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Chinese Women's Experience Of Transition Towards Married State: A Multistate/multivariate Analysis Of China In-depth Fertility Survey Data, 1985

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Chinese Women's Experience of Transition
towards Married State:

A Multistate /Multivariate Analysis of
China In-Depth Fertility Survey Data, 1985

by

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ABSTRACT

In the context of the growing amount of socio-demographic literature on marriage, this thesis explores a theoretical synthesis for an analysis on Chinese women's experience in transition to the married state, based on the China In-Depth Fertility Survey data.

The frequently cited general theories or models of marriage are broadly categorized into mathematical models and behavioural interpretations of marriage. Of the latter, the theoretical work is conventionally divided into economic and sociological perspectives. However, there exists no theoretical consensus on marriage comparable to that achieved with regard to fertility.

The thesis examines the most familiar economic and sociological theories on marriage and puts forward an analytical framework based on some clear behavioural assumptions. It is proposed that marriage can be seen as a function of motivation to marry and probability of finding a suitable mate.

The thesis conducts a multistate /multivariate analysis. The multistate life table techniques are used to model the transition from entering marriage market to betrothal, and then to married state. The findings of differential transition probabilities to betrothed and married state by birth cohorts and by place of residence help to enhance the understanding of the change in timing of nuptiality. The

multivariate models examine the interrelationship between betrothal, early marriage and a set of socio-economic control variables. The analytical results have shown significant relationships between certain socio-economic characteristics, such as place of residence, birth cohort and educational attainment, and the occurrence of events of interest, i.e. betrothal and early marriage.

In conclusion, the theoretical explanations on motivation, personal quality and mate-search effectiveness in relation to the probability of betrothal and early marriage are supported in the substantive analysis. A comprehensive understanding of Chinese women's experience of transition to the married state, however, requires more in-depth analyses of better designed survey in the future.

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Chapter 1

Introduction

The objective of the thesis is to explore the impact of socio-economic and cultural determinants on the transition to the married state for Chinese women, based on the China In-Depth Fertility Survey data (Phase I) collected in 1985.

First marriage signals the onset of conjugal family formation and childbearing. In formal demographic approach, timing of first marriage is seen as an intermediate determinant on the level of marital fertility and the rate of population growth. From the viewpoint of sociological and economic perspectives, timing of marriage is regarded as closely related to pervasive social and economic changes. Many studies are committed to exploring relationship between nuptiality and other social issues, such as the extent of women's labour-force participation, inequality of educational and occupational status and other socio-economic characteristics within conjugal families, as well as mode of mate selection and types of marriage.

1.1 Importance of Studying Transition towards Married State

Transition towards married state has been regarded as an important life event in family formation and human reproduction. Social-demographic literature has consistently

found that the age of entry into married state and timing of fertility are closely related. Among other things, entry into the married state "defines the initiation of the period of exposure to risk of conception at least in those societies limiting such exposure to institutionalized forms of 'unions' or marriages" (Ye & Bean, 1990, p. 3). In connection with studies on fertility, age at marriage has been used as central variable in Davis and Blake's 'intermediate variables'. Marriage is also regarded as one of the proximate determinants of Bongaarts' fertility model as well.

Most of the studies on fertility and nuptiality treat timing of marriage simply as a time point, beyond which marital fertility or marital status transition are analyzed. However, marriage timing itself is an important variable that deserves separate and simultaneous study. In fact, a series of events which lead up to marriage, such as mate selection, informal and formal betrothal, and eventually wedding, are crucial to the realization of marriage. These events in the transition toward married state are influenced by socio-economic and cultural factors in the society. Only a few studies, as far as we are aware, have been conducted on these events and the time that elapsed between them (e.g. Otani, 1991). Furthermore, the links between the occurrence of the events and the behavioural processes that lie beneath the waiting time between these events have never been well established. It is therefore necessary and logical to explore

the factors underlying the transition in marriage process. To attain this goal, we need first of all to review the relevant arguments in socio-demographic literature on marriage.

The 'classical' transition theory argues, in macro-economic terms, that the modernization of societies changes the economics of conjugal family formation and subsequent childbearing. In traditional societies, early marriage not only resulted in immediate recruitment of new labour hand into the patrilocal family, but also facilitated more and earlier childbearing. The advantages were envisaged as the benefits of a source of labour, investment for support in old age, enhancement of physical security and political influence of family unit. Modernization, however, eroded these benefits either directly or by providing more attractive alternatives. The shift from household to larger-scale modes of production and establishment of non-familial institutions for legal, education and insurance functions have gradually taken away the role of conjugal family except child nurture and emotional gratification. Along with the transition from corporate kinship systems to extended families and, finally, to nuclear families, there has been an increasing awareness of the opportunity cost through early marriage and subsequent early childbearing. Postponing and even foregoing marriage have become more common as monetization of economy prevails.

Recalling the experience of the World Fertility Survey, Cleland and Wilson (1987) argue that ideational rather than

economic structural change lies at the heart of demographic transition. Marital behaviour change has weaker links with economic structure at either macro- or micro-level, but stronger ones with culture and education. "The massive scale and force of the flow of new knowledge and values from the industrialized to the developing world ... impinge upon political, economic and social life alike" (p. 28). With the changes in values and normative context of behaviour, timing and practice of sexual union formation have become more diversified.

Of course the determinants on marital behaviour change deserve more studies with scrutiny than what has been discussed so far. Anyhow, the rise in age at marriage in many developing countries has been impressive. According to the World Development Report (1984), age at marriage has changed most in Asia. "Between 1925 and 1975 the average age for a woman at marriage rose from 16.6 to 23.7 years" in Korea. China has legislated minimum ages for marriage for men and women since 1950. In Tunisia, factors such as development and improvement in the status of women have "contributed to a decline from 42 percent in 1956 to 6 percent in 1975 in the proportion of women married in the age group fifteen to nineteen" (pp. 74-75). The delay of marriage in many developing countries has in part accounted for certain success in fertility decline. Nevertheless, earlier marriage and excessive childbirth remain common in many Third World

countries.

Consensus over central explanatory theories on the determinants of marriage process is by far never reached. Although the dominance of economic determinism is challenged, ideational approach also fails to offer a complete explanation (Cleland & Wilson, 1987, p. 29). It is therefore imperative to gain more understanding of the socio-economic and cultural determinants in both sociological and economic perspectives.

In his analysis of theories of marriage, Burch (1990c, p. 554) broadly classifies them in terms of behavioural theories and mathematical models. On the one hand, behavioural theories of marriage stress societal constraints on individual decision-making, acting through norms and the formation of taste. Economists emphasize individual maximization of utility (for example, Dixon, 1971; Becker, 1972). Mathematical models, on the other hand, have their roots in the empirical regularities observed in relatively reliable data on marital behaviour (see Coale & McNeil, 1972; Feeney, 1972; Hernes, 1972). Although certain models do intend to account for the successive waiting times in entry into the marriage market and from entry to marriage, "no attempts have been made by demographers to specify further the behavioural process lying beneath the waiting time" and more research to sort out the respective roles of various determinants of entry into married state is called for (Rajulton & Burch, 1991, p. 7).

Due to the absence of theoretical consensus on the marriage process, this thesis explores a synthesis for an analysis of the transition to married state, with an application to the study of the experience of ever-married Chinese women since 1950. The study also has a bearing on the subsequent demographic phenomena, such as household formation, marital fertility and marital status transition.

1.2 Overview of Transition towards Married State in China

Studies on transition toward married state in developing countries have been carried out by world organizations and academic researchers alike. As the most populous country in the world, China deserves a special attention in that one of its important demographic changes since the 1950s is in the timing of entry into married state. The existing socio-demographic literature has attributed the shift of age at marriage to government policy intervention and to modernization, including industrialization and urbanization (for example, Parish & Whyte 1978; Engel, 1984; Whyte & Parish, 1984; Liu, S. Goldstein & A. Goldstein, 1989; Yang, 1990; Ye & Bean, 1990; Coale, Wang, Riley & Lin, 1991).

To get a deeper insight into the timing of nuptiality, we certainly have to take account of the effect of government policy intervention. Centralized government control, family planning programs and marriage laws are widely reported as

having played a large role in determining the timing of nuptiality at the national level. This policy influence is evident when we look at the drastic change in fertility as the result of implementation of the one-child family planning policy. On the other hand, social, demographic and economic factors, as well as cultural adjustment, have also contributed to changes in age at marriage. These social changes, as Wang (1988) argues in an analysis on the roles of individuals' socio-economic characteristics in China's fertility decline, should include "the establishment and the expansion of a centrally-planned economy, the collectivization of the peasants, women's participation in labour force, and the expansion of educational system" (p. 274). As a result, the mean age at first marriage for women in China rose from 18.7 in 1950 to 22.8 by 1981 (Liu et al., 1989, pp. 9-10), i.e. increased by four years in about one generation. The postponement in timing of entry into married state occurred noticeably in the 1970s when women's age at first marriage increased from 20.2 years at the beginning of the decade to 23.1 years by the end (Coale, 1984, pp. 40-42). With the promulgation of the 1980 Marriage Law, the government re-regulated minimum legal age at marriage as 20 for women and 22 for men. Coale and others (1991) claim that this is in fact "a relaxation of locally administered restrictions" on marriage age. "The result of this relaxation was a boom in marriages. The total first marriage rate in 1981 was 41%

higher than that in 1979" (pp. 389-390).

Apparently, it is a joint effect of government policy intervention, economic development and the rational adjustment of culture to past environment that exerts impact on individual marital behaviour. However, previous research has often concentrated on linking the development indices with rising age at marriage at the aggregate level. The variations among individuals in experiencing different events in the marriage process have not been adequately explored. In order to gain more insight into such a process, it is necessary to examine more "complete information on individual's sample path, tracing the course of events and the different states a woman visits, along with duration in each state" (Rajulton, 1989a, p. 4).

Much has yet to be done to develop satisfactory behavioural theories and models with conceptual and analytical maturity to guide the researchers in their studies of marriage. With particular reference to marital experience in the Chinese case, better theoretical orientation and model application are all the more needed to understand the transition to married state.

With regard to the significance of the present study, it is well-known that China, especially its vast rural areas, is characterized by its comparatively low levels of economic development and educational attainment. On the other hand, government policy is reported to have tremendous impact on

individuals' marital behaviour. The result of the analysis may also shed some light on similar research in other developing countries.

1.3 General and Specific Objectives

The thesis attempts to examine the sociological and economic approaches to transition towards married state, particularly applicable to the Chinese experience. Besides the well-known influences of government policy intervention and modernization, specific factors of mode of mate selection, betrothal and perceived post-marital residence arrangement will be examined so as to develop a scheme of the marriage process.

Specifically, the current study is a secondary investigation of China In-Depth Fertility Survey (abbreviated as CIDFS hereafter). The thesis undertakes to carry out a multistate /multivariate analysis to examine the transition to married state. A multistate analysis models the process of transition from entering marriage market to betrothal, and then to married state. We can use as summary measures the expected lengths of sojourn time spent in marriage market or in betrothal state for respondents of different cohorts.

Beyond an initial multistate analysis, a multivariate analysis will be used to examine the inter-relationship between betrothal, early marriage and a set of socio-economic

control variables. Proportional hazards model, which assumes that population heterogeneity is captured by the set of covariates and the relative risks maintain constant during the entire process of transition to married state, is perceived as appropriate for multivariate analysis. In an attempt to further examine the robustness of hazard model, we also intend to carry a logistic regression analysis of betrothal in the same multivariate context. In brief, the application of multistate life table technique and multivariate analysis will enhance our understanding of the social, economic and cultural determinants of marriage.

1.4 China In-Depth Fertility Survey (CIDFS)

China In-Depth Fertility Survey (Phase I) was conducted by China's State Statistics Bureau in 1985 in the provinces of Shaanxi, Hebei and the municipality of Shanghai. With technical assistance from the International Scatistical Institute Research Centre (ISIRC), the survey employed a stratified, multi-stage, clustered random sampling scheme. The primary sampling units for the urban, town, and rural areas were street committees, towns, and Xiang (township) respectively (Hermalin & Liu, 1991, p. 342). Of the total number of ever-married women aged 16-49 selected for the survey, the response rate was above 97 percent. All eligible women were interviewed "in detail on their background,

marriage and pregnancy histories, ... attitudes to age at marriage and other factors related to fertility" (Department of Population Statistics, 1986, p. 9).

The thesis has selected CIDFS as the data base because the survey provides detailed information on each state of marital histories. In addition to conventional data on respondents' age, age at first marriage, educational and occupational status, items regarding betrothal, betrothal length, types of marriage and living arrangement upon first marriage are also covered. Thus the data set will facilitate to reconstruct each state of never married, betrothed [or not betrothed] and married with different living arrangements for the respondents in their multistate transition. Information on individual's socio-economic characteristics is also provided in appropriate detail for multivariate analysis.

1.5 Organizational Plan for the Thesis

The thesis is composed of seven chapters including this introduction chapter. Chapter 2 will further elaborate the theoretical orientation of the thesis. The first section will be devoted to behavioural theories in terms of economic and sociological approaches to marriage. As have been commonly cited in demographic literature on marriage (for example, Preston & Richards, 1975; Ye & Bean, 1990; Landale & Tolnay, 1991), Becker's economic model of comparative advantage of

marriage and Dixon's theory on societal variations in desirability and feasibility of marriage, as well as availability of marriageable mates will be the main theme of exposition. Mathematical models will be discussed in the second section. Coale-McNeil model and Feeney's model are typically interpreted in terms of waiting time, which ties in nicely with the sojourn time measures from multistate analysis. The following section undertakes to synthesize, in behavioural terms, the content of the above models by elaborating on four broad concepts put forward by Rajulton and Burch (1991, p. 8), namely, motivation; personal eligibility or attractiveness; the supply of eligible partners; and search effectiveness. In view of the differential implications of these factors on the genders, a sub-section is added to further specify gender differences in entry into marriage.

Chapter 3 provides an overview and literature research on marriage in contemporary China. The important changes as a result of contention between government policy intervention and traditional ideology will be discussed. Of the compromises in prevailing practice as a result of the contention, the issues concerning free-choice versus arranged marriage, conceptualization of suitable mate and persistence of betrothal practice are elaborated. In addition, a review of previous research will be used to delineate the general trend in age at marriage and marriage process since 1950. Since many of the existing documentations have attributed the

fundamental changes in timing and process of marriage mainly to the effects of government policy intervention and modernization, this chapter aims at identifying the social, economic and cultural determinants that affect the timing and practice in individuals' transition to married state.

Chapter 4 provides an analytical framework to view marriage as a function of 1) motivation to marry [with both social and individual components], and 2) probability of finding a suitable mate, which in turn is a function of a) the definition of 'suitable', b) age-sex ratio and c) personal qualities in terms of educational and occupational status, as well as physical attractiveness. This scheme reconceptualizes the broad behavioural terms discussed in Chapter 2 into specific factors underlying different states in marriage process, particularly in terms of mode of mate selection and betrothal. A schematic figure of the multistate process of marriage will be presented. Based on the discussion, hypotheses will be put forward for testing.

Data and methods are the main concern in Chapter 5. The nature of restricted sample containing only ever-married female respondents will be discussed. In particular, a note of the measurement of betrothal in CIDFS will be provided. Other covariates such as age cohort, place of residence, educational and work status, and types of marriage will be operationalized to fit subsequent multivariate analysis. The methods in this thesis involve multistate /multivariate

analysis. The rationale and procedure of multistate life table technique will be presented with reference to the current study. Moreover, the development of Cox's proportional hazards model will be introduced to combine the virtues of both life table and regression techniques. The model allows the risks of betrothal and early marriage to depend not only on time, but also on individuals' social and economic characteristics that lead to increasing or decreasing the probabilities of experiencing such events. As an alternative to hazard analysis, the logistic regression model will also be presented in Chapter 5.

Chapter 6 is devoted to the discussion of the results of multistate /multivariate analysis. In light of the multistate process of marriage conceptualized in Chapter 4, a multistate life table analysis will be conducted to examine the timing of entry into marriage pool or betrothed state and the sojourn time spent in such states. Probabilities of survival in these states will be analyzed in relation to age cohort and place of residence of the respondents. Multivariate analysis will be followed to examine the variations in probability of entry into betrothed state and the timing of marriage explained by covariates, paying particular attention to the relationship between age-cohort marital behaviour and the timing of government policy changes.

The last chapter provides a summary of the salient findings of the thesis. With a theoretical analysis on the

path to late marriage for women in the developing countries in general, and for those in China in particular, an example of gradual transition to late marriage for Korean women is presented. By expanding the discussion to other aspects of marital status transition, speculations on marital practice for Chinese women in the future will be given. Some further thoughts in the direction of future research on marriage process will also be discussed.

Chapter 2

Theoretical Orientation

Although we have encountered a growing amount of demographic literature devoted to nuptiality studies, a theory addressing the complex process of entry into married state is not yet well-developed. "There exists no theoretical consensus or synthesis comparable to that achieved with regard to fertility" (Rajulton & Burch, 1991, p. 1). As the existing socio-demographic documentation can in general be classified into behavioural theories and mathematical models, we intend to examine them in the first two sections in this chapter.

2.1 Behavioural Theories of First Marriage

Behavioural theories of marriage are in general classified into economic and sociological interpretations. While classical economic theory argues principally in macro-economic terms, more recent micro-economic approach has introduced greater theoretical rigour in analyzing household economics. Sociological approach, on the other hand, examines social, cultural and demographic determinants on individuals' marital behaviour. Social, economic and cultural changes have taken place, not only in the industrialized world, but also in the developing countries as well. We therefore undertake to examine the theoretical interpretations on the changing

marital behaviour in the western social context and to explore to what extent they are applicable to the third world countries.

2.1.1 Economic approach to comparative advantage of marriage

In macro-economic terms, "industrialization and modernization brought 'structural differentiation' with increasingly separate structures in society coming to play specific functions" (Beaujot, 1991, p. 237). It is widely believed that, in pre-industrial and many of the present-day developing societies, conjugal families and kin community have had a variety of functions. In addition to reproduction and socialization of the younger generation, functions such as economic production, distribution and consumption, religious observance, kin group sanction and protection are performed by family groups. Many social affairs, including marriage arrangement, are organized and "strongly supported by popular beliefs, formalized in religious doctrines, and enforced by community sanctions. They are deeply woven into the social fabric and are slow to change" (Coale, 1973, p. 347).

In the process of industrialization, family institution has gradually lost many of its roles to factories, schools, medical centres, legislative and law-enforcement institutions. These long-term changes in the family are closely related to changes particularly in economic structures. "Since women

became excluded from the economic production that moved outside of the household, they also became more dependent on the extrafamilial occupations of their husbands" (Beaujot, 1990, p. 29). Thus Becker (1974) and other micro-economic models gained dominance in explaining marital behaviour, which rely heavily on the traditional economic notion of comparative advantage.

In developing a theory of marriage, Becker (1974) combines household-produced commodities that include the quality of meals, the quality and quantity of children, prestige, recreation, companionship, love, and health status into a single aggregate Z. Maximizing utility thus becomes equivalent for each person to maximizing the amount of Z, which in turn is a function of individual's wage (w) and time (t) allocated in the household. In a household containing a husband (m) and wife (f), necessary conditions to maximize Z include

$$\frac{MP_{t_m} \ast (\delta Z/\delta t_m)}{MP_{t_f} \ast (\delta Z/\delta t_f)} = \frac{w_m}{w_f}$$

The conditions in the equation determines the allocation of the time of M (standing for a man) and F (standing for a woman) between the market and nonmarket sectors. More time would be allocated to the market by M than by F (less to the

non-market sector) if $w_m > w_f$ and if $MP_{tf} \geq MP_{mf}$ when $t_f = t_m$. Indeed, F would specialize in the nonmarket sector if either w_m/w_f or MP_{tf}/MP_{tm} were sufficiently large.

If Z_{m0} and Z_{0f} represent the maximum outputs of single M and F, and m_{mf} and f_{mf} their incomes when married, a necessary condition for M and F to marry is that

$$m_{mf} \geq Z_{m0}$$

$$f_{mf} \geq Z_{0f}$$

thus,
$$m_{mf} + f_{mf} = Z_{mf} \geq Z_{m0} + Z_{0f}$$

Becker further illustrates that, M and F gain from marriage because t_m and t_f are not perfect substitutes for each other or for goods and services supplied by market firms or households. When substitution is imperfect, single persons cannot produce small-scale equivalents of the optimal combination of inputs achieved by married couples.

In explaining the complementarity between M and F, Becker shows that the "shadow" price of an hour of t_f to a single M --- the price he would be willing to pay for t_f --- would exceed w_f, and the "shadow" price of t_m to a single F --- the price she would be willing to pay for t_m --- would exceed w_m.

Both gain from the marriage because M then, in effect, can buy an hour of t_f at w_f and F can buy an hour of t_m at w_m, lower prices they then would be willing to pay. Of course, this is also why married households use positive amounts of t_f and t_m.

With regard to the key issue of rationality in microeconomic model, Lesthaeghe and Surkyn (1988) defined it as "the anticipatory adoption of appropriate means for the realization of more distant ends, implies learning, foresight, evaluation of alternatives, calculation, correction, and above all a definition of material and nonmaterial goals" (p. 39). Based on such "a rational conscious choice as an axiom of human behaviour" (Coale, 1973, p. 353), Becker summarizes "that the gain from marriage compared to remaining single for any two persons is positively related to their incomes, their relative difference in their wage rates, and their level of non-market-productivity augmenting variables, such as education or beauty" (For detail, see Becker, 1974, pp. 301-305; p. 326).

In brief, marriage in Becker's model is viewed "in terms of partners reaping economic rewards from a division of labour. In the traditional arrangement men and women 'traded' market labour for household services, based on relative comparative advantage" (Burch & Skaburskis, 1992, p. 11). It should be noticed that here we have only discussed the basic ideas of Becker's model, which do not constitute his complete theory.

With increasing number of women participating in the labour force, career development necessarily requires more time and energy devoted to education and specialized training. Moreover, employment outside the household enables individuals to gain more financial independence. From economic point of view, marriage and subsequent childbearing became an opportunity cost, especially to employed women. In this sense, marriage has become a weaker institution, less central to the organization of society and to the lives of individuals.

Similar economic approach is found in the works of Ermisch (1981) and Preston and Richards (1975). While Ermisch claimed that "lower expected gains from marriage lead persons to marry later" (P. 356), Preston and Richards found a significant relationship between attractive employment opportunities and low proportions of women entering into wedlock. In both cases, eligibility for marriage appears to be increasing with more economic opportunities and higher real wages. Individuals' desire for marriage, conversely, wanes with the increasing degree of economic independence and more alternatives other than marriage, although it is not unexpected that remarkable variations can be found across gender and cultural boundaries within such a trend. The factors of economic eligibility for marriage and individuals' motivation, as well as their interaction, have become prominent in these economic schemes.

However, economic interpretations of motivation and eligibility for marriage remain incomplete. Based on the principle of maximization of utility, comparative gains in marriage would diminish with the increasing proportion of women participating in the labour force. Yet "in virtually all societies, the vast majority (typically over 90 percent) marry at least once during their lifetimes" (Rajulton & Burch, 1991, p. 1). Economic interpretations do not suffice in explaining the baby boom in the developed countries, still less does it adequately account for rapid population growth accompanying economic and social progress in most developing countries after the second world war, which is at least in part associated with almost universal marriage and early childbearing. Economic models alone apparently find limited applications to explaining marriage process. Sociological explanations should be introduced in conjunction with the economic models.

2.1.2 Sociological theories on entry into married state

Like sociological theories on fertility, socio-cultural explanation on marriage "stresses societal constraints on individual decision-making, acting through norms and the formation of taste" (Jones, 1982, p. 279). When elaborating on the theory on demographic transition, Coale (1973) argues that "couples marry within a range of socially accepted ages

and postpone marriage within that range because of inability to satisfy the current norms (e.g. of dowry, property ownership or income) for marriage" (p. 349).

With the progress of modernization process, individuals not only gain more in terms of economic independence, but also adjust their ideational goals in terms of marital life perception. In addressing the more recent trends especially in the western societies, Beaujot (1991) identifies that the patterns of marriage and family living have undergone fundamental changes: "marriage has been delayed, lower proportions are marrying, cohabitation has become a common practice, and there are more divorces, less remarriage, more single-parent families, a dominance of two-earner families, less childbearing, and more adults living alone" (p. 236).

Socio-cultural explanation on these changes argues that there is a weakening of the normative consensus on marital behaviour. When socio-economic conditions constrained individuals to comply with the prevailing social norms, marriage universally took place to ensure orderly replacement of generations, which was essential to home economy, particularly in the case of household production. However, present-day marital relations are based more on the need for emotional gratification. The conjugal family is more exclusively the source of that gratification. "The family provides an emotional haven to comfort individuals on their return from exposure to the frequently damaging consequences

of participation in the impersonal competitive modern economy"
(Ryder, 1979, p. 365). Such an expectation has set heavy
demands on family relationship which may not always be able to
provide. If individuals fail to have their emotional demands
fulfilled from the marital relationship, they may be less
prone to enter it.

