.14*** (-.35)
Constant	1.0	3.6	-.81	1.6	.94	3.5
R SQR	.46	.19	.54	.32	.31	.15
Total N	4442	3834	216	175	153	149

Standardized coefficients are in parentheses
*** Coefficients significant at .001 level
** Coefficients significant at .01 level
* Coefficients significant at .05 level

Appendix C.10
Regressions of Children Ever Born for Two Ethnic Groups: Husband's Education of 14+ Years

	BRITISH			CHINESE		
	Total Sample	15-34	35-49	Total Sample	15-34	35-49
Husband's actual income	7.4E-06*** (.08)	3.6E-06* (.04)	8.0E-06*** (.10)	1.0E-05* (.12)	-6.2E-06 (-.09)	2.2E-05** (.26)
Wife's actual income	-2.9E-05*** (-.18)	-4.1E-05*** (-.27)	-1.7E-05*** (-.11)	-2.1E-05** (-.14)	-1.6E-05* (-.13)	-3.0E-05* (-.21)
Wife's education	-.03*** (-.06)	-.04*** (-.09)	-.02 (-.04)	-.06* (-.13)	-.02 (-.05)	-.06 (-.16)
Proportion managerial work	-.09* (-.03)	-.07 (-.03)	-.13 (-.05)	-.05 (-.02)	-.02 (-.01)	-.34 (-.13)
Age of wife	.10*** (.56)	.14*** (.48)	.08*** (.25)	.12*** (.65)	.24*** (.82)	.09** (.28)
Age at first marriage of wife	-.13*** (-.29)	-.14*** (-.33)	-.13*** (-.33)	-.11*** (-.32)	-.19*** (-.56)	-.09** (-.30)
Constant	1.7	1.0	2.4	.84	.85	1.8
R SQR	.43	.45	.20	.51	.53	.42
Total N	3634	2063	1571	226	140	86

Standardized coefficients are in parentheses
*** Coefficients significant at .001 level
** Coefficients significant at .01 level
* Coefficients significant at .05 level

Appendix C.11
Regressions of Children Ever Born For the Portuguese: Husband Education 14+ Years

	Total Sample	Age of Wife	
		15-34	35-49
Husband's relative income	.05 (.04)	.47 (.27)	.39 (.40)
Wife's actual income	-5.3E-05 (-.38)	-4.7E-05 (-.33)	-1.9E-06 (-.01)
Wife's education	.02 (.09)	-.002 (-.01)	.12 (.72)
Proportion managerial work	.02 (.01)	.42 (.21)	-.46 (-.26)
Age of wife	.02 (.18)	.11 (.51)	-.06 (-.27)
Age at first marriage of wife	-.02 (-.09)	.06 (.22)	-.15 (-.78)
Constant	1.6	-3.2	5.8
R SQR	.25	.62	.77
Total N	27	17	10

Standardized coefficients are in parentheses
The potential income model and the relative income model (using the British as references) will not be shown for the Portuguese, with husband having at least 14 years of education.
Note: none of the regression coefficients are statistically significant. Sample size of these group of Portuguese is too small (N=27) to make any meaningful interpretation.

Appendix C.12
Regressions of Children Ever Born For Three Ethnic Groups: Husband's Education ≤13 Years

	BRITISH	CHINESE	PORTUGUESE
	15-49	15-49	15-49
Husband's actual income	-4.8E-06* (-.03)	5.5E-06 (.04)	4.8E-06 (.02)
Wife's actual income	-3.3E-05*** (-.14)	-3.6E-05* (-.16)	-2.5E-05 (-.08)
Wife's education	-.06*** (-.11)	-.02 (-.06)	-.02 (-.03)
Proportion managerial work	-.02 (-.005)	-.38 (-.08)	-.36 (-.05)
Age of wife	.11*** (.56)	.11*** (.54)	.11*** (.56)
Age at first marriage of wife	-.14*** (-.28)	-.11*** (-.27)	-.14*** (-.34)
Constant	2.5	1.3	1.8
R SQR	.38	.36	.31
Total N	4272	149	265

Standardized coefficients are in parentheses
*** Coefficients significant at .001 level
** Coefficients significant at .01 level
* Coefficients significant at .05 level

Appendix C.13
Regressions of Children Ever Born For Three Ethnic Groups: Husband's Education ≤13 Years

