

The Family, Community and Health in the Context of Economic Change: A Literature Review 2

Compiled by

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Introduction

This literature review is on the subject of family formation, fertility and health. It begins with *union formation and dissolution*, which looks at the socio-economic and demographic factors explaining delayed entry into marital relationships and dissolution. This is followed by *theories of fertility decline*, which provides insights into important correlates of fertility. We also look at the implications of family formation and dissolution on fertility in the third subsection titled *union formation and fertility*.

The review covers empirical and theoretical studies in the area of union formation and fertility compiled for the *Family, Community, and Health in the Context of Economic Change* project.

Union Formation and Dissolution

1. Baizan, Pau., Arnstein Aassve, and Francesco C. Billari. 2003. "Cohabitation, marriage, first birth: The interrelationship of family formation events in Spain". *European Journal of Population*. 19 (2): 147-169

This paper sought to investigate the mutual causal relationship between first union formation and first childbirth, and the existence of constant common determinants of these two events.

Data came from the Spanish Fertility and Family Survey conducted in 1995. This is a retrospective survey with a sample of 4021 women and 1991 men, born between 1945 and 1976. Only female sample was used. A hazard model was used for analysis. The dependent variable was time of first birth minus eight months. Marriages or cohabitations which started eight months or less before delivery were not taken into consideration when computing the first birth hazard.

Results indicate that the processes of first birth and first union formation shared some common unmeasured factors (unobserved heterogeneity). Young women who were most likely to have first birth (for reasons not measured), were most likely to form a union. Entering a first union sharply increases the hazard of first birth. This effect takes place immediately after the start of the first union. It further increases during the first three initial years of marriage and then declines. In the case of cohabitation, it continuously

declines until the third anniversary of the union, and remains stable afterwards. Thus, marital union was viewed as the more appropriate setting for having a first child than a cohabiting union. A separate model was built to investigate the changes taking place over birth-cohorts. Results showed an increase in the relative risk of first childbirth for cohabitants. A comparison over cohorts showed that childbearing in cohabiting union becomes similar to that of marriage although there were still some considerable differences in the younger cohort. Nevertheless, cohabitation was viewed as a suitable situation for bearing children. The trend in the relative risks for married women with no previous cohabitation, in contrast to the trend for those who have cohabited, showed a sharp decline, which was connected with the increasing postponement of marital fertility.

2. Andersson, Gunnar and Gebremariam Woldmichael. 2000. "Sex composition of children as a determinant of marriage dissolution and marriage formation: evidence from Swedish register data". *Journal of Population Research* 18, 143-153.

This paper investigates whether there are any effects of sex composition on the propensity of Swedish mothers to enter into and exit from marriage. It aims at estimating the relative risks of marriage formation and marriage dissolution for mothers with different numbers and sexes of their children.

Data was derived from the Swedish population register system, which covers the whole Swedish population and its vital events with a high degree of accuracy. Approximately, 100,000 divorces of mothers in a first marriage and 280,000 cases of first marriage formed during that period were used for the calculation of risks of marriage formation and dissolution. Divorce risk-measures were calculated using a proportional hazards (intensity-regression) model. The dependent variable used was time since first marriage and some of the explanatory variables were age at marriage, age of the youngest child (time-varying covariate), and time-varying factor that describes both the number and the sex composition of the children a woman has.

Results indicate that the risk of divorce is lower for women with two or three children than for one-child mothers, but it does not differ much between two-and three-child mothers. The sex of the child has no effect on the propensity to divorce for one-child mothers. For two-child mothers, there was a minor effect of the sex composition of their children but this effect was not related to one or the other of the two sexes. There was also no real effect of the sex composition of existing children on marriage-intensities. For women with one and two children, who formed the overwhelming majority of the never-married mothers, the sex of their children had absolutely no effect. For three-child mothers, there were minor differences in risks between women with different numbers of sons and daughters, but that of the never-married women with three children was very small.

3. Bruderl, Josef and Frank Kalter. 2001. "The dissolution of marriages: The role of information and marriage specific capital". *Journal of Mathematical Sociology* 25:403-421.

This paper investigates Garry Becker's theory of divorce which considers information and marital-specific capital as very crucial to decreasing the risk of divorce. The authors used cohabitation to capture the concept of information, and children and joint home ownership for marital-specific capital.

Data for this paper came from the Mannheim Divorce Study; a study of first marriages conducted in 1996 in the Federal Republic of Germany. Approximately 34,384 individuals were sampled out of whom 3,332 were divorced. The Cox proportional hazards model was used to assess the impact of explanatory variables on divorce. Some of the explanatory variables included were marriage duration, birth of a common first child and the acquisition of a joint home ownership (used as indicators for investment), marital problems, duration of a premarital cohabitation, the duration of the relationship before cohabitation, and the duration of acquaintance before the start of the relationship (used as indicators for quality of information obtained before marriage).

Results show that there is no strong effect of cohabitation on marital stability. The same holds true for the indicators of marital-specific investment. Both the birth of a first common child and the beginning of a joint home ownership nearly halved the risk of divorce. However, the authors admitted that the estimates might be biased due to endogeneity. The risk of divorce was significantly higher for younger birth cohorts, if the relationship started at a younger age.

4. Berrington, Ann and Ian Diamond. 2000. "Marriage or cohabitation: a competing risk of analysis of first-birth partnerships formation among the 1958 British birth cohort". *Journal of the Royal Statistical Society*, 163(2):127-151.

This paper aims at investigating entry into first partnership among men and women born in Britain in 1958. It considers family background and current life experiences that affect the timing and type of first partnership formation.

The data came from the National Child Development Study (NCDS). NCDS is a prospective cohort survey following up from birth all those born in Britain between March 3rd and March 9th, 1958. The cohort has been reported on at ages 7, 11, 16, 23 and 33 years. This analysis made use of data from retrospective histories of partnership, fertility and housing collected at age 33 years. Some of the covariates considered for analysis were father's social class, parental housing tenure, mother's age at first birth, education, occupational social class, religiosity, pregnancy and childbearing. A discrete time multinomial logistic hazards model was used to estimate the log-odds of remaining single, marrying or cohabiting within each month.

Results indicate that parental social class is not associated with early entry into cohabitation, although growing up in public rented housing is associated with early entry into cohabitation among women. At older ages, the effects of parental socio-economic background on the timing of the formation of partnerships become insignificant once the respondent's own educational and occupational characteristics are included in the model. On the average, cohort members whose mothers began childbearing in their teens enter partnerships at an earlier age than those whose mothers delayed childbearing into their late 20s. Remaining in full-time education delays entry into marriage. Once women reach their mid-20s there is little difference in the probability of marriage according to educational attainment. Among men, large educational differentials in the timing of entry into marriage persist. Educational enrolment does not delay entry into cohabitation as it does for marriage. Religiosity has one of the largest effects on the type of first partnership. The probability of cohabitation is significantly higher among individuals with no religious affiliation, whereas direct entry into marriage is more likely among those who attend religious meetings.

5. Oppenheimer, Valerie K. 2003. "Cohabiting and marriage formation during young men's career development process". *Demography*, 40: 127-149.

This paper looks at how young men's career development process affects both the formation and dissolution of cohabiting unions.

The National Longitudinal Survey of Youth (NLSY79) was used for this purpose. The NLSY79 is a representative sample of American youths born between 1957 and 1965. A multinomial discrete-time event history model was used for the analyses. Two sets of regression equations were estimated: the first dealing with the entry of young single non-cohabiting men into a cohabiting or a marital union and the other with the exit of single cohabiting males from these unions. The dependent variable for the first equation measured whether a single non-cohabiting man made the transition to either a cohabiting or a marital union or remained in his original state which was the reference category. The dependent variable for the second equation was whether a never married cohabiting respondent went on to marry, separate, or continued to cohabit.

Although earnings have a strong positive effect on the transition to first marriage among single non-cohabitators, results indicate that there was no significant effect of earnings on the transition to marriage among whites currently cohabiting. For blacks, earnings did not have a statistically significant effect on either marriage or separation. Again, blacks and whites differed in the effect school enrolment had on cohabitation outcomes. While being enrolled greatly reduced the odds that white cohabitators would marry, it had a strong positive effect on marriage formation for blacks. For both blacks and whites, one or more years of college as opposed to high school degree greatly increased the odds of cohabitators marrying.; furthermore, college educated black educators were significantly more likely to marry rather than separate.