Thus socio-cultural perspective tends to view the recent
trend in terms of an ideational change in the concept of
marriage. While marriage in traditional terms was based on
established roles, expectations, and mutual obligations, a
continuation of strong emotional exchange and communication is
at present essential to marriage. Such a shift in values and
norms leads to a justification of marital behaviour more in
terms of its consequences for personal development, and less
on grounds of adhering to social values. People became less
interested in living up to external norms and more interested
in living up to what they themselves wanted. After examining
a variety of arguments about long-term changes in the family,
Beaujot (1990) has summarized these changes in such terms as
"movement from institution to companionship, from orderly
replacement of generation to permanent availability, from
instrumental to expressive relationships. When the family was
basically a unit of production and survival, relationships
were instrumental; as it became a 'private sphere', nurture
and affecti. 1 became the basis for the relationships. These
perspectives all imply a loosening up of relationships and a

greater priority to affective gratification" (p. 32).

In discussing trends of marriage across historical periods and cultural boundaries, we are not saying that individual's marital behaviour in the past or in pre-industrial societies was constrained by rigid social values and norms while people now in the post-industrial social context are acting totally in a norm-free manner. In fact, social norms continue to operate either by exerting pressure on individuals to enter marriage, or by conceding with tolerance to alternate sexual and marital arrangements. What we see is that the normative context of behaviour is changed in response to the rising of individualism and self-fulfilment.

Specific to the societal and parental normative pressures which affect timing of marriage, Waite and Spitze (1981) discussed the availability and attractiveness of alternatives to wife role in relation to chances of marriage (p. 681). In an attempt to develop a theory of marriage timing, Oppenheimer (1988) explicates "a conceptual framework that links assortative mating to the transition to adult economic roles and, in the process, develop[s] a theory of how sex differentials in marriage timing will change as married women's market work becomes more extensive" (p. 563). In sociological theories, Dixon's behavioural framework (1971, 1978) is perhaps the most commonly used for analyzing marriage process.

Dixon (1971) has established an analysis to explain cross-cultural variations in age at marriage and proportions never-marrying. The three variables intervening between the social structure and marriage patterns are referred to as: 1) the availability of mates, 2) the feasibility and 3) desirability of marriage. According to Dixon, the availability of mates is determined by the "sex ratio of persons of marriageable age" and by "the method of mate selection (arranged match or free choice)". Desirability is determined "by the availability of social and institutional alternatives to marriage" and by the "pressure toward marriage and penalties of remaining single". Finally feasibility is determined by "expectations regarding the financial and residential independence ... and by the availability of resources for meeting these obligations" (pp. 221-222). Sociological approaches to marriage process highlight the effects of social constraints on individual's decision-making about marriage and mate-searching.

Nevertheless, sociological perspective also offers limited interpretations. In the first place, the concepts about changing cultural aspirations and attitudes are hard to measure. "They can be seen as ex-post f. o rationalizations that are difficult to falsify" (Beauj , 1990, p. 32). Secondly, the determinants of changes in cultural aspirations and attitudes are so far unspecified. It is also questioned as to how and how long cultural differences in marital

behaviour persist. On the one hand, it has been argued that, despite high level of industrialization and urbanization, a strong social pressure for women [in Japan] to marry by a specified age has persisted during the post-war period (Otani, 1991, p. 476). On the other hand, Catholicism and fertility are cited as an instructive example: in twenty-five years, the fertility level difference between Catholics and the rest of the population in the U.S. "has virtually disappeared, as the distinctive influence of Catholic values was 'ground down' by the operation of more powerful demographic, socio-economic and cultural forces" (Burch, 1990b, p. 12). Thirdly, people do not necessarily enter, defer or forgo marriage entirely in response to the variations and changes in social pressure. Across culture and historical periods, living in an intimate relationship with a loved one has remained as what most people would want as something pleasant in and of itself. For all its limitations, socio-cultural perspective remains a valid explanation of marital behaviour with an emphasis on the impact of social values and norms.

Social demographic analysis emphasizes factors such as sex ratio in the marriage market, marriage timing and proportions of population that enter into marriage. Goldman, Westoff and Hammerslough (1984), for example, made a comprehensive analysis on demography of the marriage market in the U.S. and specifically identified "the increasing shortage of males for females in the prime marriageable ages has been

shown to relate to increasing age at marriage" (p. 5). "The situation in which demographic and cultural factors combine to reduce the number of marriage partners available to a certain age-group of women and men" (Nett, 1988, p. 147), known as 'marriage squeeze', directly affects the supply side in terms of sex ratio in the marriage market. Individuals' motivation to marry, or not to marry, is also found to be changing in response to the squeeze.

To conclude the discussion of sociological and economic interpretations on marital behaviour, we view that changing demographics, such as fluctuation of sex-ratio in marriage market, delay and smaller proportion of marriage, have made marriage and family a smaller portion of many people's total lifetime. The rational decisions of marital behaviour based on economic advantage and disadvantage within a given social structure retain their explanatory priority. Transformations of socio-economic structure also introduce changes in the possibilities of culturally acceptable behaviour. Nevertheless, at any given time, the definition of acceptable alternatives is filtered through not only the economically acceptable possibilities but also the socio-culturally acceptable ones. As Beaujot (1990) warns: "while economic explanations have a more secure base in visible reality, let us not forget the power of attitudes, values and cultural ideals in determining the course of social change" (p. 33).

2.2 Mathematical Models of Marriage

2.2.1 Coale-McNeil and Feeney models

The Coale-McNeil model of marriage is developed on the basis of Coale's empirical observation about the existence of a standard age schedule of first marriage rates. With the adjustment to the origin, horizontal and vertical scale of the proportion ever married, a common structure underlying the age distribution of first marriage is found for populations characterized by markedly different mean marriage ages and proportions remaining celibate (Coale & McNeil, 1972, p. 743). In their attempt to find a mathematical formula to fit the first marriage curve, Coale and McNeil have discovered an expression to describe the risk of first marriage, defined as the rate of first marriage at each age of persons eligible for first marriage. They have found the risk function to be an extremely close fit of a double exponential function

$$r(a) = 0.174 e^{-4.411 e^{-0.309 a}}$$

where r(a) is the risk of first marriage at age a. The fit of this function to the standard value is derived from adjusted Swedish data. According to Coale (1971, p. 204), for a cohort in which marriage begin at age a_0, and for whom the time scale of marriage is compressed by a factor k, the risk of marriage r(a) among those who ever marry is

$$r(a) = \frac{0.174}{k} e^{-4.411e^{-0.309\frac{k}{a-a_0}}}$$

Thus the Coale and McNeil model can be seen as expressed by three parameters: the age at which a significant number of marriages occur, the speed at which marriage takes place and the proportion ever-married. Although the double exponential fits the standard risk of first marriage, Coale and McNeil did not initially offer a behavioural interpretation. The shape of the first marriage frequencies, however, appears to lead to the following explanation. The standard curve of first marriage can be seen as a convolution of a normal distribution describing age of entry into the marriage market and an exponential distribution of delays between the entry and marriage.

Being considered as "a special case of an alternative procedure for fitting probability distributions" (Coale & McNeil, 1972, p. 743), the Feeney model (1972) regards a women's age as "the sum of two components, the interval between birth and entry to a hypothetical marriage pool, and the interval between entry to this marriage pool and marriage" (p. 29). These two models are typically interpreted in terms of successive waiting time between entry and actual marriage, but with no specified behavioural explanations.

In an attempt to derive a convenient form of the

probability density function in the Coale and McNeil model, Rodriguez and Trussell (1980) re-parameterized the model in terms of mean and standard deviation instead of using a_0 and k. Thereby the Coale and McNeil model can be fit by substituting the values of a_0 and k in the density function in the form of

$$g(a) = \frac{p}{\sigma} 1.2813 e^{-1.145(z+0.805) - e^{1.896(z+0.805)}}$$

where

$$z = \frac{a - \mu}{\sigma}$$

and g(a) is the proportion ever married at age a in the population under study. μ, σ and p respectively denote mean, standard deviation of age at first marriage for those ever-married and the proportion ever married.

2.2.2 Hernes model for the process of entry into first marriage

As the behavioural process underlying the waiting times is not further specified in the Coale-McNeil and Feeney models, and in fact, not in the existing demographic

literature as a whole, Hernes' work (1972) is notable in that he builds a mathematical model starting from behavioural assumptions and specifies the process of entering into first marriage with an emphasis on the two forces of 'social pressure to marriage' and 'declining marriageability with age' by a constant proportionate factor. The concept of marriageability relates motivation with individual and social components, personal attractiveness and the availability of suitable mates.

Thus, behavioural assumptions are operationalized in a differential equation. Assuming the change in cohort proportions married by age, Hernes (1972, p. 175) specifies

$$\frac{dP_t}{dt} = Ab^t (1-P_t) P_t$$

where A is the average initial marriageability, b<1 its constant of deterioration, and P_t is the proportion married at time t. When the equation is solved and the resulting equation is fit to proportions married by age, the parameters regarding marriageability and constant of deterioration can be estimated (Burch, 1990a, p. 3).

It appears that mathematical models possess a good potential to deal with the nuptiality process, including aspects of behavioural process underlying the waiting time

prior to actual marriage, with the Hernes' model being a case in point.

2.3 A Theoretical Synthesis

In summarizing and developing Dixon's (1971) scheme for explaining cross-cultural variation in age at marriage and suggesting a simple modification of Hernes' model for remarriage of divorced persons, Burch (1990a) points out that an emerging model of marriage should include at least the following factors:

> 1] individual motivation for marriage; 2] social pressure to marry [or not]; 3] eligibility for marriage, or personal attractiveness as a partner; 4] the supply of eligible mates and search effectiveness. (p. 2)

This conceptual specification will serve as the basic framework for the subsequent analysis. In the present study, motivation refers to the aspiration to marry with both individual and social components. Similar to Fishbein's broad conceptualization of motivation applied to fertility and family planning behaviour, the individual component of motivation can be seen as a function of one's attitude toward performing certain behaviour, specifically searching for a marital partner and entering the married state. This component involves the individual's subjective judgement of the probability that "performing the behaviour will lead to

certain consequences or outcomes and his evaluation of those outcomes" (Fishbein, 1972, p. 216). The social component refers to the individual's 'normative' beliefs and the intention to comply with those 'norms' --- "that is, his beliefs about what 'others' expect him to do, or say he should do, and his desire or lack of desire to do what he believes 'others' think he should do" (Fishbein, 1972, p. 216). In this sense, the social component of motivation is related to how an individual perceives the social norms on marital behaviour and to what extent there is intention to comply with these norms.

While social pressure to marry can be viewed as the prevailing norms in respect to acceptable marital behaviour, search effectiveness serves as the means through which individuals may conform to the social norms, which is often determined by the initiative of an individual, as well as that of kinship in searching for suitable mates. Social pressure and search effectiveness are associated with the mode of mate selection and sometimes the occurrence of betrothal in the marriage process.

Eligibility is judged in part by the readiness of marriage finance, including the foreseeable residential arrangement upon marriage, as has been elaborated in Dixon's scheme. However, beyond the economic consideration, the socially-defined acceptable marriage age and other socially valued attributes are also regarded as factors to determine

one's eligibility for marriage.

In the following sub-sections, these four factors, as well as their impact on both genders, will be further elaborated to build an analytical framework for the present study.

2.3.1 Sex ratio in marriage market

A considerable amount of demographic literature has specifically looked at sex ratio in marriage market as a determinant in nuptiality process. Population sex ratio is seen as too crude a measure of availability since the too-old and the too-young age groups are not at a significant risk of marriage (Goldman et al. 1984, p. 5). More appropriate ratio indices are developed to reflect the number of females in a given age group relative to the number of males in the age groups among which those women most probably marry (e.g. Akers, 1967; Hirchman & Matras, 1971; Ermisch, 1981). The practical application of sex ratio definition is perhaps best illustrated in the model of Preston and Richards (1975), in which they use sex ratio of the number of men aged 25-29 to the number of women aged 22-24 in 100 largest Standard Metropolitan Statistical Areas [SMSAs] in 1960.

Preston and Richards assume that each single male (M) knows K_1 other single females (F) in random encountering and the probability that one particular single male-single female

relationship at time t will result in marriage during the period t to t+dt is $K_2 dt$. Then the number of marriages, N, during some time period dt is

$$N = F\left(\frac{K_1 M}{M+F}\right) K_2 dt$$

In another form, we have

$$\frac{N}{F} = K \frac{M}{M+F} dt$$

where $K = K_1 \cdot K_2$. Thus the model indicates that marriages are a positive function of the ratio of male to female and of the probability of encountering that leads to marriage. Preston and Richards (1975) found that, among other things, a decline in sex ratio has been influential in producing decline in proportions married.

A more elaborated version of Dixon's definition of availability of mates is found in Goldman et al. (1984). Having claimed that the population sex ratio of unattached men and women only sets an upper limit on the potential marital relationships that could result, they incorporate age and educational constraints to describe variations in the

measurement of Availability Ratio (AR). Thus, assuming that M_{ij} denotes the number of men aged i in education level j who are suitable for marriage and that $W_{M_{ij}}$ denotes the number of women who are suitable for men aged i of education level j, we have

$$AR = \frac{[\sum_{j}\sum_{i}M_{ij}]^2}{\sum_{j}\sum_{i}W_{M_{ij}}M_{ij}}$$

Here AR provides an indicator of total 'suitable' men against the average number of 'suitable' women for these men. Both 'suitability' terms are confined in this model to age and education. Although it is still doubtful if age and education constraints could catch the entire issue of suitability for marriage (which is to be discussed in the subsequent sections), Goldman et al. (1984) have nevertheless refined the measurement of availability of marriageable mates and combined this issue with another important factor in marriage process, namely, eligibility for marriage.

In sum, sex ratio in the 'preferred' age groups proves to affect the likelihood of marriage. However, in the absence of drastic fluctuation of fertility, extreme gender-selective migration and great gender-differential mortality, the seriousness of the shortage of one gender is questionable. In

addition, relative scarcity of unmarried members of the opposite sex may reduce marriage rates for the persons affected, but it is also possible for them to substitute partners from less preferred age groups (Ermisch, 1981, p. 349). Nonetheless, sex ratios should be considered as an important factor in transition towards married state.

2.3.2 Eligibility for marriage

The issue of eligibility for marriage has been explored under various terminologies. Dixon (1971) explains 'feasibility' of marriage in terms of opportunities for economic self-sufficiency that are crucial to a newlywed's household formation. Goldman and others (1984) attribute the ascribed and achieved social status, such as race, age and education of the potential brides and grooms, to their 'suitability' for marriage. Hernes (1972) proposes 'marriageability' as the capacity of a cohort's members to marry, which in his model is a function of age, i.e. declines with age.

The term eligibility for marriage in this study accommodates both aspects of the couple's economic assets and other socially accepted and valued attributes, such as attainment of minimum marriage age. With regard to the impact of economic factors on eligibility for marriage, there appears a positive relationship between better economic prospects and

eligibility. When there are plenty of job openings, good wage rates or good earnings prospects, fairly affluent resources in savings, or land in the case of rural residence, young couples would see themselves as eligible for marriage. Assuming the preservation of traditional gender roles, the man is valued for his upward economic mobility to finance the marriage and to support a new family. The woman, on the other hand, with her educational attainment and occupational training, would strengthen her 'bargaining' position in the marriage market and provide secondary income for her new family when married. Female education and employment, in this sense, "encourage marriage by making it more feasible" (Dixon, 1971, p. 230). Although there are striking differences in the implications of eligibility for marriage with respect to male and female, economic and educational asset accumulation contributes substantially to eligibility for marriage.

Moreover, eligibility is a culture-specific criterion. Dixon (1971) claims that "financial consideration should play a more important role in the West than in societies where the young couple are ordinarily incorporated into the existing household of an extended family" (p. 222), although it is questionable if living arrangement alone accounts for the difference in eligibility between Western and other cultures.

2.3.3 Motivation to transit to married state

Entangled with eligibility for marriage is the issue of motivation to marry. Abundance in assets is no doubt an important condition of eligibility for marriage, but not all eligible partners are necessarily motivated to marry. Goldscheider and Waite (1986) make an attempt to distinguish whether the increased barriers to marriage or the relative preferences for marriage (to some extent compatible with the concepts of eligibility and motivation) have caused the decline in marriage rate in the U.S.. Equated with the term 'preferences' is what Dixon referred to as desirability of marriage. She is more concerned about the availability of social and institutional alternatives to marriage.

The issue of motivation is elaborated in Becker's (1974) model of comparative advantage and Easterlin's (1978) theory of relative income. In Becker's economic model, a couple is motivated to marry if both perceive that gains to marriage are positive. Traditionally, the wife traded part of her domestic services in exchange for part of husband's income from market work, as long as the comparative advantages in market activity and home production for the two parties still exist. Before the economic and social changes fundamentally undermined this gender division of labour and these comparative advantages, a woman could pin her hopes for upward economic mobility on marriage to a man with a satisfactory socioeconomic background. Likewise, if the woman maintained a reasonably

satisfactory position on the status hierarchy, a man might be induced to feel that he can afford to marry. Under such circumstances, motivation to transit toward married state should usually be positive.

While Becker's model argues that motivation to enter into married state varies depending on comparative gains from marriage, Easterlin's theory "implicitly assumes no fundamental alteration in the attractiveness of marriage. What does change is the ease with which men can assume the financial responsibilities for women and children that marriage entails" (Espenshade, 1985, p. 229).

Easterlin's idea of relative income is the ratio of a couple's earnings potential to the level of their marital aspirations. As the relative income of young adults rises, they are inclined to assume that they are financially eligible and thus motivated to marry. In the event that economic stress is felt, a man is less motivated to marry due to his inability to support a new family. Likewise, a woman may also feel she has to accumulate assets in terms of employment earnings to support herself and her family if married. Meanwhile, career pursuit outside the home strengthens the feelings of financial independence. In Dixon's terms, more alternatives in career opportunities and life styles would weaken the motivation to marry. Easterlin's argument, however, stresses that motivation fluctuates with the potential couple's economic prospects.

In sum, Becker's model of motivation to enter into married state provides a useful tool for analyzing phenomena associated with sexual division of labour both within and outside marriage. A fundamental conclusion of trade analysis is that it is almost always advantageous to marry (Goldscheider & Waite, 1986, p. 94). Easterlin's theory, on the other hand, also claims no essential decline in marriage motivation which only varies with the perceived economic well-being of the potential partners. Motivation to enter into married state constitutes an indispensable part in the theory of marriage.

2.3.4 Social pressure and mate searching effectiveness

The issue of social pressure has been widely discussed in demographic literature on nuptiality. Coale (1973, p. 349) talks about couples marrying within a range of socially accepted ages and postponement of marriage within that range due to inability to satisfy the current norms. Hernes (1972, p. 173) assumes that social pressure to get married increases as the percentage of the cohort already married increases. In both cases, pressure to marry is related to social normative constraints on whether and when to enter into married state. In most studies dealing with timing of nuptiality, however, social pressure is taken as a given rather than as a variable to be explained from economic and cultural perspectives.

In fact, explanations of social pressure that start with economic factors argue that issues concerning benefits from marriage are relevant. Becker's economic model, for instance, if looked at from the viewpoint of social pressure, specifies the comparative advantages as the result of marriage contract. Stated differently, social pressures develop to press men and women to do what is economically beneficial. When women were in the economically dependent positions, their livelihood was contingent on entry into marital relations. Social pressure would tend to promote marriage to maintain a reciprocal state of dependency between the genders. However, with the increasing rate of women's labour force participation and technological improvement in the home, a narrowing of the competitive advantage of men over women in market work and that of women over men in home production becomes evident, which signifies a reduction in the gain to marriage (Espenshade, 1985, p. 222). Social pressure to marry for economic reasons would, perhaps with some time-lag, ease off to some extent with respect to the prevalence and timing of entry into the married state.

Cultural explanation of social pressure tends to emphasize the aspect of normative consensus on marriage. Traditionally, pressure to marry was realized through the local community and kin. Cross-culturally, the Chinese have a maxim saying that "when a man is old enough, he should get married; when a girl is old enough, she should be given away"

(Ye & Bean, 1990, p. 6). Talking about determinants of first marriage at least in the past, Rajulton and Burch (1991) quote social-psychological pressure to marry in the West where marriage has been considered essential to the achievement of full adult status in society (p. 2). When social norms strongly favour marriage to take place universally at certain phase in one's life span and other alternatives of life style is culturally restricted, the vast majority will enter the married state at a range of socially accepted ages and "being unmarried as a kind of deviance is heightened by popular culture" (Hernes, 1972, p. 174). Social pressure tends to operate effectively. Conversely, when there is greater legitimacy to base behaviour on personal gratification, rather than on external norms, some may feel that entry into wedlock is not particularly gratifying when emotional support presumably obtainable from conjugal family is not satisfactory. There would be an increased tolerance for late or non-marriage. Thus a relaxation of the social prescriptions for entry into married state would emerge.

The means to materialize social pressure to marry is expressed in terms of mate-search effectiveness. At least two routes to marriage in contemporary societies are conceivable, namely, love match and arranged marriage (see, for example, Fox, 1975; Xu & Whyte, 1990). In fact, absolute love match with total free choice of mate is practically nonexistent anywhere in the world, as it would imply freedom to choose a

marital partner with no regard to the wishes of anyone else nor any instrumental considerations, such as occupation and education. Love match in contemporary society, however, is found to be a match that takes into account of these instrumental considerations and is contracted by the spouses themselves within the limits of the permitted social groupings (Eshleman, 1988, pp. 294-295). Arranged marriage, on the other hand, is referred to as a marriage initiated by parents, influential kin or match-makers, not necessarily with the consent of the bride and groom.

In general, where social normative pressure to marry is traditionally effective, arranged marriage tends to be prevailing, especially with those with few alternatives in life course and mate choice. Love match, on the other hand, would become a dominant mode of mate selection when normative constraints on marriage are relaxed.

In exploring the possible relationship between social pressure and types of marriage, we are not saying that marriage is a chore and that people would not enter the wedlock unless they are constrained to do so under social pressure. In fact, even when social pressure is less specific and prescriptive in terms of prevalence and timing of marriage, people may still feel that living in an intimate relationship with a loved one is desirable. In this sense, social pressure is realized through the awareness of individual's self-interest to pursue a love marriage. Again,

we are emphasizing the essence of cultural explanation that "the spirit of individualism and self-fulfilment changes, but do not remove, the normative context of these behaviours" (Beaujot, 1990, p. 31). Possibly a love marriage is easier to propose if potential partners have more opportunities to acquaint themselves to each other in social events or work place. The effectiveness to promote the realization of marriage, however, remains to be seen.

In brief, pressure to marry operates as a form of social control largely through local community and kin to influence individuals' marital behaviour. While economic explanation tends to point out the pressure towards 'trading in marriage' owing to the comparative advantage on gender-based division of labour, cultural model inclines to postulate how social norms prescribe but also change with regard to the prevalence and timing of marriage. We have argued that arranged marriage is more common under strong and prescriptive social pressure. Love marriage negotiated by marital partners becomes popular when social pressure, though less specific, is realized with the rising importance of self-gratification. In either case, social norms appear to look with favour on individuals who actively seek to enter into wedlock and to exercise "more or less subtle sanctions against the not yet married" (Hernes, 1972, p. 174). More recently, social norms appear to be more tolerant of the alternate sexual and marital arrangement.

2.3.5 Gender differentials in entry into married state

As is elaborated in the previous sections, economic and sociological theories address the issues of sex ratio in marriage market and social pressure toward marriage and highlight the behavioural terms of motivation, eligibility and search effectiveness as determinants to entry into married state. It is of further interest to examine the differentials of these determinants applied to potential brides and grooms respectively.

In the first place, empirical observations have indicated that sex ratios in the marriage market operate differentially for men and women. The asymmetry of mean age difference between spouses appears to be very distinct: although women marrying at younger or older age have husbands of about three years older, the older the grooms, the more likely the brides will be younger (Goldman et al., 1984, p. 9). Since men tend to choose their brides from younger and larger cohorts, there are usually more women than men of marriageable age, unless drastic fluctuation of fertility or heavy sex-selective migration or mortality occur (Dixon, 1971, p. 227). Women, by contrast, if they look for marital partners who are approximately three years older, tend only to find a smaller cohort with greater proportion already married or, in the case of more traditional societies, betrothed.

Secondly, social pressure toward marriage appears to exert equally on both sexes. Hernes (1972, p. 174) asserts

that "this pressure increases with the increase in the percent of a cohort already married ... [because] the psychological experience of the undesirability of celibacy increases as more of the same age group enter into wedlock". However, as social pressure is mainly derived from the prevailing social norms regarding the acceptable range of age of marriage, marriageability decreases with age but differentially with sexes. As has been discussed earlier, sex ratios show favourable odds for younger women and increasingly unfavourable for their older counterparts (Goldman et al., 1984, p. 15). Recalling the perseverance of women marrying by a specified age in the Japanese case, we see that females tend to be hard pressed at an earlier stage of life course, especially where the traditional ideology prevails.