	BRITISH		CHINESE		PORTUGUESE	
	15-34	35-49	15-34	35-49	15-34	35-49
Husband's actual income	-1.2E-07 (-9.9E-4)	-9.7E-06*** (-.107)	4.5E-05** (.30)	-1.5E-05 (-.13)	1.5E-05 (.12)	-7.8E-06 (-.03)
Wife's actual income	-4.5E-05*** (-.23)	-2.4E-05*** (-.10)	-9.3E-05*** (-.41)	-1.5E-05 (-.07)	-4.3E-05** (-.20)	-1.4E-05 (-.04)
Wife's education	-.04*** (-.10)	-.08*** (-.14)	.01 (.03)	-.05 (-.14)	-.02 (-.06)	-.01 (-.02)
Proportion managerial work	-.13* (-.03)	.04 (.008)	-.90 (-.02)	-.28 (-.07)	-.06 (-.01)	-.73 (-.07)
Age of wife	.15*** (.57)	.07*** (.17)	.25*** (.55)	.12*** (.34)	.11*** (.41)	.07* (.18)
Age at first marriage of wife	-.15*** (-.33)	-.15*** (-.31)	-.18*** (-.43)	-.08 (-.21)	-.12*** (-.32)	-.15*** (-.35)
Constant	1.2	4.5	-1.5	.33	1.4	3.5
R SQR	.45	.18	.59	.20	.32	.14
Total N	2135	2137	67	82	130	135

Standardized coefficients are in parentheses
*** Coefficients significant at .001 level
** Coefficients significant at .01 level
* Coefficients significant at .05 level

Appendix C.14
Regressions of Children Ever Born For Chinese and Portuguese

	CHINESE	PORTUGUESE
Husband's relative income2	.15 (.05)	.09 (.04)
Wife's actual income	-2.6E-05*** (-.14)	-2.7E-05+ (-.09)
Wife's education	-.04* (-.10)	-.01 (-.03)
Proportion managerial work	-.10 (-.03)	-.43 (-.07)
Age of wife	.12*** (.59)	.11*** (.56)
Age at first marriage of wife	-.11*** (-.31)	-.14*** (-.33)
Constant	1.0	1.6
R SQR	.48	.30
Total N	391	302

Standardized coefficients are in parentheses
British equation is not applicable
*** Coefficients significant at .001 level
** Coefficients significant at .01 level
* Coefficients significant at .05 level
+ Coefficients significant at .10 level

Appendix C.15
Regressions of Children Ever Born Broken Down By Age Cohorts, Chinese and Portuguese

	CHINESE		PORTUGUESE	
	15-34	35-49	15-34	35-49
Husband's relative income2	.15 (.07)	.07 (.01)	.23* (.15)	-.08 (-.03)
Wife's actual income	-3.2E-05*** (-.21)	-2.5E-05* (-.14)	-3.8E-05** (-.19)	-2.1E-05 (-.06)
Wife's Education	-.009 (-.03)	-.06* (-.17)	-.01 (-.04)	-.02 (-.03)
Proportion managerial work	-.19 (-.08)	-.14 (-.04)	.09 (.02)	-1.2 (-.14)
Age of Wife	.24*** (.68)	.10 (.29)	.11 (.45)	.07* (.18)
Age at First Marriage of Wife	-.19*** (-.51)	-.09 (-.28)	-.10 (-.28)	-.14*** (-.35)
Constant	-.91	1.6	.69	3.4
R SQR	.55	.31	.31	.15
Total N	216	175	153	149

Standardized coefficients are in parentheses
British equations are not applicable
*** Coefficients significant at .001 level
** Coefficients significant at .01 level
* Coefficients significant at .05 level

Appendix C: 16
Regressions of Children Ever Born for Two Ethnic Groups: Husband's Education of 14+ Years

	CHINESE			PORTUGUESE		
	Total Sample	15-34	35-49	Total Sample	15-34	35-49
Husband's relative income2	.27* (.11)	-.07 (-.04)	.57* (.22)	-.09 (-.06)	.30 (.17)	.44 (.35)
Wife's actual income	-2.1E-05*** (-.14)	-1.7E-05 (-.14)	-2.8E-05 (-.19)	-5.6E-05 (-.40)	-5.6E-05 (-.39)	-2.7E-05 (-.02)
Wife's education	-.05* (-.12)	-.02 (-.05)	-.06 (-.15)	.01 (.06)	-.01 (-.04)	.12 (.72)
Proportion managerial work	.005 (.002)	-.05 (-.03)	-.19 (-.07)	.03 (.01)	.58 (.29)	-.47 (-.27)
Age of wife	.13*** (.67)	.23*** (.80)	.09** (.31)	.02 (.16)	.11 (.50)	-.04 (-.20)
Age at first marriage of wife	-.11 (-.32)	-.19*** (-.55)	-.09** (-.31)	-.02 (-.09)	.06 (.21)	-.15 (-.76)
Constant	.66	-.78	1.4	1.9	-2.8	5.4
R SQR	.51	.53	.42	.26	.59	.76
Total N	226	140	86	27	17	10

Standardized coefficients are in parentheses
British equations are not applicable
*** Coefficients significant at .001 level
** Coefficients significant at .01 level
* Coefficients significant at .05 level