6. Stewart, Susan D., Wendy D. Manning., and Pamela J. Smock. 2001. "Union formation among men in the U.S.: Does having prior children matter?" *Journal of Marriage and the Family*, 65, 90-104.

This study investigates whether fatherhood and specifically involvement with non-resident children influence men's entrance into marital and cohabiting unions. The authors hypothesize that fatherhood is very crucial to men's union prospects.

Analysis was done using data from two waves of the National Survey of Families and Households (NSFH), a national probability sample of approximately 13,000 respondents selected from each household, with a response rate of 74%. The sample size for this analysis was restricted to 1,248 male respondents not in a union at NSFH1, who completed the wave 2 interview. The data used included men of all relationship backgrounds (never-married, divorced/separated/widowed, and those with or without prior cohabitation experience). The dependent variable was *union formation* measured in terms of single men's risk of union formation between NSFH1 and NSFH2. Event history models were used to examine the effect of fatherhood and involvement with nonresident children on men's likelihood of forming a marital or cohabiting union.

Results indicate that men who have children had higher odds of cohabiting and staying single compared to men with no children, but similar odds of marriage. Differentiating men's children by their residential status improved the model fit significantly. This means that, it is important to distinguish between resident and nonresident children to fully understand men's union formation patterns. Results also show that single men with children are no more or less likely to marry than childless men. Men with non-resident children had a lower risk of marriage than cohabitation. Involvement with nonresident children does not affect men's transition to marriage from single-hood. Single men with nonresident children who reported no involvement had a similar risk of cohabitation compared to those with none. However, men with nonresident children who reported some involvement had greater risk of forming a cohabiting union than staying single. The effect of child support on union formation was not statistically significant in multivariate and zero-order models.

7. Wu, Zheng and T.R. Balakrishnan. 1995. "Dissolution of premarital cohabitation in Canada". *Demography*, 32 (4): 521-532.

This paper examines the two competing outcomes of cohabitation relationships: union separation and legalization through marriage.

Data used was the Family and Friends Survey (FFS) conducted by Statistics Canada between January and March 1990. The analysis involved a national probability sample of 7,528 women and 5,967 men aged 15 and older, excluding the residents in the Yukon and Northwest territories and full-time institutionalized residents. Event history techniques were used to examine the rate at which individuals dissolved a cohabitation relationship. The dependent variable in this study was union dissolution. It was a trichotomous

variable indicating whether cohabitation ended in marriage, in separation or was intact at the time of interview. Independent variables include those thought to affect the union formation and dissolution process, such as age at the initiation of cohabitation, year of cohabitation, fertility status, age heterogeneity, education, religion and region.

Results indicate that age at marriage is a strong predictor of marital instability, but the same could not be said for the effect of age at cohabitation on the instability of cohabitation. Older people were found as likely to break up their cohabiting relationships as younger people. The year of start of cohabitation had a strong impact on union separation for both women and men. The hazard rate of separation was lower for women who entered into cohabitation before 1970 than those who did so after 1986, holding other variables constant. The presence and number of children present within cohabitation had strong influence on separation for both sexes. Having two children compared to one reduced the hazard rate of separation. Education had a positive and marginally significant effect on union separation for men and a positive but insignificant effect for women. Religion had no significant effect for women or men. Catholics were as likely to terminate a cohabitation relationship as Protestants, or individuals with other/no religious orientations.

8. Manning, Wendy D. and Pamela J. Smock. 2002. "First comes cohabitation and then comes marriage?" *Journal of Family Issues*. 23: 1065-1087.

As an initial step in understanding why some cohabiting couples do not marry, the paper examines factors associated with cohabitators' marriage expectations. The paper focuses on the effects of socio-economic status and race/ethnicity because prior research suggests that "retreat" from marriage in the United States has been more marked among Blacks than among Non-Hispanic Whites or Hispanics and also for those of lower socio-economic status.

Data used came from the 1995 National Survey of Family Growth (NSFG). The NSFG is a nationally representative sample of 10,847 15-44 year-old women. The survey asked questions about women's expectations of marriage. This analysis focuses on 772 women who reported living with a cohabiting partner at the time of interview. The dependent variable is whether women expected to marry their current cohabiting partner or not. The main independent variables are respondents' race/ethnicity, educational background, employment status, and income. The analytic method is logistic regression, with the models predicting the odds that women expects to marry their cohabiting partners.

Results indicate that women who have cohabited for shorter time periods have significantly higher odds of expecting to marry than women who have lived with their partners for longer durations. Older women have higher odds of marrying than younger women. Women with prior union experience have lower odds of expecting to marry. Black women have significantly lower odds of expecting marriage than White women and similar odds of expecting marriage as Hispanic women. Women with part-time employment have significantly greater marriage expectations than those employed full

time or women not employed. Women's educational attainment at time of interview is not related to their marriage expectations. Women who gave birth prior to cohabitation have consistently lower odds of expecting to marry their partner than women who have no children.

9. Kravdal, Oystein. 1999. "Does marriage require a stronger economic underpinning than informal cohabitation?" *Population Studies*, 53: 63-80.

This paper examines the economic reasons behind transition from cohabitation to marriage, especially with the deterioration of young adults' economic situation in Norway.

Data source for this analysis was the Norwegian Family and Occupation of 1988, which had the biographical data of individuals' pregnancies, births, marital and non-marital unions, educational activity, and employment for 4,019 women born in 1945, 1950, 1955, 1960, 1965 and 1968 and for 1543 men born in 1945 and 1960. Discrete-time logistic event-history models were used to estimate the transition from consensual union to marriage. Ordinary logistic regression was also used to estimate the choice between consensual union and direct marriage for women who already had a child or had become pregnant, and for those who had still not experienced their first pregnancy.

College enrolment was found to reduce marriage rates for childless women, and among the childless, men's educational level was found to increase marriage rates. No effects could be discerned for women. The discrete-time hazard model also showed that single women with less than one year work experience had a significantly lower union formation rate compared to those with more than two years of experience. The probability of choosing direct marriage declined with increasing work experience for childless women which indicated against the idea that a strong economic underpinning was crucial. There were also indications of a positive effect of education on the probability of marriage for childless women, whereas no effect was found for partners' education.

10. Billari, Francesco C. and Hans-Peter Kohler. 2000. "The impact of union formation dynamics on first births in West Germany and Italy: Are there signs of convergence?" in E. Klijzing, M. Corijn (Eds.), *Fertility and partnership in Europe: findings and lessons from comparative research. Volume II*. United Nations, New York/Geneva, 2002: 43-58.

This paper investigates the changing impact of union formation on the transition to parenthood in West Germany and Italy. It tests whether the impact of union status has been changing over cohorts, and investigates whether the heterogeneous spread of non-marital childbearing is proceeding as expected from the second demographic transition.

The Italian Survey was held between 1995 and 1996 with a representative sample of 6,030 men and women born between 1946 and 1975. The German survey was held in

1992 with interviews of 10,012 men and women born between 1952 and 1972. Both surveys were conducted within a comparative programme organized by the Population Activities Unit of the Economic Commission of Europe (United Nations). An Event history model was used to study the impact of marriage and cohabitation on the transition to parenthood. A proportional hazards model with a piecewise constant baseline hazard, and both time-constant and time-varying covariates was used. The dependent variable used for the transition to birth was the time of conception leading to the first birth, that is, by approximation, the time of birth minus 9 months.

Results showed that the transition to motherhood had been postponed significantly in both countries, even after controlling for prolonged educational periods. After controlling for changes in education, West German cohort had a slightly stronger postponement than Italy's. Thus, the longer period spent in education could not fully account for the lower rates of motherhood. Being married made a high impact on the transition to motherhood, which was noticeably higher than the impact of cohabitation. The impact of being in a union rose faster for younger cohorts, but the increase was much faster within marriage than within cohabiting unions. This was because the transition to first childbirth after marriage happens faster for younger cohorts than for the oldest cohort. Thus, marriage is postponed but becomes more important when people decide that they want to settle and have a child. Considering the timing of motherhood within first unions, the first year of a union is the one with the highest transition to motherhood.