Thirdly, motivation to enter into married state is related to the desirability of marriage with regard to different gender roles. Traditionally women gain financially from marriage, but they give up more in terms of life course schedules. Men, as Goldscheider and Waite (1986) argued, gain disproportionally from the noneconomic benefits of household services, but also survivorship and mental and physical health. If one does not consider financial gains and losses, then 'his' marriage is more desirable than 'her' marriage (p. 92). In short, motivation of marriage to different sexes is based on an differential assessment of net economic and non-economic benefits.

Lastly, the criterion of eligibility operates between genders with striking difference. When relating to the issue of women's participation in the labour force, Preston and Richards (1975) argue that "while a woman's job may induce a male to feel that he could 'afford' to marry, it could also encourage a woman to feel that she could 'afford' not to marry" (p. 210). Goldscheider and Waite (1986) also address the propensities to marry in terms of relative costs and benefits, and assert that men are more likely to get married when they have a secure economic status while women are more likely to use "their resources to buy out of marriage" (pp. 94-95).

In addition, the role of parental resources complicates the issue of eligibility for marriage for the next generation of both genders. Among families with comparable income, as Goldscheider and Waite (1986) argued, "the higher the occupational prestige, the higher the life-style requirements, which are apparently achieved ... also at the expense of marriage in the next generation" (p. 105). On the other hand, however, there is no reason to overlook the correlation between a family's assets and children's access to them upon marriage. It is not uncommon that a family transfers a substantial amount of resource to finance children's marriage. Specific to offspring's marriage of both genders, Ye and Bean (1990) report that poor families, less able to support their daughters, "tend to arrange marriages earlier than wealthy

families" (p. 6). As for the 'richer' families, Waite and Spitze (1981) found that families will use their resources to "prevent an untimely wedding and to facilitate one at the proper time" for their daughters (p. 683). With regard to the son's marriage, examples of families using their assets to assist sons' marriage are reported cross-culturally (see Parish and Whyte, 1978; Engel, 1984; Goldscheider and Waite, 1986), although the extent to which parental resources influence the likelihood of marriage for offsprings of both sexes have not been established.

Goldscheider and Waite (1986) have further argued that parental resources and personal financial assets facilitate a man to be eligible for marriage, not as an indicator of a male preference for marriage, but simply as a result of the relative attractiveness of a more wealthy man (p. 94). Arguments about a woman's economic assets in relation to her eligibility for marriage have been conflicting. Some insist that a women's job acts as her 'dowry' and promotes early marriage and that women's willingness to work arter marriage increases couples' incentive to marry (see Preston & Richards, 1975, p. 210). Others examined the increasing instances of women's labour force participation and conclude that "having gained other options for financial support, women would be less prone to marry" (Beaujot, 1991, p. 241). The only consensus on this issue is that parental, as well as personal economic and educational assets of a daughter, tend to be used

to prevent a too-early marriage.

2.4 Summary of the Chapter

This chapter provides a theoretical perspective of the thesis. As there exists no conceptual consensus achieved with respect to the first marriage process, we first identified two broad categories of demographic literature in terms of behavioural theories and mathematical models.

Mathematical models of nuptiality, typically the Coale-McNeil model, have been developed to allow for prediction of "the experience of many young women on the possible course of their marriage behaviour" (Rao, 1987, p. 4). The potential of Hernes' model in dealing with the behavioral process lying beneath waiting time is also impressive. While looking at the perspectives of economic, socio-cultural and demographic explanations on marriage in behavioural theories, we have examined the broad conceptual terms of sex ratio in marriage market, motivation, eligibility, social pressure and search effectiveness.

Subsequently, we provide further elaboration on each of four broad concepts in relation to similar analyses in previous literature from economic and sociological perspectives. It should be pointed out that these terms are conceptually distinct from one another, but their effects are intermingled in the process in which individuals proceed into

married state. Eligibility for marriage, for instance, may be necessary but not sufficient to motivate individuals to marry, as is analyzed by applying both Becker's comparative advantage model and Easterlin's relative income scheme, as well as the cultural explanation from sociological perspective. Social pressure, realized through influential kin's initiative in mate-searching, has been identified as a variable subject to the impact of prevailing social norms.

Having recognized the differential implications on the two sexes of these determinants, we provide a discussion to specify the impact of sex ratio, motivation, eligibility, social pressure and search effectiveness on potential bride and groom respectively, about which empirical testing will require further work with additional data sets.

Chapter 3

Overview and Research of Marriage in Contemporary China

3.1 Traditional Ideology and Government Policy Intervention

Attempts to reform family and marriage are reported as having only been effectively m :e since 1950. Traditionally, marriage in China was entirely negotiated and controlled by the heads of the household, and the couple had no active role in the negotiations. This traditional custom remained the dominant model. Free marriage, although adopted by minority social categories, never achieved nation-wide applicability. It was not until the establishment of the People's Republic in 1949 that a new ideology of marriage, based on the principle of free choice without interference or obstruction from third parties, was formally introduced and developed on a nation-wide scale (see Croll, 1981, pp. 20, 24).

Since then, the government has provided for, and in fact actively encouraged, widespread competition and conflict with the traditional ideology on marriage. One year following the founding of the People's Republic, the Chinese government passed the Marriage Law and began to implement its policies at various administrative levels.   In the following several decades, three important changes are observed: 1) destruction of feudal pattern of marriage; 2) establishment of new-type marital relationship on the basis of new law and ethics; 3) various compromises in marriage practice as the result of

contention between policy intervention and persisting traditional ideology. The specification of the changes, in association with the current study of transition to married state, is explored as follows.

In the first place, destroying former feudal patterns aimed at abolishing polygamy, polyandry, concubinage and mercenary marriage. Meanwhile, dowry customs, marriage restrictions, rituals and strict patrilocal residence customs were discouraged. Very few instances have been reported on the first four types of marriage in modern China, as the government has been well aware of the tenacity of tradition and of the need for continued vigilance. Moreover, feudal and superstitious restrictions on marriage, such as endogamy in some traditional community or ban on marrying someone with the same surname, have vanished (for detail, see Engel, 1984, pp. 955-958; Baker, 1979, p. 191).

On the issue of establishing new law and ethics on marriage, the most prominent aspect concerns the minimum legal age at marriage. In new China, "no marriage shall be contracted before the man has reached 20 years of age and the woman 18 years of age" (Bian, 1990, p. 13), as is regulated in 1950 Marriage Law. Although the variations in enforcing the new law in different areas would lead to the discovery of cases of marriage occurring before the minimum legal age, the overall increase in age at marriage has been largely attributable to the impact of government policy. Furthermore,

based on genetic and medical considerations, the new law prohibits marriage between partners who are lineal relatives by blood or collateral relatives by blood (up to the third degree of relationship). It also forbids cases by medical science as rendering a person unfit for marriage, although this clause, according to Engel, "leaves plenty of room for creative interpretation and application" (1984, p. 958). With regard to ethical considerations, the new law specifies that "marriage must be based upon the complete willingness of the two parties. Neither party shall use compulsion and no third party is allowed to interfere" (Engel, 1984, p. 957). In an attempt to abolish the feudal patriarchal family system which went hand in hand with arranged marriage and indifference to women's wants and feelings, this clause in 1950 Marriage Law has actually manifested one of the important goals of the revolution that is to establish gender equality in the society. It should be noticed that these measures have in fact been carried out in the course of social, cultural progress and modernization in the following years. Policy alone is not likely to initiate such tremendous changes. Presumabl "as young people are increasingly freed from arbitrary family dictates and controls, ... the shift away from arranged marriage, then, should reduce the level of marital misery in a society" (Xu & Whyte, 1990, p. 709).

The more interesting aspects in marriage reform are the various compromises between what the government has long

advocated and what adamantly exists in marriage practice. Among them, outstanding issues are free choice and arranged marriage, 'suitable' mate selection, betrothal and the related problem of marriage finance.

3.1.1 Free choice and arranged marriage

While addressing the co-existing patterns of total parental control and free choice of partner on marriage decision, Croll (1981) identifies a range of four conscious models in three stages: a) the selection of par r, b) consent on the match by the third parties and c) the conclusion of the negotiation. The first "Old Ideological Model" displays a parental monopoly of controls over the entire marriage process. Two "Immediate Models" make allowance for marriage partners to enjoy varying degrees of freedom at different stages of marriage negotiations. In the last or "New Ideological Model", partners "initiate the negotiations for marriage, allow no obstruction or intervention of the older generation to stand in their way and, ...conclude the negotiations themselves" (pp. 25-29). Engel (1984) has summarized some similar patterns of Croll's "Immediate Models" and listed "a) parental arrangement of marriage after consultation with the young couple, b) arrangement by go-between on behalf of individuals and, c) free choice with the consent of parents" (p. 957).

In behavioural terms, contention and compromise on the control over marital partners can be seen as related to motivation for marriage with both social and individual components. Individuals may, on their own initiative, actively seek a marital partner or decide not to marry someone chosen by third parties, depending on their subjective judgement of the consequence of performing that behaviour. The intervention of parents or other parties is often found to be aiming at promoting a marriage, preferably to the choice of the parents rather than that of marital partners. Young couples may either be obedient to or defiant of the third parties' intervention, depending on their beliefs about the norms governing the behaviour weighted by their motivation to comply with those norms (see Fishbein, 1972, p. 217). Contentions, if any, are focused on their autonomy in choosing marital partners. Social norms that prevail in contemporary China to promote almost universal marriage, at least for now, do not appear to be at issue.

3.1.2 Conceptualization of 'suitable' mate selection

When the government encourages conflict against the traditional ideology of marriage, the focal issue is who are entitled to decide a suitable marital partner to be chosen, which boils down to who and how to define 'suitability'. In her anthropological study of the politics of marriage in

contemporary China, Croll (1981, pp. 83-84) has found that the government intends "to establish a broad field of eligible mates for each individual and therefore an increasingly wide choice of mates, particularly for those previously disadvantaged in the marriage market for socio-economic reasons". Although great efforts have been made to abolish socio-economic criteria as the sole factors governing the choice of marriage partner, especially intervened by the third party, in reality, however, "many people are still preoccupied with the essentials of making a living and do not bother too much about the emotional and spiritual side of marriage" (Tan, 1988, p. 9). In discussing an average tendency in mate selection in Canada, Beaujot (1989) draws a general conclusion, which may also find applications elsewhere. He argues that "most people are likely to marry someone who is pretty much like themselves in most social characteristics. This departs considerably from the romantic notion that love and marriage are very individualistic and that everyone should have an equal chance of falling in love with everyone else" (p. 241). In this sense, an important aspect of suitability of a partner is related to how eligible he/she is for marriage in terms of socio-economic characteristics. As Whyte and Parish (1984) find in their studies of marriage in contemporary Chinese villages and cities: "Wherever there are marked disparities in social status and life chances, as there are in socialist societies as well as capitalist ones, invariably a 'marriage

market' operates in which, through competition for partners, individuals tend to end up married to people who bring to that competition similar social resources" (p. 130). In practice, potential partner's education, work status and place of residence are taken into practical consideration by marriage parties as well as their parents. The compromises appeared to yield the result that compatible socio-economic characteristics of the partners are seen as not the sole, but nonetheless important criteria for 'suitability', about which young partners should have more say.

3.1.3 Betrothal in marriage process

One of the focal issues of this thesis involves the exploration of the practice and implications of betrothal. According to the Principal Report of CIDFS, "betrothal refers to any procedure or commitment undertaken before marriage through which a couple or their parents or other guardians consent to the marriage taking place at some time in the future" (Department of Population Statistics, 1986, p. 34).

Traditionally, marriage is conceptualized as a contract between the kin of the couples and betrothal negotiated by influential third parties is seen as an effective means for the older generation to control the recruitment of new family members. After the establishment of the People's Republic, the government has prohibited child brides and discouraged the

practice of betrothal, as part of its effort to promote free marriage and gender equality. Presumably, with the decline in proportion of arranged marriage, betrothal should gradually disappear. Nonetheless, many studies have found that "betrothal continues to function as an important social institution" (Croll, 1981, p. 43) and "it appears that there certainly has been no decline in the traditional practice of betrothal" (Department of Population Statistics, 1986, p. 34). How can we account for this and what are the implications of betrothal, since it continues to prevail?

It is well known that demographic phenomena are closely associated with the existing social and economic structure in the society. In rural China, land reform and the subsequent reorganization of the relations of production, especially the delegation of production responsibility to individual households since 1980s (see Yang, 1990, p. 151), have further strengthened the links between family member, the household and the larger lineage groups sharing the same surname. Even with the agricultural production under collective and commune organizations since the middle of the 1950s up to early 1980s, the basic production units of brigades and small teams were virtually composed of households of one or at most a few lineage groups. In both cases of collective and household farm production, the accumulation of resources by households encourages the co-residence and economic inter-independence of the individual and the consanguine family members so as to

maintain the continuing function of rural economy. "The structure and function of the rural household has encouraged the older generation ... to maintain their control of marriage procedure" and betrothal in practice constitutes an important stage within that procedure (Croll, 1981, p. 185).

As far as economic benefit for the bride side is concerned, Croll (1981, pp. 50-53) has summarized three reasons why betrothal manages to continue functioning. One is that the betrothal gifts took the form of a compensation paid by the wife-receivers to wife-givers. As traditional ideology considers that a daughter married off becomes a member of groom's family, a handsome sum is expected in return for the expense of her upbringing. Another explanation asserts that only the transfer of the betrothal gift to the bride's parents could guarantee a sufficient measure of stability of the proposed marriage. When the match is struck and agreed amount of betrothal gift is delivered, it is morally unacceptable to withdraw from the contract in the absence of sufficient basis for a back-out (see Whyte & Parish, 1984, p. 124 for detail). A third rationalization of betrothal lies with its symbolization of good relations between the families of bride and groom. There are certainly other reasons beyond economic considerations to maintain this traditional practice, but financial transaction from the groom's family to the bride and her family shows no sign of diminishing despite the government's discouragement on any forms of bride price. As

a crucial step toward the on-coming marriage, betrothal is evidently not discarded.

Furthermore, the official definition of betrothal in CIDFS Principal Report also accommodates 'the commitment undertaken by a couple to marry'. Thus betrothal, at least with regard to the present data base, has acquired the meaning of engagement, or 'established relationship' prior to marriage. Marriage commitment in the form of engagement therefore maintains its popularity. The cultural implication appears that betrothal indicates the seriousness of the commitment to marriage. As "dating follows the commitment to marry, rather than preceding it", potential partners tend to enter the proto-dating stage which is "viewed as being tantamount to engaged" (Whyte & Parish, 1984, p. 123). Betrothal thus performs the function of stabilizing the committed marital relationship. People entering marriage without experiencing the betrothed state are perhaps seen as either financially not adequately prepared for marriage or rushing into marriage without serious commitment. The underlying cultural implication may, in part, account for the finding that a large proportion of ever-married women were betrothed in the provinces of CIDFS data base.

It appears that betrothal is a socially defined waiting time from engagement to marriage. In the case of rural areas, formal betrothal serves as the occasion when the match is agreed to and marriage finance preparation is now under way.

Marriage finance negotiations between two families, which usually involve wedding banquet finance, housing for the newly weds, goods and cash for the bride and her family, have directly placed the issue of eligibility on the wedding agenda (see Baker, 1979, pp. 124-126; Parish & Whyte, 1978, pp. 180-192). In the case of urban China where household is less a unit of production, betrothal negotiation involving financial transaction to bride's household is less explicitly expressed than is the case elsewhere. More practical considerations are given to potential partner's socio-economic status which in most cases indicates his level of income and accessibility to the housing in the work unit. When a couple is committed to marry, the next stage ordinarily involves saving-up and arrangement for the housing "so that they can start their marriage on a satisfactory basis" (for detail see Whyte & Parish, 1984, pp. 122-123). It should also be noticed that, in the process of modernization and cultural dissemination, more instances of declining parental dominance in betrothal have been observed. On the other hand, more families could afford the marriage-related ceremony in both rural and urban areas (see, for example, Zeng, Tu, Guo & Xie, 1991, p. 452). The symbolic meaning of betrothal in marking an important state in marriage process in both cases, however, remains the same.

To sum up the discussion of betrothal in relation to the theoretical framework of behaviour, we see that the issues of

motivation, social pressure and available mate-search have by and large been taken care of in the pre-betrothal phase. Eligibility for marriage, expressed in terms of financial, residential readiness and earning potential, becomes a prominent factor that affects further transition to married state. In most cases, when social recognition of proposed marriage is obtained upon betrothal, the potential couple and their families will be working hard on marriage finance, including the arrangement of post-marital residence if financially plausible. It is generally true, as Ye and Bean (1990) have argued, that "marriage is a significant event for the family as a whole. Traditionally marriage does not simply involve the couple" (p. 6). Therefore, the eligibility factor operates continuously to determine the length of stay at betrothed state for individuals, whether to wait to reach eligible marriage age or to attain economic readiness, until they are entitled to enter married state.

3.2 Literature Review on Marriage in China

Demographic literature in general recognizes three periods of change in timing of nuptiality in contemporary China. The first period covers approximately twenty years from the founding of the People's Republic to the 'Cultural Revolution'. The second period witnesses an effective implementation of family planning campaign on promoting late

marriage up to the late 1970s. The third period is characterized by what is referred to as 'marriage boom' (Coale et al., 1991) in the 1980s.

3.2.1 Economic development and rapid population growth

After the founding the People's Republic in 1949, scholars in China and abroad have devoted much attention to the influence of socio-economic changes on Chinese women's marital behaviour, particularly those brought in with the implementation of 1950 Marriage Law. The fundamental changes involved economic restructuring through land reform which turned individual households into production units. This in turn encouraged households to have the younger family members married earlier in order to produce more labourers. Industrial reconstruction and collective agricultural production movement in the following years further opened new prospects to better living conditions for the individual household. Meanwhile, other alternate sources of employment in the cities also benefited the young. They were able to gain some degree of economic and social independence, and more readily came into contact with potential spouses (see Yang, 1990, p. 149; Buxbaum, 1978, p. 221 for detail). As Coale (1973, p. 347) argues: "In factory employment the individual stood on his own accomplishment". Young people have the potential to support their own families at an earlier age,

without waiting for accumulation of a substantial amount of resources or waiting for inheritance of parental property and land. Thus early marriage and early childbearing appeared to be demographic responses to economic development in the initial years of the People's Republic. "China's vast population came to be regarded as an asset rather than a hindrance to the tremendous expansion of the economy.... The question is not so much over-population, as shortage of man-power" (Baker, 1979, p. 187).

In the following years constant political movements were carried out to promote compliance with the advocated new ideology. Relevant to marital behaviour was the urge to discourage traditional ways of contracting marital partners and to promote the practice of late marriage, thus paving the way for a gradual increase in age at marriage.

3.2.2 Family planning campaign in the 1970s

The second period began with the effective implementation of family planning campaign in the 1970s. The state intensified its 'later, sparser, fewer' policy, "in which 'later' means later age at marriage. To enforce the policy, many rural areas adopted age 23 for women and age 25 for men as appropriate 'later ages' for marriage. In some cities, particularly the larger ones, the age was raised to 25 for women and 28 for men" (Liu et al., 1989, p. 10). During this

period, various studies on marriage patterns have investigated the departure from previous marriage customs and the impact of new ideology that lead to the widely spread later-marriage practice (for example, Parish & Whyte, 1978; Croll, 1981; Whyte & Parish, 1984).

In fact, the relationship between economic development and fluctuation of age at marriage is a complex one, especially for the developing countries. The rise in living standards as a result of economic development will create better financial status for more people to arouse higher aspiration to marry, perhaps even earlier. Many countries have indeed experienced the initial decrease in marriage age in response to economic development. Yet, in the meantime, the same socioeconomic mechanism can also give rise to other aspirations for better education and life style, thus eventually bring up age at marriage and fertility decline (Lindert, 1980, p. 14). In the Chinese case, many studies have examined the improvement of economic situation and educational attainment, especially on the part of younger neration. The conclusions tend to suggest that "it is the simultaneous and joint effects of modernization and policy changes which have contributed to such a dramatic increase in age of marriage" (Ye & Bean, 1990, p. 18).

3.2.3 Economic reform and demographic response

In the 1980s the government revised the Marriage Law and "raised the legal age for marriage to 22 for the male and 20 for the female" (Bian, 1990, p. 15). In the meantime, economic reform has been carried out on a national scale, noticeably with the wide-spread introduction of the production responsibility system in the vast rural area. Demographic literature was quick to realize the relationship between the two and identified a declining in age at marriage which has persisted well into the 1980s (Ye & Bean, 1990; Yang, 1990; Coale et al., 1991; Zeng et al., 1991).

Demographic response to changes in basic economic condition is evident. Under the responsibility system, "land for household use is on a per capita basis" (World Development Report, 1984, p. 138) and each peasant household is responsible for the quota of agricultural production. Clearly, early marriage and subsequent early childbearing will ensure access to more land and more helping hands in the field. A decline in age at marriage is witnessed since the 1980s.

With regard to the policy change, Coale and others (1991) argue that this apparent raise in minimum legal marriage age against legislation in 1950 Marriage Law is in fact "a relaxation of the bureaucratic restraint on marriage before age 23 (or 25) that had been imposed in the 1970s. The result of this relaxation was a boom in marriages" (p. 390). Zeng

and others (1991), while discussing the relationship between declining age at marriage and the increase in the crude birth rate in the 1980s, also confirm that the economic and political reform characterized by decentralization of the administrative system might have enabled more young people to marry at the minimum marriage age (22 for males and 20 for females) specified by the law or even to marry at lower ages, rather than following the late marriage pattern promoted by the family planning campaign. Thus, benefiting from the economic reforms, more families, especially peasant families, could afford the marriage ceremony, housing, furniture, and the like for their grown children at earlier ages, thus reducing the waiting time needed to save enough money for marriage. Therefore, it is not surprising that changes in the marriage pattern contributed significantly to the increase in the crude birth rate (pp. 451-452).

Specific to the policy concern on the relaxation of minimum legal marriage age restriction stipulated in the 1980 Marriage Law, Banister (1987) views that the purpose of the government was to "codify the laws, to standardize the laws and their enforcement nationwide, and to instill in the people a new respect for the law" (p. 159). When the local administration raised the acceptable marriage ages to the late 20s since the family planning campaign in the 1970s, the unrealistic restrictions have led to popular discontent and uneven enforcement in different areas. If the policy could

only invite noncompliance and disrespect for laws and regulations, it might be wiser for the government to adjust it into a uniform, reasonable, enforceable and fair one.

Furthermore, "the late-marriage regulations were causing social problems, personal hardships, and occasional crimes" (Banister, 1987, p. 160). While the stronger influences of traditional ideology in the rural areas adamantly object to marriage at such unacceptable high ages, urban youth might fall in love and became betrothed years before they were allowed to marry. It is unrealistic to expect postponement of sexual relations for all such couples. As moral codes refuse to tolerate pre-marital sexuality and pregnancy, such incidents, once occurred, would likely to provoke family violence and hostility toward their love, thus creating serious social problems.

Finally, from the viewpoints of physiology and demography, some insist that the healthiest age for childbearing, for both mother and baby, is the twenties. Restrictions on marriage age are causing physically harmful consequences for women and children. Some demographers argue that emphasis should be laid on the pursuit of China's fertility goals. As contraception is widely available, "they reasoned, age at marriage is no longer a crucial determinant of couple's completed fertility" (Banister, 1987, p. 161). Obviously, the government has made tacit concessions to these considerations. In any case, the reduced institutional

control over marriage proves to be one of the important factors leading to the marriage boom in the 1980s.

With particular reference to the marriage issue for Chinese women, some identified a tendency of convergence with the Western marital pattern of increasing self-initiated conjugal bond and postponement of marriage (Li, 1988), others argue that socio-economic development does not necessarily bring in Westernized marriage model (Riley & Zheng, 1990). Of the factors determining the timing of entry into first marriage, Liao (1989), after analyzing CIDFS data, found the existence of earlier marriage among women with lower education, those who did not work, in the rural setting, with arranged marriages and married during the early years of the People's Republic. By employing a time-series regression analysis, Ye and Bean (1990) also found that the "changes in age at marriage are a function of population policy, declining proportion of parental arranged marriages and increased educational attainment" (p. 1). In addition, many other studies contributed to the 1990 Beijing Symposium of China In-depth Fertility Survey also involved many insightful discussions of the timing of nuptiality for Chinese women (Zha, 1990; Qiao & Chen, 1990; Riley & Zheng, 1990).

In sum, theoretical discussion and quantitative analysis appear to reach the consensus about three broadly defined stages of marriage timing for Chinese women. There was a period of gradual increase in age at marriage between the

1950s to 1970s. Apparently, a concentration of an earlier age
of marriage is found in the early 1950s, but later on the age
at marriage was indirectly affected by a series of political
movements and fluctuating economic development since the late
1950s. The second stage is characterized by the effective
implementation of family planning campaign in the 1970s. As
a result, "age at marriage among women increased overall from
20.2 years at the beginning of the decade to 23.1 years by the
end. The changes were from 22.4 to 25.2 years in urban places
and from 19.9 to 22.5 years in rural areas" (Liu et al., 1989,
p. 10). In the third stage, with the implementation of
economic reform featured by responsibility system mainly in
the rural areas and introduction of the 1981 revised Marriage
Law, a declining age of marriage to around 22 has been
reported in the 1980s (Yang, 1990; Ye & Bean, 1990; Coale et
al., 1991; Peng, 1991).

