Gender Role Attitudes and Women's Labor Market Participation: Opting-Out, AIDS, and the Persistent Appeal of Housewifery [1]

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Abstract

After a century of remarkable growth, female labor force participation (FLP) has leveled-off in the late 1990s, despite continuous improvement in fundamental economic variables, such as educational attainment. Using data from the 1977-2006 General Social Surveys (GSS), this paper studies the impact of changing gender role attitudes on the evolution of FLP in the United States. The analysis accounts for non-linear time-period, life-cycle, and cohort effects, as well as a host of background variables. It uses a double prong instrumental variable strategy appealing to extraneous attitudes found in the GSS, and to an exogenous shock to attitudes, namely the AIDS scare, which may have acted as a counter-current to the "Pill Revolution", using repeated cross-sectional data from the 1988-2006 National Health Interview Surveys (NHIS) in the context of a variant of two-sample two-stage least squares (TS2LS). Gender role attitudes, whose progression stalled in the mid-1990s when the AIDS crisis peaked, are found to explain at least a third of the recent leveling-off in FLP that is, as much as all the usual variables combined.

Keywords: Gender role attitudes, opting out, female labor force participation, HIV/AIDS scare, Pill Revolution, cohort effects, economic identity theory.

1. INTRODUCTION

Over the last century, the most significant change in the labor market has been the remarkable growth in female labor force participation (FLP). As argued by Goldin (2006), the evolution of aggregate trends in FLP only partially reflects the profound changes in the place of women in society that accelerated in the second half of the 20th century. The aggregate trends also mask a process with spurts (e.g. Rosie the Riveter) and consolidation or retrenchment (e.g. War Reconversion/G.I. Bill) that involves period-specific and cohort-specific changes, and more recently the life-cycle effects of population aging. Period-specific structural changes, such as the rise of the clerical sector in the early 20th century (Goldin, 1990; Costa, 2000) or technological progress in the household at mid-century (Greenwood, Seshardri and Yorukoglu, 2005), are part of the many explanations supporting the transformation of women's role. Goldin and Katz (2002) and Bailey (2006) have also provided compelling evidence of cohort effects due to innovation in contraception affecting changes in female educational attainment and labor market outcomes of cohorts born after the late 1940s.

A less well-known fact, illustrated in Figure 1 (solid line), is that FLP began to level-off in the mid-1990s peaking around 72 percent in the late 1990s, before it began to retreat below 70 percent in 2004.[2] Given that the FLP of college-educated women (o-line) had almost reach parity with men's (triangle line) in the mid-1990s, this stabilization or slight retreat was particularly disappointing for the women's movement.[3] It has been characterized as "opting out" in the popular press (Belkin, 2003; Wallis, 2004; Story, 2005) and among sociologists (Cotter, Hermsen and Vanneman, 2007; Stone, 2007). The importance of this phenomenon has raised more skepticism among economists (Boushey, 2008; Goldin and Katz, 2007). Women's educational attainment, as well as their relative wages, has continued to

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[2]From 1997 to 2000, the FLP computed from the March Current Population Survey (CPS) using the variable LFSR (labor force status recode) among women aged 18 to 65 went from 71.99 to 71.78 percent passing through 72.1 in 1999. Given this plateau, it is difficult to pin point a single peak year. Blau, Ferber and Winkler (2006) and Juhn and Potter (2006) also report that the participation rate of married women began to level off in the mid-1990s and declined somewhat in the late 1990s and early 2000s, with little explanation of the trend.

[3]Taking FLP among Canadian women (x-line), which continued to increase in the 2000s (from 72.4 percent in 2000 to 76.1 percent in 2007), as a counterfactual offers the view of a retreat with respect to a long run trend increase.

rise. Demand-side factors, such as technological change and sectoral shifts (Black and Spitz-Oener, 2007) continue to favor women's work. The decreased influence of husband's income on married women labor supply decisions makes it unlikely that the better employment prospects of husbands in the early 2000's could provide a substantial explanation for the slowdown (Blau and Kahn, 2007).

The main goal of the paper is to account for gender differences in the evolution of labor force participation over the last 30 years by appealing to gender role attitudes. With its focus on attitudes, this paper can be placed in the recent literature that has emphasized the role of social norms and beliefs in modulating the impact of economic fundamentals,—such as education, wages, or income—, on labor market outcomes.[4] Over the years, incorporating tastes and social influences into economic theory has taken many forms from the early writings of Becker (1957, 1971) on tastes for discrimination to the more recent inclusion in the utility function of the notions of personal capital and social capital (Becker, 1996; Becker and Murphy, 2003), which are well-suited to capture habit formation and peer influences. [5] From Akerlof and Dickens (1982) who first began incorporating a person's beliefs as arguments in the utility function to Akerlof and Kranton (2000, 2002, 2005) who include a person's sense of self or identity into the utility function to argue that people behave as they "should" according to their social category. Here, gender role attitudes, which capture a person's own view of social norms on gender roles, are easily tied to economic identity theory (Bénabou and Tirole, 2006).

Recognizing that traditional gender role attitudes, defined below to capture the notion the husband should be the main "breadwinner" and the wife the main "homemaker", are not necessarily antagonistic to egalitarian attitudes, defined below to capture the notion that women are as capable as men in the workforce, the impact of both type of attitudes is studied. Accommodating rather than opposing both views in the work-life balance has arguably become the new face of feminism.[6] Gender role attitudes are thought to impact

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[4]See Moffitt (2001) for a review of the empirical difficulties in such attempts.

[5]Recently, Charles, Guryan and Pan (2009) found significant impacts on women's labor market outcomes of male views ("male sexism"), thought to capture taste-based discrimination. They used data similar to that the present study, but exploited the cross-regional variation in male views.

[6]The tension between family-friendly policies and gender equality policies is symptomatic of these types of dilemmas.

not only the work decisions of married women, but also those of lone-mothers who have the option of relying on government assistance, or indeed the career and lifestyle choices of single women. A number of recent papers have exploited cultural differences in gender role attitudes to show that they have some explanatory power towards women's work decisions across ethnic groups in the United States (Fernandez and Fogli, 2005) and across countries (Fortin, 2005).[7]

This paper contributes to the study of the impact of gender role attitudes on FLP in several novel ways. First, relying on pooled cross-sectional data from the 1977-2006 General Social Surveys (GSS), it accounts for non-linear time-period, life-cycle, and cohort effects, as well as a host of background variables. Second, it utilizes data from National Longitudinal Survey of the High School Class of 1972 (NLS72) to corroborate the age-period-cohort specification and address concerns about reverse causality. Third, within the GSS, an instrumental variable strategy based on extraneous attitudes about sexual morality and political views is used to dispel concerns about cognitive dissonance. To further dispel concerns of endogeneity, this is supplemented with an exogenous shock to attitudes, namely the AIDS scare, using repeated cross-sectional data from the 1988-2006 National Health Interview Surveys (NHIS) in the context of a variant of the two-sample two-stage least squares (TS2LS) strategy (Angrist and Krueger, 1992; Inoue and Solon, 2005). While the HIV/AIDS scare is likely only one factor among others, responsible for recent changes in gender role attitudes, its effect on egalitarian attitudes is sufficient to provide an arguably exogenous source of identification.[8] Similarly, when changes in compulsory schooling laws were used as instruments for education in wage regressions (Angrist and Krueger, 1991), it was not thought that these laws were the only sources of changes in overall education levels.

As shown below, egalitarian attitudes, which had been increasing over the 1970s and 1980s, peaked for most cohorts in the mid-1990s, when the AIDS crisis peaked, and they began to soften thereafter, more importantly among the post-1966 birth cohorts.[9] Conversely,

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[7]Fernandez (2007) and Fogli and Veldkamp(2007) have further described the evolution of changes in FLP over time as resulting from the dynamics of a learning model, which predicts a leveling-off.

[8]See Becker and Rubinstein (2004) for the role of fear on economic behavior. No significant effects of the AIDS scare on traditional gender role attitudes are found, likely because the measured changes in these attitudes in the GSS were not large enough (about half of the changes in egalitarian attitudes). As indicated below, larger changes can be found in other surveys.

[9]Note that the incidence of HIV/AIDS among women is much higher in the United States than

traditional gender roles after a steady decline in the 1970s and 1980s began to stabilize in the mid-1990s, even increasing in the late 1990s for some cohorts. Gender role attitudes are thus found to be the missing gender-specific factors that explain the differences in the concavity of time trends in male and female labor force participation that remain after accounting for the usual factors.[10]

Alternative explanations such as changes in divorce and in attitudes towards divorce laws are explored but their impacts on FLP are found to be dominated by gender role attitudes. The "opting out" hypothesis, conceived as the labor market withdrawal of college-educated women when they have children, perhaps out of concern for the welfare of their offspring, or perhaps because of the stresses of living in two-earner families or succeeding in the labor market is also considered.[11] Separate analyses for college-educated women and women with less than 4 years of college education are thus conducted, along with falsification tests performed on men to show that gender role attitudes capture gender-specific factors rather than general cultural factors.

More generally, the effects are found to be remarkably robust to the inclusion of a wide array of controls for social, religious, and political conservatism, ethnic, and health factors. However, among African-American, self-rated health is found to be as important as gender role attitudes in accounting for the evolution of FLP. Given that black women are half as likely as white women to be married, embracing the traditional role of homemaker may simply not be a very feasible or likely option for many African-American women.[12]

The remainder of the paper is organized as follows. The next section presents the historical

in Canada. Among women, the CDC (2008) estimated that about 10,000 new cases of AIDS were diagnosed in 2006, 65% of those among Black women. In Canada (PHAC, 2007), this number was less than 80 cases. That being said, there are limits to comparability given the very different family leave policies in the two countries.

[10]These usual factors include not only educational attainment, the number of children, the presence of pre-school children, race, marital status, and divorce experience, but also whether the respondent's mother ever worked, whether she lived in an intact family and her religious affiliation at age 16.

[11]Figure 1 indeed shows that to the extent that the AIDS scare played a role, FLP among college-educated women reacted more swiftly at peak of the crisis and recuperated more quickly as the crisis receded. This is consistent with Anderberg, Chevalier and Wadswortha (2008) who argue that education-health gradients are partly explained by the fact that more educated people absorb health information more quickly.

[12]For example, data from the 2006 March CPS reveals that 60 percent of white women are currently married, whereas the percentage among black women is 30 percent. In the GSS, the numbers are 62 percent for white women and 34 percent for black women in 2006.

social setting and theoretical framework that provide the background for the analysis. Section 3 presents the data on gender roles attitudes and on the subjective risk of HIV/AIDS, and some descriptive evidence. The main results are presented in section 4, which also comprise the results from the instrumental variables strategies, the exploration of alternative hypotheses, and the results for various sub-groups. Finally, I conclude in section 5.

2.   Competing Identities: "Career Woman" vs. "Housewife"

There has been a long tradition of collecting information about views on women's roles in society and in the family. This information shows that there have been spectacular changes that took place over time and across cohorts in perceptions about women's roles or identities. Traditional beliefs held that a woman's place was in the home, where she was entrusted with the care of children and the support of relationships. The emergence of a woman's identity as a "career woman" is relatively recent. Historically, most women took jobs while waiting for marriage or after having raised their children, rather than enter life-long careers. While women have long been engaged in the careers of nursing and teaching, many of these women never married.

In the neo-classical framework, a woman's labor market decisions are typically modeled using utility maximization over labor-leisure choices where her decisions can be summarized in terms of two fundamental parameters, her own-wage elasticity and the income (including her husband's in the case of a married woman) elasticity. Retracing the evolution of these two parameters over the course of the twentieth century, Goldin (2006) notes that the rise in women's educational attainment implied a sustained rise in the own-wage elasticity for much of the century, but the substitution effect began to reverse its upward trend in the 1980s.[13] The income elasticity, on the other hand, which was large at the beginning of the century began a substantial decline at mid-century, such that by the 1990s it was more comparable to that of men. Because married women's labor market decisions have become less sensitive to their husbands wages (Blau and Kahn, 2007), and given that their own wages relative to men's kept increasing, this framework is insufficient to fully describe the recent evolution of

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[13]Goldin also notes the importance of other demand factors such as the rise in part-time work in this increase.

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FLP.

In fact, when changes across cohorts are included in the analysis, the spectacular rise in FLP and the sharp decline in fertility in the latter half of the twentieth century can be seen almost as a discrete change that coincided with the behavior of cohorts who gained access to reliable family planning (Pill, IUD, abortion). Yet, the "Pill Revolution" happened in the same era as many other changes, including the Civil Rights movement, the "Sexual Revolution", and more importantly the "Women's Liberation Movement", which aimed to liberate women from domesticity and open up labor market opportunities for them. In recent years however, "feminism" has begun to carry negative connotations, and intensive mothering and housewifery (à la Martha Stewart) are on the rise.

One interpretation of the Women's Liberation Movement is that it proposed to women this new, and largely untested, identity of "career woman" equal to man in the workplace, capable of high achievement, and assuming her own identity by keeping her birth name. Goldin and Shim (2004) have indeed found that the fraction of college-educated women keeping their maiden name rose sharply in the 1970s and 1980s, then declined in the 1990s and early 2000s. Initially, this new identity was proposed as a polar alternative to the traditional identity of housewife: marriage was shunned, co-habitation was preferred, "'open" partnerships were acceptable. Motherhood was either delayed or altogether ruled out.

But for many women who were already assuming multiple identities as spouse, mother, cook, housekeeper, and caregiver to elderly parents, this proposition may have seemed simply like adding another largely untested role or identity to an already long list. Indeed Fortin (2005) distinguished three identities,—wife, mother, and career women—, to consider the effect of mother's guilt separately. Here, because of data limitation in terms of attitudes towards career women in the GSS, views representing the role of wives and stay-at-home moms are regrouped into the traditional views and the attitudes associated with the identities of working moms and career women into the egalitarian views.

This paper draws its theoretical underpinnings from the new economics of identity (Akerlof and Kranton, 2000; Bénabou and Tirole, 2006). In the economics of identity, the agents' utility incorporates their beliefs about their identity or their sense of self. Adopting an identity implies not only that one's preferences are aligned with those of the chosen identity,

but also that one's takes on the duties and responsibilities associated with the identity. Thus it can rationalize a wide set of behaviors such as acting out of duty or guilt, and getting caught in a "treadmill" of escalating commitments. The "opting out" phenomena could be conceived as getting off the treadmill.

Bénabou and Tirole (2006) presents a dynamic model of competing identities, where agents invest in identity-capital which has a multiplicative effect on the utility they derive from the chosen identity. Having chosen their identity on the basis of past endowments and a self-assessment of their type, the agents make some investments in the competing identities while being confronted with time and resource rivalry between these identities, and foreseeing the identity-rewards of these investments in the future. Thus identity types provide a channel by which anticipatory utility of the future realization of a desired identity influences the agent's decisions to invest in that identity in the present. The identity framework provides a motivational channel by which cultural trends towards more religious or socially conservative values may impact labor market decisions.

This framework suggests an econometric specification that includes indicators of the saliency of the competing identities, captured by gender role attitudes, where the identity of "career woman" is expected to have positive impacts on FLP, and conversely the identity of "homemaker" is expected to have negative impacts. The family background (religion at age 16, did the mother ever work, did they live in an intact family) will capture the respondent's endowment of identities. Years of schooling, marital status, the presence of young children, and the number of children will capture the initial identity-investment.

3. Measuring Gender Role Attitudes and Descriptive Evidence

This section addresses two critical issues in this paper; the measurement of the two indexes of gender role attitudes and the choice of an appropriate A-P-C (Age-time Period-Cohort) specification. These choices are made for tractability and the results are shown to be robust to more flexible specifications. The data from the NHIS on subjective risk of HIV/AIDS are presented and the likely impact of the AIDS scare discussed.

Data on gender roles attitudes have been collected in many U.S. and international surveys over a long period of time. Sociologists have been especially interested in describing the changes in these attitudes around the era of the Women's Liberation Movement, from the 1960s into the late 1970s (e.g. Mason, Czajka, and Arber, 1976). The General Social Surveys, which are conducted yearly (or bi-yearly) by the National Opinion Research Center, have been a well-utilized repeated cross-sectional source of such attitudes (e.g. Levine (1993), Fernandez (2007), and Fogli and Veldkamp (2007)). Each cross-section comprises 1372 to 2992 observations per year for a total of 20,000 females and 19,194 males between the ages of 18 and 65 from 1977 to 2006.

A growing body of literature on the impact of noncognitive skills in wage determination (e.g. Heckman, Stixrud, and Urzua (2006), Fortin (2008)) also appeals to psychological variables, for example the Rosenberg self-esteem scale and the Rotter locus of control scale. These "scales" or composite variables, are averages of answers to many related questions that ensure the reliability of the "scale".[14] Whereas these "soft" variables are well-established in the psychological literature, no such consensus on how to measure gender role attitudes exist in the literature, perhaps in part because the questions vary by survey.[15]

Indeed, in the second data source used, the NLS72, which is known as the grandmother of educational longitudinal surveys conducted by the National Center for Education Statistics (NCES), a series of ten questions were asked, in 1979, to elicit views about gender role attitudes. These are listed in Panel A of Table 1.[16] Average agreement is computed as the average of all answers rescaled between 1 and 0, where 1 denotes strong agreement and 0 denotes strong disagreement. Answers scaled 1 to n were rescaled 1 to 0 using the formula

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[14]Psychologists generally assess the validity of scales on three principles; convergent validity (a similar index should yield a similar assessment of the individual), stability (the index would yield a similar assessment if administered in a short time span), and reliability (answers to each question comprising the index should be highly correlated).

[15]Psychologists have used Bem's sex role inventory (Bem, 1981) to assess degrees of masculinity, femininity, and androgyny of subjects. This scale assesses stereotypical gender traits, a concept different although related to gender role orientation.

[16]The NLS72 interviewed students in their senior year in high school in the spring of 1972, with follow-up surveys conducted in 1973, 1974, 1976, 1979, and finally in 1986. Gender role attitudes questions were asked only in 1979 and labor market information was asked in both 1979 (when most respondents were 25 year olds), and in 1986 (when most respondents were 32 year olds.).

$(n - k)/(n - 1)$ where n is the number of categories and k is the categorical integer. In the table, the numbers are multiplied by 100 to avoid the leading zeros, thus the average of randomly distributed answers should be 50. Average agreements among women participating and not participating in labor market in 1986 are also displayed.

The questions alternate to capture traditional attitudes such as "Most women are happiest when they are making a home and caring for children" (FT196F), or egalitarian attitudes such as "High school counselors should urge young women to train for jobs which are now held mainly by men" (FT196G). Following the theoretical framework laid out the previous section, the statements are regrouped into two indexes. One measures traditional gender role attitudes (TRAD), designed to capture beliefs in the traditional division of labor in the family, and the second measures egalitarian attitudes (EGAL), designed to capture beliefs that there should be gender equality in the labor market. Using all ten variables would limit tractability and using a single index would not permit the differentiation of "pull" (in the labor market) and "push" (in the home) factors.[17]

In the GSS, there are a total of eight questions on gender role attitudes, but they are not asked consistently in every survey; rather only subset of four questions is available for some years between 1977 and 2006.[18] This reduces the sample size to study the impact of gender role attitudes to less than 9000 females, called the "Attitude Sample". The four questions on gender role attitudes available in the GSS from 1997 to 2006 are listed in Panel B of Table 1, along with the average agreement with the statements by labor force status. Note that for completeness, the impact on the evolution of FLP of these detailed questions entered separately, or together, or in composites is presented below.