11. Kiernan, Kathleen E. and Andrew J. Cherlin 1999. "Parental divorce and partnership dissolution in adulthood: Evidence from a British cohort" *Population Studies*, 53: 39-48.

This study examines the association between the timing of first partnership and subsequent dissolution, together with the effects of partnership trajectories including marrying directly, marriage preceded by a period of cohabitation, and cohabitation not converted into marriage.

The data for analysis came from the National Child Development Study (NCDS), a longitudinal study of children born in Great Britain. The sample size for the NCDS was 17,414, but for this analysis, the sample size was restricted for 10,324 cohort members for whom information at ages 7 and 16 were available. A confirmatory factor analysis was used. Variables included in the analysis were the financial circumstances of the family, measures of child's educational performance, and behavior at the time of the age-7 and age-16 interviews. A Cox partial-likelihood method was also used to estimate the determinants of the duration of first partnerships.

Results showed that parental divorce is associated with a higher risk of first partnership dissolution amongst the NCDS cohort members. Parental divorces that occurred during the adulthood of members at the age of 20 years or older had the least effect on partnership dissolution compared to those that occurred during adolescence or childhood. Both age at entry and type of first partnership were also significant predictors of partnership dissolution. The risk of dissolution was higher amongst cohabiting unions

that were not converted into marriage. For women, the rate of dissolution for women who entered marriage directly did not differ significantly from the rate for those who cohabited before marriage. However, for men, there was a marginally significant difference.

12. Wu, Zheng and Michael Pollard. 2000. "Economic circumstances and the stability of non-marital cohabitation". *Journal of Family Issues*, 21, 303-328.

This paper examines the role of economic circumstances in cohabitation dissolution through legal marriage or union separation.

Data used was the Survey of Labor and Income Dynamics (SLID), a longitudinal survey conducted by Statistics Canada, beginning in spring 1993. The cumulative response rate was 77.9% (27,900 individuals) through the end of 1994. Analysis began with a double-decrement life table estimating months of marriage and union separation. Life tables were calculated separately for premarital and postmarital cohabitations. A series of complementary log-log models with competing risks to evaluate the economic circumstances on marriage and separation for women and men were also estimated.

Results showed that postmarital cohabitation appear to be more stable than premarital cohabitations. Postmarital cohabitations also appear to end in marriage and separation in equal proportions. Regarding the effects women's economic situations on the risk of dissolution and separation, women's financial circumstances appear to have no significant effects on the probability of marriage; financial factors did not affect the probability of separation too. Personal earnings were directly related to the likelihood of separation. Cohabiting couples with earnings below the low-income cut-off were more likely to separate than those above the cut-off. Receipt of social assistance did not have any significant effect on marriage or separation. Full-time skilled employees were more likely to marry than unemployed women. After controlling for other socio-economic and time factors, there was no effect of part-time employment on marriage, but full-time semi-professional and skilled employees were substantially more likely to separate than unemployed men.

13. Coppola, Lucia. 2003. "Education and union formation as simultaneous processes in Italy and Spain". Max Planck Institute for Demographic Research. MPIDR Working Paper WP 2003-026.

This paper investigates both time spent on education and age at first marriage in both Italy and Spain where both educational training and household formation are believed to have significantly increased.

Data came from the "European Community Household Panel" (ECHP) survey. This is a multi-dimensional and multi-purpose survey centrally designed and co-ordinated by the Statistical Office of the European Community (EUROSTAT). The survey is

representative of the population of EU countries, at the household level and at the individual level, both cross-sectionally and longitudinally. A hazard model was used with education and other explanatory variables such as age, gender, household income and parent's level of education as explanatory variables.

Results indicate that that the higher the age, the higher the probability of entry into first union. Men enter a union significantly later than women. A high level of completed education results in a high probability of union formation. Thus, human capital investment seems not to delay or prevent the process of union formation, but rather accelerate it. Exiting from the educational system has a strong and significant effect on the processes of first union formation. This is very high in Spain compared to Italy. Gender differences in the timing of union formation are also more evident in the Spanish case than the Italian situation. Household income also had a significant effect on entry into marriage.

14. Demaris, Alfred K and Vaninadha Rao. 1992. "Premarital Cohabitation and Subsequent Marital Stability in the United States: A Reassessment". *Journal of Marriage and Family*, 54 (1): 178-190.

This paper sought to investigate the reasons for cohabitation and increased marital disruption. The intention of the authors was to make clear the causal relationship between cohabitation and either marital maladjustment or dissolution.

The sample consists of male and female primary respondents with a history of having contracted at least one marriage, and who, in addition entered a first marriage between 1968 and 1987. The final sample consisted of 3,300 weighted cases: 1,593 males and 1,707 females. The event of interest (dependent variable) was whether or not the respondent had dissolved his or her first marriage prior to the survey date. Independent variables include respondents' education at the time of survey, gender, and other socio-economic characteristics. Statistical analysis was accomplished with the discrete logit-model. A proportional hazards model was also used to estimate the impact of cohabitation on the monthly hazard of dissolution.

The effect of prior cohabitation is significant and positive, suggesting that cohabitators have a higher hazard of dissolution at any given time. Each year of age brings about a reduction in the protective effect of yearly increases in age at marriage on marital stability. Having either a pre-marital pregnancy or a marital birth suppresses the risk of dissolution. The impact of marital birth is particularly strong. Being black increases the risk of dissolution for females. Alternatively, living with both parents until age 19 significantly decreases the odds of dissolution for males, but not for females. Those born before 1950 have higher odds of dissolution compared to those born after 1955.

15. Hall, David and John Zhao. 1995. "Cohabitation and divorce in Canada: Testing the selectivity hypothesis". *Journal of Family and Marriage*, 57 (2): 421-427.

The aim of this paper was to investigate whether the “cohabitation effect” reflects the fact that cohabitators are a select group in ways that predispose them to divorce. The authors test the selectivity effect by determining the extent to which certain socio-demographic characteristics that distinguish cohabitators can account for the cohabitation effect.

The data were from the 1990 General Social Survey (GSS) cycle 5, conducted by Statistics Canada. This major national survey gathered retrospective marital and family history information from a sample of 13,495 Canadians. The analysis was performed using the proportional hazards regression procedure (PHREG) in SAS. The event of concern was whether a first divorce had occurred by the time of the survey. Covariates include variables that measured selectivity but have been neglected in event history models of divorce: the presence of step children, the marital status of respondent’s first spouse, whether the respondents are separated, and the age difference between the respondent and his or her first spouse.

The statistical analysis indicates that the addition of seven of the selectivity covariates only slightly attenuates the risk of divorce associated with premarital cohabitation. Thus, the cohabitation effect remains strong and statistically significant even when selectivity measures are specified. Couples with step children face a higher risk of divorce compared to couples without step children. Age heterogamy is a major predictor of marital stability. As well, parental separation is linked with a higher risk of divorce.

16. Demaris, Alfred and William McDonald. 1993. “Premarital cohabitation and marital instability: A test of the unconventionality hypothesis”. *Journal of Marriage and the Family*, 55(2): 399-407.

This study examines whether the greater instability of marriages begun by premarital cohabitation can be accounted for by cohabitators’ greater unconventionality in family ideology.

Data for this study came from the National Survey of Families and Households 1987-1988. Two sub samples were selected to provide control over exposure to confounding events. The first consisted respondents aged 35 or younger who have neither married nor cohabited with an intimate partner before, but all of whom had initiated sexual relations (n= 881: 463 males, 418 females). The second subsample consisted of couples among whom (a) both partners were in a first marriage, (b) the partners were currently living together (c) there had been a separation due to marital discord, and (d) the marriage was of 10 or fewer years duration as of survey date (n= 1,273). Measures used in this study include attractiveness of cohabitation, premarital cohabitation status, marital instability, conventionality and dimensions of unconventionality. Several items (23 questions) such as premarital sex and cohabitation, divorce, single parenting, mutual aid among family members, sex-stereotyping in family roles etc. were used to capture this concept. An exploratory factor analysis was performed on the 23 family attitude items to explore the dimensions of unconventionality among respondents.