3.3 Summary of the Chapter

The first section of this chapter provides an overview on
marriage in contemporary China. Three important changes in
marriage practice are identified with regard to abolition of
the old practice and establishment of the new, as well as the
various compromises between government policy intervention and
persisting traditional ideology.

With respect to these compromises, we have specified

three prominent features in terms of free-choice versus arranged marriage, the conceptualization of 'suitable' partner selection and the role of betrothal in the marriage process. Social changes initiated by implementing government policies have brought a series of socio-economic and demographic consequences. In the rural areas, the implementation of land reform, reorganization of the relations of production and later the responsibility system have had the effect of maintaining the economic inter-dependence between each member of the household, and between the individual household and the influential primary kin (Croll, 1981, p. 185). The basic structure and function of the household has left much room for the older generation to maintain, to varying extent, their control over marriage procedure of the young, specifically reflected in mate selection and betrothal practice. In the cities where the household is less characterized by the function of production, young people are likely to acquire a certain measure of control to define and select suitable partners. Although th young may enjoy varying degree of freedom from the older generation's intervention in the marriage procedure, theoretical analysis and empirical evidence nevertheless suggest that young couples with compatible socio-economic assets tend to match. In other words, socio-economic characteristics are taken into practical consideration, wi+h a view either to recruiting the new members of the household on the part of the old or to choosing

ideal partners on the part of the young.

Furthermore, we have explored the implications of betrothal. With its economic function of financial transaction from the household of the groom to that of the bride, betrothal is found to continue to act as an important social institution. Beyond the economic consideration, betrothal announces the serious commitment to marriage, of which social norms favourably approve. Thus betrothal is justifiably seen as an important state in marriage process for Chinese women.

As is discussed in the second section, demographic literature identifies three stages of changes in age at marriage. While there appeared a concentration of early marriage in the initial years of the People's Republic, a gradual increase of marriage age was observed until it reached and maintained a high level while the family planning campaign was carried out at full swing in the 1970s. Starting from the early 1980s, "the nuptiality pattern seems to have declined towards earlier marriage" (Yang, 1990, p. 156).

Chapter 4

Conceptualization of Transition to Married State

4.1 A Conceptualization of Marriage Scheme

In their elaboration on the waiting time preceding marriage, Coale and McNeil (1972) conjecture that the age of becoming marriageable is the age at which serious dating, or going steady begins; that the longest delay is the time between becoming marriageable and meeting (or starting to keep frequent company with) the eventual husband; and that the two shorter delays are the period between beginning to date the future husband and engagement, and between engagement and marriage (p. 746). While studying the time distribution in the process to marriage in Japan, Otani (1991) looks at "several events which lead up to marriage" and "the time that elapsed between first meeting and engagement, and between engagement to marriage" (p. 473). In both cases, it is plausible to conceptualize the marriage process in terms of a multistate analysis, although there are differences in specifying the states of waiting time prior to marriage.

In view of marriage practice in the Chinese social context, we suggest placing betrothal between never married and married state in a multistate life table and subsequent multivariate analyses. The transitions between states in the marriage process can be conceptualized as follows: individuals enter the marriage market at an assumed time point. As time

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goes by, certain proportion of women enter a betrothed state and stay there for different lengths of time, then proceed to married state. Others, however, may skip the betrothed state altogether and directly transit from never married to married state, with a certain period of time interval. Upon entering into married state, some may reside with the parents for some time before they establish their independent household, others may remain living within the premises of the extended family. Still others may set up their own household as soon as they get married. Theoretically, married with independent household and married but living with parents can be seen as two types of mutually exclusive states.

This conceptual framework will enhance our understanding of the determinants of the marriage process of Chinese women. While entry into hypothetical marriage pool can be arbitrarily defined as starting at age of 10 or 15, married state starts from the time of marriage registration or the wedding ceremony (see Parish & Whyte, 1978, p. 156; Whyte & Parish, 1984, p. 112). Betrothed state, as has been discussed in the previous chapter, begins with the procedure or commitment undertaken through which a couple themselves or their parents consent to the future marriage. Furthermore, never married to betrothal and then to marriage is mostly regarded as a one-way transition. "Once the betrothal stage was passed it was almost impossible to withdraw from the match" (Baker, 1979, p. 125) because "it does not appear that simply 'falling out of

love' is readily accepted by public opinion" (Whyte & Parish, 1984, p. 124). Based on the empirical observation of Chinese women's experience, we can reasonably conceptualize a marriage scheme of Chinese women in the following multistate diagram:

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Fig. 4.1 Multistate Diagram for Transition Towards
Married State, China In-Depth Fertility Survey, 1985
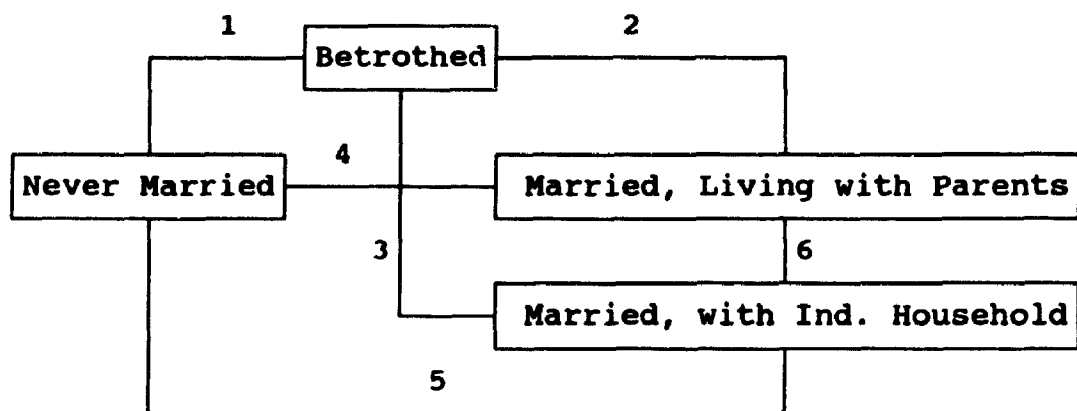
There are six, plus combinations, of transitions towards married state in this diagram. With a view to the previous discussion, we might elect to concentrate on the combinations of path 1 with paths 2 or 3 to examine the factors that affect ever betrothed women in their transition to married state. For those who have not experienced the betrothed state, path 4 and 5 can be jointly examined to gain insight into the factors influencing the transition from never married to married state. Path 6 shows living arrangement transition after first marriage, which is excluded from subsequent analysis as the main concern in the current study is on the transition to first married state.

4.2 Analytical Framework and Hypotheses

In Chapter 2 we have reviewed behavioural theories and mathematical models on first marriage and presented a theoretical synthesis put forward by Burch (1990a). For the purpose of analyzing the present Chinese data, we propose a simple modification of the model as an analytical framework, in which marriage can be seen as a function of 1) motivation to marry [with both social and individual components] and 2) probability of finding a suitable mate, which in turn is a function of a) the definition of 'suitable', b) age-sex ratio and c) personal qualities in terms of educational and occupational status, as well as physical attractiveness. This

scheme reconceptualizes the broad behavioural terms into specific factors that exert influences in the marriage process, particularly in terms of mode of mate selection and betrothal.

4.2.1 Motivation: its individual ana social components

Motivation refers to the aspiration or inclinat´ɩn to marry, derived from individual factors as well as from social structure. On the one hand, many parents, with the support of influential kin, exert pressure to marry off their grown daughter when a prospective mate for her is found. Parents may also motivate their sons to find wives in order to acquire the services of a daughter-in-law or to enjoy their grandsons. Individual's motivation to comply with these 'norms' becomes more evident in the case of arranged marriage. In general, individuals in the more traditional settings tend to see themselv:s as lacking in means of choosing own partner and compliance with social norms to marry at influential kin's choice is more common. On the other hand, the increasing practice of young people taking the initiative in negotiating their own free-choice marriage has meant that they themselves felt responsibility of choosing a suitable marriage partner. This informal pre-marital courtship has left no system of spouse reservation that is given social recognition (Croll, 1981, pp. 72, 76). Thus young people tend to be motivated to

undergo self-negotiated mating process. There still exists differences in degree of autonomy in choosing marriage partners among the youth in the rural and urban areas. In this sense, place of residence and mode of mate selection can be seen as possible predictors of the motivation to marry.

4.2.2 Reconceptualization of 'suitable' mate selection

In a broader sense, suitability of potential partner could be seen as being associated with at least three aspects in mate-selection. The availability of potential partners, for example, is a function of sex ratio in the hypothetical marriage pool. The personal qualities are often judged in terms of the socio-economic assets an individual possesses. Finally, who is entitled to define 'suitability', which again, is subject to the mode of mate selection and how much individual or influential kin has a say about the potential mate.

With regard to the issue of sex ratio, empirical studies (e.g. Ye & Bean, 1990) have shown that sex ratio at birth and gender difference in mortality have only 'weak effects'. "There is therefore no a priori reason for assuming that variation in age/sex specific marriage market has influenced age at marriage" (p. 7).

Prominent personal qualities may include educational attainment, work status and physical attractiveness. Although

the last one is regarded as "socially valued attributes" (Nett, 1988, p.199), it is clearly not measurable by conventional standards (Goldman et al., 1984, p. 6).

Educational attainment is of particular interest in the present studies. In the first place, education competes with marriage and childbearing in women's time and energy. Women who attend secondary and tertiary educational institutes would be expected to marry later than those with no school or with only primary education. As the average age of marriage for Chinese women remains relatively low by western standards, a Chinese girl at university or college might find more women in her cohort already married than her counterparts in the developed world could possibly find. In this sense, the delaying effect on marriage due to schooling is more obvious.

Secondly, when predicting age at marital status transitions retrospectively, researchers have often questioned whether such variables as educational attainment reported at the time of survey can be used as predictors with clear causal priority to age at marriage (Waite & Spitze, 1981, pp. 685-686). With regard to the Chinese case, however, the concern about the time-varying nature of education as an explanatory variable can in general be eased. In China, couples usually complete their schooling before marriage. It is a conventional requirement that, with very few exceptions, applicants for school enrolment must maintain unmarried status.

Thirdly, educational attainment may act as a resource that increases a young woman's attractiveness as a marriage partner (Waite & Spitze, 1981, p. 685) and the highly educated usually secure jobs with higher social status under 'the state labour assignment system' (for detail see Whyte & Parish, 1984, p. 120). Moreover, formal education might prompt women "to challenge traditional values and traditional authority structures within the family" (Banister, 1987, p. 138). Educational and economic asset may allow them to gain more independence in defining the standard of suitable mate and searching longer for the 'right' person (Beaujot, 1991, p. 239), given that universal marriage remains the social norm in the Chinese culture. Education is therefore considered as one of the proxy measures of socio-economic status in personal quality.

Closely related to education is the individual's work status, defined here as whether or not the respondent worked for payment. A regular work payment not only guarantees a steady employment position, but also ensures the employees a constant exposure to new ideology on mate selection advocated by the government. Meanwhile, work-share activities and social interaction may provide more opportunities for young people to meet prospective mates. Thus freedom of mate choice resulting from work place contact has won acceptance 'without a dating culture having emerged' (Whyte & Parish, 1984, p. 119).

In sum, we see that educational attainment and work status constitute important dimensions of personal qualities, which in turn contribute to the factor that affects the probability of finding suitable mate.

4.2.3 Hypotheses

In order to capture the impact of the co-variates previously discussed on transition towards betrothed state and the timing of transition towards married state, multivariate analyses are perceived as applicable in the present study. The co-variates in such analyses are selected on the basis of the theoretical orientation and the following empirical considerations.

In the first place, as formal betrothal tends to involve parental or other influential facilitators' intervention, it appears more likely to occur to women with relatively lower l⸱⸱ ٤l of literacy in the more traditional community, presumably in the rural areas.

Secondly, it follows that such an intervention should be more effective for women with lower economic status. Thus we expect that an individual who did not work is more subject to pressure to marry early.

Thirdly, it seems that families capable of taking care of the newly weds' living arrangement find it easier to have their unwed youngsters betrothed, and marriage is likely to

occur soon. Conversely, if establishing independent household turns out to be the couple's only alternative upon marriage, betrothal is more difficult to contract and marriage is most likely to be postponed. The settlement of living arrangement upon marriage, usually through the provision of housing for the newlyweds, makes the marriage occur sooner. Empirically, the association between age at marriage and post-marital residence with parents is not inconsistent with such a hypothesis that living with parents facilitates early marriage.

We therefore hypothesize that

(1) women with rural residence, experiencing arranged marriage are more likely to betroth and to enter an early marriage.

(2) women with lower educational attainment and no wage employment, and having obtained an arrangement of living with couple's parents during the marriage negotiation process have greater likelihood of betrothal and are more likely to be motivated to marry early. On the other hand, women with comparatively higher educational attainment and regular wage employment, though advantageous in eligibility for marriage, are likely to be less motivated to enter early marriage, due to relatively higher degree of economic independence and time needed to complete schooling.

(3) Considering the impact of government policy intervention at different time periods, women marrying in the

1970s are more likely to experience later marriage than those who married in the 1950s, 1960s and 1980s.

(4) women who have been betrothed are more likely to experience an accelerated marriage process.

Chapter 5

Data and Methodology

5.1 Data and Restricted Sample

Quantitative information collection on marriage is a fairly recent undertaking in China, although it has been reported that, as early as in the 1930s, the Department of Agricultural Economics at Nanjing University conducted the Chinese Farm Population Survey in 16 provinces between 1929-1931. Findings from the survey show that the mean age at first marriage was 21.3 for men and 17.5 for women (Ye & Bean, 1990, p. 8).

In the 1980s three large scale surveys were conducted at the provincial and municipal levels. A 1/1000 Fertility Survey of China was organized by the Family Planning Commission in 1982. An Urban Family Survey was carried out under the direction of the Sociology Institute of the Chinese Academy of Social Science in five large cities of Beijing, Tianjin, Shanghai, Nanjing and Chengdu. However, by far the largest undertaking was the China In-Depth Fertility Survey (Phase I and II) covering seven provinces and the two largest cities.

China In-Depth Fertility Survey (Phase I) was conducted by China's State Statistics Bureau in 1985 in the provinces of Shaanxi, Hebei and the municipality of Shanghai. Although the three survey areas are not selected to comprise a

comprehensive sample at the national level, each data set does represent a typical region. Shanghai Municipality is well known to be a metropolis of the world and Shanghai data can be used to analyze marital and childbearing behaviour of women in a large urban area. Shaanxi is seen as "a typical inland province of China..., less developed than Hebei" (Department of Population Statistics, 1986, p. 3). Studies based on Shaanxi data might be appropriate if a researcher is interested in marriage and fertility in the less developed areas in China. Being "a relatively developed province in industrial and agricultural production and in education", Hebei is referred to as a "typical province of North China" (Department of Population Statistics, 1986, pp. 3, 5). Many empirical studies have considered Hebei as "a good example of the average situation in China" (Wang, 1988, p. 256; also see Ye & Bean, 1990; Zhang, 1990).

The present study has also selected Hebei data out of the China In-Depth Fertility Survey (Phase I) sample. This province is located in the northern part of China (see attached map). In over three decades following the founding of the People's Republic, Hebei population increased from 35.9 million in 1953 to 39.4 million in 1964, and over 53 million by 1982 (Population Census Office, 1985, pp. 537, 556-557). Surrounding Beijing and another metropolitan city Tianjin, Hebei itself has about eleven big and medium sized cities under its jurisdiction, enjoying a moderate level of

THE PEOPLE'S REPUBLIC OF CHINA

Shaanxi

Hebei

Shanghai
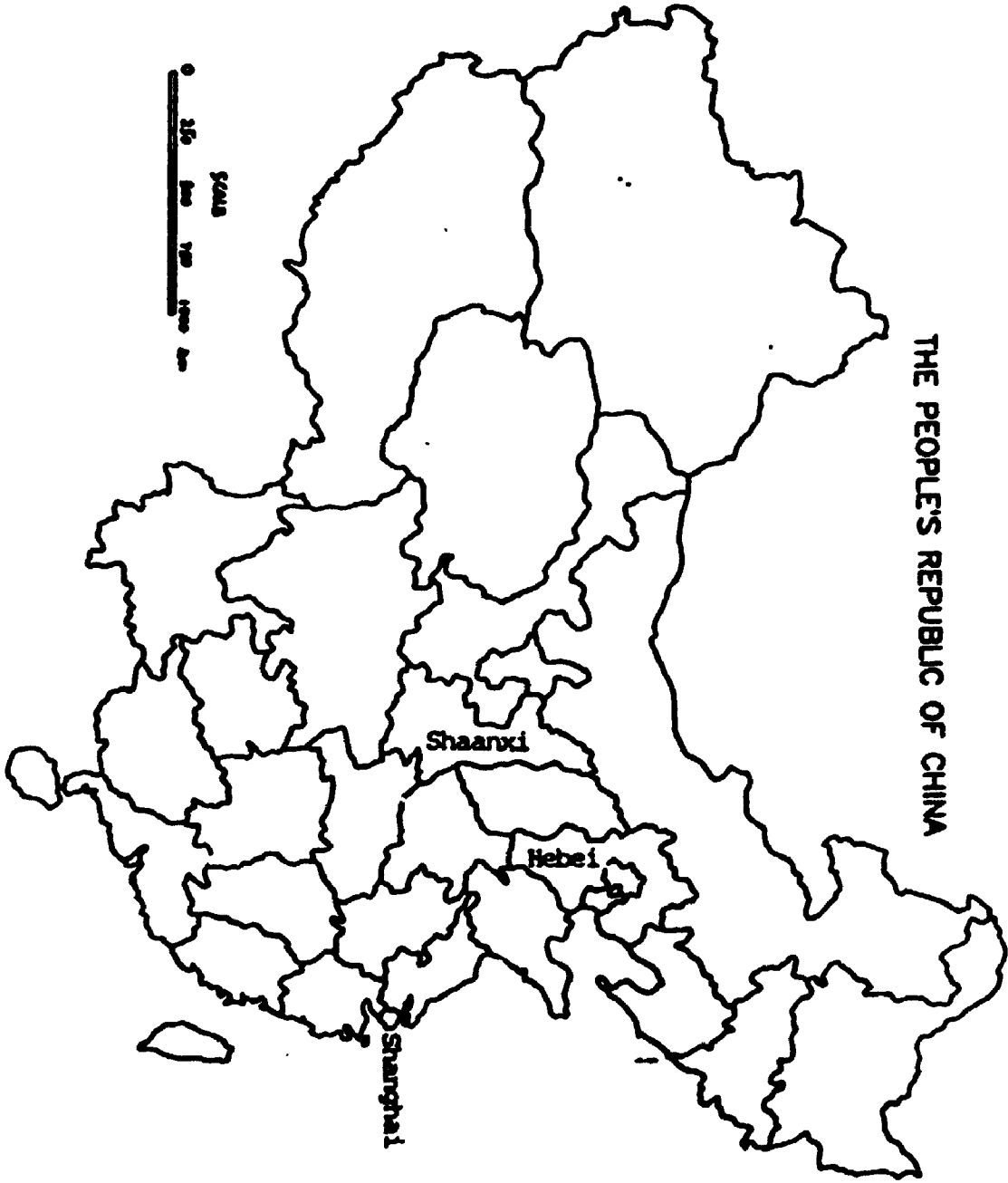
urbanization. According to the 1982 census, the level of urbanization of Hebei stands at 13.70% against the national level at 20.58% (Population Census Office, 1985, p. 564). By 1991, urbanization level of Hebei rose to 19.1%. Meanwhile the national level rises to 26.2% (see Zeng et al., 1991, p. 438). On the other hand, it comprises a moderately developed North-China agriculture plain and backward north-west mountain areas, presenting a wide spectrum of agrarian economic development. No attempt is made to treat Hebei data as a representative sample of the Chinese women as a whole. However, the general characteristics of the population profile identified in Hebei resemble those found at the national level. Selected characteristics of demographic profile of China and Hebei are presented in Table 5.1.

Hebei sample contains 5080 cases of ever-married women with 75% of the respondents reported to have experienced betrothal and 25% non-betrothed. There are about 81.6% of total sample population reporting rural residential locality and over 18% of the respondents having urban registration, closely resembling the typical distribution pattern of about 21% urban residents in the Chinese population.

**TABLE 5.1   POPULATION PROFILE OF CHINA AND HEBEI
(SUMMARY TABLE OF SELECTED CHARACTERISTICS)**

	Population (in million)			Increase (in percent)		Urbanization level
Year	1953	1964	1982	53-64	64-82	1982
China	601.94	691.22	1003.93	14.83	45.24	20.58
Hebei	35.98	39.42	53.01	9.56	34.47	13.70

Sources: 1982 Population Census of China (Results of Computer Tabulation), Population Census Office under the State Council and Department of Population Statistics, State Statistical Bureau, People's Republic of China, Beijing, July 1985, pp. 537-538; Table 1, pp. 556-557; (calculated based on) Table 5, pp. 564-565; Table 8, p. 570; (calculated based on) Table 10, pp. 573-574.

Like some of the countries taking part in the World Fertility Survey program, China In-Depth Fertility Survey also provides restricted samples containing only ever-married respondents. For the purpose of studying marital status transition, a restricted sample has given rise to statistical problems because the respondents are selected under the criterion that they possess some pre-specified trait, i.e. ever-married in the present case. As Namboodiri and Suchindran (1987) point out: "One of the special features of survival data is that usually such data are censored" (p. 2). In ordinary regression analysis, the parameter estimates are biased "to the extent of representing all women who ever marry by those who had married before survey" (Rao, 1987, p. 31). Although some mathematical models, such as Coale and McNeil model can tackle this problem by "accommodating the terms indicating conditional probabilities into likelihood function", only mean (μ) and standard deviation (σ) of age at first marriage, which are discussed in Chapter 2, can be estimated. "It is not possible to estimate the third parameter p, the proportion ever married because the parameter does not appear in the likelihood function in this restricted sample" (Rao, 1987, p. 32). This thesis therefore makes no further attempt to fit the data into the previously discussed mathematical models, but proceeds to conduct a multistate /multivariate analysis.

5.2 Measurement of Variables

A special note on the measurement of betrothal is in order here. In CIDFS data, the questions regarding betrothal are worded as:

"In what month and year did you marry?"
"Thinking back to the time before you were first married, were you betrothed?" and
"For how long were you betrothed?"
(Department of Population Statistics, 1986, pp. 9, 145).

Thus the entry time of betrothal can be calculated with reference to marriage date. However, as no further question has been asked about whether a betrothal ceremony has taken place, a respondent could refer to betrothal either as a formal occasion of engagement, or simply as a time point at which she 'established relationship' with her marriage partner. This implication of betrothal is used throughout our analysis. In addition, although the government-advocated new ideology discourages the practice of betrothal, respondents still tend to think that betrothal carries the positive implication that marriage is a serious undertaking with a certain form of social approval. As long as they were betrothed prior to marriage, they would be willing to report the event, producing a fairly high percentage of betrothed respondents in the sampling provinces. Thus the recording of the event should be largely reliable.

Other covariates in the hazards models are as follows.

<u>Age cohort</u>: Age cohort is classified into 20-24, 25-34, 35-44, 45-49 age groups. The division of the sample is based on empirical analyses which suggest a substantial difference in marital timing for the four groups that married approximately in the order of 1980s, 1970s, 1960s and 1950s. Besides, since the mean age at marriage for the total sampling respondents is found to be over 20, ever-married women in 16-19 age group are excluded from the subsequent analysis to avoid misleading results. Thus a total of 5043 women are included in this analysis. While in multistate analysis, age groups of 25-34 and 35-44 are further divided into five-year categories, the multivariate analysis is done on the four-category basis to reduce number of categories in co-variate analysis.

<u>Place of residence</u>: divided into rural and urban residence groups.

<u>Education</u>: divided into categories of no-schooling, primary and secondary and above levels of education.

<u>Work status</u>: classified into worked and not-worked groups.

<u>Types of marriage</u>: In CIDFS data, the question "Who arranged marriage?" prompted the respondents to identify the ty.. s of marriage. The respondents were given the choice in the order of (0) No one (1) Her parents (2) Her brother/sister (3) Other relative (4) Matchmaker and, (5) Other, which requires further specification (Department of Population Statistics, 1986, p. 146).

For types of marriage, we assign the response 'no one' as self-negotiated marriage, referred to as love-marriage; those arranged by parents, her sibling, other relative, matchmaker or others are regarded as arranged marriage.

<u>Living arrangement upon marriage</u>: differentiated by living with pai..its and establishing independent household.
In CIDFS data, the question regarding living arrangement are worded as:

"At the beginning of your (first) marriage did you
and your husband live with your /your husbands's
parents?" and

"How long did you and your husband live with them?"
(Department of Population Statistics, 1986, p. 146)

Thus the response to the question should be considered as
reporting the living arrangement at the time of first
marriage, rather than that at survey time. Although in
temporal order a couple ordinarily enters the married state
before taking up residence, the special characteristic of the
variable makes it justifiable to include living arrangement in
the multivariate analysis, for an agreement on living
arrangement is usually reached in the negotiation process
before the wedding.