The index of traditional attitudes (TRAD) is derived as an average agreement with the statements "It is much better for everyone involved if the man is the achiever outside the home

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[17]Public policies have at times been designed to pull women into market work, such as subsidized child care for social assistance recipients (mostly lone mothers) following the 1996 welfare reform; at other times, they have favored homemaking, such as the 2003 child tax credit in support of stay-at-home moms.

[18]Four gender role attitudes questions asked in the early 1970s (FEWORK, FEHOME, FEPRES, FEHELP) were not asked in the 2000s. The largest common subset for which FEPOL, FEFAM, FEPRESCH and FECHLD are available, includes the years 1977, 1985, 1988-1994, 1996, 1998, 2000, 2002, 2004, and 2006. Sampling weights are used to adjust for differences in sampling frame across years, especially in 2004 and 2006.

and the woman takes care of the home and family" (FEFAM) and "A preschool child is likely to suffer if his or her mother works" (FEPRESCH). In the GSS, the better statement meant to capture egalitarian attitudes "If your party nominated a woman for President, would you vote for her if she were qualified for the job?" (FEPRES) was not asked in the 2000s. I thus use as second best disagreement with the statement "Most men are better suited emotionally for politics than are most women" (FEPOL) and agreement with the statement "A working mother can establish just as warm and secure a relationship with her children as a mother who does not work" (FECHLD) to capture egalitarian attitudes (EGAL).[19] As shown in Panel B of Table 1, there are sizeable differences (denoted Δ), of at least 10 points, between non-participating and participating women in these traditional and egalitarian attitudes.

3.2. Descriptive Evidence and Age-Time Period-Cohort Specification

For comparability with FLP trends in the CPS, labor force participation is defined similarly using the GSS variable WRKSTAT.[20] Table 2 displays the levels of FLP from the two data sources for selected years.[21] Given the potential for sizeable cohort effects reported in other studies, it is important to consider these effects in any discussion of trends in FLP. However, because age corresponds to birth cohort plus time spanned, it is not possible to separate linear combinations of these effects. Fortunately, there are some important non-linearities in time period and life-cycle effects in labor force participation and other outcomes. Using a parsimonious non-linear specification, it is possible to identify these non-linear features.[22] While Heckman and Robb (1985) are generally correct in arguing that the linear dependencies between age, period and cohort may affect the identification of higher order terms, here the non-linear effect sought is robust to more flexible specifications of the age and cohort effects.

In the parsimonious specification, I differentiate eight birth cohorts with the underlying

[19]The correlation between FEPOL and FEFAM is -0.322; between FEPRESCH and FECHLD, it is -0.514. The correlation between TRAD and EGAL is -0.506.

[20]See footnote 2. Working decisions at the intensive margin, using the hours of work variables, are best studied using time use data.

[21]The mean of the main explanatory variables from the GSS and the NLS72 are reported in Appendix Table A1 and a description of the variables used is provided in the data Appendix.

[22]For example, Beaudry and Green (2000) successfully use a non-linear specification to illustrate the deterioration in the age-earnings profile of Canadian men of younger cohorts by comparison with older cohorts.

assumption that any cohort effect should be the same for individuals born within the years spanning the birth cohorts. For that reason, the commonly known baby boom cohort (1945-1966) is divided into three sub-cohorts (early, mid, and late boomers), following the important differences in FLP and educational attainment found in Bailey (2006). I also curtail the span of the older generation, the "Greatest Generation", to 1920 as preliminary inspection of the reduction in fertility stemming from having been of marriageable age during World War II showed that it affected only those born before 1921.[23]

Figures 2 to 4 display the changes over time and over the life-cycle for each of the eight cohorts, along with the changes for all cohorts in FLP, male labor force participation, women's traditional gender role attitudes, egalitarian attitudes, negative attitudes towards premarital sex, and liberal political views; the latter two variables will serve as the within-sample instruments for gender role attitudes.[24] Table 2 reports the cohort averages for selected birth cohorts and for selected years. Many figures are stunning in showing that commonly stylized perceptions about time trends actually correspond to quite dramatic cohort shifts, while other series are dominated by life-cycle effects.

Panel A of Figure 2 shows that the leveling-off or slight decline in FLP for all cohorts (slim solid line) after 2002 is not solely due to the natural life-cycle decline among baby boom cohorts, but is also shared by the more recent birth cohorts (1966-75 and also 1976-88). In particular, as reported in Table 2, the average labor force participation (expressed as percentages) among Generation X women is about 3 percent lower in 2004-2006 than in 1998-2000 both in the CPS and in the GSS. As in Bailey (2006), Panel B of Figure 2 shows some striking differences in FLP across the three baby boom cohorts between the ages of 20 and 35, found to have been caused by age differences in accessibility to the "Pill". Note that consistent with an "opting out" hypothesis, the two youngest cohorts appear to withdraw from the labor market when they are in their mid-twenties and early thirties. Figure 2 also shows that the general pattern of the two aggregate curves (FLP for all cohorts), especially

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[23]The number of children, displayed in Appendix Figure A1, show a complete shift in behavior from the pre-1945 birth cohorts to the post-1945 birth cohorts, with the distinctive feature that all cohorts in this second group seems to converge to a similar number of children (around 2).

[24]In the figures, the answers to attitudes questions are rescaled between 0 and 1. One-half should be seen as the mid-value. The figures display three year moving averages of the underlying data. Appendix Figures A1-A3 display proportion of women ever divorced or separated, and church attendance.

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the time-period trend, will be well-captured by quadratic functions.[25] Illustrated in Panels C and D of Figure 2, male labor force participation appears even more dominated by life-cycle effects than FLP.

The evolution of gender role attitudes is displayed in Figure 3 and averages (expressed as percentages) for selected years are presented in Table 2, along with age at first marriage. Panel A of Figure 3 displays the evolution over time of traditional gender role attitudes, showing a sharp decline from the late 1970s to the 1990s. However in the mid-1990s the declining trend bottomed out among all cohorts and began to reverse itself among the 1959-65 and 1966-75 birth cohorts. For example, Table 2 shows that, among Generation X women, traditional gender role attitudes which bottomed at 32.2 in 1993-94 were up to 41.0 in 2004-2006. Panel C of Figure 3 displays a mirror like evolution of egalitarian attitudes with a reversal of the upward trend beginning in the mid 1990s. A reversal is more pronounced and pervasive across cohorts than for traditional attitudes. Table 2 shows that, among Generation X women, egalitarian attitudes, which peaked at 78.7 in 1993-94, were down to 69.6 in 2004-2006.

Table 2 suggests the same turning point (around 1993-94) for both gender role attitudes (and the subjective risk of HIV/AIDS discussed below), but a five to seven-years time lag between these changing attitudes and the turning point (around 1998-2000) of FLP, likely to vary by cohort. For example, while the gender role attitudes of Generation X women became more traditional when they were in their early 20's (as the AIDS crisis peaked), the opting-out hypothesis would suggest that these attitudes actually influenced these women's decisions to exit the labor market a few years later, when they had children in their late 20's or early 30's.

Figure 4 illustrates the cohorts' time-period and life-cycle trends for the attitudes towards premarital sex and the liberal political views that will be used as GSS instruments in the analysis. Panel A shows that agreement with the idea that 'premarital sex is wrong' had been declining until the 1990s for many cohorts.[26] Then it began to increase significantly among the two birth cohorts, who were in their 20's and 30's at the time. These cohorts were the ones more likely to engage in risky sexual behavior, as defined by Smith (1991) in

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[25]Estimation of quartics in time was found to give insignificant third and fourth order terms. The consequences of using more flexible models of life-cycle effects are explored below.

[26]The exact wording of the questions is given in section 4.2.

terms of the number and types of sexual partnerships and illustrated in Appendix Figure A1.[27] Furthermore, Panel B shows that the three more recent cohorts have more negative attitudes towards premarital sex than the early and mid-boomer cohorts. Also the rise in negative attitudes towards pre-marital sex (not illustrated) is strongest and more pervasive across cohorts among African-American women.[28]

To clarify the stylized facts emerging from these figures and from Table 2, a more complete analysis of the trends is needed. Table 3 displays the results of various APC (age-time period-cohort) specifications where the life-cycle profile in labor force is captured by a full set (minus 1) of age dummies, and/or where the cohort effects are captured by a full set (minus 1) of birth cohort dummies, and/or where the time trend is captured by a full set (minus 1) of time dummies, as well as the preferred parsimonious model,

$$Y_i = \beta_0 + \beta_{p_1}t + \beta_{p_2}t^2 + \beta_{a_1}A_i + \beta_{a_2}A_i^2 + \sum_{j=1}^{8}\beta_{c_j}C_{ij} + \mathbf{X}_i\boldsymbol{\beta}_X + \epsilon_i, \qquad (1)$$

where Y_{it} is the outcome of individual i, A_i is the age of the individual and C_i is the birth cohort category of each individual, and where $\mathbf{X}$ is a vector of demographic variables. Since $C_{ij} = I\{\underline{d}_j < t - A < \overline{d}_j\}$, the coefficients β_{c_j} may capture some time or age effects when either the time or age variables are not included. To simplify the interpretation, equation (1) is estimated as a Linear Probability Model, but the results from a Probit model show that magnitude and significance of the marginal effects are very comparable.[29]

As illustrated in Figure 1, a quadratic in time tracks well the time pattern of FLP in the March CPS data, smoothing out some small business cycle fluctuations.[30] In the GSS, the parsimonious specification is useful for tractability and smoothness since the data is available

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[27]High risk sexual behavior, defined as having more than 5 or more sexual partners (PARTNERS) in the last 12 months or having sex with a pick-up partner (PIKUPSEX) or paying or being paid for sex (PAIDSEX) or having homosexual male sex (SEXSEX), began to declined substantially in the 1990's for most cohorts, except the youngest cohort (arguably post-HIV/AIDS).

[28]Their average negative attitudes towards pre-marital sex went from 0.44 in 1993 to 0.56 in 2006. There was also a rise in these negative attitudes among African-American men, from 0.33 in 1993 to 0.41 in 2006.

[29]Because of space considerations, these results are not presented here, but are available upon request.

[30]The estimates from a simple specification using the March CPS, $Y_t = 0.0124\,t(0.0004) - 0.0254\,t^2(0.0012)$, are identical to those in column (1) of Table 3.

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only for a subset of years. The results however do not hinge on this choice of functional form, they hold when more flexible functional forms are estimated as shown in Table 3 and in other tables below.

Column (1) of Table 3 represents the parametric estimation corresponding to Panel A of Figure 2 and shows that, when age effects are omitted, the cohort effects capture some of the concave pattern of the life-cycle participation (age) effects. Column (2) represents the parametric estimation corresponding to Panel B of Figure 2 and shows that, when time effects are omitted, the cohort effects capture the linear trend in FLP over time. Columns (3) and (5) show that estimates of the time and age effects are almost identical whether cohort effects are included or not. Column (4) and (6) show that the cohort effects do not change much when the life-cycle profile is captured by a full set of age dummies or when the time trend is captured by a full set of time dummies. Consistent with the raw numbers of Table 2, the cohort effects in columns (4), (6), and (7) show small decreases in FLP among the two younger cohorts. However, once explanatory variables are included in column (8), the significance of these cohort effects goes away.[31] Overall, the more flexible specifications confirm that the estimated quadratic in the time period is quite robust.

The results of a similar exercise, estimating equation (1) using as dependent variables women's agreement with traditional gender role attitudes, egalitarian attitudes, attitudes towards premarital sex, the number of children, ever divorced, and self-rated health are presented in the Appendix Table 2. To preserve space, I simply highlight some of the main findings. The time trends in gender role attitudes are found to be similar to the trends in FLP, with the opposite signs for traditional attitudes. There are some positive cohort effects in the number of children for the younger cohorts by comparison with the baby boomer generations, perhaps as a result of less delay in childbearing, but that effect is, unsurprisingly, dwarfed by the one from the parents of the baby boomers. For divorce rates, the cohort effects are consistent with higher rates among the three baby boom cohorts.

Interestingly for the intergenerational effect of divorce hypothesis, there is a significant association between gender role attitudes and having lived in an intact family; it is of opposite

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[31]This is a sharp contrast with a similar analysis on the number of children (columns (7) and (8), Table A2) where the cohort effects remain strong and where the time effects are not significant.

sign and about half the magnitude as having a mother who ever worked. Because living in an intact family is also more strongly negatively associated with the number of children and ever divorced, which are respectively negatively and positively associated with FLP, the intergenerational consequences of divorce for FLP turn out to be ambiguous.[32]

3.3. Self-Assessed Risk of HIV/AIDS Data from the NHIS

Data on the subjective chances of getting HIV/AIDS are available from the National Health Interview Surveys conducted yearly, for over fifty years, as one of the major data collection programs of the National Center for Health Statistics (NCHS) which is part of the Centers for Disease Control and Prevention (CDC). Designed to monitor the health of the U.S. population, these large repeated cross-sectional surveys comprise from 20,000 to 30,000 observations a year; they combine information on health characteristics and many demographic and socioeconomic characteristics. In the late 1980s, the NCHS added an "AIDS Knowledge and Attitudes" supplement; in 1997 a subset of that module was incorporated into the core components "Sample Adult".[33]

The initial surveys contained detailed questions about knowledge of AIDS, including possible transmission mechanisms, testing and counseling, prevention, and one's own chances of getting HIV/AIDS as a response to the question: "What are your chances of getting HIV/AIDS? High/Already have HIV/AIDS, Medium, Low, or None." In 1989, there was an attempt to quantify the magnitude of these chances with a follow-up question which was subsequently dropped, probably because of the seemingly unreasonable numbers reported. For example, people who answered "low" to the above question thought that on average their chances were 8 out of 100, those who answered "medium" 38 out of 100 and those who answered "high" 60 out of 100. On the other hand, these very high numbers are consistent with an AIDS "scare", that is, the fear of an event with grave consequences that is not in line with actual risk probabilities, but that nevertheless provokes intense attitudinal and behavioral

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[32]In the FLP regressions below, the coefficients of intact family are found not be significant and are not be reported, but available upon request.

[33]In the first year of the supplement 1987, the wording and placement of the question was different from other years, thus data from that year was not used. In 1996, the AIDS supplement was skipped, data for that year was interpolated from 1995 and 1997 surveys.

responses.[34]

Women's average assessment of their subjective risk of getting HIV/AIDS are reported in Table 2, and displayed in Figure 5 by birth cohorts and year (Panel A) and age (Panel B). The graphs show gradual increases over time that peaked in 1993 and then declined steadily. By contrast, AIDS incidence among women rose steadily through 1993, and leveled off at approximately 13,000 AIDS cases each year from 1993 through 1996 (CDC, 2006). After 1996, the incidence among women and adolescent girls began to decline, primarily because of the success of antiretroviral therapies, and has leveled at approximately 10,000 cases a year since 2000.[35] Thus part of the perceived risk reduction in the 2000s could be associated with better therapies to deal with the disease, rather then reduced incidence.

More importantly, Figure 5 shows striking differences by birth cohorts in the time pattern of perceived risk of HIV/AIDS that will be exploited as a source of identification. Because younger women face a longer time horizon of potential HIV exposure, their perceived risk should be higher. Perceived risk also appears to be related to marital status and risky sexual behavior.[36]

The rational behavioral consequence of the AIDS epidemic should be to decrease risky sexual activity, as shown by Ahituv, Hotz and Philipson (1996). The evidence from the GSS, presented above, on risky sexual behavior and negative attitudes towards premarital sex is consistent with greater changes among the cohorts who have directly witness the deadly consequences of AIDS in their 20s and 30s, when they were most at risk.[37] The impact of the AIDS scare on other behaviors is not so clear, thus in terms of acting as a countercurrent to

[34]Other examples of health scares are the 2003 "Mad Cow" (bovine spongiform encephalopathy) and the "SARS" (H5N1 virus) scares, which lead to dramatically reduced consumption of beef (Adda, 2007) and poultry in the affected countries, shifts to vegetarianism, and even trade embargos. See Becker and Rubinstein (2004) for an economic model to explain large reactions by very small changes in the states of nature objective probabilities in the context of the aftermath of 9/11 and the post-2000 increase in suicide bombings in Israel.

[35]Note that the overall number of AIDS cases peaked in 1992. While the majority of AIDS cases occurred among men, the proportion of AIDS cases among women has increased from 7% in 1985 to 27% in 2006.

[36]The smaller decline in subjective AIDS risk in the NHIS for the mid-boomers cohort (1953-58) around year 2000 (ages 45-50) in Figure 5 is consistent with a burst in risky sexual behavior (Panel D of Figure A1) and a spike in ever divorced (Panel B of Figure A2) found in the GSS among this mid-boomer cohort in their late 40s.

[37]Also consistent is the reduction in extramarital sex by men noted in footnote 64.

the "Pill Revolution", the AIDS scare likely had a much narrower scope.[38]

As noted by Reiners (2008), the impact of HIV/AIDS on divorce rates is ambiguous; while it may lead to less divorce through more positive selection of faithful spouses, it may also lead to more divorce of adulterous spouses.[39] Similarly, it could be argued that the impact of HIV/AIDS on marriage rates and age at first marriage (displayed in Table 2) is ambiguous. Positive selection would have spouses "locking in" into faithful marriages earlier, but where doubt exists trial co-habitation to test the faithfulness of prospective spouses may delay marriage. The difficulty of finding reliable husbands is also an argument put forward by Edin and Kefalas (2005) to explain why low income women enter motherhood before marriage. The higher costs of unfaithfulness may add further heterogeneity in the already complicated determinants (Neal, 2004b) of single motherhood.

The effect of the AIDS scare on egalitarian gender role attitudes would operate through preoccupations about reducing risk; it would make the lifestyle of the single, but not celibate, "career woman" less attractive. With the Pill, some women could become as sexually promiscuous as some men without facing the gender specific consequences; with the AIDS epidemic this equality of "opportunities" was severely tested.[40]

4. Impact of Gender Role Attitudes

4.1. Baseline Results

The above descriptive evidence clearly shows that, accounting for life-cycle and cohort effects, the evolution of FLP over the past 30 years has peaked and begun a slight decline, a decline that is larger than the one found among men. At issue is whether the retreat in egalitarian gender role attitudes and the revival of traditional gender role attitudes, which began in

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[38]For example, no effect on educational attainment is anticipated since college students using the "Pill" can also practice safe sex with dating partners.

[39]Unprotected sex with an adulterous spouse would present more risk that protected sex with dating partners, although the latter may be temporary in nature.