For both sexes, a conservative attitude towards sexual behavior was associated with a significantly lower score on cohabitation. For males only, subscription to the philosophy that parents should provide financial aid and offer co-residence to their children in times of need was associated with a more favorable evaluation of cohabitation. Belief in the value of a traditional family lifestyle was associated with a more favorable evaluation of cohabitation. Women who disapproved of single parenting, as well as those who endorsed an ideology of marital permanence, had significantly lower opinion of cohabitation, compared to others. The factors used to measure unconventionality in family accounts did not account for the impact of cohabitation.

17. Schoen, Robert. 1992. "First unions and the stability of first marriages". *Journal of Marriage and the Family*, 54(2): 281-284.

This paper sought to examine whether the relationship between cohabitation and marital stability has changed over time. A second objective was to consider whether the effects of cohabitation on marital stability vary by duration of marriage.

The paper used data from the National Survey of Families and Households (NSFH). The NSFH interviewed a national sample of 13,017 persons between March 1987 and May, over-sampling cohabiting couples and certain other population subgroups. Only female experience was examined because the marital and cohabitation histories for males were found to be of lower quality (representativeness). The focus was to compare first marriages for women who married without ever cohabiting with first marriages of those who married their first cohabiting partners. The procedure used was to follow never married women through age 35, the age by which over 95% of first marriages occur. The probability of first marriage dissolution through the first 15 years of marriage was then calculated, separately for those who did and did not cohabit.

The results show that the likelihood of women cohabiting before marriage increases dramatically across cohorts, beginning with the cohort born 1943-47. The likelihood of divorce tends to rise over time at all durations, and declines with marital duration for every cohort. An examination of probabilities of dissolution specific to cohort and duration of marriage reveals a previously unsupported trend. In contrast to noncohabitators, the probability of dissolution for marriages where the partners had cohabited fell for the youngest cohorts, born 1948-52 and 1953-57. As a result, the differential risk for both cohorts largely disappeared. The rise in cohabitation suggests an increase in the probability that a first union (either marital or consensual) will be disrupted.

18. Balakrishnan, T.R and K. Vaninadha Rao and Evelyn Lapierre-Adamcyk. 1987. A Hazard model analysis of the covariates of marriage dissolution in Canada". *Journal of Marriage and the Family*, 24(3): 395-406.

The main objective of this paper was to analyze data on marital histories collected in the first national fertility done in Canada. It determines the correlates of dissolution by examining duration-specific probabilities of dissolution for various subgroups.

The data came from the Canadian Fertility Survey conducted in April-June 1984. A total of 5,315 women, aged 18-49 and living in a private household, of all marital statuses were interviewed. 3,884 ever married women are included in this study. As this analysis was mainly concerned with the correlates of marriage dissolution, life tables were constructed for subgroups of the population with different characteristics to see whether the chances of marriage vary among them. Cox proportional hazards model was used with the following covariates: age at first marriage, year of first marriage, first birth status (whether it was premarital or pre-maritally conceived but born after marriage), religion, religiosity, rural and urban residence and educational attainment.

The analyses suggest that women who marry before the age of 20 had a much greater risk of experiencing divorce than those who marry later, say after the age of 25. Religion and religiosity were found to be correlated with marital disruption. Catholics and those who are more religious had lower rates of divorce. Relationship of educational attainment to marital instability was not clear cut and varied depending on the controls used. Educational attainment and religion were not significant in the Cox model. Those who married on or before age 19 had higher risk for marriage dissolution compared to those who married between ages 20 and 21. Women who cohabited also had higher risks of marital dissolution compared to those who did not cohabit before marriage. Premarital conception or birth significantly increased the chance of dissolution.

Theories of Fertility Decline

1. Caldwell, John. C. 1982. *Theory of fertility decline*. New York. Academic Press Inc. (pp. 233-300).

The fundamental concept of the "Wealth flows theory" is that of a cultural superstructure determined by the mode of production but capable of lagging behind it in the course of change so that at any given time it specifically determines the advantage and disadvantages of children. Thus, he argues that the period before late nineteenth century was characterized by marked differences in type of work and consumption according to sex and age, with the advantage tending to go to the old and the male. Historically, this period was referred to as the period of "family production". The late nineteenth century which was characterized by a massive labor market outside the family also saw a transition from the family system of production. Caldwell identifies *growth of the industrial system* as one of the fundamental forces that led to the dismantling of the familial morality and to lower fertility. This new system led women who were previously

confined to the household to challenge their husband's work in the market place and increasingly attempt to enter the market place. The same system built an ever more complex educational structure, largely to train bread-winners for more complex jobs, saturated with the philosophy implying that education made one more fitted for market than household work. For Caldwell, it was the advent of mass schooling that determined the timing of the onset of fertility decline due to its impact on child costs and how it changed females' perception of work roles. Thus, the advent of the mass schooling system increased the cost of children while reducing their immediate productivity, thus leading to declining fertility. It provided an unrivalled extra-familial system of child care, which would eventually assist mothers to enter the extra-household labor force, and also bridged the gap between childhood and adulthood so that female choices between occupation and reproduction could occur at about the same age. Caldwell then concludes with reason that fertility declined because children became a decisive economic burden. On the question of why fertility did not fall to replacement level immediately but took a century with several fluctuations, he asserts that change of this order takes time because it consists of a series of institutional changes which must follow each other in a certain order.

2. Easterlin, Richard A., and Eileen M. Crimmins. 1985. *The fertility revolution: A supply-demand analysis*. Chicago. The University of Chicago Press.

Easterlin and Crimmins look at the reasons behind a shift from high fertility to low fertility throughout the world. They acknowledge the fact that there has been a shift from what is called a natural fertility regime to one of deliberate control of family size by individual couples. They describe the change as the most dramatic in human history, which merits the designation "fertility revolution". Easterlin and his colleague consider the fertility revolution as part of a much broader transformation, commonly termed "modernization", observed in a growing number of nations. On the economic side modernization involves a sustained rise in real output per head and wide-ranging techniques of producing, transporting and distributing goods, in the scale and organization of productive activities, and in types of outputs and inputs. It also embraces major shifts in the industrial, occupational, and spatial distribution of productive resources and in the degree of exchange and monetization of the economy. On the social and demographic side, it involves significant alterations in fertility, mortality, and migration, in place of residence, in family size and structure, in the educational system, and in provision of public health. In terms of human personality, modernization is characterized by an increased openness to new experience, increased independence from parental authority, belief in the efficacy of science, and ambition for oneself and one's children. However, they argue that the principal changes in reproductive behavior associated with modernization relate to fertility and fertility control, evidenced by a change in fertility from an average of six or more births to around two. In terms of crude birth rate, the change is from magnitudes often of 40 per thousand or more to less than 20. According to them, the change in fertility from high to low levels, together with a similar (and usually prior) decline in mortality, is termed "the demographic transition". Education and mass media were considered one of the aspects of modernization capable

of affecting fertility in terms of family size limitation. Family size limitation was found to operate through three main channels namely, demand, potential supply and regulation costs. On potential supply, it was argued that formal education improves health conditions by diffusing improved knowledge with regard to personal hygiene, food care, environmental dangers, and so on. It may also break down traditional beliefs and customs and thus undermine cultural practices, such as an intercourse taboo and prolonged lactation, which have latent function of limiting reproduction. It also lowers the cost of fertility regulation by providing information not formerly available on various fertility control, reducing the expense in time and money. Finally, it tends to reduce the demand for children by shifting tastes in a manner unfavorable to children, while decreasing the price of good relative to children.

3. Kingsley, Davis. 1987. "Low fertility in evolutionary perspective". *In Below-replacement fertility in industrial societies*. Kingsley, Davis and Michail S. Bernstam and Rita Ricardo-Campbell. (eds.). USA. The Population Council, Inc. (pp 49-85).