Betrothal: divided into betrothed and non-betrothed group and
used only in proportional hazards model of marriage.

Analysis will be conducted on relative risks for
different groups and identify higher and lower risk categories
for betrothal and early marriage.

5.3 Methodology

Owing to the development of methodologies of proportional
hazards model and other survival analyses, there has been an
increasing interest in studying continuous processes of event

history in social science. The data used in survival analysis are referred to as event histories. As an individual's life can be characterized by a particular sequence of events, defined as the qualitative changes that occur at specific points in time, the best way to study them (as well as their causes and effects) is through complete (or partially complete) information on the number, timing, and sequence of the events (Rajulton, 1992, p. 1). Since most cross-sectional surveys collect retrospective information on these events, these data can be effectively analyzed in survival models.

5.3.1 Multistate life table analysis

The first step in our substantive analysis is a multistate analysis. "The probabilistic structure of the multistate life table is that of a continuous-time nonhomogeneous Markov [and semi-Markov] process with finite state space" (Namboodiri & Suchindran, 1987, pp. 137-138). In a multistate life table applied to our marital status transition model, we use as a summary measure the expected length of sojourn time in state j (betrothed state, taking the present model for example) between times s and t, given occupancy of state i (never married state) at time s (when a significant number of women entered marriage market, say at age 15). After staying in never married state i for a random duration, some of them move to state j. As this state is a

non-absorbing one, the process stays there for a random duration and then moves to another state k (for example, the first married state) at time u. This continues until the observation period ends or an absorbing state is reached. In this case first marriage is treated as the absorbing state, defined as the state "once entered cannot be left - depending on the type of analysis" (Rajulton, 1989, p. 8).

The multistate analysis is carried out with computer program LIFEHIST, which provides transition probabilities of various state sequences under Markovian and semi-Markovian assumptions. Marital status transitions are analyzed in a stochastic process, which is a collection of random variables that describe the <u>evolution of a process</u> over time. According to Markov assumption, "the occurrence of the event of interest (or transition from one state to another) depend directly on that of the preceding event (or state), and only on it" (Rajulton, 1992, pp. 5-6). The state transition probability is expressed as $P_{ik}(s,u)$, following the notation in the previous paragraph. Here it satisfies the condition that $P_{ik}(s,u)>0$ and $\Sigma P_{ik}(s,u)=1$ for all i, and summing over k, since an individual ought to be found in any one of the states in the system, given a specific origin state. With this stochastic property, we note that a Markov model is such that the transition rates are constant across the time difference (u-s) and across individuals. It is this constancy of rates which gives rise to Markov model's simplicity (For detail see

Rajulton, 1992, p. 7).

Although the occurrence of a preceding event has a great impact on the likelihood of the occurrence of the following event, it has been argued that the duration in each state before making a transition also exerts influence. A semi-Markov model is thus proposed to consider "changes in states according to Markov chain but also allows the distribution of time intervals between successive transitions to be arbitrary and to depend on the state of origin (as in Markov chain) as well as on the state of destination (unlike a Markov chain)". Under semi-Markov assumption, "the occurrence of the event of interest depends both on the preceding and succeeding events, and on the length of duration between the two events" (Rajulton, 1989, p. 11).

In taking timing and length of duration into consideration, let s_i be the state in S in a respondent's sample path and y_i be the sojourn time (duration) taken between s_{i-1} to s_i. We further assume that x_0 as the age at which state s_1 was entered and $w_i = (s_i, y_i, x_i)$ denotes the i-th transition among the states of S at age x_i. Hence $w_1 = (s_1, y_1, x_0)$, $w_2 = (s_2, y_2, x_1)$, etc. When the first (n-1) steps of a sample path $w^{(n-1)}$ is known, a homogenous or age-independent semi-Markov model can be specified by assuming that the conditional probability of going to state s_n in t or less time units does not depend on the number of transitions (n-1) nor on the age x_{n-1} at which an individual enters state s_{n-1} (Rajulton, 1989,

pp. 11-12).

With the homogenous semi-Markov model so specified, we look at the state entered at the n-th step and the sojourn time in state (S_{n-1}). Let $s_n=k$ and $s_{n-1}=j$, the conditional probability of transition from state j to state k in t or less time units can be denoted by $A_{jk}(t)$, which is referred to as the first passage probability in the subsequent analysis.

In the marriage scheme specified earlier, two or three state transitions, namely, from never married to married, or from never married to married via betrothed state are perceived. From the state transition probabilities, life table functions of expected number of survivors in each state and expected length of time period to be spent in each state (all these being age specific) can be calculated. It is of particular interest to examine the _conditional_ probability of transition from never married to married state, in which the term _conditional_ specifies whether the individual experienced betrothed state or not, thus assisting in finding the association between betrothal and early marriage. This is done in part by analyzing the first passage (cumulative) probability under semi-Markov assumption.

5.3.2 Multivariate analysis

5.3.2.1 Proportional hazards model

Although survival models are of great assistance in

identifying important covariates that affect individual's survival time in each state, they fail to allow for observation on the covariate effects in a multivariate context. It might be tempting to select a group of respondents with chosen socio-economic characteristics and estimate several survival functions. However, this procedure would quickly reduce the sample size and cause the estimates to be unreliable. In other words, an analysis based on several survival tables, each with small number of cases, is problematic, especially when many covariates are introduced into each model.

Based on these considerations, a proportional hazards model is selected to further analyze the co-variate sets that account for the variations in transition rates for groups of different socio-economic characteristics.

Proportional hazards model was initially introduced by Cox (1972) and applied to demographic studies widely. Excellent discussions on proportional hazards model can be found in Menken et al., 1981; Teachman, 1982; and Balakrishnan et al., 1987. Here only a brief presentation of the model is provided.

Proportional hazards model combines aspects of the life table and multiple regression. "Suppose $h(t; z)$ is the hazard function for an individual with covariate vector z. The proportional hazards model is given by

$$h(t;z) = h_0(t)\exp(\beta'z)$$

where β is a vector of unknown regression coefficients and $h_0(t)$ is an unknown hazard function for an individual with covariate vector $z = 0$ " (Hopkins, 1990, p. 769). The principal assumptions are that population heterogeneity is captured by the set of covariates included in the model and that the relative risks maintain constant during the entire process of transition to married state. The model allows the risk to depend not only on time, but on the socio-demographic characteristics of individuals.

Having been focused on the effect of covariates, we would also like to make specific reference to inter group differences in survival functions. Then the baseline hazard function should be estimated. We have the survivorship function

$$S(t;z) = [S_0(t)]^{\exp(\beta,z)}$$

where $[S_0(t)]$ is the survivorship function for the unspecified baseline group. Each exponential of the coefficients in $S_0(t)^{e(z,\beta)}$ indicates the effect of the covariate on the hazard function for the specific group with

characteristics z. When there are no covariates present $e^{(z,\beta)}$ reduces to unity. Values greater than 1 indicate that the relative risk is greater for this group, compared with the baseline group. In the current analysis, the BMDP computer program (BMDP2L) for Cox model is used. Then the survivorship probabilities for other groups can be calculated under the assumption that the relative risks remain the same at all durations. Since the development of proportional hazards model has combined life table and regression analysis in a multivariate context, there is no need to select subgroups of respondents for separate study which may cause drastic reduction of sub-sample size and making estimates unstable.

5.3.2.2 Logistic regression

With particular reference to the betrothal model, the qualitative character of the dependent variable [betrothed or not] makes it possible to use some form of logit regression. In an attempt to examine the robustness of the findings in hazard analysis of betrothal, an alternative procedure is proposed to employ logistic regression for the betrothal model. This procedure will yield regression-like coefficients which allow an assessment of the relevance of a particular predictor. Judgements of adequacy of this model will be based on substantive grounds and significance of parameter estimates will also be considered.

In standard logistic regression, the dependent variable is dichotomous: the event did or did not occur to individuals. The following functional form is adopted:

$$\ln\left[\frac{P}{1-P}\right] = \alpha + \beta X + u$$

Where P is the value of the dependent variable between 0 and 1. X is a vector of the individual's covariates and β is the associated vector of regression coefficients. α is the constant and u is the unobserved disturbance term. Solving this equation for P we get

$$P = \frac{1}{1 + e^{-(\alpha + \beta X + u)}}$$

Since P is binary, i.e. either 0 or 1. The procedure used in this case is the maximum likelihood method (Ramanathan, 1989, pp. 183, 475-476). The likelihood of experiencing the event will be obtained for logistic regression. The current study uses LOGISTIC REGRESSION package in SPSS in which the assumption is made "that either the event has occurred (and when it occurred is irrelevant) or it has not" (Trussell & Rao, 1989, p. 537). The same set of

covariates for hazard model of betrothal is analyzed. In this approach, probabilities, not rates (employed in hazard analysis), are modelled. In general, "the two approaches must yield similar qualitative results, because rates and probabilities usually correspond closely" (Trussell & Rao, 1989, p. 538).

5.3.3 Statistical issues in application of models

With analysis of retrospective histories collected in cross-sectional surveys, selectivity and censoring usually turn out to be problems.

Selectivity is caused by sample selection criteria which exercise restraints on the group of respondents in the sample. Rajulton (1992) argues that, from the point of view of statistical analysis, "the sample may not be representative of all persons in a particular cohort of interest because of the death or emigration of some members before the time of enquiry; the individuals thus excluded from observation may be a select group", and the individuals from whom information is obtained may not represent the study population (p. 2). With reference to the study of CIDFS data, Ye and Bean (1990) also believe that "historically if early marriage is linked to early and rapid childbearing among more traditional families, the likelihood of maternal mortality is then also likely to be higher" (p. 10). Thus the older survivors in the study may

represent women who experience fewer cases of betrothal and married later than those in the same cohorts who did not survive. Furthermore, as we have emphasized that the restricted sample only contains ever-married women, those who married after the date of the survey, particularly women in the younger cohorts, are excluded by sample selection criteria.

The issue of censoring arises from the incomplete experience of the event under study. For instance, in the provincial samples of the In-Depth Fertility Survey data, over 70% of women are reported to have experienced betrothal. In the proportional hazards model of betrothal, the non-betrothed respondents are regarded as withdrawn from exposure of the event of interest, thereby overcoming the censoring problem to some extent.

In addition, recalling error or systematic mis-timing of events can yield spurious trends in analysis. Errors in reporting timing (e.g. of betrothal and marriage especially those which occurred some thirty years ago) are quite common, although the logical sequence of events is usually correctly reported (Rajulton, 1992 p. 3). In this case, we have to exercise caution in interpretation and to derive correct information from the data file available.

5.4 Summary of the Chapter

This chapter deals with the issues of data and methods before undertaking the substantive analysis. In the first section, the feature of China In-Depth Fertility Survey is presented and we highlight the fact that the survey provides a restricted sample with only ever-married women. The potential problem of using samples containing only ever-married women for Coale-McNeil or other mathematical models of first marriage is discussed. In fact, a sample with only ever-married women may also pose problems for multistate and hazards analyses. Ordinarily, in multistate population analysis, one could expect that "individuals with high propensities of exiting from a population will drop out of that population in greater numbers than their fellow members with lower exit rates, thereby eventually transforming that population into one consisting mostly of persons with low exit rates" (Rogers, 1992, p. 31). In the present study, everyone in the population is eventually married regardless of age and length of exposure in the hypothetical marriage pool. We would not expect to see a population transformed into one consisting of persons with low exit rate eventually.

With a view to the fact that CIDFS is not a national sample, but regional data composed of samples at the provincial or centrally-administered municipal level, the data set from Hebei Province is selected. Subsequently the demographic situation of Hebei province in relation to that at the national level is briefly discussed.

The measurement and operationalization of the variables for substantive analysis are considered in the second section. Particularly, we have given some further thought on the measurement of betrothal in the survey to understand the implications of the response to that item, thereby treating betrothal as an important state in the multistate /multivariate analysis.

Section Three is devoted to the methodology used in this study. The rationale and procedure of multistate techniques are presented with reference to Markov and semi-Markov assumptions underlying the life table analysis. Formalization and application of proportional hazards model are discussed. The virtues of life table and multiple regression analysis are combined in a multivariate context by employing this model. In order to replicate the findings of hazards analysis for betrothal, an alternative is suggested to use a logistic regression. Procedure of logistic analysis is also presented in Section Three. Problems associated with the study of retrospective data collected in cross-sectional survey are raised, with particular reference to censoring, selectivity and measurement error. Finally, a discussion concerning to what extent these problems can be dealt with in the multistate /multivariate analysis is provided.

Chapter 6

Multistate /Multivariate Analysis

6.1 Trends in Age at Betrothal and Marriage

The mean age at first marriage for Chinese women as a whole was 19 in the 1950s, 19.8 in the 1960s, 21.6 in the 1970s, and 22.8 in 1980-82 (see Coale et al. 1991, p. 390; Ye & Bean, 1990, p. 12; Peng, 1991, p. 120). Peng (1991, p. 119) further reported that "since the early 1980s, the age at marriage has decreased slightly but still at the level of 22.66 years in 1982 and 22.54 in 1986". In general, changes in age at marriage for ever-married Chinese women have been reported as showing an inverted U-shaped pattern over the last four decades.

For ever married Hebei women in CIDFS data set, mean age at first marriage rose from 17.07 at early 1950s to 20.48 by late 1960s. In the heat of family planning campaign in the 1970s, age at marriage continued to increase from 21.71 to a peak of 23.01 by the second half of the decade. Upon entering the initial years of the 1980s, mean age began to drop to 22.44 (Table 6.1). The changing pattern of Hebei women's age at marriage is in general compatible with the findings at the national level (see Fig 6.1.1 and 6.1.2).

**TABLE 6.1 WOMEN'S MEAN AGE AT FIRST MARRIAGE
CHINA IN-DEPTH FERTILITY SURVEY (PHASE I), HEBEI
1949 - 1985**

Year	49-55	56-60	61-65	66-70	71-75	76-80	81-85	Total
Mean age at marriage	17.07	18.99	19.84	20.48	21.71	23.01	22.44	21.32
N	213	473	533	831	809	1281	900	5040
Std. Dev.	1.64	2.00	2.65	2.66	2.58	2.28	2.44	2.88

Source: CIDFS, Hebei Data Base. (1985). Based on author's computer reconstruction of the respondents' age at first marriage by five- year intervals.

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Fig.6.1.1 Mean Age at First
Marriage, China (1950-)
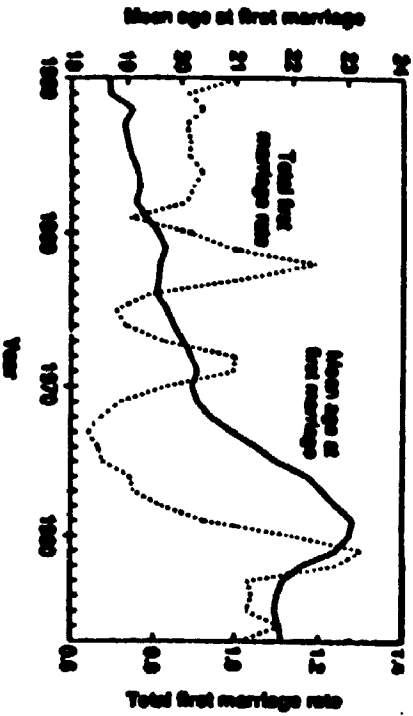
Source: Coale et al. (1991). Recent trends
in fertility and nuptiality in
China. Science, 251, p. 390.

Fig.6.1.2 Mean Age at First
Marriage, Hebei Province, China
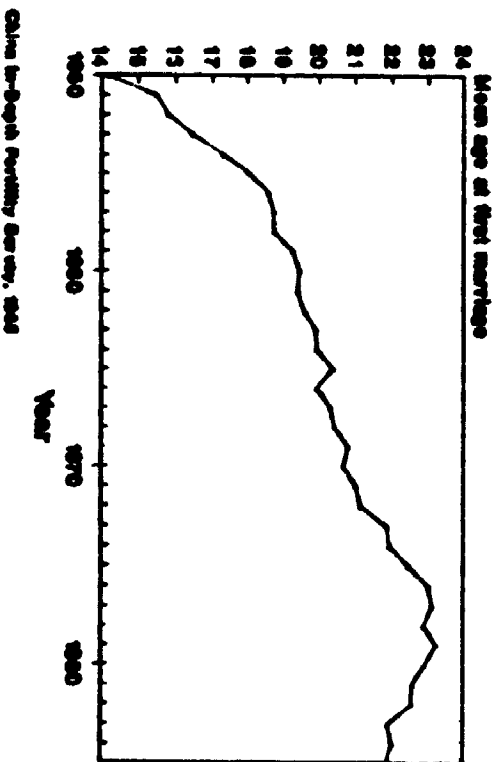
Source: CIDFS, Hebei Data Base. (1985). Based on
computer reconstruction of the respondents'
age at first marriage by year.

In order to understand the cohort marital behaviour in the midst of rapid change in age at first marriage, a further investigation by age group is undertaken. For the 20-24 age cohort, whose marriage approximately took place around the turn of 1980s and thereafter, mean age at marriage is found to be about 20.64. Admittedly, this mean age will probably go up as more time evolves and more women in this cohort marry. Married mainly in the 1970s, 25-29 and 30-34 cohorts had mean ages 22.46 and 22.07, the highest among all cohorts. Compared with their younger counterparts, 35-39 and 40-44 cohorts had lower mean ages of marriage. However, 45-49 cohort had the lowest mean age of 19.73, when women in this cohort got married mainly in the 1950s. When respondents are divided into ever-betrothed or non-betrothed categories, it has been found that betrothed women consistently married younger than the non-betrothed. These findings are summarized in Table 6.2 and 6.3.

TABLE 6.2   MEAN AGE AT FIRST MARRIAGE BY AGE GROUPS
CHINA IN-DEPTH FERTILITY SURVEY (PHASE I),
HEBEI, CHINA, 1985

Age Cohort	20-24	25-29	30-34	35-39	40-44	45-49	Total
Mean age at marriage	20.64	22.46	22.07	21.03	20.10	19.73	21.32
N	536	1145	1275	907	604	573	5040
Std. Dev.	1.64	2.01	2.99	2.95	3.13	3.21	2.89

Source: CIDFS, Hebei Data Base. (1985). Based on author's computer reconstruction of the respondents' age at first marriage by birth cohorts.

**TABLE 6.3   MEAN AGE AT MARRIAGE FOR
BETROTHED & NON-BETROTHED WOMEN BY AGE GROUPS
CHINA IN-DEPTH FERTILITY SURVEY (PHASE I),
HEBEI, CHINA, 1985**

Age Groups	Betrothal	Age at marriage	N
20-24	Non-Betrothed	20.19	78
	Betrothed	18.35	458
25-29	Non-Betrothed	21.82	195
	Betrothed	19.71	950
30-34	Non-Betrothed	21.55	255
	Betrothed	19.56	1020
35-39	Non-Betrothed	20.00	240
	Betrothed	19.00	667
40-44	Non-Betrothed	19.60	238
	Betrothed	18.35	369
45-49	Non-Betrothed	19.13	267
	Betrothed	18.03	306

Source: CIDFS, Hebei Data Base. (1985). Based on author's computer reconstruction of age at first marriage for ever-betrothed respondents and non-betrothed respondents.

6.2 Multistate Analysis

6.2.1 Cohort experience

The cumulative transition probabilities from never married to betrothed, and to married state are presented in six age groups (Table 6.4). The division of the sample is based on empirical observations that there are substantial fluctuations in transition probabilities occurring at various time periods. While NM-FM denotes the direct transition from never married to married state, NM-BE refers to the transition from never married to betrothed state. The term TOTAL is the cumulative probabilities of total transition from the never married state to either betrothed or married state. Furthermore, an examination of marriage age distribution has shown that approximately the earliest age of a significant number of first marriages is above 15. We therefore assume that the respondents enter the never married state (NM) at age 15 in the multistate analysis. It should be noted that the origin of time scale for the hazard analysis of betrothal in the next section is set differently based on some substantive considerations.

Cohort comparison shows a clear trend towards rising age at marriage until 25-29 birth cohort. For the oldest 45-49 age group, the direct transition probability of first marriage by minimum legal marriage age 18 is 26%, the highest among all age groups. For the 40-44 cohort the probability is about 20.3%. The probabilities continue to decline across cohorts

and dip down to less than 2% at 25-29 age group. This finding indicates that early marriage was more prevalent in the early 1950s.

Land reform has greatly stimulated agricultural productivity as the majority of the farming households began to harvest on their own fields rather than work as tenants on landlords' lot. The future prosperity of the households, as might be perceived, was associated with number of labourers available who could contribute more and earlier to household income. Betrothal would not only ensure the recruitment of a new family member, but more importantly, early marriage resulting from betrothal would also lead to more childbearing, all of which make economic sense. The evidence of early marriage on the part of the 45-49 age group is reflected on Figure 6.2.

Following the age groups, we find that, by age 20, the 40-44 and 35-39 age groups show much higher total transition probabilities of 81% and 75% in leaving never married state (TOTAL of NM-BE and NM-FM), greatly surpassing two younger cohorts with the same probability of 63% in leaving never married state. This measure used here and after provides an indicator of propensity to leave the married state on the part of women in a given cohort. As marriage for those born between 1941 and 1950 approximately took place in the 1960s, another rise in marriage in response to economic recovery came in sight. Living standards in the rural and urban areas alike

have improved as compared with those in the famine years since the late 1950s. In terms of suitability for marriage, more and more families were capable of sustaining marriage expenses and their grown children became financially eligible to enter into marriage. Hence the increasing probabilities of leaving never married state during that period.

This propensity to leave never married state, however, should be seen in the general trend of gradual increase in age at marriage since the 1950s. The complexity lies in the fact that, although the increasing probabilities of leaving never married state were associated with better economic prospects, the effect of modernization through compulsory education and more openings of employment for economic reconstruction in these years nevertheless kept age at marriage rising gradually. As is indicated in Table 6.4, none of the later cohorts achieved cumulative transition probabilities from never married to married state as high as women in the 45-49 cohort did. However, although "a family planning campaign was visible in the Chinese media from early 1962 until mid-1966", it was not carried out in depth before the country was thrown into a tumultuous state during the first few years of the 'cultural revolution' (Banister, 1987, p. 150).

Findings presented in Table 6.4 also reflect the impact of the national family planning campaign on 25-29 and 30-34 age cohorts, whose marriage largely took place in the 1970s. Cumulative transition probabilities of entering betrothed

state at age 17, one year prior to minimum legal marriage age, for example, stand only at 20% and 28%, whereas the probabilities for other age cohorts at that age have far exceeded 30%. In fact, cumulative transition probabilities of leaving never married state (TOTAL of NM-BE and NM-FM) for the two cohorts could not catch up with those for other age cohorts until about 23 years of age, showing a substantial delay in contracting and entering marriage for the couples in the 1970s. For 20-24 age group, the prime time of their marriage was around early 1980s and the family planning campaign was being carried out at full swing. Local administrative restrictions regulated the acceptable marriage age well above the minimum marriage age promulgated in 1950 Marriage Law (Engel, 1984, p. 958). Thus the transition probability was as low as 8.4% at age 15, with 7.8% of probability of transiting to betrothed state and only 0.56% to first marriage. However, following a relaxation on local restrictions on marriage age through the 1980 Marriage Law, there appeared a boom in marriage for the youngest cohort. First the transition probabilities to betrothed state rose from 21% to 79% between age 16 to 20, surpassing all previous cohorts in magnitude and speed. After reaching the newly promulgated minimum legal marriage age of 20, transition probabilities of leaving never married state went up over 95% within the age of 21 to 23 (Table 6.4).

TABLE 6.4
CUMULATIVE PROBABILITIES OF TRANSITIONS FROM
NEVER MARRIED TO BETROTHED/MARRIED STATE
CHINA IN-DEPTH FERTILITY SURVEY, HEBEI, 1985

Age Cohort	20-24			25-29			30-34		
	TOTAL 536	NM-BE 458	NM-FM 78	TOTAL 1145	NM-BE 950	NM-FM 195	TOTAL 1275	NM-BE 1020	NM-FM 255
15	.0840	.0784	.0056	.0620	.0611	.0009	.1176	.1129	.0047
16	.2220	.2127	.0093	.1153	.1109	.0044	.2110	.1937	.0173
17	.3918	.3750	.0168	.2131	.2017	.0114	.3106	.2816	.0290
18	.5896	.5578	.0317	.3179	.2987	.0192	.4251	.3757	.0494
19	.7631	.7015	.0616	.4725	.4428	.0297	.5318	.4635	.0682
20	.8806	.7892	.0914	.6314	.5869	.0445	.6329	.5490	.0839
21	.9571	.8340	.1231	.7537	.6882	.0655	.7176	.6180	.0996
22	.9963	.8545	.1418	.8620	.7607	.1013	.8102	.6831	.1271
23	1.0000	.8545	.1455	.9406	.8017	.1389	.8886	.7365	.1522
24				.9904	.8253	.1651	.9420	.7671	.1749
25				.9983	.8288	.1694	.9718	.7827	.1890
26				1.0000	.8297	.1703	.9890	.7929	.1961
27							.9945	.7969	.1976
28							1.0000	.8000	.2000

Mean timing of	Betro	Marry		Betro	Marry		Betro	Marry
	18.35	20.19		19.71	21.82		19.56	21.55

Note: TOTAL refers to cumulative probabilities of total
transition from never married state to betrothed or
married state.