[40]Accordingly to the CDC (2008), 80% of HIV/AIDS cases among women arises from high risk heterosexual activity. The female condom was never a practical solution and the male condom is not a life-long alternative for everyone.

the mid 1990s, can be implicated in that leveling-off.[41] First, it is important to assess the extent to which the change in the FLP trend can be explained by changes in fundamental economic variables, such as wages and income. Wages are captured in reduced form as years of schooling and a quadratic in age. In the regressions among married women, the logarithm of other family income, which comprises the husband's income, is included.[42] Following the economic identity framework laid out earlier, I also include the identity-endowment variables (religion at age 16, did the mother ever work, did they live in an intact family) as well as the identity-investment variables (dummies for married, ever divorced, the number of children, and the presence of pre-school children).[43]

When this list of explanatory variables is added to equation (1), one finds (comparing columns (7) and (8) of Table 3) that the economic fundamentals, the identity-endowment, and identity-asset variables account for about a third of the time trends in FLP, which however remain highly statistically significant. A similar reduction in the linear (from 0.015 to 0.010) and quadratic terms (from -0.025 to -0.019) is found in the Attitude Sample, comparing columns (1) and (2) of Table 4.

The introduction of the gender role attitudes variables begins in column (3) of Table 4, which adds traditional attitudes as measured in Table 1. At -0.246 (0.022), the impact of traditional attitudes is negative as expected, relatively large, and very significant. Egalitarian attitudes introduced in column (4), have a positive and significant impact which at 0.135 (0.019) is equal to a bit more than half of traditional attitudes. When both gender role attitudes are included in column (5), the magnitude of the estimate for each variable is reduced, reflecting some degree of collinearity between the two variables, and the estimate of traditional attitudes dominates. Column (6) shows that the estimates are robust to a more flexible specification of the time and age trends. Columns (7) to (10) show the impact of each attitude individually, and column (10) includes all of them separately.

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[41]While a leveling-off in FLP was mechanically expected, its timing and the level at which it would level off was not forecasted. Indeed as shown in Figure 1, it did not happen in Canada.

[42]Note however that the income variables are not very well measured in the GSS, they are based on categorical mid-points data and are not continuous. Moreover they are not available for about 25 percent of the sample of married women.

[43]Because age at first marriage is not available from 1994 to 2004, it is not included in the reported results. However, in trials it was found not to be significant. The mean of the explanatory variables are given in appendix Table A1.

The other important point made in Table 4 (column (4) or (10)) is that when gender role attitudes are included the equation, they account for another third of the time trend in FLP, moving the linear term from 0.010 to 0.006 and the quadratic term from -0.019 to -0.010, rendering the latter coefficient insignificant.[44] This point is illustrated more clearly in Panel A of Figure 6, which plots the time trends associated with the specifications from columns (1), (2), and (5), showing how the quadratic trend is captured by the usual explanatory variables going from the solid thick curve to the long dashed curve, and by the gender role variables going to the short dashed curve.[45] Gender role attitudes are thus shown to capture as much of the evolution in FLP as all previous variables combined.

Next, to address the issue of potential endogeneity of gender role attitudes arising from the reverse causality, I appeal to data from the NLS72, a longitudinal survey where the questions about gender role attitudes were asked 7 years before the labor market decisions are observed.[46] The NLS72 sample contains only one birth cohort with most students being born in 1954 or 1955, and therefore there is no need to correct for potential cohort or life-cycle effects.[47]

The regression results using the NLS72 sample are reported in Table 5. The estimated coefficients on gender role attitudes are found to be very similar to those of Table 4. Focusing on column (4), the coefficient of traditional attitudes is equal to -0.278 (0.037) in the NLS72, and to -0.219 (0.024) in the GSS; the coefficient of egalitarian attitudes is equal to 0.049 (0.044) in the NLS72, and to 0.051 (0.021) in the GSS.

Because the gender role attitudes questions were asked in 1979, it cannot be the case that a woman's labor market decisions in 1986 influenced her attitudes observed in 1979. On the other hand, it is possible that labor market participation in 1979 affected gender role attitudes in 1979; thus I include labor force participation in 1979 (when most women were 25 year olds)

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[44]Note also the introduction of gender role attitudes in columns (5) and (6) reduce the magnitude of the negative cohort effects (not shown) for the 1966-75 and 1975-1986 birth cohorts, although these coefficients are never significant in the Attitude Sample.

[45]The portion explained by the other regressors is the differences between the predicted curves and the time trends.

[46]Because it selects respondents attending grade 12 and thus ignores students who dropped out earlier, the average FLP in this sample is a little higher than in the GSS.

[47]See Fortin (2008) for more details on this data set. But note that education is available in terms of highest degree completed, rather than years of schooling.

as a regressor. This is shown, in columns (5) and (6), to only slightly reduce the magnitude of the coefficients of gender role attitudes, so that any bias arising from contamination with past labor market decisions appears small.

The above analyses were also conducted among samples of married women only and the results are reported in Table 6. The main findings are as follows. The coefficients of the gender role attitudes are similar, albeit a bit stronger, than estimates found among all women, both in the GSS and in the NLS72. In the GSS, the inclusion of the gender role attitudes in the regression also implies a reduction of about one third in the linear (from 0.014 to 0.009) and quadratic terms (from -0.033 to -0.022). Looking at married women, it is possible to include an additional fundamental economic variable, the logarithm of other income (mostly husband's income), whose coefficient is found to be negative, strongly significant, and of similar magnitude in the GSS and NLS72. However, the inclusion of this additional fundamental economic variable does not help account for much of the change in the linear terms (from 0.016 to 0.014) or in the quadratic terms (from -0.036 to -0.033). That is, the husbands' income reduces their wives' labor force participation, but the effect is extremely small. This is consistent with the view of Blau, Ferber, and Winkler (2006) who speculate that part of the slowdown in married women's labor force participation is unlikely to be attributable to their husbands' better employment opportunities given that married women's labor supply has become less sensitive to their husbands' income in recent decades.

4.2.   Instrumental Variables Strategies

Stating that when gender role attitudes are accounted for, gender differences in the evolution of labor force participation over the past 30 years fade away may appear tautological. Perhaps the respondents' agreement with gender role attitudes is simply an afterthought to rationalize their actions. Perhaps their responses are tailored to avoid cognitive dissonance problems (Akerlof and Dickens, 1982), that is, the respondents may adjust their opinions to reflect consistency with their actions rather than their deep-rooted beliefs.[48]

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[48]Note that the questions about gender role attitudes are phrased to appeal to beliefs about the behavior of others, but this may not be sufficient to address this concern.

Letting $\mathbf{A}^r \equiv (A, A^2)$, $\mathbf{P}^r \equiv (t, t^2)$, $\mathbf{C}^r \equiv (C_1, \ldots, C_8)$, equation (1) can be rewritten as

$$Y_i = \mathbf{G}_i \boldsymbol{\beta}_g + \mathbf{A}_i^r \boldsymbol{\beta}_a + \mathbf{P}_i^r \boldsymbol{\beta}_p + \mathbf{C}_i^r \boldsymbol{\beta}_c + \mathbf{X}_i \boldsymbol{\beta}_x + \epsilon_i \tag{2}$$

where $\mathbf{G}$ is a vector of observed gender role attitudes and $\mathbf{X}$ is a vector of demographic variables. Cognitive dissonance would generate an errors-in-variables problem, $\mathbf{G} = \mathbf{G}^* + v$, where $\mathbf{G}^*$ denote the true attitudes. In the classical case, $E(v|\mathbf{G}^*) = 0$, this would lead to an attenuation bias in the coefficients of gender role attitudes.

To address this concern, first a within-sample instrumental variable strategy where attitudes towards sexual relations and liberal political views are the instruments is used. In the GSS, the precise questions used to elicit views about sexual morality and political views are:

"There's been a lot of discussion about the way morals and attitudes about sex are changing in this country. If a man and woman have sex relations before marriage, do you think it is always wrong, almost always wrong, wrong only sometimes, or not wrong at all?" [VAR:PREMARSX]

"We hear a lot of talk these days about liberals and conservatives. I'm going to show you a seven point scale on which the political views that people might hold are arranged from extremely liberal point 1 to extremely conservative point 7? Where would you place yourself on this scale?" [VAR:POLVIEWS] [49]

The rationale behind this choice of instruments is that they should be correlated with gender role attitudes and should impact labor market decisions only through attitudes towards whether women should work outside the home or not. To the extent that the Women's Liberation movement and Sexual Revolution of the 1960s went together or that the new "career woman" was to be a "liberated" women in control of her sexuality and fertility, it is not too difficult to imagine that gender role attitudes and attitudes about sexual morality are correlated. In effect, it is a condition that is easily verified empirically below.

The exclusion restriction can be seen as using sexual morality and political views to circumvent the cognitive dissonance issue. Because of mother's guilt, a working mother may

[49]Note that these attitudes are measured on a 7-points scale and are thus more precise than the variables underlying the gender role attitudes which are measured on a 4-points scale.

have difficulty agreeing with the statement that a preschool child may suffer when his mother is working; she would not face the same problem when asked about sexual morality or political views. It also says that the only channel through which conservative political views affect FLP is through gender role attitudes, that is, conservatives would argue that women's main role or salient identity should be that of housewives. The use of two types of views allows me to perform some over-identification tests that go some distance towards alleviating concerns about the endogeneity of the instruments. But because over-identification tests are valid only when one instrument is deemed exogenous, the analysis is pushed further by using an instrument generated by an external shock.

Thus second, views about the risk of HIV/AIDS are included as instrumental variable using a variant of the TS2SLS and repeated cross-sectional data from the NHIS 1988-2006. The rationale behind a potential role for the HIV/AIDS scare as a factor generating changes in gender role attitudes is linked to the previous argument. As career women became more "liberated", they would have had more casual sexual partners. As the risks associated with this behavior became better known, they may have reviewed their attitudes and lifestyle, or even their identity.[50]

4.2.1. Two-sample Two-Stage Least Squares Specification

A variant of TS2SLS (Inoue and Solon, 2005) is used to take advantage of the AIDS scare as an exogenous source of identification for egalitarian gender roles attitudes. To explain how this variant works, I omit the exogenous demographic variables from the exposition.[51]

Let Z_{1i} denote the excluded instrument that is not available in the first sample, and the vector of available exogenous variables as $\mathbf{X}_1 \equiv (\mathbf{A}^r, \mathbf{P}^r, \mathbf{C}^r)$. Let Z_{2it} be the excluded instrument that is available in the second sample. From each cross-section of the NHIS, I obtain an estimate of the relationship between the subjective risk of HIV/AIDS and age by estimating the equation:

$$Z_{2it} = \mathbf{A}_i \mathbf{\Gamma}_{2t} + \epsilon_{2it}, \quad t = 1, \ldots, T \tag{3}$$

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[50]In the same way, following the "Mad Cow" scare, some have simply eaten less ground meat, but others have reviewed their identity as "meat-eaters" and have become "vegetarians".

[51]However, as indicated in the tables, demographic variables are included in the estimation.

where $\mathbf{A}_i$ is a M-vector of age dummies.[52] Stacking the estimates results in a $M \times T$ matrix $\widehat{\mathbf{\Gamma}}_2$. An estimate of the subjective risk of HIV/AIDS in the first sample is constructed as $\widehat{Z}_{1i} = \mathbf{A}_i \widehat{\mathbf{\Gamma}}_2 \mathbf{P}'$, where $\mathbf{P}$ is a T-vector of time dummies, assuming as in Inoue and Solon (2005) that $\mathbf{\Gamma}_1 = \mathbf{\Gamma}_2$. The excluded instruments arise from the interactions between age and time which are missing from equation (2). Further, writing the linear projection of included instruments from the first sample $\mathbf{X}_1$ onto $\widehat{Z}_{1i}$: $\widehat{Z}_{1i}^* = \mathbf{X}_1 \mathbf{\Pi}$, the residuals $\widehat{R}_i = \widehat{Z}_{1i} - \widehat{Z}_{1i}^*$ then net out the included instruments, and can be used as excluded instrument for the identification of $\boldsymbol{\beta}_g$ and $\boldsymbol{\beta}_p$. In other words, the instrumentation relies on the fact that women of different ages at different time periods evaluated their chances of getting HIV/AIDS differently, as illustrated in Figure 5, and uses innovations not predicted by the parsimonious specification of age, year and cohorts as a source of identification.

4.2.2. Results from the within-sample instrumentation

The results from the first instrumental variables strategy are presented in Table 7. Column (1) presents the results of the first stage, where traditional attitudes are the endogenous variable and where views about premarital sex and politics are used as instruments. As anticipated, these views are strongly correlated with traditional attitudes with the expected signs. The value of F-Test on the instruments is also very strong at 386.6, confirming that these are not weak instruments. Column (2) presents the results of the 2SLS estimation. The instrumental variables estimate of the impact of traditional attitudes at -0.231 (0.070) is very close to -0.246 (0.022), reported in column (3) of Table 4, and the estimates of the time trends are identical. Column (3) reports the first-stage results, where egalitarian attitudes represent the endogenous variable. Again, the F-test reveals that the instruments are strong. However, in the case of egalitarian attitudes, the results of 2SLS in columns (4) show a much larger estimated IV coefficient of 0.257 (0.088) compared to the estimate of 0.135 (0.019) from column (4) Table 4; the time trends are also better captured. To the extent that mother's guilt may lead to cognitive dissonance, it is not surprising to find that the attenuation bias in egalitarian gender role attitudes is corrected by the IV strategy. In both cases, the instruments

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[52]There are other predictors of subjective risk of HIV/AIDS in the NHIS, such as marital status. However, focusing on age which is a non-behavioral variable looks cleaner.

pass the over identification test with flying colors.

4.2.3. Results from the two-sample instrumentation

Because the data on the subjective AIDS risk is available only from 1988 on, Table 8 begins by reporting the results from the benchmark analysis beginning with male labor force participation in column (1), FLP with only life-cycle and cohorts effects in column (2), adds the usual demographics in column (3), and the gender role attitudes in columns (4) and (5). As shown in Panel B of Figure 5, over this shorter time horizon the curvature of male and female time trends appears more pronounced. The usual variables bring the coefficient of the linear time trend down from 0.039 to 0.029 and the coefficient of the quadratic term from -0.067 to -0.056; the gender role attitudes bring it down further to -0.052. Yet to the extent that there is an attenuation bias in the coefficient of egalitarian attitudes, the more appropriate TS2SLS strategy yields estimates in column (9), at 0.010 for the linear term and -0.046 for the quadratic term, which are very close to the male trends at 0.019 and -0.040 in column (1). The time trends associated with the specifications from columns (2), (3), and (9), plotted in Panel B of Figure 5, show how the quadratic trend is captured by the usual explanatory variables going from the solid thick curve to the long dashed curve, and by the gender role variables going to the short dashed curve.

The first-stage results from the TS2SLS where the subjective HIV/AIDS risk residual, $\widehat{R}_i$, is the only excluded instrument, are shown in column (6). While the coefficient of subjective HIV/AIDS risk residual is statistically significant at the 5% level, with an F-test of 4.02, it yields imprecisely estimated second stage coefficients in column (7), a sign of a weak instrument. When $\widehat{R}_i$ is used in conjunction with the liberal political views (columns 8 and 9), it yields a more successful instrumentation with an F-test on the instruments of 78.6, very solid over-identification test results, more precisely estimated coefficients of egalitarian attitudes and substantially reduced time trends. To the extent that the AIDS scare can be viewed as an exogenous shock to gender role attitudes, this validates that the use of the political views as instruments. The estimated coefficient of egalitarian attitudes for the 1988-2006 period is similar 0.313 (0.133), somewhat larger, but in the same range as the corresponding coefficient 0.257 (0.088) estimated over the entire period [column (4), Table 7].

In summary, the results of the within-sample instrumental variables strategy show that traditional gender role attitudes and egalitarian views have substantial explanatory power toward trends in FLP over the entire 30 years horizon, essentially as large as all usual variables combined. Concerns about the validity of these instruments are addressed by appealing to an arguably exogenous shock to egalitarian attitudes, the HIV/AIDS scare, in the context of a TS2SLS strategy.

4.3. Alternative Explanations

Could gender role attitudes simply be capturing some general conservative or "cultural" trends in the United States? In this section, various alternative explanations for the leveling-off of FLP are explored. In the estimation of returns to education, concerns about unobserved ability inducing a case of omitted variable bias was confirmed when the introduction of measures of ability (such as AFTQ scores) substantially reduced the estimates of returns to education. No similar effects are found here: The inclusions of sexual morality views, political views, religious denominations and church attendance, or ethnic ancestry do not change the magnitude of the estimated coefficients of gender role attitudes. Self-rated health renders the coefficient of egalitarian attitudes insignificant when traditional attitudes are also included; but for the whole sample, self-rated health does not help capture the time trend in FLP. However, a different story emerge among African-American women in section 4.4 below.

Table 9 explores these alternative explanations, presenting both the impact of these variables by themselves, and in conjunction with gender role attitudes. The impact of liberal political views and of negative attitudes towards premarital sex are studied separately in columns (1) and (3) of Table 9. While they are found to be significantly associated with FLP, their inclusion in the regression does not help capture the time trend in FLP. When gender role attitudes are added in columns (2) and (4), the time trend coefficients become insignificant and the coefficients of liberal political views and of negative attitudes towards premarital sex are effectively reduced to zero, showing that gender role attitudes absorb the explanatory power of these variables with respect to FLP.

Increases in divorce rates are often offered as an explanation for the increase in FLP over the last part of the twentieth century, both as direct effect and perhaps influencing

the daughters of divorcees. However, living in an intact family is not significant in FLP regressions, although it is negatively associated with own divorce. As reported in Table 4, having ever been divorced has a positive impact on FLP when traditional attitudes are not included in the regression (that is, in columns (1), (3), and (5)), but lose significance when the attitudes are included. In columns (6) and (7) of Table 9, beliefs about whether divorce laws should make divorce easier or more difficult are included.[53] The coefficients of "divorce easier" are found to be statistically and negatively associated with labor force participation, while increasing the magnitude of the ever divorced coefficients. The inclusion of this variable reduces the magnitude of the quadratic time trends further when gender role attitudes are also included (column (6)), but by itself, it does very little.

The United States is often viewed as singular among industrialized countries with its high level of religiosity.[54] Given that as shown by Guiso, Sapienzad, and Zingalese (2006), increased religiosity is often associated with more traditional views toward gender roles, it provides an interesting alternative hypothesis to explain the recent stabilization in FLP. First, note that religion at age 16 is already included in the regressions from Table 3 onwards.[55] The inclusion of current religion in column (8) of Table 9, does not alter much the effects of the denomination dummies; only being Baptist at age 16 remains is weakly positively significant, being currently Muslim has a large and significant negative coefficient, and adhering to an Eastern religion has a large and positive coefficient.[56] Moreover, when gender role attitudes are added in column (9), only the Eastern coefficient remains significant, probably capturing the ethnic origin of the respondent.

Following Glaeser and Sacerdote (2008), church attendance is introduced in column (8)

[53]The GSS variable DIVLAW captures the answers (easier, more difficult, or stay the same) to the question "Should divorce in this country be easier or more difficult to obtain that it is now?"; answers were recoded 1, 0, and 1/2.

[54]Time and life-cycle trends by birth cohorts of church attendance, a commonly used measure of religiosity (Glaeser and Sacerdote, 2008) are displayed in Appendix Figure A2. They show that increases in church attendance among the three younger cohorts began to increase only in the late 1990s and early 2000s, by contrast with their negative attitudes towards premarital sex which began to increase earlier.