Davis makes reference to the industrial revolution in an attempt to explain the falling fertility rates in industrial countries. According to him, the industrial age came along while the expansion of agriculture around the world was still going on. It thus did not permit a return to the zero population growth rate that would eventually have characterized a world limited to agriculture; instead, it sharpened the imbalance between birth rates and death rates that agriculture had already fostered. Thus, industrialism generally produced a lower death rate in several ways. Industrialism brought improvement in agricultural output, efficiency of transportation which permitted more varied diets and more secure supplies around the world, and developed a specialized medical technology. With continued improvement of economic production, and with the medical technology rapidly diffused to all nations, man could control mortality as he had never done before. Davis asserts that the speed of this control is unique, and the later it occurred in a country the faster mortality fell. In all modern societies, there have been offsetting factors tending to nullify the mortality improvements (warfare, self-destruction through drugs and alcohol, new diseases), but these are weak in the face of continued drive to save lives. Consequently, in the advanced nations most of the burden of restoring a balance, between births and deaths has fallen. Thus Davis claims that after a century or more of rapid population growth and the resulting congestion, the advanced nations have finally adjusted their fertility to their mortality. Since their mortality is now extremely low, the adjustment has given rise to birth rates so low as to be unprecedented for entire nations. Davis then argues that the advanced countries have reached these low rates by pushing the principle underlying human social organization— reliance on a division of labor based on acquired skills— to its limit. The destiny of the child in such societies has come to depend on the child's training and education. The social structure that generates this kind of adaptation is characterized by social mobility, planned innovation, formal schooling, urbanization, separation of home and work place, and bureaucracy. For Davis unless these traits are somehow reversed or overcome, the industrial countries will continue to have fertility rates near or below replacement, and as other countries become developed, they too will record low fertility.

Union Formation and Fertility

1. Sawako, Shirahase. 2000. "Women's increased higher education and the declining fertility rate in Japan". *Review of Population and Social Policy*, No. 9, 47-63.

This paper investigates the relationship between increasing number of women who receive higher education and the declining rates of fertility. The study was divided into two main parts. The first part considered the marital and reproductive behavior associated with family background, educational credentials, and first job as social stratification variables. The second part looked at changes in values as a consequence of increased education and examines the relationship between views on the sexual division of labor and men's participation in housework.

Analysis was based on the 1995 Social Stratification and Mobility Survey (SSM). The study made use of the Cox proportional hazards model to estimate the rate of transition to first marriage.

The average marriage age increased with higher educational attainment. Women married at later ages and the time they spent between completion of their education and marriage was longer. The time until marriage for women with a higher education considered in proportion to their period of school attendance was not longer than in the case of those with lower educational levels. Women born into prosperous families had a higher marriage rate, and those born into families with professional or managerial status had a lower marriage rate than those born into families of unskilled manual laborers. Women in professional jobs and those fresh from school had a lower hazard of marrying. On the timing of first birth after marriage, the more advanced a woman's education the older the woman at the birth of her first child. A difference could also be seen regarding marriage cohorts and their ages at first birth: the younger the cohort, the older the woman at childbirth. Considering women's rate of transition to childbirth, including rate of those who had not yet had a child at the time of survey (censored cases), the birth rate was low for women in managerial or professional positions and for highly educated women.

2. Lesthaeghe, R. and G. Moors. 2000. "Recent trends in fertility and household formation in industrialized world". *Review of Population and Social Policy*, No. 9, 121-127.

This article analyses the recent period changes in fertility in industrialized countries from the point of view of the varying degrees of fertility postponement at younger ages and subsequent partial recuperation at later ages. It does so through both periods and cohort analysis.

The analysis showed that fertility postponement to older ages was indeed a major characteristic of the second demographic transition. However countries are currently

located at different stages of the process. In many Eastern European countries, the tempo shift started only recently (e.g. Russia, Poland, Lithuania, Czech Republic and Hungary), and low fertility has been reached mainly as a result of quantum declines rather than as a consequence of overall postponement. In some others, western pattern is followed more closely (e.g., Slovenia, Croatia) or postponement started to manifest itself earlier (Bulgaria). Most countries in Eastern Europe are likely to maintain low fertility levels for at least another decade in the 20th century. The western European countries, joined by Japan have all progressed much further along the postponement trend, but they split into two groups: one with relatively strong recuperation of fertility after age 30 and the other with inadequate recuperation. The Scandinavian countries, United Kingdom and France have been able to maintain or reach Period Total Fertility Rates of 1.70 as a result of stronger recuperation, whereas the Mediterranean countries such as Italy and Spain exhibit weak recuperation.

3. Hans-Peter, Kohler and Iliana Kohler. 2002. "Fertility decline in Russia in the early and mid 1990s: The role of economic uncertainty and labor market crises". *European Journal of population*, 18: 233-262.

This paper analyses the fertility decline in Russia during the early and mid-1990s from a macro and a micro perspective and presents a striking divergence between these two empirical viewpoints. While the macro perspective suggests that the fertility decline after 1989 was due to the economic hardships accompanying the transition to a market economy, the micro perspective argues otherwise.

Data used were from the Russian Longitudinal Monitoring Survey (RLMS), the first nationally representative survey for Russia. The main unit of the survey was the household. Although the target sample was 4,000 households, the number of households drawn into the sample of the second phase was 4,728 to make up for non-response rates. Logistic regression was used to estimate the probability of a birth based on individual characteristics and indicators of economic and labor market uncertainty. The specific indicators used as explanatory variables were employment status, whether the primary employer failed to pay wages in the last month and whether a woman is concerned about losing her job or about obtaining daily necessities. The same variables were included for the husband (partner) if the woman is married (cohabiting).

Results showed that female unemployment was not significantly associated with the probability of having a child within the period 1994-1996. However, labor market uncertainty reflected in a high prevalence of companies that do not pay wages to their employees was significantly related to the probability of having a child in the period 1994-1996. The direction of this effect was contrary to the theory outlined. However, other sections of the theory proposed supported this counter-intuitive finding. Women with unemployed husbands had a higher probability of childbirth than women with employed husbands. Male unemployment and high prevalence of unpaid female wages remained positively related with child birth. Results then indicate that there was no

negative association between labor market uncertainty and fertility; frequently there was even a positive association.

4. Santow, Gigi and Michael Bracher. 2000. "Deferment of the first birth and fluctuating fertility in Sweden". *European Journal of Population*. 17: 343-363.

This paper looks at the predictors of the timing of the first birth of women in Sweden since the mid-1960s.

Data used was from the Swedish Family Survey of 1992. This survey obtained background data on respondents' families of origin and histories of childbearing, union formation and dissolution, education and employment from 3,318 women, approximately equal numbers of women being drawn from the five single-years birth cohorts of 1949, 1954, 1959, 1964 and 1969. Other sources of data were the national taxation register and the monthly labor force surveys. Hazard model regression models were constructed using the GLIM statistical package. The dependent variable was first live-birth conception which was inferred to have occurred nine months before the first live birth. Covariates included were educational participation, labor force activity and a number of aggregate-level economic indicators.

Results indicate an upward shift of the age at conception of the first live birth between 1949 and 1954 cohorts. Women whose fathers had white-collar occupations were slightly slower than other women to conceive. Women were considerably more likely to conceive their first child while they were cohabiting than living singly, and even more likely to do so once they married. After being in a union for five years, however, married women had first-conception rates very similar to those of cohabiting women, whatever the duration of cohabitation. The first-conception rates of women who had completed secondary schooling were lower, and of women with university degree were higher, than the conception rates of women with an incomplete high-school education or with post-secondary vocational training. The rates at which women conceived their first live births did not vary according to their work status, their work experience during the previous twelve months, or their earnings over the previous calendar year. First-birth conception rates did not vary with aggregate level factors like age-specific employment ratios, age-specific labor force participation rates or the absolute level of GDP per head.

5. Dewit, Margaret. L and Zenaida R Ravanera. 1997. "The changing impact of women's educational attainment and employment on the timing of births in Canada". *Canadian Studies in Population*, 25 (1): 45-67.

This paper investigates the effects of women's paid employment on the timing of first births, as well as the possible interaction between educational achievement and employment activity.

Data used was the 1995 GSS; a national-level probability sample (n=10,749) with a target population of non-institutionalized Canadians, 15 years of age or older, and living in ten provinces. This analysis was based on birth history data of 3519 women of all marital statuses ages 18-49 at the time of the survey. The sample was stratified according to age or birth cohorts of the respondents, 18-29, 30-39, and 40-49, and only women exposed to the risk of a birth, either first or second birth, were included in the analysis. Cox proportional hazards model was used for this analysis. Dependent variables for first birth analysis was measured in years and months and was interpreted as survival time from age 15 in the childless state before experiencing a first birth. In the analysis of second birth, survival time is measured in months and years from the date of first birth. Covariates included were educational attainment, prior employment status, marital status and contraceptive use etc.