NM-BE refers to cumulative probabilities of transition
from never married state to betrothed state.

NM-FM refers to cumulative probabilities of transition
from never married state to first married state.

The mean of timing of betrothal/marriage is calculated
by making use of probabilities adjusted for censoring.

TABLE 6.4 (CONT'D)
CUMULATIVE PROBABILITIES OF TRANSITIONS FROM
NEVER MARRIED TO BETROTHED/MARRIED STATE
CHINA IN-DEPTH FERTILITY SURVEY, HEBEI, 1985

Age Cohort	35-39			40-44			45-49		
	TOTAL 907	NM-BE 667	NM-FM 240	TOTAL 607	NM-BE 369	NM-FM 238	TOTAL 573	NM-BE 306	NM-FM 267
15	.1510	.1301	.0209	.1911	.1483	.0428	.2705	.2024	.0681
16	.2514	.2128	.0386	.3377	.2257	.1120	.3927	.2688	.1239
17	.3881	.3142	.0739	.4893	.3245	.1647	.5096	.3246	.1850
18	.5094	.4046	.1047	.6211	.4185	.2026	.6335	.3735	.2600
19	.6417	.4961	.1455	.7364	.4876	.2488	.7295	.4206	.3089
20	.7508	.5799	.1709	.8105	.5288	.2817	.7976	.4485	.3490
21	.8280	.6207	.2073	.8517	.5519	.2998	.8726	.4712	.4014
22	.8875	.6626	.2249	.8913	.5717	.3196	.9180	.4939	.4241
23	.9239	.6858	.2381	.9193	.5783	.3410	.9442	.5061	.4380
24	.9548	.7067	.2481	.9522	.5865	.3657	.9511	.5096	.4415
25	.9724	.7200	.2525	.9671	.5914	.3756	.9703	.5201	.4503
26	.9868	.7266	.2602	.9786	.5931	.3855	.9808	.5236	.4572
27	.9945	.7321	.2624	.9819	.5964	.3855	.9930	.5305	.4625
28	.9978	.7332	.2646	.9819	.5964	.3855	.9965	.5323	.4642
29	.9978	.7332	.2646	.9868	.6013	.3855	.9965	.5323	.4642
30	.9989	.7343	.2646	.9918	.6046	.3871	.9983	.5340	.4642
31	1.0000	.7354	.2646	.9918	.6046	.3871	1.0000	.5340	.4660
32				.9951	.6063	.3888			
33				.9951	.6063	.3888			
34				.9951	.6063	.3888			
35				.9984	.6079	.3904			
36				1.0000	.6079	.3921			

Mean timing of	Betro	Marry	Betro	Marry	Betro	Marry
	19.00	20.00	18.35	19.60	18.03	19.13

Note: TOTAL refers to cumulative probabilities of total transition from never married state to betrothed or married state.

NM-BE refers to cumulative probabilities of transition from never married state to betrothed state.

NM-FM refers to cumulative probabilities of transition from neve married state to first married state.

The mean of timing of betrothal/marriage is calculated by making use of probabilities adjusted for censoring.

Fig.6.2 Cumulative Probability of
First Marriage by Cohort, Hebei, China

Cohort
— 20-24
+ 25-29
✳ 30-34
◆ 35-39
♦ 40-44
ᚿ 45-49
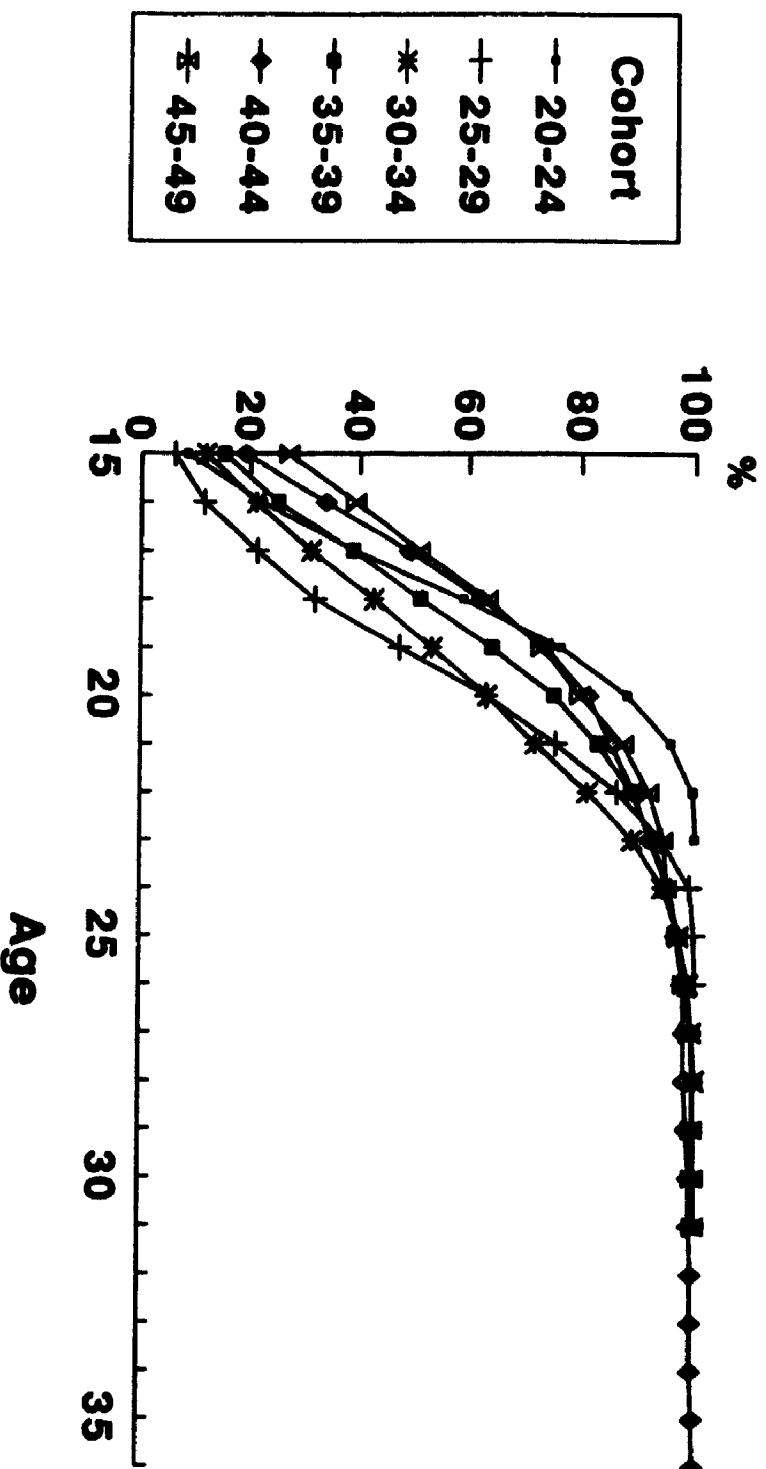
China In-Depth Fertility Survey, 1985

The phenomenon of marriage acceleration for ever-married women in the youngest cohort is also illustrated on the graph in Figure 6.2.

A plot of cumulative transition probabilities from betrothal to married state for different cohorts also highlights the changes in behaviour, showing the accelerating effects of betrothal to first marriage (see Figure 6.3, also see Table 6.5). The magnitude of variation indicates the role of betrothal for each cohort at different time periods. For example, while the cumulative probability of transition to marriage by one year of betrothal is 71% for 45-49 age group, the corresponding transition probability for 25-34 age group is only 53%. For a clear graphic presentation, we have combined the 25-29 and 30-34 age groups as one, and the 35-39 and 40-44 age groups as another. We have also changed the duration interval from one year to half a year to examine the cumulative transition probability changes in more detail. Although the patterns of transition for different cohorts are in general similar, the speed of transiting to married state for 20-24 age group is worth commenting: between one and a half to two years of betrothal the transition probabilities to marry go up from 66% to 82%, much faster than other cohorts. In fact, betrothal in the form of confirming the 'established relation' between partners is gaining popularity and self-negotiated marriage becomes more frequent with the more recent

TABLE 6.5
CUMULATIVE PROBABILITIES OF TRANSITIONS FROM
BETROTHED STATE TO FIRST MARRIED STATE
CHINA IN-DEPTH FERTILITY SURVEY, HEBEI, 1985

Age Cohort	TOTAL	20-24	25-34	35-44	45-49
Case No.	3770	458	1970	1036	306
Years since betrothal					
0.5	.3013	.2838	.2492	.3649	.4477
1	.5857	.5742	.5269	.6669	.7092
1.5	.6549	.6550	.5954	.7288	.7876
2	.8032	.8231	.7543	.8678	.8693
2.5	.8225	.8428	.7756	.8842	.8856
3	.9000	.9432	.8660	.9373	.9281
3.5	.9106	.9476	.8766	.9459	.9542
4	.9448	.9782	.9223	.9653	.9706
4.5	.9499	.9869	.9254	.9710	.9804
5	.9724	.9934	.9589	.9836	.9902
5.5	.9761	.9934	.9635	.9875	.9935
6	.9867	1.0000	.9787	.9932	.9967
6.5	.9886		.9822	.9971	.9967
7	.9936		.9898	.9981	.9967
7.5	.9947		.9914	.9981	.9967
8	.9976		.9970	.9990	.9967
8.5	.9981		.9975	1.0000	.9967
9	.9984		.9975		.9967
9.5	.9989		.9985		.9967
10	1.0000		1.0000		1.0000

Fig.6.3 Probability of Transition
from Betrothal to 1st Marriage

AGE COHORT
— 20-24
+ 25-34
✳ 35-44
■ 45-49

(%) Transition Probability

No. of Years Since Betrothal
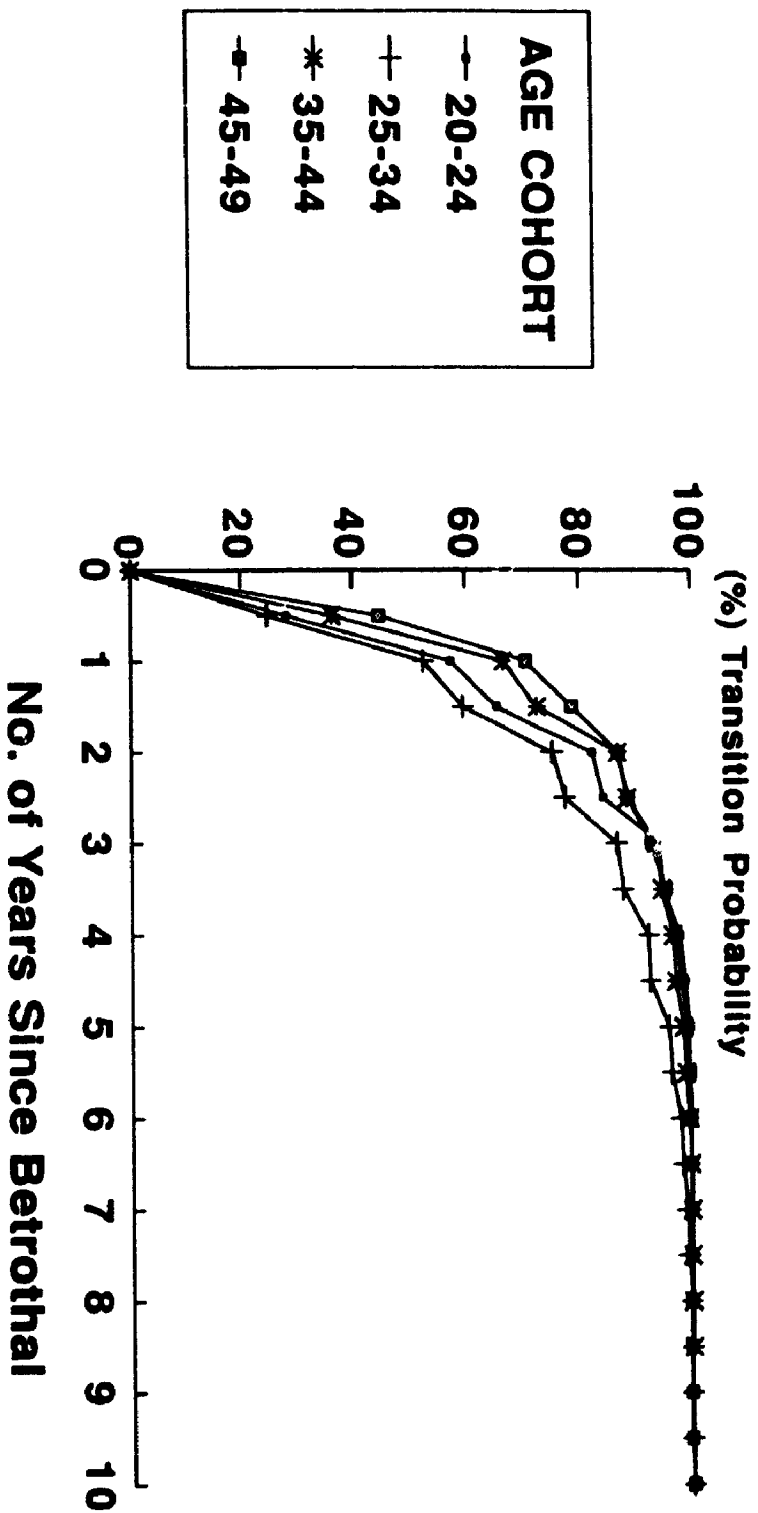
China In-Depth Fertility Survey, Hebei

cohort. Apparently, such an 'informal betrothal', in conjunction with 'formal betrothal' in somewhat more traditional form, may have played an accelerating role in facilitating early marriage, particularly for the ever-married women in 20-24 age group.

6.2.2 Rural-urban difference

As there exists considerable difference in betrothal practice between rural and urban residents, the effect of betrothal can be examined by separating respondents in the sample according to place of residence.

For the 4111 cases of rural women, the cumulative probability of transiting to betrothed state by the legal marriage age 18 (according to 1950 Law) is 42%, and by the legal marriage age 20 (according to 1980 Law) is 63%, whereas the transition probabilities for their urban counterparts (N = 932) at these two ages are 24% and 35% (see Table 6.6). Betrothal appears to be a widely-spread practice in the rural areas. The impact of betrothal in marriage process can be shown in three aspects.

In the first place, when we examine the cumulative transition probabilities of leaving never-married state, we see that rural women have consistently shown greater propensity to leave the never-married state, as is illustrated in Fig. 6.4.

TABLE 6.6
CUMULATIVE PROBABILITIES OF TRANSITIONS FROM
NEVER MARRIED TO BETROTHED/MARRIED STATE
BY PLACE OF RESIDENCE, AND HEBEI PROVINCE, CHINA, 1985

Place of residence	Rural			Urban			Hebei		
	TOTAL 4111	NM-BE 3285	NM-FM 826	TOTAL 932	NM-BE 485	NM-FM 447	TOTAL 5043	NM-BE 3770	NM-FM 1273
15	.1428	.1255	.0173	.0933	.0687	.0247	.1337	.1150	.0186
16	.2476	.2090	.0387	.1717	.1212	.0504	.2336	.1927	.0408
17	.3763	.3155	.0608	.2618	.1738	.0880	.3551	.2893	.0658
18	.5064	.4208	.0856	.3670	.2414	.1255	.4807	.3877	.0930
19	.6427	.5308	.1119	.4646	.2994	.1652	.6098	.4880	.1218
20	.7580	.6252	.1328	.5536	.3530	.2006	.7202	.5749	.1453
21	.8390	.6852	.1537	.6545	.4013	.2532	.8049	.6328	.1721
22	.9029	.7310	.1720	.7661	.4571	.3090	.8777	.6803	.1973
23	.9433	.7604	.1829	.8637	.4850	.3788	.9286	.7095	.2191
24	.9701	.7786	.1914	.9356	.5032	.4324	.9637	.7277	.2360
25	.9842	.7876	.1965	.9624	.5118	.4506	.9802	.7367	.2435
26	.9908	.7923	.1985	.9871	.5161	.4710	.9901	.7412	.2489
27	.9956	.7959	.1997	.9903	.5172	.4732	.9946	.7444	.2502
28	.9971	.7966	.2004	.9968	.5204	.4764	.9970	.7456	.2514
29	.9978	.7974	.2004	.9968	.5204	.4764	.9976	.7462	.2514
30	.9988	.7983	.2004	.9979	.5204	.4775	.9986	.7470	.2516
31	.9990	.7986	.2004	.9989	.5204	.4785	.9990	.7472	.2518
32	.9995	.7988	.2007	.9989	.5204	.4785	.9994	.7474	.2520
33	.9995	.7988	.2007	.9989	.5204	.4785	.9994	.7474	.2520
34	.9995	.7988	.2007	.9989	.5204	.4785	.9994	.7474	.2520
35	1.0000	.7991	.2009	.9989	.5204	.4785	.9998	.7476	.2522
36				1.0000	.5204	.4796	1.0000	.7476	.2524

| Mean timing of	Betro	Marry		Betro	Marry		Betro	Marry
	19.05	19.84		19.57	21.39		19.12	20.39

Note: TOTAL refers to cumulative probabilities of total transition from never married state to betrothed or married state.

NM-BE refers to cumulative probabilities of transition from never married state to betrothed state.

NM-FM refers to cumulative probabilities of transition from never married state to first married state.

The mean of timing of betrothal/marriage is calculated by making use of probabilities adjusted for censoring

Secondly, when the multistate life table technique is applied under Markov assumption that the occurrence of marriage depends directly and solely on that of the preceding event (betrothed or never-married state), we can examine the expected number of individuals in each state at exact age (Rajulton, 1989, p. 35). We find that, starting with 10000 women entering the hypothetical marriage pool at age 15, 62% of rural women have remained neither betrothed nor married at age 18, about 17% are betrothed and 20% are married. For 10000 urban women starting their marital history at age 15, however, as many as 74% of the urban respondents remained neither betrothed nor married at age 18, less than 9% are betrothed and only 17% are married. By age 20, the proportions of never married, betrothed and married rural women are 35%, 19% and 45% respectively, while the proportion distribution for their urban counterparts stands in the order of 53%, 12% and 35%. A comparison of these figures can reveal the difference in patterns of behaviour for rural and urban respondents. The prevalence and timing of betrothal would thus greatly affect the marriage process (see Table 6.7).

Thirdly, for the rural women, the mean age at transition to betrothed state is 19.05 and the mean age at transition to married state is 19.84, on average only nine and a half months after betrothal. For the urban women, the mean age at transition to betrothed state is 19.57 and the mean age at transition to married state is 21.39, with a greater time

lapse of about twenty-two months (see Table 6.6).

The differential waiting time between betrothal and marriage in the villages and cities, according to Banister (1987), is attributable to the fact that "urban women were affected earlier and more than rural women" by the late marriage campaign (p. 158). Aside from the effect of policy intervention, better enforced compulsory education and employment commitment in the cities, such as restrictions on marriage during apprenticeship, may also prolong the waiting time to marriage. Furthermore, the problem of housing shortage in the cities might explain, at least in part, the longer waiting time for the urban couples.

TABLE 6.7
THE EXPECTED NUMBER OF WOMEN IN EACH STATE AT EXACT AGE
BY PLACE OF RESIDENCE (RURAL VERSUS URBAN),
CHINA IN-DEPTH FERTILITY SURVEY, HEBEI, 1985

| Age | Place of Residence | | | | | |
| | Rural | | | Urban | | |
	N.Married	Betrothed	Married	N.Married	Betrothed	Married
15	10000.00	0.00	0.00	10000.00	0.00	0.00
16	8572.12	1235.17	172.71	9066.52	686.70	246.78
17	7523.72	1486.90	989.38	8283.26	830.95	885.79
18	6236.93	1741.30	2021.78	7381.97	874.99	1743.04
19	4935.54	1884.40	3180.06	6330.47	1147.11	2522.41
20	3573.34	1913.83	4512.83	5354.08	1169.34	3476.58
21	2420.34	1699.53	5880.14	4463.52	1045.36	4491.12
22	1610.31	1186.87	7202.82	3454.94	935.46	5609.60
23	970.57	761.95	8267.49	2339.06	912.77	6748.17
24	566.77	418.48	9014.75	1362.66	397.09	8240.25
25	299.20	233.53	9467.27	643.78	182.40	9173.82
26	158.11	107.03	9734.86	375.54	85.84	9538.63
27	92.43	46.22	9861.35	128.76	42.92	9828.33
28	43.78	36.49	9919.73	96.57	10.73	9892.70
29	29.19	12.51	9958.30	32.19	42.92	9924.89
30	21.89	9.80	9968.31	32.19	0.00	9967.81
31	12.16	9.73	9978.11	21.46	0.00	9978.54
32	9.73	2.43	9987.84	10.73	0.00	9989.27
33	4.86	2.43	9992.70	10.73	0.00	9989.27
34	4.86	0.00	9995.14	10.73	0.00	9989.27
35	4.86	0.00	9995.14	10.73	0.00	9989.27
36	0.00	2.43	9997.57	10.73	0.00	9989.27
37	0.00	2.43	9997.57	0.00	0.00	10000.00
38	0.00	2.43	9997.57	0.00	0.00	10000.00
39	0.00	2.43	9997.57	0.00	0.00	10000.00
40	0.00	2.43	9997.57	0.00	0.00	10000.00
41	0.00	2.43	9997.57	0.00	0.00	10000.00
42	0.00	2.43	9997.57	0.00	0.00	10000.00
43	0.00	2.43	9997.57	0.00	0.00	10000.00
44	0.00	2.43	9997.57	0.00	0.00	10000.00
45	0.00	2.43	9997.57	0.00	0.00	10000.00
46	0.00	2.43	9997.57	0.00	0.00	10000.00
47	0.00	2.43	9997.57	0.00	0.00	10000.00
48	0.00	2.43	9997.57	0.00	0.00	10000.00
49	0.00	2.43	9997.57	0.00	0.00	10000.00

Fig.6.4 Cumulative Probabilities for Respondents to Leave Never Married State

Legend
* RURAL
+ URBAN
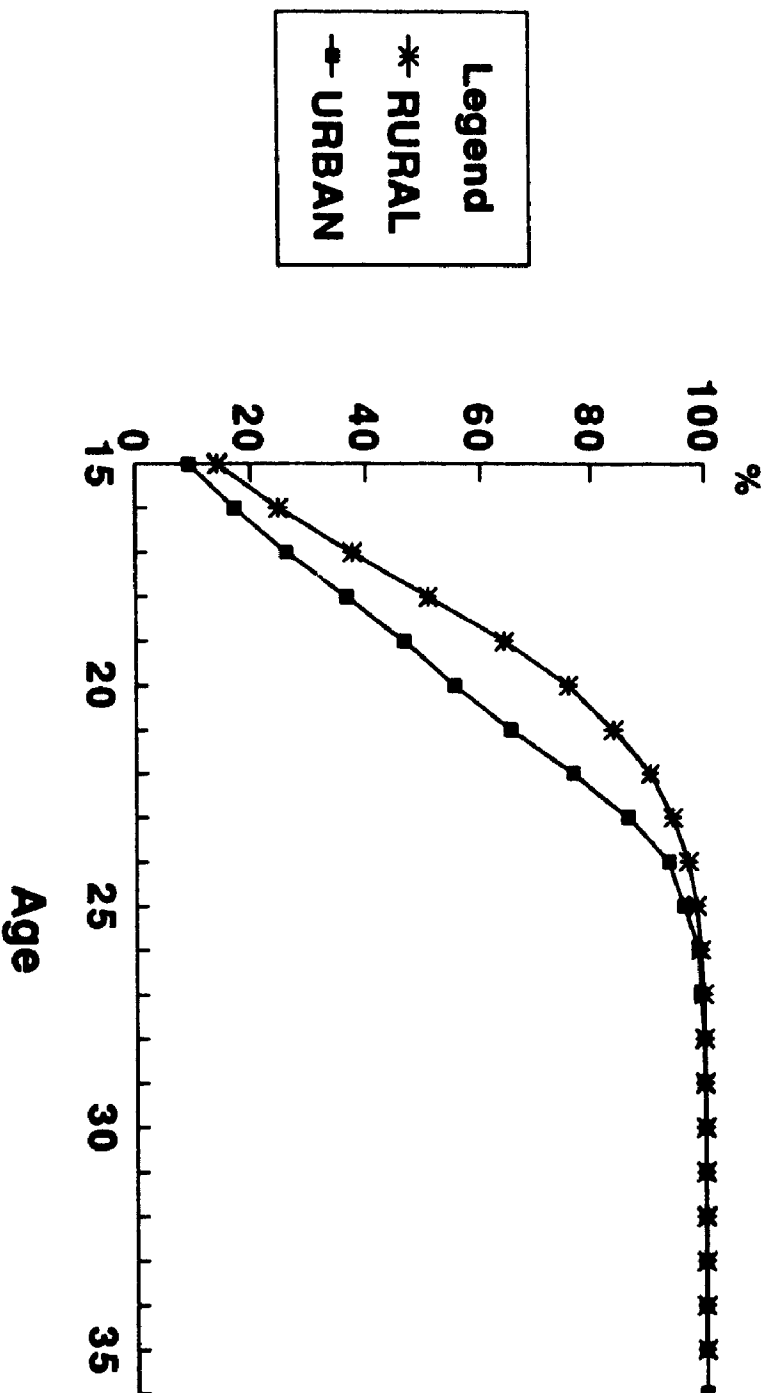
China In-Depth Fertility Survey, Hebei

6.3   Multivariate Analysis

6.3.1   Proportional hazards model of betrothal

As multistate analysis has indicated that betrothal has an accelerating effect to promote early marriage, the first hazard model applies survival analysis with socio-economic factors as covariates (Table 6.8).