[55]Religious denominations are regrouped into 10 categories: Baptist, Methodist, Lutheran, Presbyterian, Catholic, other Christian, Jewish, Muslim, other Eastern, and undeclared is the omitted category.

[56]The current religious denominations are coded from the variables RELIG and DENOM.

as an indicator of the strength of religious beliefs, and yield a counterintuitive positive sign of attending religious service on FLP, although only it is statistically significant when gender role attitudes are included.[57] This positive sign on church attendance may derive from the positive correlation between church attendance and education found in individual regressions by Glaeser and Sacerdote (2008), who argue that it is explained by the positive correlation between sociability and religion. In both columns (8) and (9), the introduction of the religious denomination variables and church attendance does not capture or alter the time trend coefficients.

Another recent disturbing trend in the United States is the increase in morbid obesity, which has been shown to decrease women's employment outcomes more than that of men (Cawley, 2004). Questions about respondents' weight were asked only in 2004, so self-reported health is used as a proxy for this trend.[58] While the coefficient of the health variable in columns (10) and (11) is positive, sizeable, and significant, its inclusion does not alter the time trend coefficients.

Many recent papers (e.g. Fernandez and Fogli (2005), Zaiceva and Zimmerman (2007)) have used ethnic origin to account for culturally driven differences in FLP among immigrant populations. In results not shown here, the question ETHNIC on main ethnic ancestry from the GSS, which comprises 42 categories, along with an immigrant dummy was included in the regressions. None of the ethnic ancestry dummies were found to be significant and thus the previous results remained unaffected by the inclusion of these variables.

4.4. Results for Sub-Groups

4.4.1. African-American Women

In this section, the analysis is pushed further by considering the following groups: African-American women, women with less than a four-year college-education, college-educated women,

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[57]Like these authors, I used the variable ATTEND, recoded like the other categorical variables. I also followed Sherkat (2000) in testing the impact of biblical inerrancy (using the variable BIBLE), that is, whether the Bible is the word of God and always true, but it did not come out as significant.

[58]When equation (1) is estimated using the variable HEALTH (excellent, good, fair, poor) as the dependent variable, the time trends show a slight concave shape and some negative coefficients for the two younger cohorts. When linear trends in time and age are included, the negative coefficients for the younger cohorts are even stronger. See Table A3.

and men.[59]

Table 10 reports the results for the sample of African-American women, whose histori-cally higher labor force participation has converged to overall FLP over the period examined (Neal, 2004b).[60] By comparison with the full sample, a first interesting difference is that the coefficient of "married" is non-negative and non-significant whereas among all women, it was sizeable, negative and significant (around -0.080 (0.011)). A second disturbing difference is the larger impact of self-rated health, introduced in columns (3), (6) and (7): It captures a sizeable part of the time trends, which was not the case among all women [column 10, Table 9]. Detailed analysis [columns (11) and (12), Table A3] indeed shows that self-rated health among black women exhibits a larger significant concave time trend than found among white women, when cohort and age effects are included.[61] In the Attitude sample, the effect of traditional gender role attitudes introduced in column (5) and (7) is similar to that found among all women, -0.175 (0.065) vs. -0.219 (0.024) [column 4, Table 4] and -0.303 (0.079) vs. -0.234 (0.030) [column 10, Table 9]. Its impact on the time trend coefficients is similar to the one found among all women, and is similar to the reduction brought about by the introduction of the self-rated health variable. Note however that in this smaller sample, none of the quadratic terms are significant.

The relationship between gender roles attitudes and FLP would appear to have several weaker links among African-American women. Given that black women are 60 percent less likely to be currently married than white women (over the entire period), it is not surprising that black women are 60 percent more likely to have multiple and casual sex partners than white women.[62] Possibly as a result of the greater perceived risk, negative attitudes towards

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[59]Because of the resulting small sample sizes, many of the differences with the full sample turn out to be not as statistically significant as one would desire. But many readers may find the analysis informative nevertheless.

[60]As shown by comparing the time trend coefficients in column (1) of Table 10 to those in column (8) of Table 3.

[61]In the trends by birth cohort are illustrated in Panels B and D of Appendix Figure A3, there appears to be an increase over time in self-rated health, but this is due to attrition of the older cohort (<1920) and the arrival of the younger cohort (1976-88), given the very pronounced negative age gradient in self-rated health among African-American women.

[62]In the GSS, the percentage of women who are married (or living as married) is 67.5 percent among whites and 40 percent among blacks. The variable "risky sexual behavior" (defined in footnote 27) is equal to 0.057 among white women and 0.098 among black women; among men, where it also includes homosexual sex (but not IVDU), it is equal to 0.146 among white men and 0.273 among black men.

premarital sex among black women increased more pervasively across cohorts in the 1990s and 2000s.[63] However, the link between negative attitudes towards premarital sex and traditional gender role attitudes, although significant, is weaker, 0.082 (0.014) vs. 0.131 (0.006) among all women. Further, liberal political views turned out not to have predictive power for traditional gender role attitudes. If the racial identity dominates the gender identity, liberal political views may be more related to civil rights than to women's rights. Given the lower incomes and greater propensity of black men to have multiple sex partners when married, it may simply be more difficult for African-American women to embrace the traditional marriage and the identity of housewife in intra-racial marriages.[64] On the other hand, there appears to be a strong link between health and the evolution of FLP among black women, although it is not clear which health factor is at play here given the self-reported nature of the variable.[65]

4.4.2. Sub-groups by Educational Attainment

Table 11 presents a summary of the results by educational sub-groups for the last 30 years and for the 1988-2006 period, over which the TS2SLS can be employed. It reports the time trends coefficients from regressions that include the cohorts dummies, life-cycle quadratic, and the other demographic variables in the first row of each panel; the gender role attitudes are added in subsequent rows. Comparing the LMP results with those of the instrumental variables strategies shows that either choice of empirical strategies yields similar results. Although, to the extent that there is more measurement error in egalitarian attitudes arising from less reliable questions or from cognitive dissonance, the instrumental variables strategies may be more appropriate; they yield larger coefficients for egalitarian attitudes and greater

The greater likelihood of bisexuality among black men (MSMW on the "down low"), which may be related to higher rates of incarceration, may place heterosexual black women at higher risk for HIV infection (Millett et al. (2005), Johnson and Rafael (2009)).

[63]In the post-1990 period, the variable PREMARSX (recoded between 0 and 1) averages 0.51 among black women and is significantly higher than the 0.37 among white women.

[64]In the GSS, there has been a substantial decline in the percentage of married black men stating that they had more than one sex partner in the last 12 month (PARTNERS), from 19 percent prior to 1990 to 8 percent in the 2000s. Among married white men, the percentage went from 5 percent to 3.5 percent. See Wood (1995) for an evaluation of various explanations for the decline in black marriages.

[65]Data from the CDC shown that black women are 20 times more likely to be diagnosed with HIV than white women, and that HIV infection is the leading cause of death for black women aged 25-34 years, but black women are also more likely to be obese.

explanatory of the time trends in the later period. The results show that gender role attitudes account for a substantial part of the time trends in FLP, in most cases making the female and male trends very comparable.

In order to further address the "opting out" hypothesis, I perform the analysis for sub-samples of women with less than a four-year college-education and of college-educated women. The estimated coefficients of gender role attitudes in Panel B estimated among women with less than college are very similar to those among all women presented in Panel A. In particular, the results also show that the retreat in FLP is not a phenomenon reserved for the more highly educated. Incorporating gender role attitudes in the regression drives the quadratic time trend terms to zero in the 1977-2006 sample, and brings it down the male trend (shown in Panel D) in the 1988-2006 sample.

The results among college-educated women in Panel C show that the impact of gender role attitudes of the FLP of these results very similar to those of Panel A. However, gender role attitudes account for a smaller share of the slowdown in FLP among college-educated women. This is consistent with findings (Boushey (2005), Goldin and Katz (2007)) showing that the labor force participation of college-educated women has not fallen due the presence of children. It leaves room for explanations based on negative feedback from the labor market, such as glass ceiling effects, long hours, difficult schedules, and increased commuting time.[66]

To reinforce the notion that gender role attitudes are capturing gender-specific factors rather than general cultural factors, Panel D presents the results for the sample of men. Although small in magnitude and not always statistically significant, the impact of gender role attitudes is unsurprisingly opposite in sign to that of women. Men that believe that the man should be "the achiever outside the home" would be more likely to participate in the labor market. Importantly, the magnitude of the trends remains unaffected by the introduction of the gender role attitudes.

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[66]Preston (1994) is an early economic study of women from the science and engineering professions exiting the labor force in the mid-1980s with very low probabilities of reentry.

5. Conclusion

This paper provides compelling evidence that beliefs about gender roles have considerable explanatory power, beyond that of fundamental economic variables, toward the evolution of FLP over the latter part of the twentieth century. The theoretical underpinnings of the findings are rooted in economic identity theory, which argues that saliency of identities is an important factor in the agents' decisions (Akerlof and Kranton, 2000; Bénabou and Tirole, 2006). The empirical analysis of pooled cross-sectional data from the 1977-2006 GSS shows that gender role attitudes account for about a third of the gender differences in the evolution of labor force participation. A double prong instrumental variables strategy that uses as instruments sexual morality and political views from the GSS, and the subjective HIV/AIDS risk from the NHIS, is used to dispel concerns of endogeneity. The potential problem of reverse causality is further addressed by using longitudinal data where past labor market decisions are shown not to change much the magnitude of the effects of past gender role attitudes on current labor market decisions.

Gender role attitudes, whose secular trends reversed in the mid-1990s when the AIDS crisis peaked, account for a substantial part of the recent leveling-off in FLP, while general cultural trends towards more conservative social, religious and political views do not. More precisely, the estimated coefficients of gender role attitudes imply that the 2 points rise in average traditional attitudes and 4 points decline in average egalitarian attitudes from 1993-94 to 2004-06 (see Table 2) would account for one half to a full percentage point decline in FLP.[67] By comparison, the increase in years of schooling from 13.04 in 1994 to 13.12 in 2006 would have lead to an increase of 0.18 percentage points.

While this paper solves one puzzle, it raises a number of questions regarding the formation and the evolution of gender role attitudes. Many believe that gender role attitudes are formed in youth (Vella, 1984). Indeed, I find little negative (positive) effect of aging on egalitarian attitudes (traditional attitudes), when cohort and time effects are included. There is some empirical evidence on the intergenerational transmission of gender role attitudes (Fernandez, Fogli, and Olivetti, 2004, Farré-Olalla and Vella, 2007). It is echoed here in the positive

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[67]From the estimates of Table 11, Panel A, 1988-2006, on traditional attitudes: -0.24*2=-0.48; on egalitarian attitudes: 0.31*-4=-1.2.

impact of one's own mother working on FLP, but this effect is not very strong.

On the other hand, there have been dramatic cohort shifts in gender role attitudes, illustrated in Figure 3b and 3d, from the pre-World War II cohorts to the baby boom cohorts who embraced the new identity of "career woman" proposed by the Women's Liberation Movement of the 1960s with less reservation than other cohorts. As highlighted by Goldin and Katz (2002), an important consequence of the "Pill" was to facilitate investment in higher education, in turn higher education fostered more egalitarian and less traditional attitudes, compounding the effect of the "Pill Revolution" on gender role attitudes.

But this paper also finds (Figures 3a and 3c) important period-specific changes, namely a recent retreat of egalitarian views and a bottoming out of the longer term decline in traditional gender role attitudes, that occurred in the mid-1990s and was shared by most cohorts.[68] Ethnographic accounts of the "opting out" movement (Stone and Lovejoy, 2004; Stone, 2007) argue that these changing attitudes may incorporate some negative feedback from the workplace that makes it difficult for women to reconcile the competing identities of homemaker and "career woman". Sociologists have suggested that the "Gender Revolution" may simply be running out of steam given the many obstacles faced by career women.

Given the period-specific nature of these changes in gender roles attitudes, this paper suggests that a more exogenous factor, namely the AIDS scare, may be at play. The AIDS scare, which peaked in the mid-1990s, would have acted as a counter-current to the Pill revolution, especially for late boomer and Generation X women (who were in their twenties and early thirties at the time), making the lifestyle of the single, but not celibate, career women less attractive. Predicted (on the basis on age and year) subjective risk of getting HIV/AIDS from NHIS data is indeed shown to have a significant association with egalitarian attitudes in the GSS data. It is also possible that other exogenous events had some impacts. While the take-up rate of the unpaid family leave, following the Federal Family and Medical Leave Act of 1993 (FMLA), was insufficient to have direct effects on employment (Baum, 2003), the hortatory campaign that accompanied the FMLA may have had some broader

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[68]Note that a rebound in traditional gender role attitudes is also found in the World Value Surveys (Fortin, 2005). In 1990, 70.7 percent of American women agreed or strongly agreed with the statement that "Being a housewife is just as fulfilling as working for pay". In 1995, that percentage was up to 78 percent and was at 78.5 percent in 2000.

psychological effects on traditional gender roles attitudes consistent with the observed trends.

Finally, whether gender role attitudes have important impacts on other outcomes besides FLP is another interesting area of research. For example, the fall in fertility rates that started in the 1960s with the massive entry of women into the labor market seems to have bottomed out in many European countries, as well as in the United States.[69]

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[69]Bongaart (2002) reports that in 1999 fertility increased in Belgium, Denmark, Finland, France, Greece, Italy, Luxemburg, Netherlands, Norway, Portugal, Spain, and Switzerland, but that the increases are small. He concludes, however, that it is unlikely that fertility will climb back to the replacement level.

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DATA APPENDIX

General Social Surveys and National Longitudinal Study of 1972

The following describes precisely which variables from these two data sources are used. The means of the main variables used in this study are reported in Table A1. Unless otherwise noted the variables from the NLS72 are from the fifth follow-up (1986), when most respondents were 32 years of age. The main dependent variable (FLP) is constructed from the GSS variable WRKSTAT and from the NLS72 variables FI3A, FI3F, FI3H and FI3I. In the GSS, labor force participants are those currently working full-time or part-time, temporarily absent from work, unemployed, laid off or looking for work. In the NLS72, individuals on active duty in the armed forces are also included among labor force participants. The construction of the attitudes variables is described in the main text and in Table 1. The education variable is the years (from 0 to 20) of schooling variable EDUC in the GSS. In the NLS72, the education variable is available as a categorical variable constructed from the SCHOOL variable in the base questionaire, updated with variables FQ2 and FQ3B from the first follow-up, variable TQ49A from the third follow-up, variables FT66 and FT67 from the fourth follow-up, and variable FI29 from the fifth follow-up.

In the GSS, the marital status variables are constructed using the variable MARITAL and DIVORCE, which asked currently married and widowed individuals whether they were ever divorced. In the NLS72, the married variable are constructed using the variable MARSTAT and the ever divorced variable using information on how up to the three marriages ended, variables FI40F and FI40G, FI41F and FI41G, FI42F and FI42G. Given respondents are about 32 years of age, no one actually had a third marriage fail. In the GSS, the number of children is from the variable CHILDS, which includes all children ever born alive and is

capped at 8. In the NLS72, the corresponding variable is CHILDREN and is capped at seven. The presence of pre-school children is recoded from the variable BABIES in the GSS, which count the number of family members under 6 year olds and the variable FI90AA in the NLS72, which asks about pre-school children. In the GSS, the variable "mother ever worked" is constructed using the variables MAWRSLF, MAWORK, MAWKBABY, MAWKBORN, MAWK16, MAWKGRW and where affirmative answers to any of these questions is coded as a "YES". In the NSL72, this variable is coded, from the base survey, as the negative of the response, "BQ25C=4" which corresponds to the mother being a homemaker, which may be more closely related to the above concept of identity. "Living in an intact family" is coded from the response "FAMILY16=1" in the GSS and from FI101B and FI101D in the NLS72.

The variable "white" is from the variable RACE in the GSS and RACE86 in the NLS72. In the GSS, the religion at age 16 is constructed using the variables RELIG16 to obtain the broad categories, and DENOM16 to further differentiate the specific denominations, as shown in Table A1. Only the first type broad categories is available from the base survey variable BQ92 in the NLS72. In the GSS, the log of other income is computed as the logarithm of REALINC (real family income) minus REALRINC (real respondent's income) set to zero if missing because of non-labor force participation. In the NLS72, it is the log of husbands's income, FI111C85+FI111H85+FI111L85, which adds spousal wages and business income, unemployment compensation and scholarships, when these variables are not missing.

National Health Interview Surveys

The data from the 1988-1995, 1997, 1998, 2000, 2002, 2004 and 2006 surveys are used. The main variables from the NHIS are AGE, SEX and the answers to the questions on chances of getting HIV/AIDS. The variables used are called YCOHAV and YCOGAV in 1988, CHANCEH and CHANCEG in 1989, CHANCEHA and CHANCEGT in 1990, CHANCEAV and CGETAIDS in 1991 and 1992, HIVRISK in 1993, CHANCE in 1994 and 1995, CHN-SADSP in 1997, 1998, 2000, 2002, 2004 and 2006.

Figure 1. Labor Force Participation 18-65 Year Olds
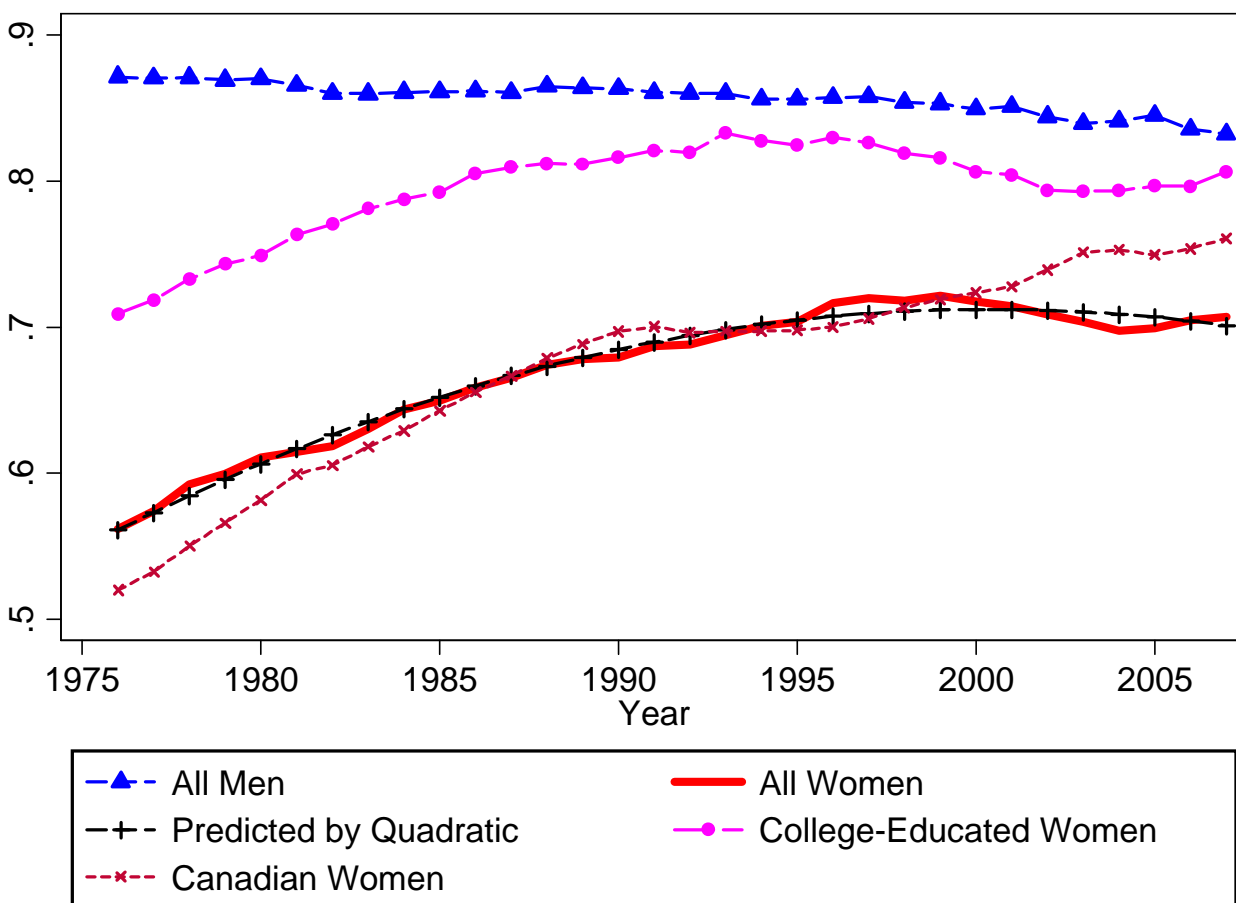
Note: Computed from March CPS data and Statistics Canada, CANSIM data. .