Results indicate that for women of all ages education at first birth exerts a strong and significant negative impact on the risk of childbearing, net of the other explanatory variables. A similar pattern of significant effects was also observed for the model of second birth timing. The greatest influence was found among younger cohorts, compared to the two older groups. The combined effects of previous employment and 12 to 13 years of formal education elevates the risk of birth by 8.6, compared to women not employed prior to a birth with the same level of education.

6. Gunnar, Anderson. 1999. "The impact of labor-force participation on childbearing behavior: Pro-cyclical fertility in Sweden during the 1980s and the 1990s". *European Journal of Population*, 16: 293-333.

The paper examines how the various types of attachment to the labor market affect women's propensity to give birth at different parities. Specifically, it considers the impact of changes in women's employment status on recorded fertility trends in Sweden.

Data used came from the Swedish population register system, which is based on the childbearing histories for women born in Sweden. This information is also linked to the registered income of these women during the years 1985-1995. Analysis was performed by using an intensity-regression (or proportional hazard) models for estimating influence of a number of economic variables on the propensity to give births at common birth orders. Different models were estimated on the propensity to give birth separately for four different groups of women: childless women in their 20s, childless women in their 30s, and for-one and two-child mothers, respectively.

Results indicate that birth risks increased for all four groups of women during the second half of the 1980s. In the 1990s, birth risks declined but to a different extent for different sub-groups of women. First birth intensities of childless women in their 20s declined dramatically, comparable to the risk of two-child mothers to give birth to a third child. There was also a strong positive effect of female income on the propensity to give birth, but these effects varied for the different sub-groups of women. The positive effect was very strong for young women without children. For young women in the highest income

group, there was a slightly reduced risk compared to that of women in the second highest income group. Generally, those enrolled in education had lower birth risks compared to those who did not participate in any kind of education. An interaction between employment and income level showed that childless women in their 20s have a relatively high birth risk, in comparison to other women on the same level of earned income, if they just had the experience of being unemployed.

7. Jain, S.K and P.F. McDonald. 1997. "Fertility of Australian birth cohorts: Components and differentials". *Journal of Australian Population Association*, 14(1): 31-46.

This paper examines the change in the level and pattern of fertility that took place in the post-1971 period, and the downward completed fertility of successive generations of Australian women born since 1933-37. The change in cohort fertility was assessed through parity progression ratios.

Fertility in Australia at present represents, more or less, stabilization since about the late 1970s with below replacement of fertility achieved in 1976. Fertility in Australia declined between 1970 and 1984 compared to other developed countries, even though fertility rose between 1985 and 1990, but declined in the following years for countries like Canada, Sweden, United States and New Zealand. The decline in fertility is attributed to the economic and social conditions of the 1970s which brought about a change in the attitude of men and women towards family formation and reproduction. This was mainly because the era saw most women stepping out of their traditional home duties, accepting alternative roles and life styles to motherhood. Increasing proportions of women participated, and continue to participate, in education and the labor force. They also made reference to improvement in contraceptive technology and easier access to abortion which has allowed couples to exercise control over unwanted pregnancies and to plan more precisely the number and timing of their desired children. The marriage revolution, marked by a decreasing proportion of the national population marrying and in the increasing age at marriage also accounted for the decline in fertility rates.

8. Blake, Judith and Jorge Del Pinal. 1980. "Educational attainment and reproductive preferences: Theory and evidence". In Hohn, Charlotte and Rainer Mackensen (eds) *Determinants of fertility trends: Theories re-examined*. Belgium. Ordina Editions. (pp. 61-77).

This paper takes a critical look at fertility decision models. One, associated with Richard Easterlin, Deborah Freedman, and Bernard Okun, suggests that the desire for consumer goods other than children competes with the desire for offspring. A second model, originating with Gary Becker emphasizes "quality" of children as the principal competitor with number. This paper agrees with the usefulness of the consumer models but believes that they predict poorly at the "micro" level of fertility decision making. One reason for this is the inattention to the utilities of children, as well as the restrictive assumption that the price of children is a pure decision variable. They therefore make the

case that because so much of the reasoning of consumer models relates to individuals' perception of appropriate lifestyles, acceptable "quality" in offspring, and possible alternatives to children, it seems important to study the effects on family-size preferences of a major antecedent influence on these variables - respondent's education. It was then hypothesized that highly-educated people will know about and have cultivated a wide range of utilities alternative to children, resulting in a perception of children as high cost-particularly, parental attention and educational investment.

Analysis was based on two large data sets for the American population. Both data sets contained questions on family-size preferences. One data set consisted of five national fertility surveys of women in the reproductive ages dating between 1955 and 1973. The second set involved six national surveys of voting-age adults of both sexes. All the surveys were analyzed using multiple regression techniques.

Results showed that the overall relationship between education and family-size preferences in the United States was negative. This association exists because different educational groupings perceive the utilities and costs of children differently. The higher the level of educational achievement the more likely is the individual to have acquired a wide range of knowledge concerning sources of satisfaction alternative to children, as well as greater access to such sources. Less educated people are more likely to be confined to a limited sphere of living. The effects of education on family size preferences was not due solely to selection for other associated characteristics such as race, income, occupation, or community size. The relationship between education and fertility preferences was maintained even after other backgrounds were taken into account.

9. Balakrishnan, T.R and Evelyn Lapierre-Adamczyk and Karol K Krotki. 1993. *Family and childbearing: A demographic analysis*. Toronto. University of Toronto Press Inc.

The authors of this book admit that Canada, like any other advanced country, is undergoing important demographic changes. They cite the recent trend in family formation and, more specifically, in reproductive behavior as evidence to substantiate this argument. "By the end of the 1950's fertility in Canada reached a peak. Starting with 1958, period fertility in Canada declined at a rapid rate. It is convenient to think of 1966 as the end of the baby boom. The total fertility rate, the number of births per woman, fell from 3.9 in 1958 to 1.7 by 1987. The net reproduction rate, the number of daughters per woman, went below unity, the replacement level, for the first time in 1972, and stood by 1989 at 0.78. That such sustained fertility decline is more than a timing effect and is due to a true decline in the number of children various cohorts of women were having is now beyond doubt" (p.3). They looked into the causes and consequences of these profound changes in the fertility patterns of Canadians and examined the following: (1) Canadians' attitudes, aspirations, and motivations with regards to family size and timing of births and family planning; (2) expectations within marriage, value of children, satisfaction or utility from work outside the home, and in general family and life conditions as they affect childbearing and vice-versa; (3) the relative importance of factors such as religion, ethnicity, education, income, place of residence, and female

labor-force participation on fertility and marriage; (4) separation and divorce as factors in fertility behavior, among others. Data used for this study was from the Canadian Fertility Survey which collected information through interviews from women in the reproductive years of 18 to 49 irrespective of their marital status. Touching on issues of trends in expectations of fertility in Canada, the authors noted that expectations as to the number of children to have was a function of not only what one desires, but also the subjective perceptions of getting married, having the time to have children, and the extent of sterility and subfecundity. They argue that among the never-married women, the total expected number of children decreases with age. Even for the very young in the 18-24 age group, for whom most of their reproductive life lies ahead, the expected number may not be achieved. The statistics showed that 35.2 per cent of women were childless at the time of the survey, and 9.6 per cent expected to remain childless. Childbearing in teens and early twenties had gone down in Canada, and was attributed to the increasing ages at first marriage. The mean age of first birth has been going up, as most fertility occurred within marriage. They also observed the inverse relationship between age at first birth and lifetime fertility of women. Religion, education, place of residence, ethnicity and work status were some of the socio-cultural factors identified as reasons for such demographic changes.

10. Vikas, Andret. 2004. "Women's child labor force attachment and childbearing in Finland". MPDIR Working Paper WP-001. Max-Planck Institute for Demographic Research.

This paper analyzes the impact of women's economic activity, earnings and child home care allowance on childbearing. It also examines the possible changes in these relationships and their role in maintaining the relatively stable fertility throughout the 1990s.