In the hazard model of betrothal, we assume that individuals enter marriage market at age 10. When addressing the choice of origin of the time scale in the proportional hazards model, Allison (1984) has argued that the question of when time begins should depend on substantive considerations. "If the hazard is known to depend strongly on age but only weakly on time since some other starting point, then age would probably be the most appropriate way to define the time scale" (p. 40). The origin of the time scale anchored at age 10 is based on the consideration that the earliest marriages took place in the early teens for some respondents in the survey. Their exposure to the risk of betrothal may have well started, say perhaps at least around age 10.

It has been further assumed that age at betrothal is the failure time. Those who are not observed to have betrothed by the survey time are considered as cases withdrawn from the exposure to the event of interest. The hazard analysis uses previously discussed variables as covariates. The coefficients estimate the relative effects of individual variables on the hazard of entry into betrothed state,

controlling for other covariates. In Table 6.8, we report the four relevant statistics.

In the first column, the b coefficients are presented, which are comparable to un-standardized multiple regression coefficients. Asymptotic standard errors (S.E.) are shown in the second column. In the third column, (b/S.E.), the ratios of coefficients to standard errors are presented, which indicate t-statistics (coefficients must be at least twice as large as their standard errors to be statistically significant at the 0.05 level). In the fourth column, the exponents of the coefficients are given which relate the effect of each covariate to the baseline hazard function.

The exponent of a coefficient greater than 1 indicates that "individuals with this characteristic are more likely both to experience the event in question (number) and to do so more rapidly (timing)" (Teachman, 1982, p. 1043). Thus hazard is increased [individuals with this socio-economic characteristic are (exp(b)-1) times more likely to enter betrothed state]. Conversely, When the exponent of a coefficient is smaller than 1, the relative risk of experiencing the event is lower for the group, compared with the reference group. Individuals with such characteristics, compared to those in the baseline group, are less likely to experience betrothal and do so less rapidly, thus the hazard is reduced.

In addition, the logarithm of the maximized partial

likelihood function and the global chi-square statistic (and its p-value) are reported. The global chi-square statistic tests the hypothesis that all regression coefficients are identically zero (for details, see Hopkins, 1990, pp. 773-774).

Consistent with those of the multistate analysis, the results have shown that, other things being equal, urban women experience only about 50% of the risk of betrothal compared with their rural counterparts. Social component of motivation toward betrothal apparently has exerted stronger impact on the rural women. The figures of 1.2939, 1.2820 for women with no schooling and only primary education respectively mean that their risks for betrothal are 0.29 and 0.28 times greater than the risk of those with secondary or more education, showing that the higher the educational attainment, the less the family involvement in the marital decision (c.f. Balakrishnan et al., 1987, p. 399). It has been found that individuals in the younger age groups have relatively higher risks of betrothal, showing the popularity of informal betrothal with the more recent cohorts. In addition, women who have not worked experience only 91% of risk of betrothal. It seems that women exposed to work-sharing activities have more opportunity of contacting potential partners, which leads to more occurrence of betrothal, presumably informal betrothal.

TABLE 6.8 A HAZARD MODEL OF BETROTHAL
CHINA IN-DEPTH FERTILITY SURVEY, HEBEI, 1985
(N = 5,043)

Variable	Coeff.(b)	S.E.	b/S.E.	Exp(b)
Age Cohort				
20-24	1.0037	0.0790	12.7106	2.7283
25-34	0.5347	0.0642	8.3347	1.7070
35-44	0.3339	0.0671	4.9792	1.3965
(45-49)				
Residence Place				
Urban	-0.6863	0.0517	-13.2851	0.5034
(Rural)				
Education				
No schooling	0.2577	0.0456	5.6505	1.2939
Primary	0.2484	0.0453	5.4825	1.2820
(Secondary & +)				
Work Status				
Not worked	-0.0915	0.0352	-2.5964	0.9126
(Worked)				
Marriage Type				
Love marriage	0.0609	0.0616	0.9887	1.0628
(Arranged Marriage)				
Living Arrangement upon Marriage				
Living with Parents	0.0252	0.0413	0.6094	1.025ͷ
(Establishing independent household)				

Log likelihood	-29905.6367
Global Chi-square	447.87
D.F.	9
P-value	.0000

NB: In the parentheses are reference groups in each covariate.

6.3.2 A logistic regression analysis

In the previous section, the hazard model of betrothal is used to conduct a survival analysis in the multivariate context. As the period of survival is between entry into a hypothetical marriage pool and the event of betrothal, the respondents who did not betroth are considered to have withdrawn from experiencing event of interest. Stated differently, some individuals exposed to the occurrence of the event have not experienced that event.

As the dependent variable of betrothal [or not] is dichotomous, a procedure of logistic regression is selected to replicate the results from hazard analysis of betrothal. The same set of covariates for hazard model is used and logistic regression coefficients are examined in regard to their corresponding significance tests and model significance tests.

Logistic regression estimates have shown that urban residence is associated with lower odds of betrothal, relative to the rural residents. Attaining only primary education is related to higher odds of betrothal. Meanwhile, women in the two younger cohorts are more apt to experience betrothal, showing the prevalence of informal betrothal among these individuals. With respect to these significant associations, logistic regression analysis and hazard model yield similar qualitative results. The relationship between living arrangements upon marriage and the risk of betrothal turns out to be insignificant, as is also the case with hazard analysis

(see Table 6.8 and Table 6.9).

However, certain estimations obtained from logistic regression are inconsistent with the results of hazard analysis, particularly with regard to the age group of 35-44. The discrepancy can be attributed to the difference between the two models. As Trussell and Rao (1989) point out: "One advantage of hazard models is that all relevant respondents can contribute the full amount of information available to the analysis" (p. 538). For logistic model, assumption has been made that either the event has occurred or it has not. The timing of occurrence becomes irrelevant.

On occasions that logistic regression is employed to deal with survival data, a discrete linear logistic model has been proposed to handle the case when the survival time is either discrete or known only for a few discrete time intervals. However, for an analysis based on a regression model for continuous time, as is the case of the current analysis, proportional hazards model may be more appropriate (see Hosmer & Lemeshow, 1989, pp. 239, 245).

TABLE 6.9   A LOGISTIC REGRESSION MODEL OF BETROTHAL
CHINA IN-DEPTH FERTILITY SURVEY, HEBEI, 1985
(N = 5,043)

Variable	Coeff.(b)	S.E.	Sig.	Exp(b)
Age Cohort				
20-24	0.7723	0.1026	0.0000	2.1647
25-34	0.4292	0.0578	0.0000	1.5361
35-44	-0.3441	0.0602	0.0000	0.7088
(45-49)				
Residence Place				
Urban	-0.6343	0.0416	0.0000	0.5303
(Rural)				
Education				
No schooling	0.0331	0.0505	0.5120	1.0336
Primary	0.1579	0.0496	0.0015	1.1711
(Secondary & +)				
Work Status				
Not worked	-0.0323	0.0368	0.3811	0.9682
(Worked)				
Marriage Type				
Love marriage	0.1586	0.0555	0.0043	1.1719
(Arranged Marriage)				
Living Arrange-				
ment upon Marriage				
Living with Parents	0.0562	0.0415	0.1758	1.0578
(Establishing				
independent				
household)				
Constant	0.5415	0.0677	0.0000	

-2 Log likelihood	5161.115
Model Chi-square	537.355
D.F.	9
Significance	.0000

NB: In the parentheses are reference groups in each covariate.

One way to sort out the problem of the discrepancy between the findings in logistic regression and hazard model might be to incorporate some more properly defined covariates, such as duration in the marriage pool, in the analysis (see Trussell & Rao, 1989, as an example). However, it is difficult to conduct a discrete linear logistic analysis of betrothal with the current data since the timing of entering the marriage pool is in itself assumed. We would rather leave such an undertaking for future research with more suitable data. At the moment, we cautiously conclude that logistic model does, nonetheless, provide alternative estimations to complement findings 'ı the hazard model.

6.3.3 Proportional hazards model of first marriage

The results of proportional hazard analysis of first marriage are presented in Table 6.10. Taking the age cohort for instance, life table analysis has shown that the youngest ever-married women enter married state at a speed faster than their counterparts in the previous cohorts. When relating this marriage boom to the behaviour of betrothal, we find that, other things being equal, 20-24 age cohort is 1.25 times more likely to get married earlier than reference group women in 45-49 age cohort. However, women in 25-34 and 35-44 age cohorts experience only 60% and 84% of the risk of early marriage that women in 45-49 age cohort experience. By

comparison, women in 25-34 age group are affected most at their prime ages of betrothal and marriage by the government policy of 'later marriage, longer intervals between births, and fewer children' in the 1970s.

The co-variate effects on failure time in a multivariate context are further examined. In the less traditional communities where arranged marriage is less common, the impact of social pressure is less felt. We find that urban residents and women experiencing love marriage experience merely 87% and 65% of the risks of early marriages compared with their counterparts in the rural areas and in the arranged marriage situation.

TABLE 6.10   A HAZARD MODEL OF MARRIAGE
CHINA IN-DEPTH FERTILITY SURVEY, HEBEI, 1985
(N = 5,043)

Variable	Coeff. (b)	S.E.	b/S.E.	Exp(b)
Betrothal				
Betrothed	-0.0067	0.0347	-0.1924	0.9933
(Not Betrothed)				
Age Cohort				
20-24	0.2260	0.0642	3.5228	1.2536
25-34	-0.5069	0.0487	-10.4057	0.6024
35-44	-0.1771	0.0502	-3.5259	0.8377
(45-49)				
Residence Place				
Urban	-0.1377	0.0398	-3.4623	0.8714
(Rural)				
Education				
No schooling	0.3887	0.0396	9.8128	1.4750
Primary	0.3179	0.0390	8.1527	1.3743
(Secondary & +)				
Work Status				
Not worked	0.0368	0.0303	1.2126	1.0375
(Worked)				
Marriage Type				
Love marriage	-0.4311	0.0488	-8.8403	0.6498
(Arranged Marriage)				
Living Arrangement upon Marriage				
Living with Parents	0.0312	0.0350	0.8927	1.0317
(Establishing independent household)				

Log likelihood		-38170.9114
Global Chi-square		589.70
D.F.		10
P-value		.0000

NE: In the parentheses are reference groups in each covariate.

With regard to the impact of eligibility for marriage and availability of marriageable mates, covariates related to women's occupational and educational status as well as living arrangement upon marriage are analyzed. It is identified that women with no schooling and with only primary education are 48% and 37% more likely to get married earlier than women with secondary and more education. Apparently, women who did not attend school were available for marriage even earlier and their risk of early marriage was thus almost one and a half times as high as the risk of those receiving secondary and more education. The risk of early marriage for women with primary education is relatively lower than that for women with no schooling. Longer schooling appears to be inversely associated with early marriage, controlled for the event of betrothal. Furthermore, women who did not work seem to be slightly more likely to have an earlier marriage than working women. Women living with either their own or their husbands' parents are slightly more likely to get married earlier than those who have to establish their independent household upon marriage, although these expected relationships do not reach statistical significance at the 0.05 level.

In order to examine the co-variate effects on failure time in a multivariate context, a baseline group is selected with the characteristics of being in 45-49 age cohort, with rural residence and secondary or more education, having worked and experienced arranged marriage and established independent

household upon marriage. The values of annual probability of survival (by remaining in never married state) for the reference group are used to calculate survival probabilities for selected groups by means of

$$S(t;z) = [S_0(t)]^{e(\delta.z)}$$

where $S_0(t)$ is the reference group survivorship function ($z_i=0$). The relative risk for a category with characteristics z_i determines the survival curve in the following manner. When the two categories differ only in the value of one characteristic, j, we have $z_{ij} =0$ for reference group and 1 for the other category, then $S(t;z)$ is obtained by $S_0(t)$ raised to the power of $e^{\delta j}$ (Menken et al., 1981, p. 194).

Thus the probabilities of not getting an early marriage for individuals who differ from their counterparts in the reference group in only one category can be estimated and the results are presented in Table 6.11. Occupying urban residence, for instance, decreases the probability of getting an early marriage by a factor of 0.871. The survivorship curve is $[S_0(t)]^{0.871}$. The survival probability of 84.09% at age 18 increases to 87.87%. By the same token, women who contracted marriage by themselves decrease the relative risk of having an early marriage by a factor of 0.650. Thus at age 21, one year after the minimum legal marriage age of 20 by 1980 Marriage Law, the probability of survival by remaining

never married state stands at 64.79%, higher than that for the baseline group at 49.25%.

A graphic presentation of hazards model for marriage is shown in Figure 6.5. The differences in the survivorship curves can be used to illustrate that propensity and timing to enter marriage differs with various socio-economic and demographic characteristics. Survival probabilities of baseline group against other groups with one characteristic differing from baseline group indicate that, other things being equal to those of baseline group, relative risk of getting an early marriage for no schooling group is the higher. In other words, survivor probabilities in maintaining not-married status for ever-married women with no schooling fall faster than that for baseline group women. Love-marriage group and urban residents, on the other hand, have higher survival probabilities in maintaining not-married status against baseline group.

TABLE 6.11 PROBABILITY OF SURVIVAL BY REMAINING
IN NEVER MARRIED STATE FOR REFERENCE GROUP
(45-49 age group, rural residence,
secondary or more education, not betrothed,
having worked, experienced arranged marriage
& established independent household upon marriage)
AND SELECTED GROUPS DIFFERING BY ONE CHARACTERISTIC

				Differing characteristic				
Age since enter marriage pool	Reference group	Urban residence	20-24 age group	25-34 age group	35-44 age group	No education	Primary education	Love marriage
x	1.000	0.871	1.254	0.602	0.838	1.475	1.374	0.650
10	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12	.9994	.9998	.9973	.9999	.9999	.9935	.9955	.9999
15	.9890	.9943	.9726	.9994	.9954	.9530	.9624	.9990
18	.8409	.8787	.7692	.9527	.8886	.7124	.7375	.9409
21	.4925	.5408	.4179	.6756	.5550	.3686	.0895	.6479
24	.1435	.1629	.1162	.2267	.1688	.0997	.1066	.2121
27	.0236	.0270	.0189	.0389	.0281	.0161	.0172	.0361
30	.0063	.0072	.0050	.0104	.0075	.0043	.0046	.0097
33	.0017	.0020	.0014	.0028	.0020	.0012	.0012	.0026
36	.0003	.0003	.0002	.0005	.0004	.0002	.0002	.0005

Note: Probabilities are estimated in terms of S_0^x, where S_0 is the survivorship function for the reference group and x is the relative risk. The values of relative risks are under the titles of each group in the table.

Fig.6.5 Proportions of Never Married
for Reference & Comparison Groups

Legend

— **Baseline**

+ **Urban residence**

✳ **20-24 cohort**

✴ **No schooling**

◆ **Love marriage**
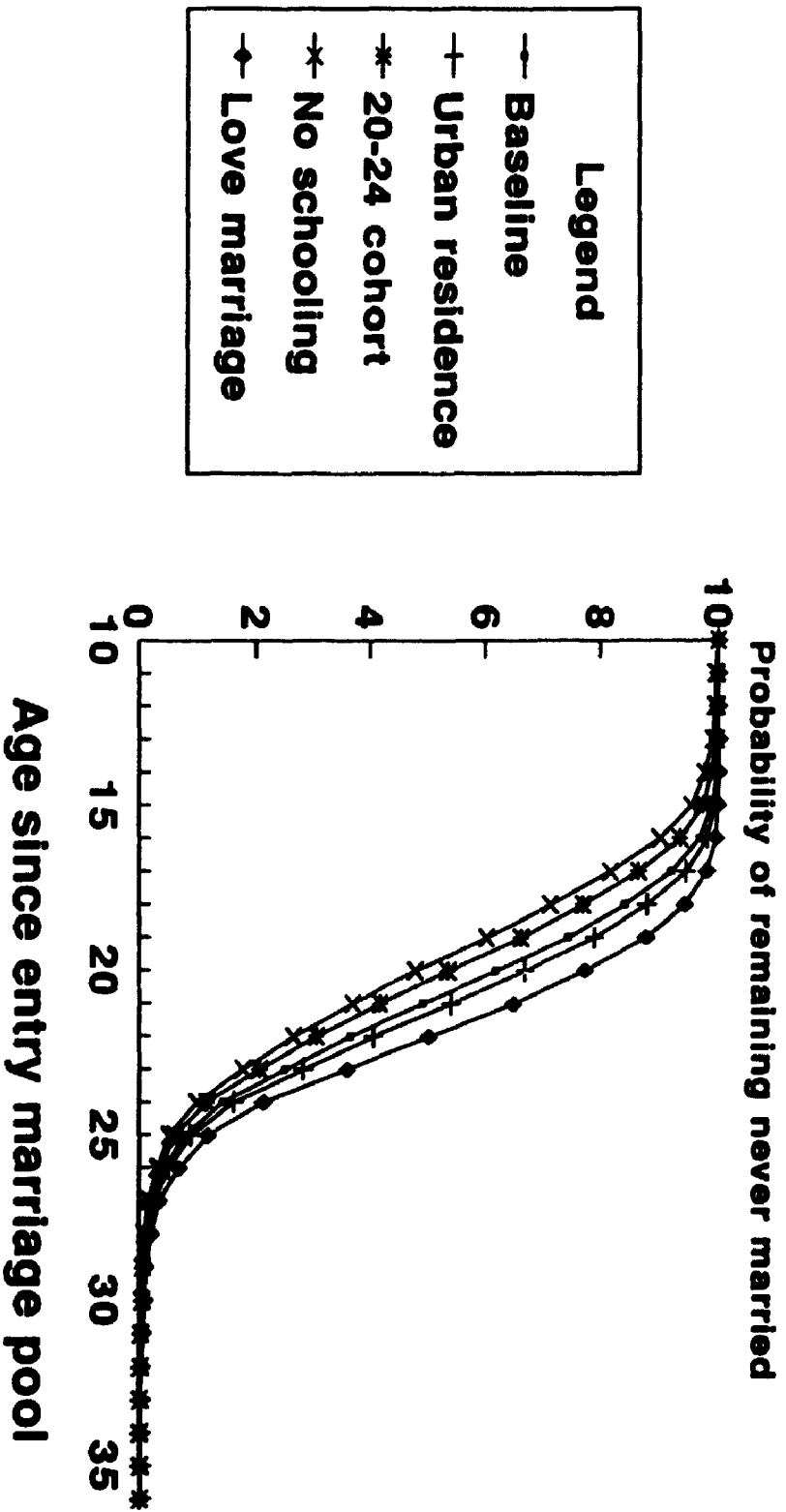
Sources: CIDFS, Hebei Data, 1985

Probability of remaining never married

Age since entry marriage pool

6.4 Discussion

When discussing the theoretical work about family change, Burch (1990b) emphasizes that attempts for a unique theory have usually turned out to be unsatisfactory. What is needed is the "particular knowledge of the culture and history and detailed data for small areas combined with the discipline inherent in a theoretical approach" (p. 4).

Pursuing the current study in line with this perspective, we first presented the demographic situation and changes in Hebei province and made a brief comparison between Hebei and China in general. Compatible with the results of other studies on China In-Depth Fertility Survey data, socio-economic and demographic changes in Hebei are found to have provided a typical case for a quantitative analysis (e.g. Zhang, 1990; Ye & Bean, 1990). In a province with differentiated levels of development, the general trend of changing demographics, specifically in the area of nuptiality, resembles to a great extent the average level of China as a whole.

In examining the trend of nuptiality change, we regard the changes in timing of nuptiality generally as the outcome of the interplay between effective governmental intervention, deeply-rooted traditional ideology and behavioral adjustment as the result of the evolution of economic-cultural environment. Although government policy and family planning campaign have great impact on nuptiality timing for Chinese

women over the last four decades, socio-demographic determinants on the occurrence of events that lead to betrothal and marriage, nevertheless operate as they would in other cultural settings, making it possible to examine the behavioral factors in our models. In other words, both government policy and modernization process have simultaneously facilitated gradual rise in age at marriage.

In an attempt to further specify the behavioral process underlying the waiting times in marriage process, we have singled out betrothal as a culture-specific event of interest. As a socially defined waiting time between engagement and marriage, the occurrence and timing of betrothal provides insight as to what behavioral factors operate to lead to such events and how they influence the timing of marriage.

The first marriage boom in the early years of the Republic responded to the economic revival and land reform movement in which marriage was seen as highly desirable in providing families with more and early helping hands. In light of demographic transition theory, this growing propensity to leave never married state can be perceived as a prelude of delayed nuptiality and fertility decline at the dawn of economic development. The higher probabilities of transition to betrothed and married state in the early 20s for the 45-49 age cohort have reflected the boom. In the process of modernization in the following years, compulsory education for the young and more employment opportunities particularly

in the urban areas, in addition to family planning drive, have brought in ideational changes in marriage and childbearing. Age at marriage is gradually increasing and traditional ideology on marriage is under constant attack and challenge.

Demographic transition toward higher age at marriage and lower fertility is not a straightforward process. The renewed mid-1960s rise in transition probabilities of leaving never married state indicated the catch-up effect due to a slight decrease caused by economic difficulties and famine in the late 1950s. Women in 35-39 and 40-44 age cohorts bore the brunt in this wave, managing to obtain higher probabilities to transit toward married state upon reaching early 20s than those of two subsequent age cohorts. Early 1980s marriage rush, however, reflected a quick response to the actual relaxation of minimum legal marriage age stipulated in the 1980 Marriage Law. Moreover, benefiting from the economic reform, more families, especially peasant families, can afford the marriage finance. Betrothal becomes easier to propose and the waiting time for marriage is reduced. The trend of dropping marriage age below the artificially high ages during the 1970s is sustained well into the 1980s (see Zeng et al., 1991, p. 451; Banister 1987, p. 164). However, very few attempts have ever been made to predict how far the marriage age decrease will go in the 1990s. As far as the most recent statistics can tell, the ages at marriage remain lower than the drastically high level during the family planning campaign

in the 1970s, but manage to keep above the level at the end of 1960s. In general, an upward trend of age at marriage, with a bulge in the 1970s, is still observed.

In order to understand the determinants of nuptiality timing in the present stage of demographic transit'on, this study has followed the general trends of changes of the timing of events that lead to marriage. In summarizing the substantive findings with respect to the hypotheses put forward in Chapter 4, the first hypothesis that women with rural residence and having experienced arranged marriage have greater risk of early marriage is supported in the hazard model. Hypothesis Two is partly supported as lower education is found to be significantly related to greater likelihood of betrothal and early marriage. However, the associations between early marriage and such covariates as work status and living arrangement do not reach statistical significance. The third hypothesis about cohort difference in experiencing later marriage has stood the test. Both multistate analysis and the hazard model have shown that women in 25-34 age group are found to have married signif\u2081cantly late in the 1970s. Finally, multistate life table analysis has shown that women having betrothed are more likely to enter into married state faster, although betrothal, as a covariate, is not significantly related to higher risk of early marriage in the hazard model.

Chapter 7

Conclusion

7.1 Summary of the Thesis

In the context of the growing amount of socio-demographic literature on marriage, this thesis attempts to explore a theoretical synthesis as a guidance to conduct a practical analysis on Chinese women's experience in transition to the married state. Among the frequently cited general theories or models of marriage, mathematical models of first marriage and behavioural interpretations of marriage patterns are fairly well documented.   Of the latter, the theoretical work is conventionally broken down into economic and sociological perspectives.

Starting with the most familiar models in social demography, we see that Becker (1972) views marriage in terms of partners reaping economic rewards from a division of labour based on relative comparative advantage.   Dixon (1971) emphasizes feasibility, desirability and availability of marital partners as social constraints that govern an individual's transition to marriage.   In summarizing an emerging model of marriage based on some clear behavioural assumptions, Burch (1990a) put forward four factors combining the view from both economic and sociological perspectives. Namely, individual motivation, social pressure to marry [or not], eligibility for marriage and supply of eligible mates

(p. 2).

With a simple modification as an analytical framework to model marriage process, we propose that marriage is a function of motivation to marry with both individual and social components and of probability of finding a suitable mate. The latter, in turn, is a function of definition of 'suitable', age-sex ratios in the hypothetical marriage pool and personal qualities in terms of, for example, the educational and occupational assets an individual possesses.

As more detailed data on Chinese women's fertility and nuptiality became available in the 1980s, this dissertation undertakes some secondary investigation on marriage. The data come from the 1985 China In-Depth Fertility Survey, the largest by far at the provincial and centrally-administered municipal level in China.