Figure 2. Labor Force Participation by Birth Cohorts

Women

Men

A. Changes over Time (Women)

A. Changes over Time (Men)

B. Changes over the Life-Cycle (Women)

B. Changes over the Life-Cycle (Men)

Legend: <=1920, 1921-39, 1940-45, 1946-52, 1953-58, 1959-65, 1966-75, 1976-88, All
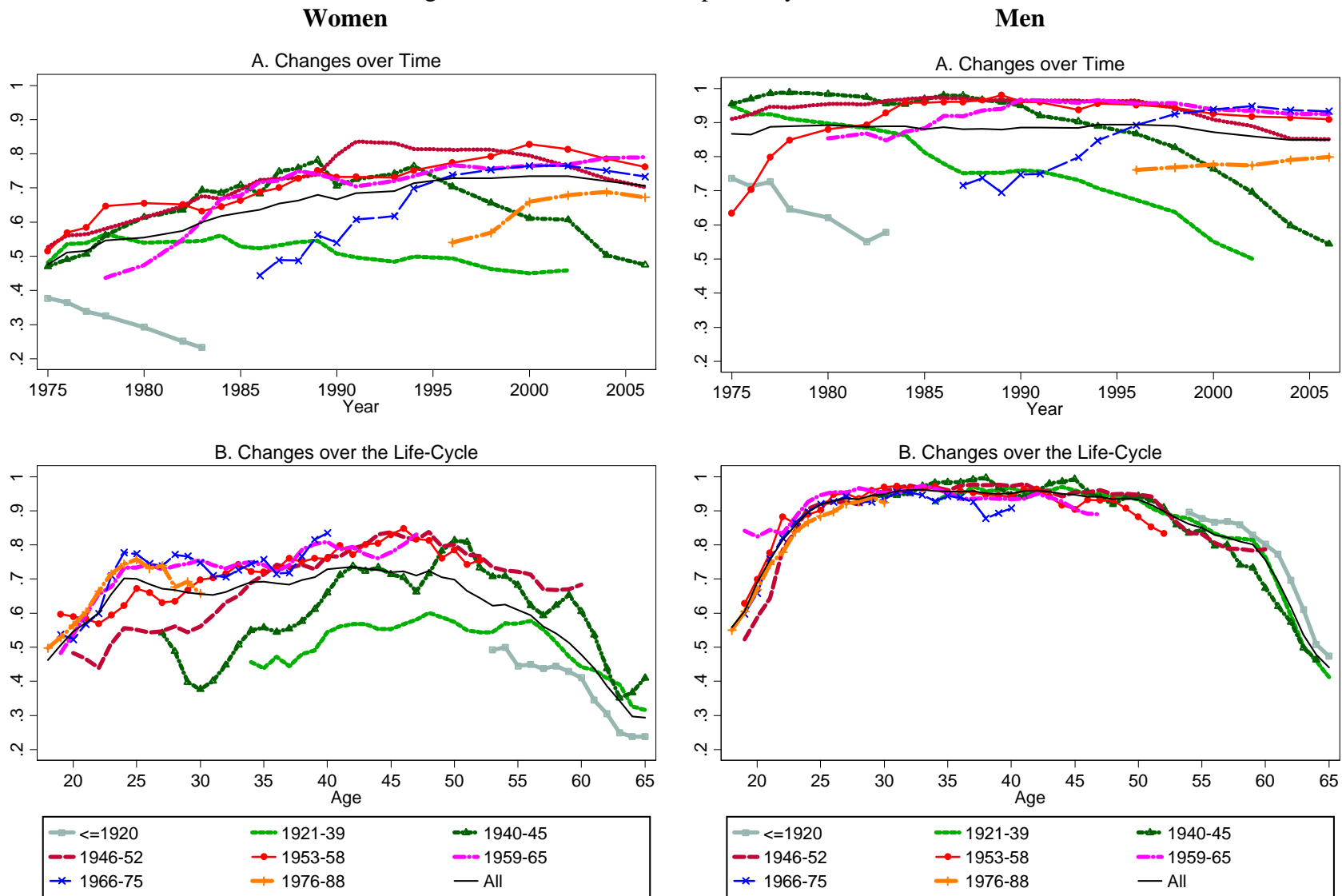
Note: 3-year moving averages of WRKSTAT recoded based on 21,376 observations (women) and 17,312 observations (men) from the GSS 1975-2006, excludes respondents 65 years of age and older.

Figure 3. Gender Role Attitudes of Women by Birth Cohorts

Traditional Views　　　　　　　　　　　　　　　　**Egalitarian Views**

A. Changes over Time

C. Changes over Time

B. Changes over the Life-Cycle

D. Changes over the Life-Cycle

Legend (left):
- <=1920
- 1921-39
- 1940-45
- 1946-52
- 1953-58
- 1959-65
- 1966-75
- 1976-88
- All

Legend (right):
- <=1920
- 1921-39
- 1940-45
- 1946-52
- 1953-58
- 1959-65
- 1966-75
- 1976-88
- All
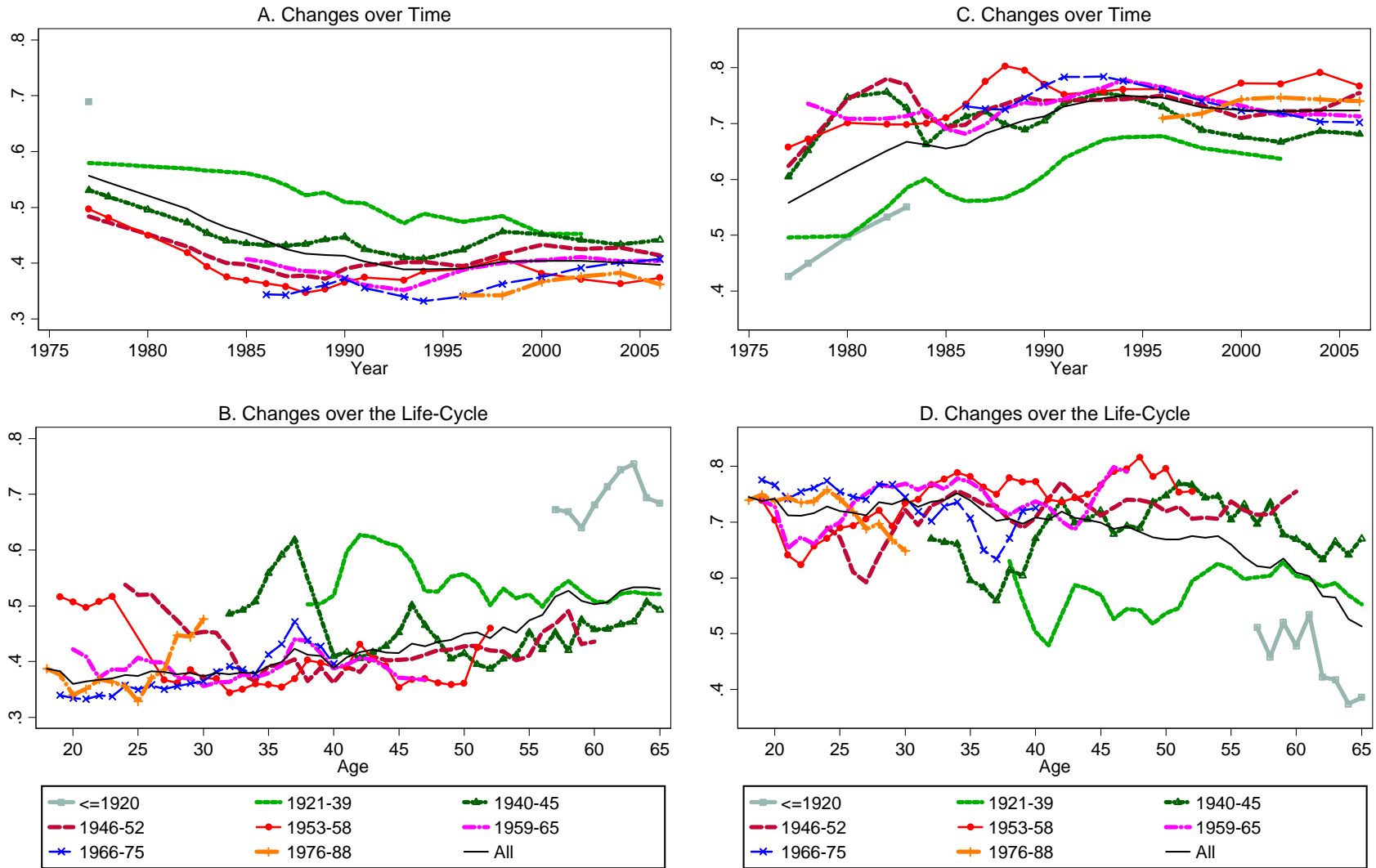
Note: 3-year moving averages of TRAD based on 9,825 observations and of EGAL based on 11,610 observations, as defined in Table 1, from the GSS 1977-2006, excludes respondents 65 years of age and older. For smoothness, values in missing years have been interpolated.

Figure 4. Instrumental Variables – Women by Birth Cohorts

Premarital Sex Wrong   **Liberal Political Views**

A. Changes over Time

C. Changes over Time

B. Changes over the Life-Cycle

D. Changes over the Life-Cycle

<=1920	1921-39	1940-45
1946-52	1953-58	1959-65
1966-75	1976-88	All
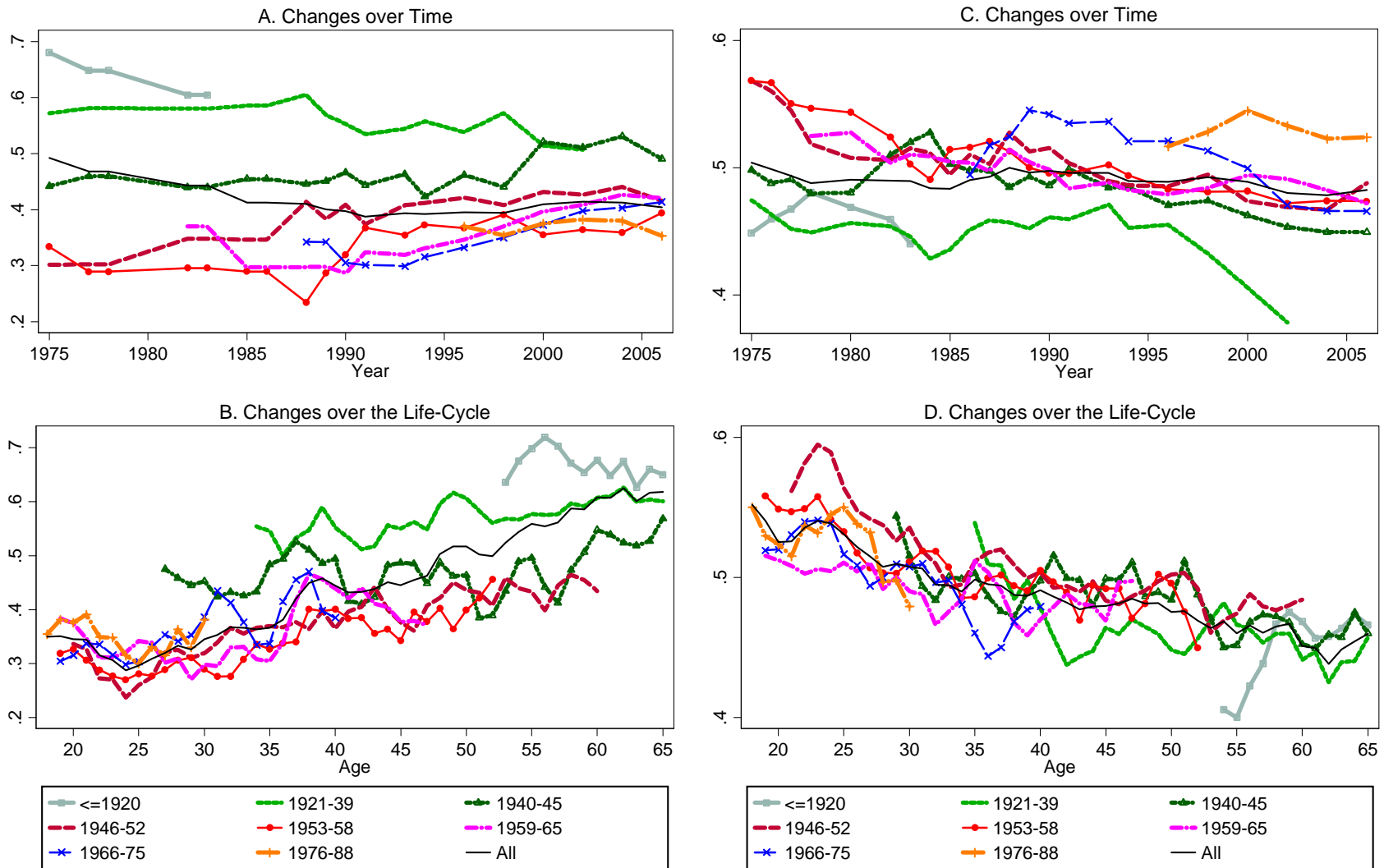
Note: 3-year moving averages of the GSS variables PREMARSX recoded based on 12,324 observations and POLVIEWS recoded based on 18,552 observations from the GSS 1975-2006, excludes respondents 65 years of age and older.

Figure 5. "What are your chances of getting HIV/AIDS?"
Women by Birth Cohort (1988-2006)
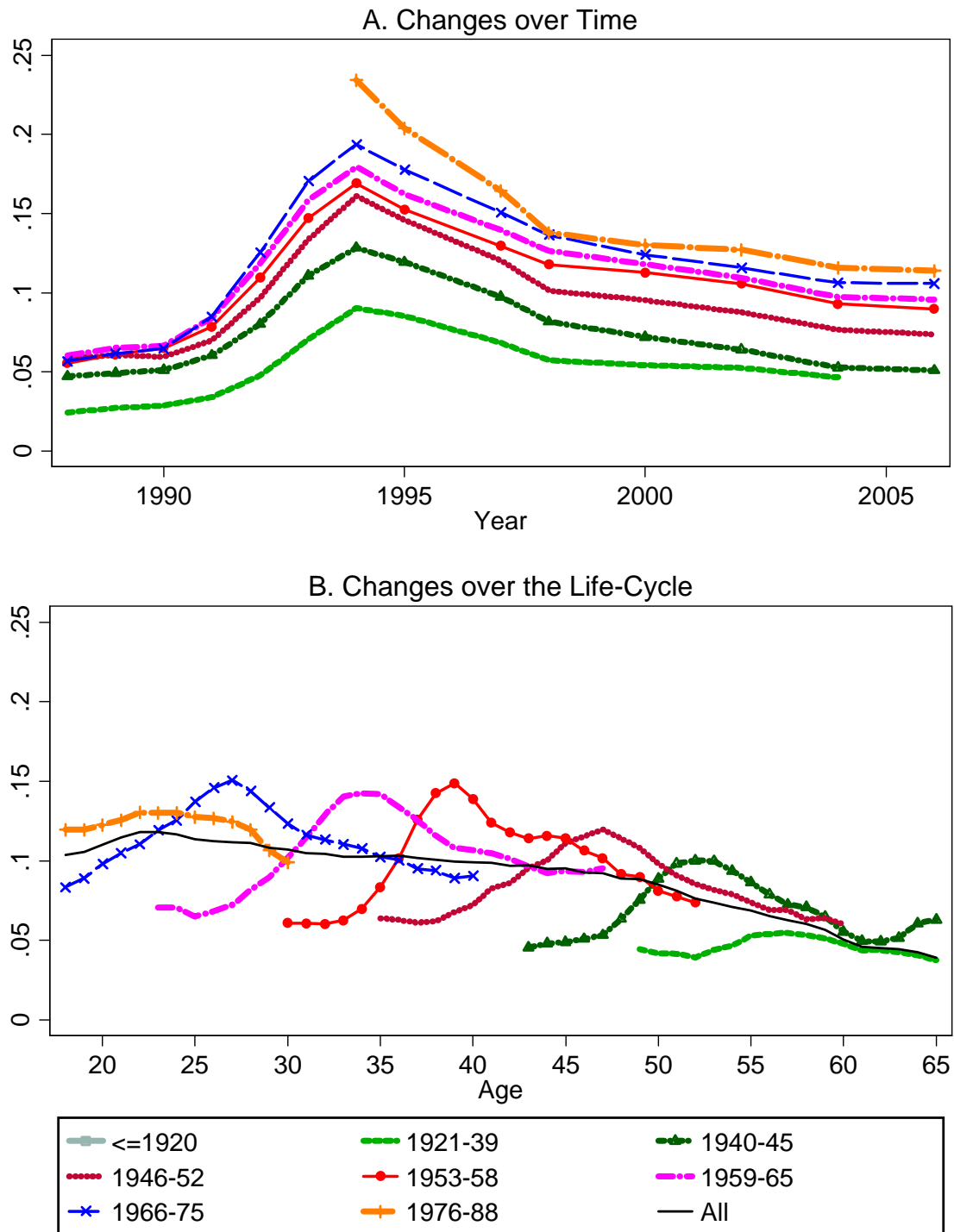
Note: 3-year moving averages of "Chances have HIV/AIDS: High/Already =1, Medium=2/3, Low=1/3, None=0" from the National Health Interview Surveys (NHIS) 1988-2006.