Data were obtained from the Finish Longitudinal Fertility Register, a Statistics Finland database containing linked individual level information from different administrative registers. The extract used for analysis covered women's full histories of child-bearing and educational attainment. The extract was a ten-percent random sample stratified by single-year birth cohort, drawn from all women who had ever received a personal identification in Finland and were in the age range 20 to 24 for the years 1988 to 2000. There were 125,392 of such women in the data, and they had 28,955 first, 25,875 second and 12,936 third births during the observation period. The statistical analysis used for this study was the intensity-regression (proportional hazard) models with piecewise constant specifications of the baseline intensity, using the GLIM software package. The event under study was a live birth, and the intensity of its occurrence was analyzed as the dependent variable, measured with the precision of a month. All explanatory variables used in the study were time-variant.

Results showed that women were less likely to give birth when engaged in full-time studies. When other demographic variables were controlled, unemployed women aged 20 to 30 years old had the same propensity to become mothers as employed women did;

however, the unemployed had a notably higher risk when earnings, education level and calendar year were controlled for. Higher risk of motherhood only applied to unemployed women who did not have more than a compulsory level of education. Their relative risk of first-birth was higher compared to the employed; at all other education levels employed and unemployed women had the same level of first-birth risk. Unemployed women with lower secondary education had the highest risk. Results also showed a strong positive effect of a 20 to 30 year-old woman's earnings on her propensity to become a mother, after controlling for level of education. Among women with a compulsory level of education only, income did not matter at all regarding first-birth risk, while there was a very clear income gradient among women with more education. Lack of or low level earnings did not inhibit younger childless women with a low level of education from entering into motherhood, while it clearly did among women of the same age with an education higher than a compulsory one. Among women over 30, being in employment, having higher earnings and a higher level of education were all positively correlated with transition to motherhood.

11. Kreyenfeld, Michaela. 2004. "Fertility decisions in the FRG and GDR: An analysis with data from the German Fertility and Family Survey". MPDIR Working Paper, WP 2004-008. Max Planck Institute for Demographic Research.

This paper aimed at comparing family policies and fertility patterns in the former German Democratic Republic (GDR) and the German Federal Republic (FRG). Both societies differed in the integration of women into the labor market. By contrasting fertility development in these two societies, the paper aimed at finding out how women's education and employment affects fertility decisions, especially in the two societal contexts.

Data were obtained from the German Fertility and Family Surveys (FFS). The FFS is part of an international project designated to produce comparable data sets for the analysis of fertility and family dynamics in European countries. The German FFS was conducted in 1992 with roughly 10,000 respondents who are of German nationality, live in private households, and were between the ages of 20-29 at the time of interview. However, the author restricted the sample to female respondents, of which there were 5,996 in the German Fertility and Family Survey. The dependent variable for this study was transition to first pregnancy and the key independent variable was women's educational attainment. Other background characteristics such as size of place where respondents grew up, religiosity, number of siblings, etc were also considered. Event history techniques were used for the analyses of first pregnancy risks. The process time was considered as the age of the mother and the baseline hazard modeled as a piecewise constant function.

Results for West Germany indicate that the effect of education was negative, very strong and highly significant. Compared to women with a medium education level, first birth risks are cut by 50 percent compared to women with low level of education. Being in educational system strongly reduces first birth risks: They are cut by more than 70% for women who are in vocational training or in university education (compared to being

employed). Women who are not employed and not studying encounter highly elevated first birth risks compared to active women. The inclusion of personal background characteristics did not change the results. Neither did the size of the place of origin nor whether parents were divorced, but being religious increased relative risk by 12 percent. In East Germany, women with a low school degree encountered fairly low birth risk, which was opposite to the finding for West Germany. Women's educational participation also reduced first birth risks in East Germany. Contrary to findings in Western Germany, background characteristics, with the exception of parental divorce, had a strong effect on fertility.

12. Merlo, Rosangela. 2004. "What women want: Antecedent conditions for the initiation of childbearing". The Australian Nationality University, Canberra. Paper presented at the 2004 meeting of the Population Association of America, Boston.

This paper argues that the main tenets of theoretical explanations operate through antecedent conditions (such as marriage, financial security, and home ownership) that individuals want in place before initiating childbearing, and that decisions about the transition to motherhood are based on the interplay of such conditions, how strongly these conditions are valued, and the strength of an individuals' desire for children.

The Women's Views Survey (WVCS), conducted in 2001, was used for analysis. The WVCS has a nationally representative sample of over 1,000 Australian women aged 25-39 years. As the survey's primary aim was to investigate aspects of childlessness, childless women were over-sampled, resulting in completed interviews from 688 childless women and a comparison of 328 mothers. To investigate factors associated with preconditions for the transition to motherhood, ordinal multinomial logistic regression models were developed. Models were built to estimate the probability of wanting a secure relationship, marriage, and a partner with a good job, and of owning a home, and having time to travel to do other things.

The findings suggested that for all women, a secure relationship and an ideal partner stand as the most important prerequisites to motherhood. Financial security and having a partner with a good job were important prerequisites for at least one in four women. Surprisingly, human capital conditions were not considered high priorities for survey respondents— the attainment of tertiary qualifications and establishing a career were the two conditions ranked as unimportant. Current and prior cohabitation, engagement in full-time employment and desire for children all had significant positive effects on the chances of regarding a secure relationship as a precondition of having children. For increased importance of marriage as a precondition of having children, age, childless status, previous cohabitation and desire for children all produced statistically significant effects. Models of importance of having a partner with a good job and owning or buying a home had little predictive power.

13. Weston, Ruth and Lixia Qu. 2001. "Changing patterns relationship formation: Implications for fertility". Australian Institute of Family Studies. Paper presented at the Australia- New Zealand Population Workshop, Canberra.

This paper examines the links between relationship formation, relationship stability and fertility. The study was based on the Australian Family Formation Project, a national longitudinal survey conducted by the Australian Institute of Family Studies in 1981 (when respondents were 18 to 34 years old). The sample size for this survey was 2,500 representing about 58% of the total number of respondents. Four sets of analysis were conducted: (a) the timing of the first living together relationship, (b) whether the union began with cohabitation or marriage, (c) what happened after cohabitation-the proportion who married or separated within four years and who had a child within this period; (d) what happened to those who married at the outset- the proportion who married or had a child.

Results indicate that the timing of first union for older groups occurred earlier compared to younger groups. However, more recently born respondents were more likely to choose cohabitation as a form of union. For most couples too, cohabitation was a temporary situation, ending in either separation or marriage. Having children outside marriage was increasing. Fertility intentions also indicate that Australian women, like their counterparts in most European countries, typically have fewer children than they intended having when they were young. Relationship status contributed to whether a woman will have a child or not. The most likely to have children were those who have been able to maintain their partners right through cohabitation. Those who had separated from their partners were most likely to change their minds about having children, followed by the continuously single. Of all the groups, the most likely to express uncertainty about this matter were the continuously single.

14 Aassve, Arnstein and Gereltuya Altankhuyag. 2001. "Changing pattern of fertility behavior in a time of social and economic change: Evidence from Mongolia". Max Planck Institute for Demographic Research. MPDIR Working Paper WP 2001-023.

This paper examines how changes in the socio-economic conditions in Mongolia have affected fertility patterns in recent times. The paper aims at meeting two main objectives: First, to provide a detailed micro level analysis of marriage and birth parities; second and most important, to examine how recent changes in economic prosperity have affected the Mongolian people's family formation behavior.

The 1998 Reproductive Health Survey of Mongolia (RHSM) was conducted using a two-stage sampling method, with an equal probability of selecting the households. A total number of 7535 women between the ages of 15 and 49 were interviewed. The sample was divided according to date of birth of the respondent. The first group was made up of women born between 1949 and 1973 and the second group born between 1974 and 1983. The latter group represented women who started their childbearing just before the economic transition started in 1989. A hazard regression model, with time since age 12

as the duration variable, was used to estimate the determinants of first birth. For second births, the authors used duration from first birth, and similarly the duration from second birth for third births. Enrolment status and educational attainment were used as time-varying covariates, ownership of livestock was also considered a covariate (note that animal husbandry is the main source of livelihood and approximated to individuals' wealth).

Results indicate a significant delay of the event of first birth among younger cohorts and that also affected completed fertility. For both cohorts, there was a positive relationship between economic prosperity and the timing of first birth. However, the relationship for older cohorts was not statistically significant. This indicates that factors other than economic prosperity and growth were important during the socialist rule. The relaxation of the pro-natalist policies was more influential. For the young cohort however, the economic downturn worked as an effective break on women's childbearing. There was delaying effects associated with educational attainment, and the effect was among those undertaking higher education. The effect of economic activity on second birth was significant for both cohorts, but was weak during the socialist rule.