The covariates considered include age group, place of residence, education, types of marriage, work status, living arrangement upon marriage, and betrothal (only for marriage model). There are other possible covariates available in the survey, but the primary purpose is to examine the effects of the most relevant covariates specified in the analytical framework in light of the behavioural theory.

In conceptualizing the marriage process, the timing and sequence of a series of events that lead to married state are examined by conducting a multistate analysis. Ideally, these events could include entry into hypothetical marriage pool,

first meeting with the eventual partner, entry into serious dating, engagement, formal betrothal and finally, wedding, as some demographic studies have undertaken or suggested (e.g. Coale & McNeil, 1972, p. 746; Otani, 1991, p. 473). With a view to the information available in the current data base, we have identified entry into the marriage pool, betrothal and entry into married state with various living arrangements as the distinctive events marking "qualitative changes that occur at specific points in time" in the marriage process (Rajulton, 1992, p. 1). A multistate analysis has been undertaken by using computer package LIFEHIST under Markovian and Semi-Markovian assumptions.

Subsequent multivariate analysis is carried out in two models of betrothal and one model for marriage. A hazard analysis models betrothal in the context of survival analysis. A logistic model has also been used to examine the robustness of the findings in hazards analysis. The same set of explanatory covariates is applied to both models. Another hazard model deals with the transition to married state in a m"ltivariate context.

In the hazard mode of betrothal, it has been found that, lower educational attainment and rural residence are associated with higher risk of betrothal. These findings have shown that those with fewer educational assets and residing in the more traditional rural settings are more likely to comply with the social norms favouring traditional practice of

betrothal. However, as the concept of betrothal also accommodates the commitment to future marriage by potential couples themselves, those who belong to more recent birth cohorts and have worked (implying regular employment) are more likely to have betrothed. Apparently, advantageous personal qualifications (in terms of economic assets earned through regular employment) are related to higher probability of betrothal.

In logistic regression analysis, we find that experiencing love marriage and belong· to the two most recent birth cohorts increase the odds of betrothal. Similar to the results of hazard analysis, urban residence is found to be associated with lower odds of betrothal. Women with only primary education are more likely to be betrothed than those with secondary or more education. Results of logistic regression analysis have provided alternative findings in hazard model of betrothal.

The hazard model is further applied to marriage analysis. Other things being equal, low educational attainment is found to significantly increase the chance of early marriage. Urban residence and love marriage are associated with lower risk of early marriage. With regard to cohort difference, women in the 25-34 age group, whose marriage took place largely in the 1970s when family-planning campaign was carried out in depth, are found to experience the lowest risk of early marriage. Following this cohort is 35-44 age group. Women belonging to

that cohort married during the 1960s when age at marriage gradually rose. The hazard analysis shows that they indeed had lower risk of early marriage than those in the oldest age group. However, women in the 20-24 age group experience the highest risk of early marriage, reflecting a marriage boom in the 1980s. Again, it should be cautioned that this data set consists of only ever-married women and the analysis provides no knowledge of marital behaviour for those who did not marry by the survey date.

Since the founding of the People's Republic, there have been three broadly defined time periods of change in nuptiality patterns in China: 1950 to late 1960s, 1970s and 1980s.

In the first two decades since 1950, reorganization of agricultural production (land reform, collective and later commune movement) and industrial reconstruction have brought the country into the early phase of economic development. On the one hand, early marriage and childbearing were perceived as constructive to future family prosperity, particularly in the setting of agricultural production. On the other hand, women became increasingly involved in the labour force and education which exerted negative effect on early marriage. In addition to the attempts to abolish feudal marriage practice initiated by the government, the first period is featured by a gradual rise in age at marriage.

The second period in the 1970s witnessed an intensive

implementation of family planning program. As far as the target minimum marriage age during that period is concerned, Banister (1987) reports that "large cities in particular set high minimums and enforced them strictly, with little regard for unnecessary personal hardships" (p. 154). Although the enforcement varied substantially by locality, the sharp increase in age at marriage has been observed both in urban and rural areas. Between 1971 and 1979, a total of 3.2-year rise in mean age at first marriage for women in the cities is reported. Average rural marriage age also increased 2.7 years (Banister, 1987, p. 158).

A third period of marriage boom is identified in the 1980s. The government has eliminated the extreme policy of compulsory late marriage and issued a revised 1980 Marriage Law. With the implementation of responsibility system of agricultural production, basic economic structure has undergone some important changes and land has been re-distributed to farmers (Yang, 1990, p. 151). Enforcement of late marriage on employees has also been relaxed in the urban enterprises and institutes. Young people are reported to have taken full advantage of the change in the marriage ages. Banister (1987) has found that, nationwide, about 6.7 million marriages took place during the first six months of 1981, more than doubled over those taking place in the first half of 1980 (p. 161).

Reviewing the overall trends in changes of age at first

marriage over the three periods, we have witnessed a gradual rise in marriage age since 1950 and a sharp increase in the 1970s. The decline in age at marriage since the 1980s, as Yang (1990) predicted, may continue to the levels which prevailed before 1972 (p. 151). In the multistate /multivariate analysis of the current study, the trend of rising age of marriage and the fluctuation at different periods of socio-economic development within that general trend are reflected. At the overall level, the analytical results of our findings are compatible with those of many current studies (e.g. Yang, 1990; Ye & Bean, 1990; Coale et al., 1991). The theoretical explanations on motivation to marry with social and individual components, personal quality and mate-search effectiveness in relation to the probability of betrothal and early marriage are in general plausible.

The study, however, is subject to several constraints. Classified in general terms, there are problems with the data base and methodological issues with the analysis.

As the China In-Depth Fertility Survey data were collected mainly for the purpose of fertility analysis and "almost all births have taken place within marriage" in the Chinese social context (Peng, 1991, p. 263), the sample design is restricted to the target population of "all ever-married women aged under 50" (Department of Population Statistics, 1986, p. 9).

This restricted sample poses several methodological

problems for nuptiality studies. In the first place, any conclusion generated from this data set is related to the marital behaviour of the ever-married women and provides no knowledge of those who did not experience marriage before the survey date. Secondly, given the fact that Chinese marriage is universal and stable (Peng, 1991, p. 116), not much difference between the behaviour of ever-married respondents and female population in the higher age groups can be expected. Problems arise, however, with the younger age group since only a small proportion of them managed to marry before the survey date. The parameter estimates only provide information of those who had married at such young ages prior to the survey. Thirdly, the application of mathematical models of first marriage is limited by a sample containing only ever-married women. For one thing, the estimation of the proportion ever married, one of the three key parameters in the Coale-McNeil model, is made impossible.

Further problems with the data are related to measurement of certain concepts. For example, betrothal is an important event of qualitative change in life history. In the Chinese social context, it marks the completion of mate-search in the hypothetical marriage pool and the beginning of the socially defined waiting time for marriage. If betrothal maintains its traditional sense of formal engagement arranged by parents or influential kin, it is peculiar that over 90% of the respondents claiming 'no one arranged their marriage' whereas

75% of the respondents experienced betrothal. One might reasonably argue that, with the decline in arranged marriage, traditional betrothal practice could not have been so popular, especially with the more recent cohorts. The trend of proportion of betrothal increasing with each recent cohort identified in this data set was not initially expected.

On this issue, at least two explanations can be speculated. One is related to the nature of the sample which contains only ever-married women. Within each cohort, it is the most traditional that are apt to become betrothed and to marry early. Thus they are more likely to enter the sample. A second explanation concerns the conceptualization of betrothal. Betrothal carries dual meanings of formal betrothal in the more traditional sense and the 'established relationship' as the outcome of free-choice mate-searching, as is informed by the Principal Report of the China In-Depth Fertility Survey (Department of Population Statistics, 1986, p. 34). It is the establishment of marital relationship by couples themselves, not necessarily formal betrothal in the traditional sense, that gains popularity, particularly with more recent cohorts. If this is the case, further questions could have been followed to help identify the form of betrothal and the mode of mate selection. Unfortunately, the entire set of questions regarding the timing and length of betrothal were removed from the questionnaire of Phase II of China In-Depth Fertility Survey in 1987, making it impossible

to replicate our current study with more recent data sets of the Survey.

Another issue is related to the measurement of some abstract concepts. In this research we have discussed extensively the concepts of eligibility for marriage, motivation to marry with individual and social components. One might raise the question that motivation and eligibility are unobserved variables. Nevertheless, unobserved variables are not necessarily unobservable. There are at least two approaches to this problem. One is to capture the unobservable indirectly in terms of "effects" of various socio-economic characteristics, as the present and many other studies have done (see Burch & Rajulton, 1991, pp. 21-22). Caution should be exercised in this approach since it is difficult to delineate clearly what characteristics capture the abstract concept and what do not, and some factors have ambiguous effects. Another approach is to treat motivation and eligibility as unobserved variables and estimate them by incorporating their distributions in the formal analysis (Burch & Rajulton, 1991, p. 22). Such an undertaking would depend on "how much external knowledge the investigator can assume", specifically, the external knowledge "either about the shape (function form) of the hazard or about the distribution of the unobservable" (Trussell & Guinnane, 1991, p. 15). This is certainly a promising approach we should pursue in the future.

A further question about multistate /multivariate analysis could be explored in terms of the total effects of covariates. When a set of event history data is analyzed, researchers tend to look for the total effect of certain variable[s] on the occurrence of an event of interest. For example, what is the total effect of education on marriage, including direct effect and indirect effect through betrothal? However, up to now survival analysis in hazards model is widely applied to studies such as first meeting between eventual spouses to engagement, or family formation to dissolution, or birth to first marriage (Otani, 1991; Teachman 1982; Rao, 1987). It would be useful to develop a simple way to combine life-table analysis with path analysis in future studies.

7.2 Path to Late Marriage: Some Speculations

7.2.1 Ideational change and marital behaviour

It seems reasonable to expect that economic development in developing countries like China would bring fundamental changes in terms of late marriage and lower childbearing. By promoting education, female employment, industrialization and urbanization, socio-economic development should pave the way for changes in marital behaviour. Indeed, the result of the present study does show that women with urban residence, higher education and experiencing love marriage enter married

state at significantly higher age. However, evidence has also shown that, with the relaxation of minimum legal marriage age restriction and the implementation of responsibility system which presumably has stimulated economic development, particularly in the agricultural sector, people enter married state at an even faster speed, as is reflected in the behaviour of ever-married women in the 20-24 age cohort. What effect does economic development exert on marital behaviour?

Lindert (1980) summarizes several views relating delayed fertility decline due to modernization. Applied to marriage studies, the main points of these arguments tend to see traditional marriage practice during early development as 'a threshold of economic consciousness': before this point, attitudinal inertia prevents any conscious change of marital behaviour. Individuals at this stage still conform to traditional rules regarding marriage. "The early diffusion of modern values has little influence on family formation practices, perhaps even among those becoming literate, urbanized, and more prosperous" (Lindert, 1980, p. 13). Opportunity cost and impediment to the attainment of new aspirations, which, at least in part, resulted from early marriage and childbearing, are irrelevant simply because they are not perceived. Instead, when social restrictions on marriage are relaxed, individuals in the settings of early phase of modernization see early marriage and more childbearing as beneficial, particularly for household

production. In the short run, people may focus on the net economic contributions of children of different ages, rather than on the cumulative effect of family size on the household's economic well-being. Only after the development process has passed some threshold do they realize the consequences of early marriage and childbearing as something that should affect their behaviour.

Reflecting on the present analysis of Chinese women's experience, we feel that, neither the available evidence on patterns of marriage timing nor the prevailing social norms would allow us to reject these views from an economic perspective. In fact, economic development has substantially raised living standards and brought in more employment opportunities, which make marriage affordable at an earlier age. Yet, at the same time, the dawn of economic development will also fuel rising aspirations and specify new needs, presumably through the same socioeconomic mechanism that leads to later marriage. However, it will take considerable amount of time before such mechanisms really work. Perhaps that explains, at least in part, the lower age at marriage in the initial years of the People's Republic and the fast entry into the married state in the 1980s.

If the persistence of early marriage is but a 'delay' in transition to late marriage during the early phase of modernization, then how long will it last? What else can bring the socioeconomic mechanism into effective operation?

There is no easy answer to these questions. Experience from analyzing Chinese women's transition shows that, in addition to economic factors, cultural adjustment played and will be playing an increasing role in affecting the marital behaviour. On the one hand, the massive family-planning campaign and dissemination of new ideology about gender equality in marriage have "formed the main vehicles by which the State has actively intervened and attempted to articulate major changes" in marital timing, mode of mate selection and marriage practice, including betrothal and wedding (Croll, 1981, p. 187). On the other hand, compulsory education [especially for the young] and gradual progress of modernization do make their way to change people's mind. In the first instance, pursuit of education definitely takes away the time from the young people to enter early marriage. Furthermore, marital and fertility behaviour is found to have "strong links with culture and education, both of which are likely to determine the initial acceptability of new ideas; and the quick spread of birth control within many societies" (Cleland and Wilson, 1987, p. 28). Findings from this study have shown steady rise in age at marriage up to the end of 1970s and increasing acceptance of free-choice type of marriage for the more recent birth cohorts, which appear to indicate the gradual acceptance of the new ideology in the process of cultural adjustment.

However, the effectiveness of the new ideology alone is

also limited. It is the interplay of cultural and economic factors that has brought in fundamental changes in marital behaviour. In even broader terms, some have argued that "ideational rather than structural change" is most significant in demographic transition (Cleland and Wilson, 1987, p. 28). This conclusion should provoke some thought on our discussion.

In abstract theoretical terms, "the transmission of meaning-giving (ideational) goals, ...through agents of socialization and through the individual's search for meaning-giving beacons in life contributes to the specification of the content of what is understood under the blanket term 'utility'" (Lesthaeghe & Surkyn, 1988, p. 2). It follows that ideational change takes place in the course of economic, cultural and institutional transformations and acts as the fundamental dynamics to affect the individual's demographic behaviour. On the one hand, gradual growth of economic affluence has shifted the needs from 'irreducible needs' to 'higher order needs'. On the other, the accumulation of upward social mobility assets, such as education and other forms of human capital, has frequently led to higher aspirations not necessarily in conformity with the norms approved of by existing social institutions. "Increasing numbers of people have become aware of alternatives to their traditional lifestyles and aspire to something different, even though these aspirations often are poorly defined" (Freedman, 1979, p. 4). Meanwhile, "cultural diffusion of models

concerning family relationships may direct the response to economic opportunities (to wit, embourgeoisement and the 'work later' response" (Lesthaeghe & Surkyn, 1988, p. 40). As we review the theoretical foundation of the present study, it should be pointed out that, while economic explanation takes the priority in accounting for rising age at marriage, cultural adjustment (through both policy intervention and gradual concessions to the new ideology of gender equality in marriage) stands at the core of the evolution of marriage process. Both factors constitute important parts in the entire system of ideational change.

7.2.2 A delayed response to economic development

Empirically, demographers are seeking evidence of late marriage and fertility decline in relation to economic development. For example, McNicoll (1980) has analyzed the institutional determinants in the cases of Bangladesh, an Indonesian province of Bali and a Chinese province of Guangdong. Freedman (1979) reappraised theories of fertility decline while studying the examples of Taiwan, China, Sri Lanka and Kerala. A general trend is identified that, in the better developed areas within the Third World countries, late marriage and fertility decline do occur eventually in response to fast-growing economics, as in the case of Hong Kong, Korea, Singapore, and more recently Malaysia and Thailand (e.f. World

development report, 1984, p. 41). Among them, changes in Korea might provide some insightful comparison for the present study.

The Republic of Korea lies in the southern part of Korean peninsula in Northeast Asia, about one hundred and twenty miles away to the east of Shangdong peninsula of China. Close geographical location, cultural connection and common historical experience of Japanese occupation made China and Korea quite similar in level of development at the end of the World War II.

"Since 1961 Korea has undergone intensified national development, ... the per capita net income has increased from $82.6 per year in 1960 to $138.9 per year in 1968, an increase of 68 per cent. During this same period the population grew by 25 per cent" (Dae, 1970, p. 2). The Korean experience has provided a classical example of initial increase of population growth in response to economic development, "fertility persisted at a high level until the mid-sixties despite a steady decline in mortality" (Mason, 1986, p. 3). After 1963 the government stepped in to formulate a ten-year family planning program and total fertility rate dropped from 6.28 in 1960 to 3.65 in 1975 (Finch, 1978, p. 9). Although cultural influence such as "bias in favour of sons exists in Korea, and has been partly responsible for keeping total fertility, now at 2.7, from declining to replacement level" (World development report, 1984, p. 138), the achievement of the

family-planning program is nonetheless remarkable.

Dae (1970) attributes these changes to several socio-economic factors. He argues that "the new status of women, as the country undergoes urbanization and secularization, is possibly the most important of these factors. It has resulted in higher educational levels for women and a greater number of women seeking employment; these conditions, combined with required military training for men, serve to raise the age at marriage... In 1955 the average age at marriage for women was 20.5 ... In 1968 the average age for women was 23.0 ... Today, marriage remains a universal custom, but the age at marriage has risen" (pp. 1 & 3). Marital behaviour changes for Korean women have shown a possible path to late marriage in better developed countries in the current Third World societies. Considering the similar effects of economic development, cultural influence and government policy intervention, there is a possibility that Chinese women might follow a similar route toward late marriage.

7.2.3 Future development: some speculations

Like most of the Third World countries, the main demographic concern now in China is to control the rapid population growth (Deng, 1989; Hou, 1991). "Due to the large population base and the tremendous size of young cohorts already built into the age structure", marital behaviour of

the young will directly affect the timing and magnitude of fertility growth in the future (Peng, 1991, p. 294). Reflecting on the experience of the marriage boom since the 1980s, we cannot foresee any sign, at least at the moment, that people are motivated to marry late and have smaller families in response to economic development. It will not be surprising if the government continues to take action, sometimes stringent, to discourage early marriage, and particularly early childbearing. Individuals may, on the one hand, take advantage of the elimination of compulsory late marriage specified in the 1980 Marriage Law to enter married state when they are eligible. On the other hand, they may adjust the timing of marriage in connection with their perception of educational and economic prospects, such as schooling, saving and housing. This might be more common in the urban sectors where economic and cultural life change more rapidly in the process of modernization.

What will happen if socioeconomic mechanism, as it did in other cultural settings, begins to bring fertility decline and perhaps to raise aspiration for alternative lifestyle? Although few studies address this issue for the developing countries, there are a few related findings in China. Tan (1988) reveals that, as early as 1953, divorce "cases reached an all-time peak of 1.8 million (China's population at the time was roughly 500 million)" (p. 9). He also cites the approximate numbers of cases of divorce in the order of about

400,000 annually in the 1960s and 1970s, 500,000 yearly in the 1980s. By 1986 the divorce rate in China was still among the lowest rates in the world. When discussing social problems in relation to marital behaviour in China, Banister (1987) presents studies which "show that because of restriction on marriage, the number of instances of couples living together before marriage, illegitimate children, and abortions by unmarried mothers has increased" (p. 160). Admittedly, these fragmentary data can hardly qualify for any quantitative analysis, the ideational changes behind these facts are nevertheless worth exploring.

Ideational change with regard to marital behaviour is best seen as an on-going process. Divorces in the early years of the Republic were mainly sought to "escape abusive husbands or forced marriages" (Tan, 1988, p. 9), which reflected the quest for gender equality and break-away from traditional ideology on the part of liberated women. Later cases of divorce, according to the study of <u>Marriage and Family</u> magazine and information supplied by several regional courts, are initiated on account of some social issues commonly seen in modern societies. As Tan (1988) listed, reasons for divorce include unequal division of household chores, suspected infidelity of a working wife, hasty marriage as a result of premarital pregnancy, and long-term separation and resentment between the pairs (p. 9). Although divorce at the present stage only involves an insignificant proportion of

Chinese population, the causes of marital dissolution have nonetheless revealed certain aspects of ideational change in the course of socio-economic development. Traditional gender-roles have changed as the majority of Chinese women became active in the socio-economic life. Education and employment outside the home have led to conflict with women's traditional role in household chores and in social conduct. Such a conflict is expected to intensify with further economic progress that involves more, especially younger, women in the labour force. While self-gratification in marital relationship is gradually gaining acceptance, such as claims made by some young people "that co-habitation does not harm anyone" (see Tan, 1988, p. 9), the moral code still frowns upon pre-marital and extra-marital sexuality. In brief, more diversified marital practice as the result of clashes between old and new ideologies might be a social phenomenon not too remote in the future.

However, at least two cautions should be exercised when speculating on marital behaviour of Chinese women in the future. In the first place, no strong assumption that Third World countries like China would follow the western model in marital behaviour change could ever be made. Although several studies have identified cases of co-habitation, marital dissolution, pre- and extra-marital sexuality (e.g. Tan 1988; Banister, 1987), "there is little evidence that marked changes in marriage behaviour... have produced the sorts of problems

visible on a large scale" (Whyte & Parish, 1984, p. 149). On the contrary, the serious problem at least at the moment remains the dogged and stubborn pursuit of early marriage and childbearing, particularly in the rural areas with less educated population. In general, universality and stability remain the major characteristics of the Chinese marriage at the present stage, as Peng summarizes (1991, pp. 116-117).

Secondly, while the situation in better developed regions in the Third World countries may provide useful predictions on the future marital behaviour change for Chinese women, such as the comparison we have made between China and Korea, socio-cultural changes in developing countries do not take place in the same pattern. For one thing, "informal unions, common in the Caribbean, are typically transitional stages preceding legal marriage" (World Development Report, 1984, p. 74). Some argue that the changing relationships between sex, marriage and procreation are shaped by attitude, values and norms, which in turn alter an individual's marital perception and behaviour. This is certainly a valid cultural explanation on changes in family-related behaviour, as we discussed earlier. When applied to the Chinese case, we feel that the idea of sex without marriage can hardly gain social acceptance to any significant extent by the society. In short, it is self-evident that the Third World is composed of nations with wide diversity of social, economic and cultural traditions and development. Over-generalization about the possible adoption

of western pattern of marital behaviour in the developing countries is likely to lead to erronecus conclusions.

In summing up the speculation on future development, we notice that China has often been looked upon as an exceptional case with effective government policy intervention and strong traditional ideology influence. With a view to the economic development and cultural adjustment to gradually modernized society, a prudent prediction on future marital behaviour can be made that, "union formation ...will continue to be associated positively with indicators of ... civil religion and negatively with indicators of the individuation process", as Lesthaeghe a. a Surkyn assert (1988, p. 40). There will be a long period of persistence in universal, stable and preferably early marriage. In the long run, the resultant influence of traditional ideology and individualism developed in the process of modernization (implying more education, better economic prospects and higher aspiration for alternate lifestyle) will lead to diversified marital practice between rural and urban areas and among individuals.

7.3 Directions for Future Research

This thesis started by examining benavioural theories and mathematical models on transition to first married state and explored a synthesis for the analysis of Chinese women's experience of the transition toward the married state. While

policy intervention has no doubt exerted great impact on the changes in timing and practice of marriage in China since 1950, socio-economic characteristics of the individuals are also playing important roles in marital behaviour change in the progress of modernization. This research has analyzed the impact of the two aspects in a multistate /multivariate context. Several issues developed in this thesis deserve further investigation.

1. The core assumptions in proportional hazards model are that population heterogeneity is captured by a set of covariates and relative risks conditioned in the values of the covariates remain constant. Such an unrealistic assumption is problematic in social research applications. In addition to the unsatisfactory solution to the problem of heterogeneity among subgroup populations in hazard analysis, some efficient way to combine life-table analysis with path analysis in a multistate context is not yet found.

2. Theoretically, we have discussed differential implications of socio-economic determinants of marriage on the genders. Quantitative analysis is not carried out with the current fertility survey data which involves only ever-married women respondents. Information about the characteristics of their husbands cannot be used to model marriage process for males because inclusion of the husbands is contingent on the probability of selection of their female partners. Husbands themselves do not constitute a probability sample in this data

set.   Given the importance of gender difference in the marriage process, further analysis is necessary when appropriate Chinese data become available.

3. While we have proposed some factors that can be captured in large measure by such terms as motivation and personal qualifications in the analytical framework, there is much room to improve the measurement of these unobserved variables.   Although we have attempted to capture them indirectly in terms of 'effects' of various socio-economic characteristics, data of better quality are needed to obtain more refined measurements.   Another approach is to estimate the unobserved variables by incorporating their distributions in the formal analysis, which is a promising approach worth pursuing in the future.

4. In the final analysis, this study has adopted an analytical framework in which marriage is seen as a function of motivation to marry and a function of probability of finding a suitable mate.   Thus the marital behaviour change is not merely seen as a reflection of policy variation, nor related with only a few socio-economic variables.   Instead, the analytical framework is built in light of economic and sociological theoretical interpretations of marital behaviour, and is applied to the study of the basic socio-economic and cultural determinants of transition toward married state.

In addition, the current analysis has explored the issue regarding the changes in timing and practice of marriage in

the early phase of modernization, which provides some insights into the effect of economic development on the eventual transition to late marriage, particularly relevant to the situation in the developing world. However, given the complex nature of marriage process in the changing economic and cultural environment, we are not likely to obtain a complete understanding of the determinants on the transition toward late marriage until more refined data become available to develop these studies in greater depth.

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