Appendix C.17
Regressions of Children Ever Born for Chinese and Portuguese

	CHINESE			PORTUGUESE		
	Total Sample	15-34	35-49	Total Sample	15-34	35-49
Husband's relative income2	.04 (.02)	.64** (.27)	-.41 (-.17)	.07 (.03)	.18 (.12)	-.11 (-.03)
Wife's actual income	-3.4E-05* (-.15)	-9.3E-05*** (-.40)	-1.0E-05 (-.05)	-2.6E-05 (-.08)	-4.3E-05* (-.20)	-1.3E-05 (-.04)
Wife's education	-.02 (-.06)	.03 (.08)	-.06 (-.16)	-.01 (-.03)	-.01 (-.04)	-.02 (-.03)
Proportion managerial work	-.34 (-.07)	.14 (.03)	-.33 (-.08)	-.33 (-.04)	.04 (.01)	-.77 (-.08)
Age of wife	.11*** (.55)	.26 (.59)	.12** (.33)	.11*** (.57)	.11*** (.44)	.07* (.17)
Age at first marriage of wife	-.11*** (-.27)	-.20 (-.47)	-.07* (-.21)	-.14*** (-.34)	-.13*** (-.33)	-.14*** (-.35)
Constant	1.3	-1.7	.51	1.7	1.2	3.6
R SQR	.36	.58	.21	.31	.31	.14
Total N	149	67	82	265	130	135

Standardized coefficients are in parentheses
British equations are not applicable
*** Coefficients significant at .001 level
** Coefficients significant at .01 level
* Coefficients significant at .05 level

Appendix C.18 Regression Equations of Predicted Fertility for the Three Ethnic Groups

Chinese and British

Overall Sample

British: $Y_d = 2.22+(-.000030194)(6466.85)+(-.055)(12.34)+(-.135)(21.01)+(.104)(34.34)=2.08$

Chinese: $Y_c = 1.17+(-.000023060)(8405.90)+(-.043)(11.85)+(-.118)(23.37)+(.122)(34.74)=1.95$

Wife's age 15-34

British: $Y_d=.89+(-.0000461958)(6127.82)+(-.157)(20.65)+(.147)(27.93)=1.47$

Chinese: $Y_c=-.92+(-.0000319752)(7828.10)+(-.202)(23.0)+(.246)(29.25)=1.38$

Wife's age 35-49

British: $Y_d=3.68+(-.0000190454)(6854.52)+(-.068)(12.03)+(-.136)(21.43)+(.071)(41.67)=2.78$

Chinese: $Y_c=1.62+(-.0000254608)(9099.88)+(-.059)(10.95)+(-.0094)(23.80)+(.101)(41.33)=2.68$

Husband's education 14+ years

British:

$Y_d=1.63+(-.00002879)(7387.9)+(.177)(1.02)+(-.033)(13.68)+(-.13)(21.69)+(.104)(33.96)=1.86$

Chinese:

$Y_c=.66+(-.00002071)(9340.03)+(.213)(1.03)+(-.053)(13.86)+(-.107)(24.38)+(.126)(33.37)=1.55$

Wife's age 15-34

British: $Y_d=.76+(-.00004271)(7102.80)+(-.152)(21.32)+(.146)(28.50)=1.38$

Chinese: $Y_c=-1.17+(-.000021168)(8659.42)+(-.182)(23.63)+(.232)(29.09)=1.09$

Wife's age 35-49

British: $Y_d=2.00+(-.00001785)(7752.06)+(.195)(1.07)+(-.131)(22.17)+(.082)(41.13)=2.54$

Chinese: $Y_c=.330+(-.00003655)(10347.30)+(.479)(1.13)+(-.102)(25.55)+(.108)(40.24)=2.23$

Husband's education ≤13 years

British: $Y_d=1.91+(-.0000402867)(5655.44)+(-.153)(20.46)+(.108)(34.85)=2.32$

Chinese: $Y_c=1.07+(-.0000347671)(6986.04)+(-.117)(22.04)+(.118)(36.62)=2.57$

Wife's age 15-34

British: $Y_d=.94+(-.0000500225)(5068.43)+(20.01)(-.158)+(27.50)(.48)=1.59$

Chinese: Y_i=-1.32+(-.0000551928)(5949.85)+(21.93)(-.190)+(29.47)(.261)=1.88
Wife's age 35-49
British: Y_i=3.34+(-.156)(20.90)+(.069)(42.03)=2.98
Chinese: Y_i=.007+(-.088)(22.12)+(.120)(42.26)=3.13

Overall Sample
British: Y_i=1.78+(-.159)(21.01)+(.106)(34.34)=2.08
Portuguese: Y_i=1.43+(-.135)(21.35)+(.107)(34.56)=2.25

Wife's age 15-34
British: Y_i=.82+(-.000045789)(6152.58)+(.048)(1.04)+(-.155)(20.66)+(.146)(27.93)=1.46
Portuguese: Y_i=.66+(-.0000419828)(6234.58)+(.355)(1.06)+(-.10)(20.14)+(.100)(27.78)=1.54
Wife's age 35-49
British: Y_i=2.87+(-.152)(21.43)+(.076)(41.67)=2.78
Portuguese: Y_i=3.13+(-.143)(22.57)+(.071)(41.42)=2.84