Figure 6. Yearly Averages of Actual and Predicted FLP
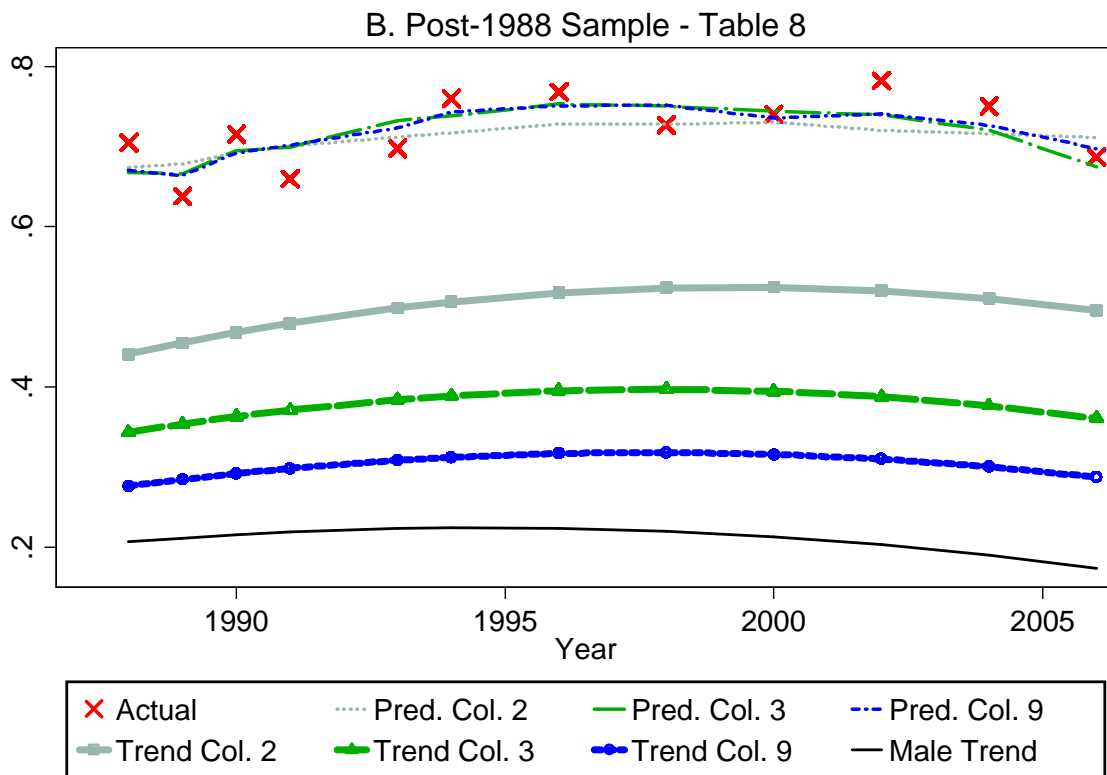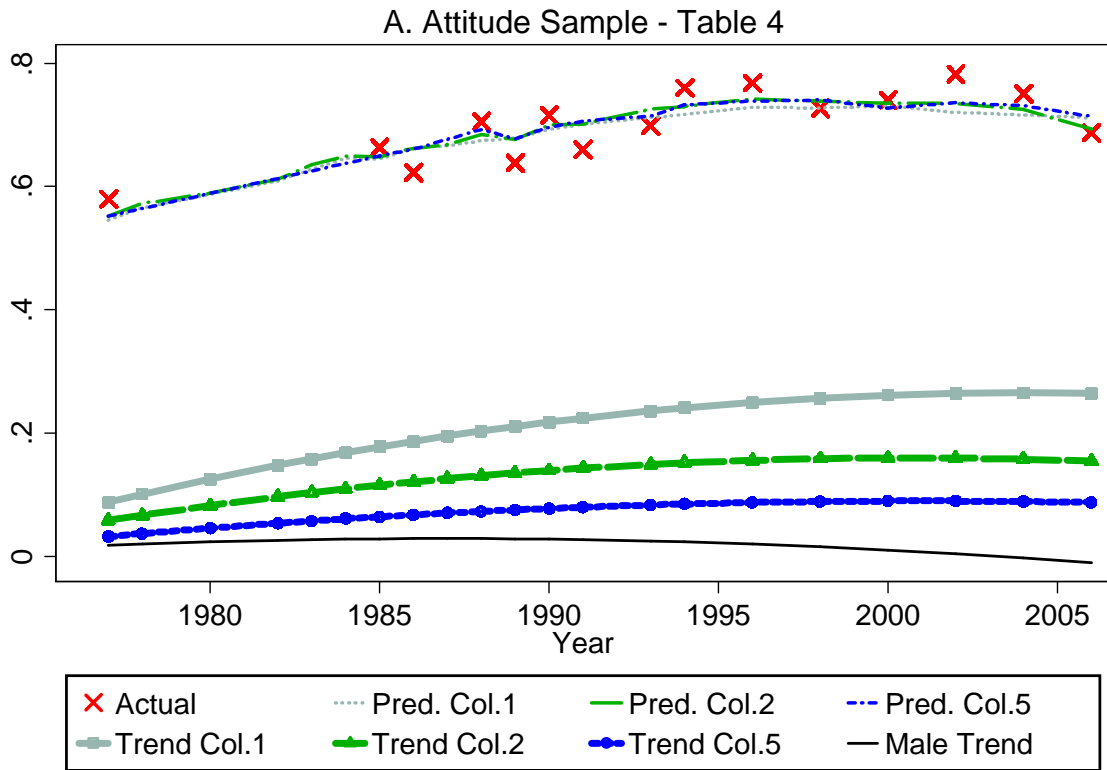
Table 1. Women's Average Agreement with Gender Role Attitudes by Labor Force Participation

Variable Name	A: National Longitudinal Survey of 1972	Non-LFP in 1986	LFP in 1986	Δ
	How do you feel about the following statements? Strongly agree, agree, disagree, or strongly disagree. (asked in 1979)			
FT196A	a. A working mother of pre-school children can be just as good a mother as the woman who doesn't work	57.5	68.8	-11.3
FT196B	b. It is usually better for everyone involved if the man is the acheiver outside the home and the woman takes care of the home and family	46.7	35.0	11.7
FT196C	c. Young men should be encouraged to take jobs that are usuall filled by women (nursing, secretarial, work. etc.)	46.0	48.0	-2.0
FT196D	d. Most women are just not interested in having big and important jobs	32.0	30.6	1.4
FT196E	e. Many qualified women can't get good jobs; men with the same skills have much less trouble	58.2	60.5	-2.3
FT196F	f. Most women are happiest when they are making a home and caring for children	44.6	37.9	6.7
FT196G	g. High schools counselors should urge young women to train for jobs which are now held mainly by men	54.3	56.9	-2.6
FT196H	h. It is more important for a wife to help her husband than to have a career herself	45.0	36.3	8.7
FT196I	i. Schools teach women to want the less important jobs (reverse)	41.3	43.1	-1.8
FT196J	j. Men should be given first chance at most jobs because they have the primary responsibility for providing for a family	37.0	30.0	7.0
EGAL	Composite of (FT196A+FT196C+FT196E+FT196G+FT196I)	51.5	55.5	-4.0
TRAD	Composite of (FT196B+FT196D+FT196F+FT196H+FT196J)	40.4	20.5	19.9

Variable Name	B: General Social Survey 1977-2006	Non-LFP	LFP	Δ
	Do you agree or disagree with this statement?			
FEPOL	Tell me if you agree or disagree with this statement: Most men are better suited emotionally for politics than are most women. (reverse)	67	77.3	-10.3
	Now I'm going to read several more statements. As I read each one, please tell me whether you strongly agree, agree, disagree, or strongly disagree with it. For example, here is the statement:			
FECHLD	A. A working mother can establish just as warm and secure a relationship with her children as a mother who does not work.	58.4	69.2	-10.8
FEPRESCH	C. A preschool child is likely to suffer if his or her mother works	50.3	41.1	9.2
FEFAM	D. It is much better for everyone involved if the man is the achiever outside the home and the woman takes care of the home and family.	47.9	35.7	12.2
EGAL	Composite of (FEPOL+FECHLD)	62.3	73.0	-10.7
TRAD	Composite of (FEFAM+FEPRESCH)	49.1	38.5	10.6

Note: Respondents are women aged 18 to 65 in the GSS. Answers scaled 1 to n (strongly agree, agree, disagree, or strongly disagree) are rescaled between 100 and 0, using the formula 100*(n–k)/(n−1) where n is the number of categories and k is the categorical integer.

Table 2. Women's Averages for Selected Birth Cohorts and Selected Years

| Birth Years | Cohort Name | Labor Force Participation | | Gender Role Attitudes | | Age at First Marriage | HIV/AIDS Subjective Risk |
| | | | | Traditional | Egalitarian | | |
	Survey:	CPS	GSS	GSS	GSS	GSS	NHIS
				Years: 1983-1985			
1940-45	Parents of Gen X	70.4	67.8	47.1	65.0	20.2	—
1946-52	Early Boomers	70.0	66.8	38.8	71.4	20.6	—
1953-58	Mid-Boomers	69.6	64.1	35.7	70.1	20.4	—
1959-65	Late Boomers	68.1	67.1	41.3	71.7	19.4	—
1966-75	Generation X	59.0	—	—	—	—	—
	All[a]	63.1	61.7	45.0	66.3	20.5	—
				Years: 1988-1990			
1940-45	Parents of Gen X	73.5	75.9	46.7	66.1	20.9	4.6
1946-52	Early Boomers	76.4	74.0	37.1	74.8	21.1	6.1
1953-58	Mid-Boomers	73.0	75.2	35.3	79.6	21.0	6.2
1959-65	Late Boomers	73.4	74.1	38.4	73.7	21.1	6.4
1966-75	Generation X	65.7	56.8	36.2	75.2	18.7	6.4
	All	67.3	67.8	41.4	70.6	20.8	5.3
				Years: 1993-1994			
1940-45	Parents of Gen X	72.4	75.7	41.1	75.2	20.9	12.6
1946-52	Early Boomers	78.5	80.0	39.1	75.4	22.1	16.1
1953-58	Mid-Boomers	75.9	76.7	36.5	76.4	22.5	17.8
1959-65	Late Boomers	74.1	74.4	35.5	78.7	22.2	18.6
1966-75	Generation X	70.5	68.3	32.2	78.7	19.9	20.2
	All	69.8	71.4	38.0	75.9	21.6	16.3
				Years: 1998-2000			
1940-45	Parents of Gen X	63.6	57.7	46.0	66.4	—	7.3
1946-52	Early Boomers	76.7	80.3	42.2	73.4	—	10.1
1953-58	Mid-Boomers	78.6	82.6	40.2	73.7	—	12.0
1959-65	Late Boomers	77.1	75.7	40.8	73.7	—	12.7
1966-75	Generation X	77.0	75.4	36.8	73.2	—	13.2
	All	71.9	72.9	40.3	72.5	—	11.5
				Years: 2004-2006			
1940-45	Parents of Gen X	45.5	45.2	46.4	65.9	21.1	4.9
1946-52	Early Boomers	68.4	69.6	42.6	74.3	22.3	7.4
1953-58	Mid-Boomers	76.7	75.9	38.6	77.4	20.9	8.9
1959-65	Late Boomers	77.3	79.2	39.3	72.1	22.8	9.5
1966-75	Generation X	73.8	72.9	41.0	69.6	23.2	10.6
	All	70.1	70.2	39.9	72.2	22.2	9.5

Note: To increase comparability with GSS data, averages from the March CPS are computed for years in which the GSS is available. These corresponds to years 1983, 1984, 1985 for 1983-1985; 1988, 1989, 1990 for 1988-90; 1993 and 1994 for 1993-1994; 1998 and 2000 for 1998-2000; 2004 and 2006 for 2005-2006. In the GSS, age at first marriage was not asked between 1994 and 2004. In the NHIS, questions on subjective HIV/AIDS risk were asked consistently from 1988 onwards.

[a]All birth cohorts also include data from cohorts not included in the Table.

Table 3. Trends in Labor Force Participation ─ GSS 1977-2006

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Mean LFP	All Women: 0.672								All Men: 0.879		
Time (1977=1)	0.012***		0.017***	0.018***		Full set	0.018***	0.012***	0.002	0.002	
	(0.002)		(0.002)	(0.002)		of time	(0.002)	(0.002)	(0.002)	(0.002)	
Time^2/100	-0.025***		-0.034***	-0.033***	-0.033***	dummies	-0.031***	-0.023***	-0.004	-0.007*	-0.006
	(0.005)		(0.005)	(0.005)	(0.005)	(1998 omit.)	(0.005)	(0.005)	(0.003)	(0.004)	(0.004)
Age		0.044***	0.043***	Full set	Full set	Full set	0.036***	0.044***	0.052***	Full set	Full set
		(0.002)	(0.002)	of age	of age	of age	(0.003)	(0.003)	(0.002)	of age	of age
Age^2/100		-0.051***	-0.057***	dummies	dummies	dummies	-0.050***	-0.057***	-0.067***	dummies	dummies
		(0.003)	(0.002)	(65 omit.)	(65 omit.)	(65 omit.)	(0.003)***	(0.003)***	(0.003)	(65 omit.)	(65 omit.)
Birth cohort (1953-1958 omitted)											
<=1920	-0.354***	-0.290***		0.027	Full set	0.023	0.004	-0.001	0.016	0.078	Full set
	(0.027)	(0.030)		(0.054)	of birth	(0.054)	(0.053)	(0.052)	(0.050)	(0.049)	of birth
1921-39	-0.175***	-0.162***		-0.013	cohort	-0.011	0.007	0.019	0.019	0.031	cohort
	(0.013)	(0.016)		(0.033)	dummies	(0.033)	(0.032)	(0.032)	(0.026)	(0.026)	dummies
1939-45	-0.072	-0.079***		0.001	(1988	0.002	0.010	0.006	0.007	0.020	(1988
	(0.015)	(0.015)		(0.022)	birth	(0.022)	(0.021)	(0.021)	(0.017)	(0.017)	birth
1946-52	0.005	-0.017		0.024	omitted)	0.025	0.026	0.013	0.017*	0.021**	omitted)
	(0.012)	(0.012)		(0.014)		(0.014)	(0.014)	(0.014)	(0.010)	(0.010)	
1959-65	-0.011	0.025**		-0.011		-0.012	-0.020*	-0.008	0.010	0.007	
	(0.012)	(0.012)		(0.014)		(0.014)	(0.014)	(0.014)	(0.010)	(0.010)	
1966-75	-0.051***	0.033**		-0.054**		-0.057**	-0.069***	-0.036*	-0.007	-0.025	
	(0.013)	(0.014)		(0.022)		(0.022)	(0.021)	(0.021)	(0.018)	(0.018)	
1975-88	-0.101***	0.069***		-0.091***		-0.095***	-0.090***	-0.054	-0.013	-0.040	
	(0.019)	(0.030)		(0.035)		(0.035)	(0.035)	(0.034)	(0.029)	(0.029)	
Observations	20000	20000	20000	20000	20000	20000	20000	19919	16193	16193	16193
R-squared	0.04	0.059	0.061	0.073	0.076	0.075	0.063	0.132	0.123	0.140	0.146

Note: Parameter estimates from Linear Probability Model. Robust standard errors are in parentheses. Significance at 1% level denoted by ***, at 5% level denoted by **, at 10% level denoted by *. Column (8) also includes years of schooling, number of children, dummies for white, married, ever divorced, preschooler present, mother ever worked, living in an intact family and dummies (9) for religion at age 16, and region dummies (8).

Table 4. Impact of Gender Role Attitudes on FLP — Attitude Sample GSS 1977-2006

Mean LFP: 0.692	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Time (1977=1)	0.015***	0.010***	0.007*	0.008**	0.006	Full set	0.007**	0.008**	0.008**	0.008***	0.005*
	(0.003)	(0.001)	(0.004)	(0.004)	(0.004)	of time	(0.003)	(0.004)	(0.004)	(0.003)	(0.003)
$Time^2/100$	-0.025***	-0.019***	-0.011	-0.014*	-0.010	dummies	-0.013*	-0.014*	-0.015*	-0.014*	-0.009
	(0.008)	(0.007)	(0.008)	(0.008)	(0.008)	(1998 omit.)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Traditional attitudes			-0.246***		-0.219***	-0.223***					
			(0.022)		(0.024)	(0.024)					
Egalitarian attitudes				0.135***	0.051**	0.047**					
				(0.019)	(0.021)	(0.021)					
FEFAM[a]							-0.174***				-0.089***
							(0.020)				(0.023)
FEPOL[a]								0.024*			-0.011
								(0.013)			(0.013)
FEPRESCH[a]									-0.185***		-0.113***
									(0.019)		(0.022)
FECHLD[a]										0.189***	0.125***
										(0.018)	(0.021)
Years of		0.023***	0.020***	0.021***	0.019***	0.018***	0.020***	0.023***	0.021***	0.021***	0.020***
schooling		(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Married		-0.083***	-0.077**	-0.078***	-0.076***	-0.074***	-0.076***	-0.081***	-0.081***	-0.079***	-0.078***
		(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Ever divorced		0.025**	0.019	0.022*	0.018	0.019	0.022*	0.025*	0.020*	0.021	0.020
		(0.012)	(0.011)	(0.011)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.011)
Presence of		-0.137***	-0.140***	-0.136***	-0.139***	-0.138***	-0.134***	-0.138***	-0.143***	-0.136***	-0.140***
Pre-school children		(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
Mother ever worked		0.027**	0.018*	0.027**	0.018	0.020	0.020*	0.024**	0.020*	0.022**	0.018*
		(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Quadratic in age	Yes	Yes	Yes	Yes	Yes	Full set	Yes	Yes	Yes	Yes	Yes
Cohort dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other demographics	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8915	8915	8915	8915	8915	8915	8915	8915	8915	8915	8915
R-squared	0.060	0.056	0.145	0.136	0.146	0.016	0.138	0.130	0.140	0.145	0.143

Note: Parameter estimates from Linear Probability Model. Robust standard errors are in parentheses. Significance at 1% level denoted by ***, at 5% level denoted by **, at 10% level denoted by *. Other Demographics include number of children, dummies for white, married, ever divorced, preschooler present, mother ever worked, living in an intact family, and dummies (9) for religion at age 16, and region dummies (8).

[a] As defined in Table 1.

Table 5. Impact of Gender Role Attitudes on FLP – NLS72

Mean LFP in 1986 at age 32: 0.728	(1)	(2)	(3)	(4)	(5)	(6)
Traditional attitudes in 1979[a]		-0.294***		-0.278***	-0.232***	
		(0.034)		(0.037)	(0.040)	
Egalitarian attitudes in 1979[a]			0.173***	0.049		0.133***
			(0.045)	(0.044)		(0.044)
Education (HS Omitted)						
Less than HS	-0.180*	-0.180*	-0.199*	-0.186*	-0.181	-0.195
	(0.109)	(0.108)	(0.109)	(0.108)	(0.147)	(0.144)
Trade	0.003	0.003	0.001	0.003	-0.013	-0.010
	(0.019)	(0.018)	(0.019)	(0.018)	(0.022)	(0.022)
Some college	0.029*	0.015	0.023	0.014	0.003	0.009
	(0.015)	(0.015)	(0.015)	(0.015)	(0.017)	(0.018)
College	0.016	-0.012	0.006	-0.013	-0.033*	-0.021
	(0.015)	(0.018)	(0.018)	(0.018)	(0.019)	(0.019)
Post-graduate	0.057**	0.017	0.041	0.015	0.003	0.021
	(0.027)	(0.027)	(0.027)	(0.027)	(0.026)	(0.026)
Married	-0.060***	-0.060***	-0.064***	-0.069***	-0.071**	-0.067**
	(0.020)	(0.020)	(0.019)	(0.020)	(0.019)	(0.019)
Ever divorced	0.074***	0.074***	0.067***	0.060***	0.047***	0.050***
	(0.016)	(0.016)	(0.016)	(0.016)	(0.017)	(0.017)
Presence of pre-school children	-0.097***	-0.100***	-0.096***	-0.100***	-0.125***	-0.123***
	(0.013)	(0.013)	(0.013)	(0.013)	(0.017)	(0.015)
Mother ever worked	0.014	0.012	0.013	0.012	0.016	0.017
	(0.012)	(0.012)	(0.012)	(0.012)	(0.013)	(0.013)
LFP in 1979					0.180***	0.189***
					(0.016)	(0.016)
Other demographics	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5460	5460	5460	5460	5460	5460
R-squared	0.104	0.115	0.116	0.116	0.144	0.139

Note: Parameter estimates from Linear Probability Model. Robust standard errors are in parentheses. Significance at 1% level denoted by ***, 5% level denoted by **, at 10% level denoted by *. Other demographics include number of children, dummies for white, living in an intact family and dummies (6) for religion while growing up and region dummies (3).