15. Fisher, Kathleen and David Charnock. 2003. "Partnering and Fertility patterns: Analysis of the HILDA Survey, wave 1. Paper presented at the HILDA Conference, Melbourne University.

This paper investigates the causes of the declining fertility rates in Australia. The analysis made use of the HILDA dataset of individuals who filled out personal questionnaires in mid-2001 merged with selected variables from the HILDA household dataset. The sample was made up of men and women in three separate groups 18-19 (N=2690), 30-49 years (N=5672) and 50+ years. The ages were chosen to reflect the stages of key life events relevant to fertility and partnering. Logistic regression was used to identify the associations between fertility expectations and the various socio-demographic factors. Three parity progressions were considered in order to study whether the significant factors varied with parity: expectations of remaining childless compared with expecting one or more children, expectations of having one child compared with expecting two or more children, and expectations of having two children compared with three or more.

Results indicate that a large proportion of those in the younger age are unsure as to whether they are likely to have any children in their lifetime. This declines steadily with older age groups (up to 55 years). For all age groups, current partnering status is the most significant factor associated with predicting whether individuals expect to have children in their lifetime. Married couples were thus most likely to have children, while the least likely were those who have never married and have never been in a *de facto* relationship. Similarly, those in *de facto* relationships who are likely to marry appear somewhat more likely to expect children than those unsure or unlikely to marry. Women with higher education in age groups 30-49 years and 50 years and over were more likely to expect to be childless. In addition, women with higher personal income were more likely to expect to be childless. Unlike women, for men the link between higher education levels and

childlessness is not so distinct. Similarly, men's likelihood of childlessness is decreased as their capacity to fulfill the breadwinner role increases.

16. Caldwell, John C. 1980. "Mass education as a determinant of the timing of fertility". *Population and Development Review*, 6 (2): 225-255.

This article proposes mechanisms through which mass education produces declines in fertility and reviews the evidence, both in the 19th century demographic transition in the West and in contemporary developing countries, for such a relationship. Caldwell argues that traditional family-based production is inevitably characterized by high fertility; and a fully developed system of capitalist production, with most production arising from wage labor offered to individuals within the family by outsiders characterized by low fertility. According to Caldwell, education has its impact on fertility through five main mechanisms. First, it reduces the child's potential for work inside and outside the home. The child is completely alienated from traditional chores in that he feels to be at odds with his learning and status. Parents may therefore fail to enforce traditional work or positively discourage it by asking children to invest all their energies for succeeding at school. They may feel that the traditional work does not benefit a person who is headed for nontraditional status, and may be apprehensive of alienating the affection of a child who is going to be successful in the new world. Second, education increases the cost of children far beyond the fees, uniforms, and stationery demanded by the school. Third, schooling creates dependency, both within the family and within the society. In the absence of schooling, all members of the family are clearly producers. With schooling, it becomes clear that the society regards the child as a future rather than a present producer, and expects the family to protect the society's investment in the child for that child. Fourth, schooling speeds up cultural change and creates new cultures. Fifth, in contemporary developing world, the school serves as a major instrument for propagating the values, not of the local middle class, but of the western middle class. The school system holds in high esteem western middle class values, while traditional family morality is disdained or regarded as irrelevant.

17. Miller, Brent C and Tim, B. Heaton. 1991. "Age at first sexual intercourse and the timing of marriage and childbirth". *Journal of Marriage and Family*, 53(3): 719-732.

This article views age at first sexual intercourse as a life course transition that can influence marriage and childbearing. Thus, the paper aims at examining the effect, if any, of age at first sexual intercourse on the subsequent timing of marriage and childbirth.

Data for this study were taken from the National Survey of Family and Growth (NSFG), cycle three. The NSFG was done by professional female interviewers who questioned 7,969 women aged 15-44 in their homes. The NSFG data include background characteristics and measures of timing of sexual activity, fertility and marriage. Six categories of age at first sexual intercourse were considered. The control variables used in the analysis included region and residence type, father's, mother's and respondent's

education, and age at menarche. Life table procedures were used to calculate the rates of marriage and first birth following first intercourse.

Intercourse most often occurs in the mid-teens (16-17 age interval), regardless of race, but black females' first sexual experience occurs sooner than whites. Marriage experience among whites varied with age at first sexual intercourse in two main areas. First, early initiators of sexual activity were more likely to marry young. Second, early initiators had a longer interval between first sexual intercourse and marriage. Marriage rates for blacks were much lower than for whites. Overall, white teenagers who began sexual activity at young ages were more likely to have formed a family by age 20 compared to those who delay sexual initiation. For both blacks and whites, there was a fairly consistent pattern for women who began sexual activity at younger ages to have birth sooner after marriage. Blacks spend less time after marriage to bear their first child than do whites.

18. Heaton, Tim B., Cardell K. Jacobson, and Kimberlee Holland. 1999. "Persistence and change in decisions to remain childless". *Journal of Marriage and the Family*, 61(2): 531-539.

This paper examined factors related to persistence and change in decisions to remain childless.

The analysis is based on Waves I and II (1994 and 1998) of the National Survey of Families and Households (NSFH), a national probability sample of 13,017 respondents of the non-institutionalized US population aged 19 years and older. Five possible birth outcomes were examined as the dependent variables. The first possible outcome they called "postponers"; indicating those who wanted children at wave I, but had not had them by wave II. The second group was those who switched from initially wanting children in the first survey saying they no longer want children or are uncertain in the second survey. Intentional parents, the third group, said they wanted children in the first survey and had them before the second survey. Those in the fourth group were consistently childless. The fifth group constituted those who did not want children but had a child or decided they wanted to have one. Explanatory variables used were age, education, race, perceived stability of relationship and marital stability. A multinomial logistic regression was used for analysis.

Results indicate that there is little age difference between postponers, and those who have a child, but older people are more likely to decide they will not have any children after all. Older people are also more likely to be consistently childless and to switch and decide they want children. Compared with whites, blacks were more likely to have children. They were particularly unlikely to be in the consistently childless group or to switch to childlessness. Higher levels of education reduce the likelihood of switching from childlessness to wanting children and increase the chances that people will postpone having a child.

19. Beaujot, Roderic and Alain Belanger. 2001. "Perspectives on below replacement fertility in Canada: Trends, desires and accommodations". Discussion Paper no. 01-6. Population Studies Center. The University of Western Ontario.

This paper describes the Canadian case in below replacement fertility, including proximate determinants of union formation and contraception. It places the stable cohort and period rates of the past 20 years into two explanatory contexts: (1) perceived trade-offs in terms of value and cost of children, and (2) the accommodations between paid and unpaid work. Comparing the fertility rates of previous cohorts to recent ones, the authors came to a conclusion that early childbearing continues to be undermined, and there is the possibility of further frustrations in achieving anticipated childbearing in the narrowed windows of the late 20s and early 30s, especially in the context of unstable marital relationships. The second demographic transition was considered the most relevant context for explaining the trends of the past 20 years. For instance, the average births per woman, as measured by the total fertility rate, had reached a peak of 3.9 in 1957, declined to 2.2 in 1971, and had been relatively stable at about 1.7 to 1.5 births per woman over the whole period 1997 to 1998. The median age at marriage also declined over the century to over 21 years for brides and 23 years for grooms in the early 1970s, then increased to ages 26 and 28 for women and men respectively in 1996. This could be identified as the first phase of the second demographic transition. Based on evidence from 1995 General Social Survey, the authors document that among persons born between 1951 and 1970, two of five have lived in a cohabiting union and over half of first unions taking place since 1985 have been cohabitations rather than marriages. This is characteristic of the second phase of the demographic transition. The third stage is made manifest in terms of an increase in divorce and cohabitation. There has been a general downward trend in the age at home leaving, first marriage, first birth, last birth and home leaving children over the birth cohorts 1916-20 to 1941-45. The delays are interpreted as reflecting the needs of both men and women to put off the entry into relationships, and especially childbearing, until they are better able to handle the decision to either invest in themselves and in reproduction.