[a] As defined in Table 1.

Table 6. Impact of Gender Role Attitudes on FLP – Married Women

	(1)	(2)	(3)	(4)	(5)	(6)
Sample	GSS	GSS-Attitude Sample			NLS72	
Mean LFP	0.589	0.655			0.695	
Time (1977=1)	0.020***	0.016***	0.014***	0.009*		
	(0.003)	(0.004)	(0.004)	(0.005)		
Time^2/100	-0.038***	-0.036***	-0.033***	-0.022**		
	(0.007)	(0.011)	(0.011)	(0.010)		
Traditional attitudes				-0.297***		-0.260***
				(0.032)		(0.058)
Egalitarian attitudes				0.048		0.088
				(0.030)		(0.062)
Education (HS Omitted)						
Less than HS					-0.217	-0.226
					(0.174)	(0.181)
Trade					0.003	-0.008
					(0.030)	(0.029)
Some college					0.033	0.020
					(0.024)	(0.024)
College					0.027	0.001
					(0.026)	(0.026)
Post-graduate					0.086***	0.046
					(0.033)	(0.034)
Year of schooling		0.029***	0.029***	0.024***		
		(0.003)	(0.003)	(0.003)		
Ever divorced		0.014	0.014	0.006	0.054***	0.040*
		(0.018)	(0.018)	(0.018)	(0.021)	(0.021)
Presence of		-0.173***	-0.173***	-0.174***	-0.102***	-0.105***
Pre-school children		(0.019)	(0.019)	(0.019)	(0.020)	(0.019)
Mother ever worked		0.018	0.018	0.009	0.025	0.022
		(0.016)	(0.016)	(0.011)	(0.018)	(0.018)
Log of other income			-0.080***	-0.078***	-0.089***	-0.091***
			(0.009)	(0.009)	(0.013)	(0.013)
Quadratic in age	Yes	Yes	Yes	Yes	No	No
Cohort dummies	Yes	Yes	Yes	Yes	No	No
Other demographics	No	Yes	Yes	Yes	Yes	Yes
Observations	10612	3967	3967	3967	3469	3469
R-squared	0.071	0.140	0.158	0.183	0.113	0.112

Note: Parameter estimates from Linear Probability Model. Robust standard errors are in parentheses. Significance at 1% level denoted by ***, 5% level denoted by **, at 10% level denoted by *. All columns also include number of children, dummies for white, living in an intact family and dummies for religion while growing up and region dummies as in Appendix Table A1.

Table 7. 2SLS Estimates – Attitude Sample GSS 1977-2006

	(1)	(2)	(3)	(4)
Econometric Specification	First-Stage	2SLS	First-Stage	2SLS
	Traditional		Egalitarian	
Dependent variable:	attitudes	FLP	attitudes	FLP
Time	-0.017***	0.007*	0.027***	0.006*
	(0.002)	(0.004)	(0.004)	(0.003)
$Time^2/10$	0.030***	-0.011	-0.045***	-0.010
	(0.003)	(0.007)	(0.008)	(0.008)
Traditional		-0.231***		
attitudes		(0.070)		
Egalitarian				0.257***
attitudes				(0.088)
Instruments:				
Premarital sex	0.131***		-0.107***	
wrong	(0.006)		(0.009)	
Liberal political	-0.137***		0.147***	
views	(0.011)		(0.015)	
Quadratic in age	Yes	Yes	Yes	Yes
Cohort dummies	Yes	Yes	Yes	Yes
Other demographics	Yes	Yes	Yes	Yes
Observations	8915	8915	8915	8915
R-squared	0.17	0.14		0.13
F-Test on instruments/				
Anderson canon corr.	386.6	744.6	111.4	220.7
Sargan/ Anderson-Rudin		0.001		0.074
Overid : p-value		0.9795		0.7854

Note: Robust standard errors are in parentheses. Significance at 1% level denoted by ***, at 5% level denoted by **, at 10% level denoted by *. Other demograhics include years of schooling, number of children, dummies for white, married, ever divorced, preschooler present, mother ever worked, living in an intact family, and dummies (9) for religion at age 16, and region dummies (8).

Table 8 . Two-Sample 2SLS Estimates of the Impact of Gender Role Attitudes on FLP - GSS 1988-2006

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Econometric Specification	LPM	LPM	LPM	LPM	LPM	First-Stage Egalitarian attitudes	TS2SLS	First-Stage Egalitarian attitudes	TS2SLS
Dependent Variable:	MLP	FLP	FLP	FLP	FLP		FLP		FLP
Time	0.019***	0.039***	0.031***	0.029***	0.029***	0.007***	0.010	0.009***	0.010***
	(0.008)	(0.011)	(0.010)	(0.011)	(0.010)	(0.002)	(0.007)	(0.006)	(0.004)
Time^2/10	-0.040***	-0.067***	-0.056***	-0.052***	-0.052***	-0.031***	-0.042	-0.035***	-0.046***
	(0.016)	(0.020)	(0.020)	(0.019)	(0.019)	(0.010)	(0.031)	(0.010)	(0.018)
Traditional attitudes				-0.196***					
				(0.027)					
Egalitarian attitudes				0.048*	0.122***		0.415		0.313**
				(0.025)	(0.022)		(0.829)		(0.133)
Instruments:									
Liberal political views								0.172***	
								(0.014)	
Estimated HIV/AIDS risk residual						-0.469**		-0.469**	
						(0.234)		(0.231)	
Quadratic in age	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cohort dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other demographics	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5749	7017	7017	7017	7017	7017	7017	7017	7017
R-squared	0.14	0.05	0.12	0.12	0.13		0.1		0.12
F-Test on instruments						4.02		78.56	156.3
Sargan/ Anderson-Rudin									0.016
Overid : p-value									0.8996

Note: Standard errors are in parentheses. Significance at 1% level denoted by ***, at 5% level denoted by **, at 10% level denoted by *. Other demographics are years of schooling, number of children, dummies for white, married, ever divorced, preschooler present, mother ever worked, living in an intact family, and dummies (9) for religion at age 16, and region dummies (8).

Table 9. Impact of Alternative Explanations on FLP – GSS 1977-2006

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Time (1977=1)	0.011***	0.006	0.010***	0.006	0.009**	0.005	0.010***	0.006	0.011**	0.007
	(0.004)	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)	(0.004)	(0.004)
Time^2/100	-0.018**	-0.010	-0.018**	-0.010	-0.016**	-0.007	-0.019**	-0.011	-0.018*	-0.011
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.009)	(0.009)
Traditional attitudes		-0.220***		-0.221***		-0.226***		-0.220***		-0.234***
		(0.024)		(0.025)		(0.025)		(0.025)		(0.030)
Egalitarian attitudes		0.052**		0.052**		0.058**		0.053**		0.026
		(0.022)		(0.022)		(0.022)		(0.022)		(0.027)
Ever divorced	0.025**	0.018	0.022*	0.019	0.034***	0.028**	0.026**	0.021*	0.032**	0.025*
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.015)	(0.015)
Liberal political views	0.046*	-0.007								
	(0.023)	(0.024)								
Premarital sex wrong			-0.035***	0.005						
			(0.013)	(0.014)						
Divorce should be easier					-0.026*	-0.044***				
					(0.013)	(0.013)				
Church attendance							0.020	0.048***		
							(0.017)	(0.017)		
Self-rated health									0.187***	0.187***
									(0.026)	(0.026)
Current religion (9 dummies)	No	No	No	No	No	No	Yes	Yes	No	No
Quadratic in age	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cohort dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other demographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8915	8915	8915	8915	8554	8554	8822	8822	5518	5518
R-squared	0.131	0.146	0.131	0.146	0.131	0.148	0.134	0.149	0.149	0.164

Note: Parameter estimates from Linear Probability Model. Robust standard errors are in parentheses. Significance at 1% level denoted by ***, at 5% level denoted by **, at 10% level denoted by *. All columns also include years of schooling, number of children, dummies for white, married, preschooler present, mother ever worked, living in an intact family and dummies (9) for religion at age 16, and region dummies (8).

Table 10. Impact of Gender Role Attitudes on FLP – African-American

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GSS 1977-2006		All Women			Attitude Sample		
Mean LFP:		0.657			0.693		
Time	0.009*	0.007	0.005	0.003	0.003	0.000	-0.003
	(0.005)	(0.006)	(0.006)	(0.008)	(0.008)	(0.010)	(0.010)
Time^2/10	-0.023	-0.014	-0.008	-0.015	-0.010	-0.003	0.004
	(0.013)	(0.016)	(0.016)	(0.019)	(0.019)	(0.023)	(0.023)
Traditional					-0.175***		-0.303***
attitudes					(0.065)		(0.079)
Egalitarian					0.056		-0.077
attitudes					(0.054)		(0.065)
Self-rated health			0.289***			0.275***	0.273***
			(0.039)			(0.065)	(0.064)
Years of		0.038***	0.033***	0.043***	0.041***	0.040***	0.035***
schooling		(0.004)	(0.004)	(0.006)	(0.006)	(0.007)	(0.007)
Married		0.031	0.020	0.023	0.030	-0.008	0.000
		(0.022)	(0.022)	(0.029)	(0.029)	(0.036)	(0.025)
Ever divorced		0.040	0.044	0.059*	0.055*	0.034*	0.028
		(0.024)	(0.023)	(0.030)	(0.030)	(0.037)	(0.037)
Presence of		-0.082***	-0.088***	-0.139***	-0.143***	-0.148***	-0.160***
pre-school children		(0.024)	(0.024)	(0.033)	(0.033)	(0.042)	(0.042)
Mother ever worked		0.039*	0.041*	0.062**	0.063**	0.076**	0.073*
		(0.022)	(0.020)	(0.029)	(0.029)	(0.037)	(0.037)
Quadratic in age	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cohort dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other demographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3326	2482	2482	1352	1352	854	854
R-squared	0.168	0.182	0.206	0.182	0.191	0.212	0.229

Note: Parameter estimates from Linear Probability Model. Robust standard errors are in parentheses. Significance at 1% level denoted by ***, at 5% level denoted by **, at 10% level denoted by *. Other demographics include number of children, dummies for living in an intact family and dummies (9) for religion at age 16, and region dummies (8).

Table 11. Impact of Gender Role Attitudes on FLP – Summary of Results by Sub-Groups

Explanatory variables:	(1) Time	(2) Time^2/100	(3) Traditional attitudes	(4) Egalitarian attitudes	(5) Time	(6) Time^2/100	(7) Traditional attitudes	(8) Egalitarian attitudes
Econometric Specification	Years: 1977-2006				Years: 1988-2006			
A: All Women								
LPM	0.010***	-0.019***			0.031***	-0.056***		
	(0.001)	(0.007)			(0.010)	(0.020)		
LPM	0.006	-0.010	-0.219***	0.051**	0.029***	-0.052***	-0.196***	0.048*
	(0.004)	(0.008)	(0.024)	(0.021)	(0.011)	(0.019)	(0.027)	(0.025)
2SLS	0.007*	-0.011	-0.231***		0.012***	-0.054***	-0.239***	
	(0.004)	(0.007)	(0.070)		(0.004)	(0.017)	(0.083)	
2SLS/TS2SLS[a]	0.006*	-0.010		0.257***	0.010***	-0.046***		0.313**
	(0.003)	(0.008)		(0.088)	(0.004)	(0.018)		(0.133)
B: Less than College Women								
LPM	0.011***	-0.021***			0.011*	-0.048**		
	(0.002)	(0.006)			(0.005)	(0.024)		
LPM	0.004	-0.005	-0.223***	0.043*	0.019*	-0.044*	-0.189***	0.044
	(0.003)	(0.009)	(0.029)	(0.024)	(0.010)	(0.023)	(0.033)	(0.029)
2SLS	0.004	-0.005	-0.266***		0.020*	-0.045*	-0.283**	
	(0.003)	(0.008)	(0.087)		(0.010)	(0.009)	(0.112)	
2SLS/TS2SLS[a]	0.003	-0.004		0.301***	0.007	-0.033		0.451**
	(0.003)	(0.009)		(0.099)	(0.006)	(0.025)		(0.208)
C: College-Educated Women								
LPM	0.015**	-0.028*			0.018**	-0.067*		
	(0.007)	(0.016)			(0.008)	(0.034)		
LPM	0.013*	-0.025	-0.209***	0.079	0.017**	-0.062*	-0.216***	0.049
	(0.007)	(0.015)	(0.044)	(0.045)	(0.008)	(0.033)	(0.046)	(0.047)
2SLS	0.014	-0.026*	-0.232**		0.018**	-0.063*	-0.264**	
	(0.006)	(0.020)	(0.112)		(0.008)	(0.033)	(0.131)	
2SLS/TS2SLS[a]	0.012*	-0.023*		0.226*	0.016**	-0.057*		0.300**
	(0.006)	(0.013)		(0.118)	(0.008)	(0.034)		(0.149)
D: All Men								
LPM	0.006**	-0.012*			0.011***	-0.042***		
	(0.003)	(0.006)			(0.004)	(0.016)		
LPM	0.007***	-0.013**	0.028	-0.019	0.021***	-0.043***	0.024	-0.023
	(0.003)	(0.006)	(0.021)	(0.016)	(0.007)	(0.016)	(0.023)	(0.019)
LPM	0.007***	-0.013**	0.039**		0.021***	-0.043***	0.037*	
	(0.003)	(0.006)	(0.018)		(0.007)	(0.016)	(0.020)	
LPM	0.007***	-0.013**		-0.028**	0.021***	-0.043***		-0.032*
	(0.003)	(0.006)		(0.014)	(0.007)	(0.016)		(0.016)

Note: Robust standard errors are in parentheses. Significance at 1% level denoted by ***, at 5% level denoted by **, at 10% level denoted by *. Also included in the regressions are a quadratic in age, cohort dummies (7), years of schooling, number of children, dummies for white, married, ever divorced, preschooler present, mother ever worked, living in an intact family, mother ever worked, and dummies (9) for religion at age 16, and region dummies (8).

[a] TS2SLS is used for the 1988-2006 period.

Figure A1. Number of Children and Risky Sexual Behavior - Women by Birth Cohorts

Number of Children   **Risky Sexual Behavior**
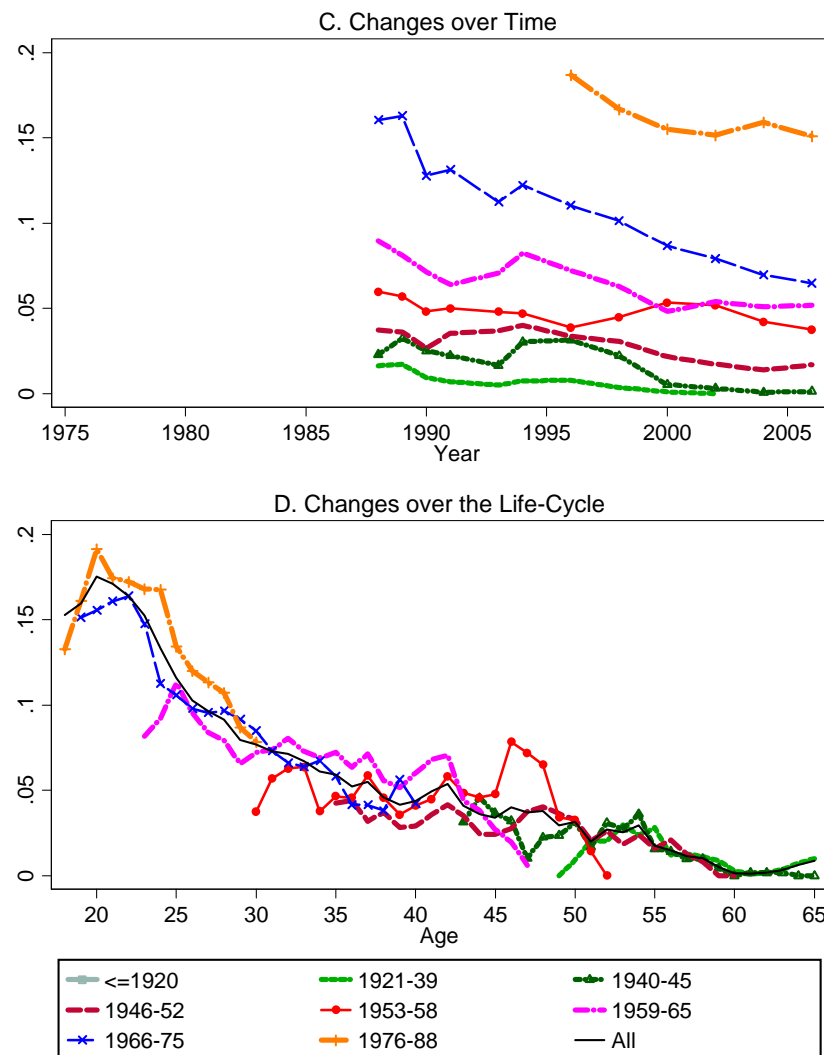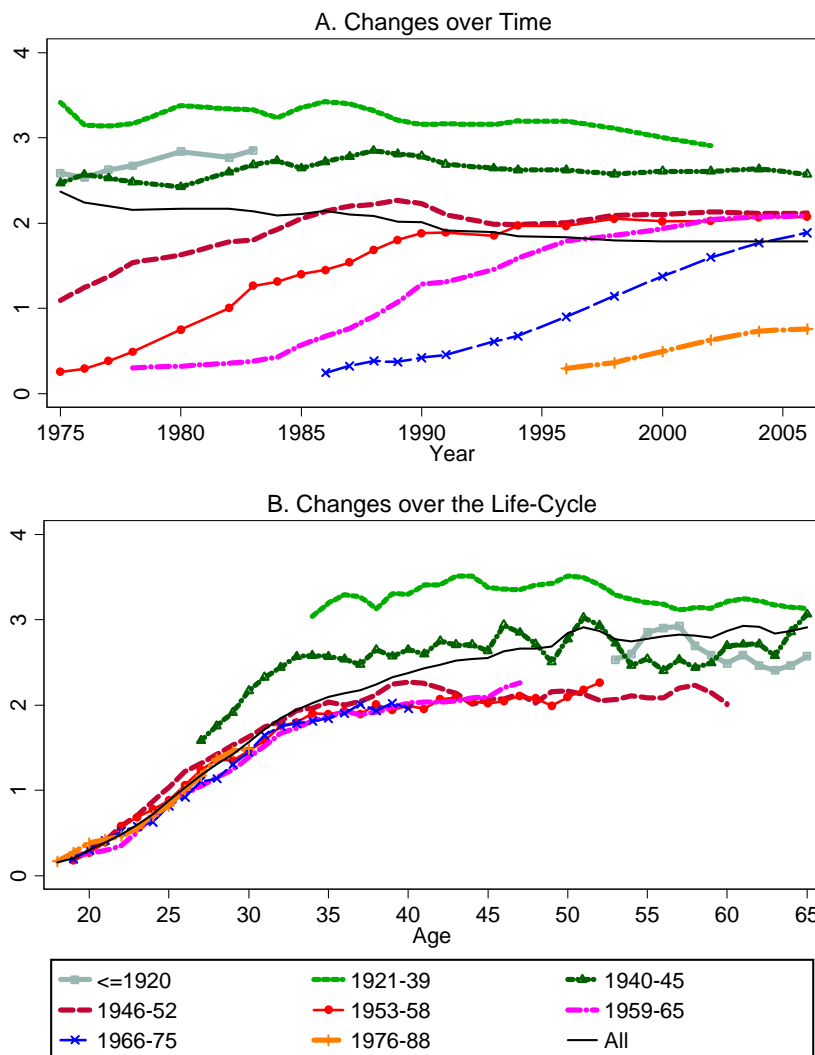
Note: 3-year moving averages of the GSS variables CHILDS based on 21,324 observations from the GSS 1975-2006, and PARTNERS, PIKUPSEX, PAIDSEX and SEXSEX recoded based on 10,982 women from the GSS 1988-2006, excludes respondents 65 years of age and older. Having 0 or 1 sexual partners over the last 12 months is coded as low risk (0), having being 2 and 4 partners is coded as medium risk (0.5) and having 5 or more partners, or having sex with a pick-up, paid or paying partner or homosexual male sex is high risk (1).

Figure A2. Alternative Explanations – Women by Birth Cohorts

Ever Divorced or Separated

A. Changes over Time

B. Changes over the Life-Cycle

Church Attendance

C. Changes over Time

D. Changes over the Life-Cycle

Legend: <=1920, 1921-39, 1940-45, 1946-52, 1953-58, 1959-65, 1966-75, 1976-88, All
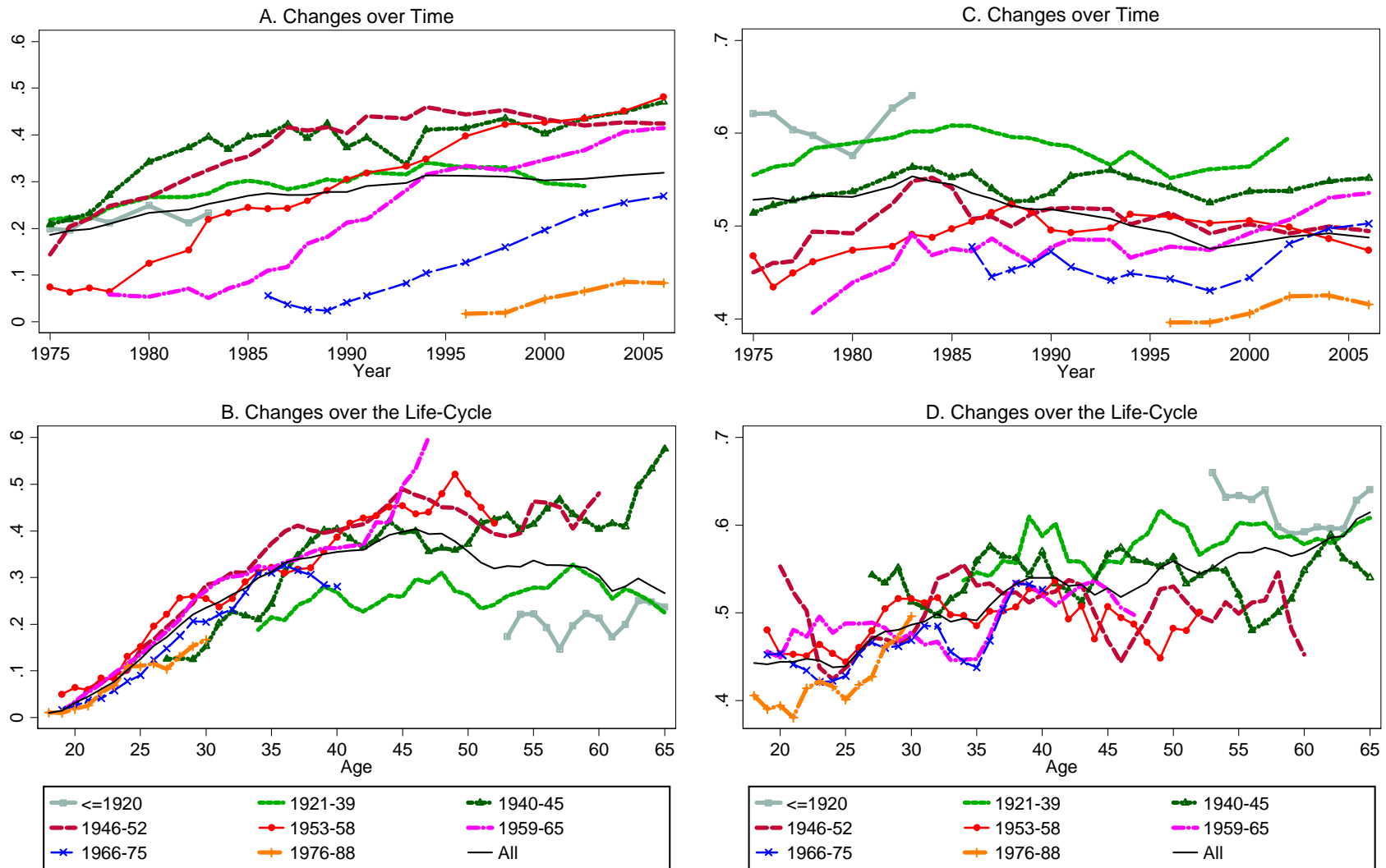
Note: 3-year moving averages of the GSS variables MARITAL and DIVORCE recoded based on 21,376 observations and of ATTEND recoded based on 21,170 observations from the GSS 1975-2006, excludes respondents 65 years of age and older.

Figure A3. Alternative Explanations - Self-Rated Health by Birth Cohorts
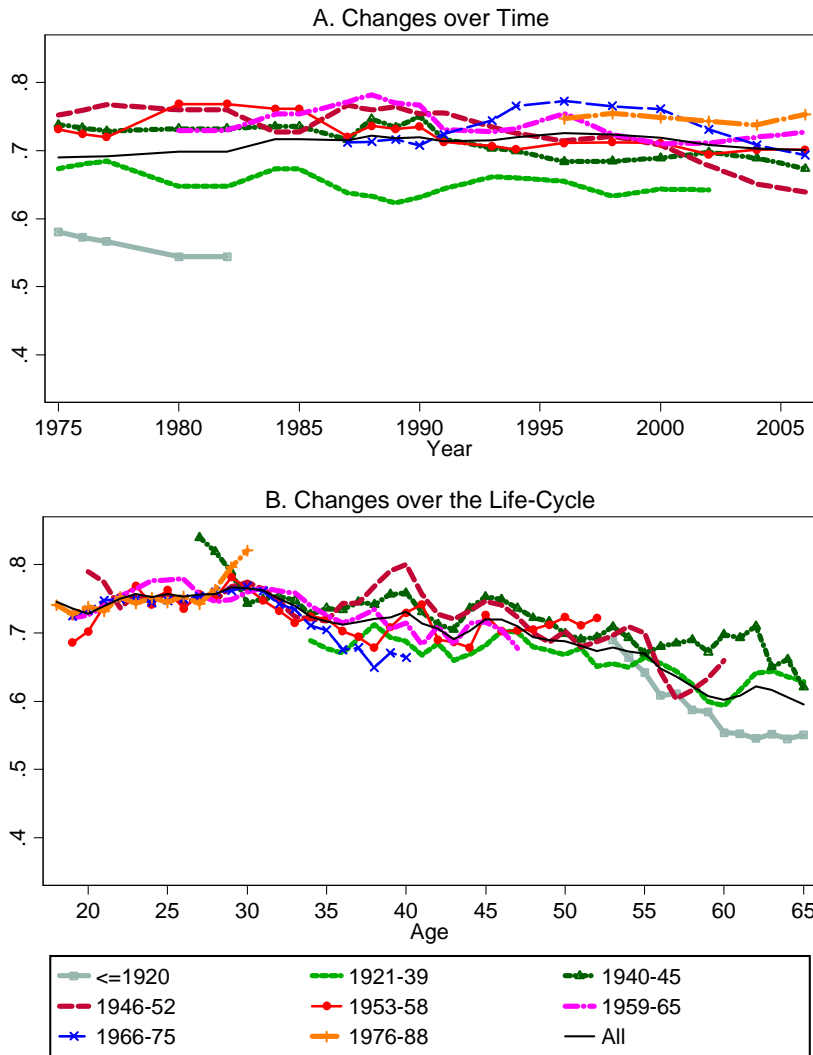
White Women   **Black Women**
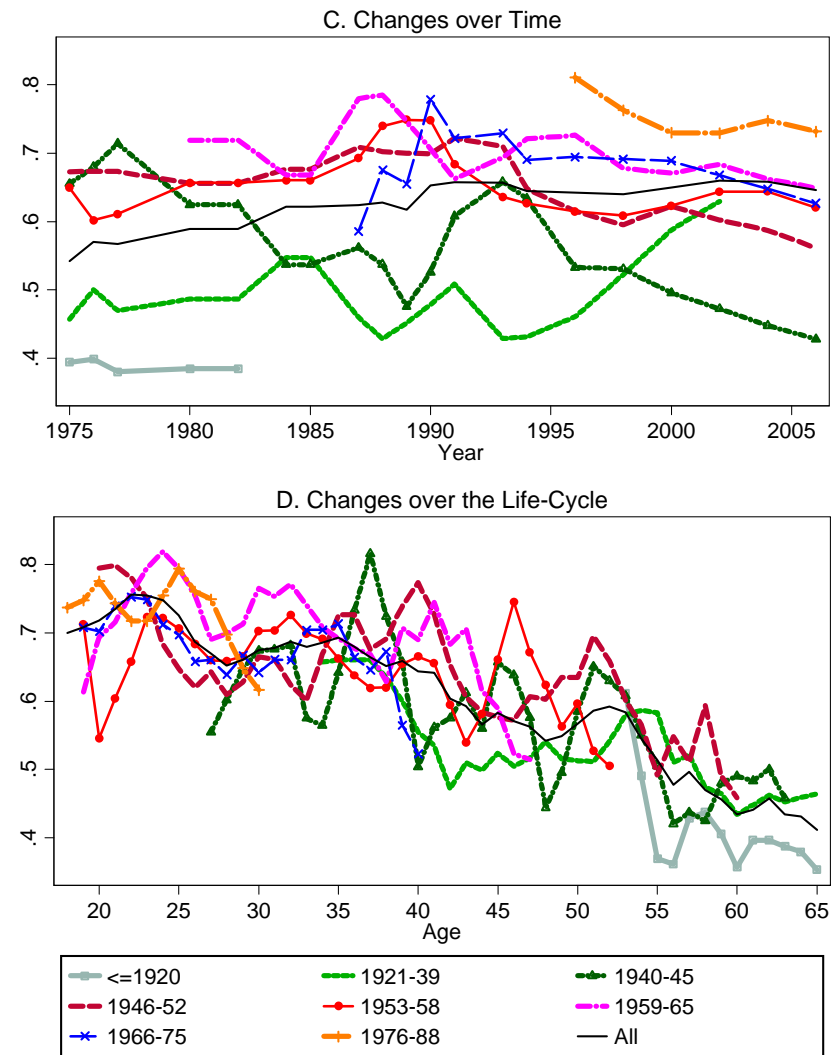
Note: 3-year moving averages of the GSS variable HEALTH recoded based on 12,106 observations on white women and 2631 observations on black women from the GSS 1975-2006, excludes respondents 65 years of age and older.

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Appendix

Table A1. Means of Main Variables

	(1)	(2)	(3)	(4)	(5)	(6)
Sample:		GSS 1977-2006			NLS72	
	All Women	Attitude Sample	Married Women	All Men Attitude Sample	All Women	Married Women
Labor Force Participation	0.672	0.692	0.655	0.881	0.728	0.696
Traditional attitudes	0.418	0.413	0.436	0.481	0.363	0.366
Egalitarian attitudes	0.694	0.710	0.685	0.632	0.540	0.536
Age	39.660	39.555	41.780	39.322	32.153	32.148
Education:						
Less than HS					0.003	0.003
Trade					0.142	0.139
Some College					0.305	0.302
College					0.195	0.201
Post-Graduate					0.062	0.065
Years of schooling	13.025	13.246	13.286	13.398		
Married	0.606	0.602	1.000	0.605	0.839	1.000
Ever divorced	0.286	0.290	0.216	0.249	0.325	0.195
Pre-schooler present	0.229	0.231	0.272	0.184	0.479	0.529
Number of children	2.014	1.904	2.234	1.625	1.677	1.765
Mother ever worked	0.602	0.630	0.613	0.629	0.640	0.635
Living in intact family	0.686	0.707	0.751	0.738	0.706	0.727
White	0.786	0.801	0.860	0.829	0.864	0.880
Religion at age 16						
Protestant					0.410	0.418
Baptist	0.226	0.228	0.194	0.207		
Methodist	0.101	0.098	0.086	0.095		
Lutheran	0.061	0.066	0.072	0.068		
Presbyterian	0.038	0.042	0.044	0.043		
Catholic	0.161	0.161	0.215	0.161	0.288	0.288
Other Christian	0.291	0.309	0.269	0.313	0.147	0.145
Jewish	0.017	0.019	0.022	0.022	0.018	0.017
Muslim	0.002	0.003	0.001	0.022		
other Eastern	0.003	0.003	0.002	0.004	0.033	0.028
Log of other income			10.052			10.043
LFP in 1979					0.734	0.709
Observations (maximum number)	20000	8915	4686	7374	5460	4520

Table A2. Trends in Attitudes, Number of Children, Divorce, and Self-Rated Health ─ GSS 1977-2006

Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Traditional Attitudes		Egalitarian Attitudes		Premarital Sex Wrong		Number of Children		Ever Divorced		Self-Rated Health	
											Whites	Blacks
Mean:	0.413	0.413	0.710	0.710	0.429	0.404	2.01	1.9	0.271	0.290	0.709	0.637
Time (1977=1)	-0.020***	-0.017***	0.023***	0.020***	-0.010***	-0.005	-0.012	0.021	0.008***	0.002	0.005**	0.012**
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.007)	(0.013)	(0.002)	(0.003)	(0.002)	(0.005)
Time^2/100	0.034***	0.030***	-0.040***	-0.034***	0.011*	0.004	0.001	-0.039	-0.008*	0.002	-0.007*	-0.021**
	(0.004)	(0.004)	(0.005)	(0.005)	(0.006)	(0.006)	(0.017)	(0.024)	(0.005)	(0.007)	(0.004)	(0.010)
Age	0.004***	0.003	-0.001	-0.001	0.009***	0.004	0.227***	0.202***	0.034***	0.055***	-0.005***	-0.008***
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.008)	(0.012)	(0.002)	(0.003)	(0.001)	(0.002)
Age^2/100	0.000	0.000	-0.004	-0.000	-0.000	-0.000	-0.022***	-0.020***	-0.004***	-0.006***		
	(0.002)	(0.002)	(0.003)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)		
Birth Cohort (1953-1958 omitted)												
<=1920	0.058	0.044	-0.052	-0.056	-0.001	0.050	0.459**	0.501	-0.026	-0.135*	-0.013	0.047
	(0.042)	(0.042)	(0.057)	(0.056)	(0.058)	(0.073)	(0.221)	(0.351)	(0.048)	(0.071)	(0.045)	(0.102)
1921-39	0.029	0.009	-0.036	-0.032	0.046	0.029	0.936***	1.034***	-0.043	-0.088**	0.042	0.057
	(0.025)	(0.024)	(0.031)	(0.030)	(0.036)	(0.042)	(0.119)	(0.165)	(0.029)	(0.042)	(0.030)	(0.065)
1940-45	-0.005	-0.016	0.015	0.016	0.015	0.003	0.455***	0.523***	0.030	-0.005	0.045*	0.028
	(0.017)	(0.017)	(0.020)	(0.020)	(0.024)	(0.028)	(0.077)	(0.118)	(0.020)	(0.029)	(0.030)	(0.041)
1946-52	-0.002	-0.007	-0.002	-0.006	-0.009	-0.001	0.006	-0.040	0.041***	0.028	0.031**	0.045*
	(0.012)	(0.011)	(0.013)	(0.013)	(0.016)	(0.018)	(0.047)	(0.071)	(0.014)	(0.020)	(0.011)	(0.025)
1959-65	0.031***	0.031***	-0.045***	-0.043***	0.059***	0.040**	0.043	0.020	-0.033***	-0.002	-0.012	0.009
	(0.011)	(0.011)	(0.013)	(0.013)	(0.016)	(0.018)	(0.044)	(0.068)	(0.013)	(0.019)	(0.011)	(0.025)
1966-75	0.044***	0.040**	-0.070***	-0.064***	0.117***	0.088***	0.174**	0.131	-0.110***	-0.090***	-0.039**	-0.058
	(0.017)	(0.016)	(0.020)	(0.020)	(0.024)	(0.027)	(0.073)	(0.107)	(0.019)	(0.027)	(0.017)	(0.039)
1975-86	0.070**	0.064**	-0.105***	-0.097***	0.179***	0.155***	0.260**	0.197	-0.153***	-0.142***	-0.061**	-0.055
	(0.027)	(0.027)	(0.032)	(0.032)	(0.039)	(0.044)	(0.115)	(0.173)	(0.029)	(0.019)	(0.028)	(0.060)
Mother ever worked		-0.034***		0.032***		-0.025***		-0.066*		0.013	-0.026***	-0.021
		(0.006)		(0.007)		(0.010)		(0.036)		(0.010)	(0.009)	(0.023)
Lived in intact family		0.015**		-0.017**		0.048***		-0.152***		-0.071***	0.034***	0.018
		(0.006)		(0.007)		(0.010)		(0.038)		(0.011)	(0.010)	(0.021)
Observations	8915	8915	8915	8915	11659	8915	19948	8915	20000	8915	4369	2492
R-squared	0.072	0.126	0.062	0.106	0.058	0.152	0.263	0.278	0.081	0.209	0.093	0.094

Note: Robust standard errors are in parentheses. Significance at 1% level denoted by ***, at 5% level denoted by **, at 10% level denoted by *. Even columns plus column (11) include dummies for white, married, ever divorced, preschooler present, mother ever worked, living in an intact family, and dummies (9) for religion at age 16.