

Socioeconomic Variation in the Effect of Economic Conditions on Marriage and Nonmarital Fertility in the United States: Evidence From the Great Recession

Daniel Schneider¹ · Orestes P. Hastings¹

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Abstract The United States has become increasingly characterized by stark class divides in family structure. Poor women are less likely to marry than their more affluent counterparts but are far more likely to have a birth outside of marriage. Recent theoretical and qualitative work at the intersection of demography and cultural sociology suggests that these patterns are generated because poor women have high, nearly unattainable, economic standards for marriage but make a much weaker connection between economic standing and fertility decisions. We use the events of the Great Recession, leveraging variation in the severity of the crisis between years and across states, to examine how exposure to worse state-level economic conditions is related to poor women's likelihood of marriage and of having a nonmarital birth between 2008 and 2012. In accord with theory, we find that women of low socioeconomic status (SES) exposed to worse economic conditions are indeed somewhat less likely to marry. However, we also find that unmarried low-SES women exposed to worse economic conditions significantly reduce their fertility; economic standing is not disconnected from nonmarital fertility. Our results suggest that economic concerns were connected to fertility decisions for low-SES unmarried women during the Great Recession.

Keywords Nonmarital fertility · Marriage · Recession

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✉ Daniel Schneider
djschneider@berkeley.edu

¹ Department of Sociology, University of California, Berkeley, Barrows Hall, Berkeley, CA 94720, USA

Introduction

Research on the effects of economic recession on families has coalesced around the idea that economic shocks will tend to reduce fertility and marriage because a bad economy renders both events economically unaffordable. Evidence of such negative effects has been found during normal economic cycles (Schaller 2012a, b), in past recessions (Sobotka et al. 2011), and during the extraordinary downturn of the Great Recession (Cherlin et al. 2013; Morgan et al. 2011; Schneider 2015; Sutton et al. 2011). These results align with classical economic theories of fertility in which income is positively related to fertility, an idea that Sobotka et al. (2011) traced to Adam Smith and that animated the influential work of Becker (1960) and Easterlin (1976). It perhaps follows that these negative effects on fertility and marriage would also be present among individuals of more limited economic means and would perhaps be even stronger given that these individuals with low socioeconomic status (SES) likely have the fewest economic reserves to buffer against such shocks (Lusardi et al. 2011).

However, in the complex cultural environment that shapes family formation in the United States, these expectations may be far too simplistic. Writing in the years since 2000, scholars of the family have suggested that SES shapes decisions to have children and to marry in counterintuitive ways. Specifically, Kathryn Edin and colleagues (e.g., Edin et al. 2004, 2005a, 2005b) and Cristina Gibson-Davis (2009) have argued that fertility has become relatively disconnected from economic concerns among economically disadvantaged unmarried women. Faced with few opportunities for social mobility and few reasons to defer fertility, disadvantaged unmarried women do not delay births even in the face of limited economic resources. In contrast to fertility, Andrew Cherlin (2005) and Kathryn Edin and colleagues (e.g., 2004, 2005a, 2005b) argued that marriage has come to be tied to a universal and high economic standard. Adherence to this “marriage bar” then depresses marriage among the most disadvantaged, who have great difficulty meeting the economic standard. The resulting class divides in marriage and nonmarital fertility matter because the family settings in which children are born and raised appear to have significant effects on their development and later life outcomes (McLanahan et al. 2013). These arguments about the meaning and prerequisites of marriage and fertility are powerful and important, yet they have been subject to few empirical assessments (but see Gibson-Davis 2009) outside the motivating body of qualitative and ethnographic studies (e.g., Edin and Kefalas 2005a; Gibson-Davis et al. 2005).

We leverage the sharp deterioration in macro-economic conditions during the Great Recession—changes that are plausibly exogenous to any individual-level characteristics—in order to assess these arguments. We draw on individual-level data from the 2008–2012 American Community Survey (ACS) linked to state-level data on unemployment rates and other measures of area-level economic conditions. We use these data to assess whether exposure to recessionary economic conditions is related to the fertility and marital behavior of low-SES unmarried women. Theory would suggest that marriage entry among low-SES women would be negatively affected by recessionary economic conditions, while the nonmarital fertility of low-SES women would be unresponsive, or at least less responsive, to the recessionary shock of incredible growth in unemployment rates during the Great Recession.

We find that marriage entry by low-SES women was negatively related to state-level economic conditions. However, the findings for fertility do not support the idea that

births to low-SES unmarried women would be relatively unresponsive to economic conditions. Instead, we find evidence of a significant negative relationship between state-level unemployment and nonmarital fertility for low-SES women. Further, whereas a weaker version of the disconnection theory might suggest any negative effect of economic shocks on the fertility of low-SES women would be smaller than the effect on marriage, we show that the relationship between state-level unemployment and marriage among low-SES women is similar in magnitude to the relationship between state-level unemployment and nonmarital fertility among low-SES women. Finally, we present evidence that recession-induced reductions in nonmarital fertility among low-SES women were at least as large as those induced in married high-SES women and larger than those induced in married low-SES women and unmarried high-SES women. In sum, using the circumstances of the Great Recession, we show that low-SES unmarried women are less likely to marry when faced with poor economic conditions but that economic concerns are not disconnected from fertility decisions among the disadvantaged.

Marriage, Fertility, and Socioeconomic Status

Theories of SES and Family Formation

A relatively new line of research in sociology offers a culturally informed account of how economic opportunity (or the lack thereof) may shape divides in marriage and nonmarital fertility. Scholars have argued that economic opportunities structure transitions to marriage and parenthood but that economic conditions affect these different demographic behaviors very differently. Low-SES individuals are deterred from marriage because of high normative economic standards for respectable matrimony that prove difficult to satisfy given material deprivation (Edin and Kefalas 2005a). But, limited economic resources do not similarly deter nonmarital fertility because having a child is seen as a means of meaning-making for women with few opportunities for social and economic mobility. In this account, low-SES unmarried women may not set out to become pregnant but, given limited chances for economic and educational attainment and the high value placed on motherhood, are not strongly opposed to becoming pregnant, either. These ambiguous feelings about pregnancy and childbirth can then lead to motherhood (Edin et al. 2007).

More specifically, Edin and colleagues (e.g., Edin and Reed 2005b) have suggested that Americans of all backgrounds continue to place a high value on marriage and that marriage has come to be seen as the capstone to early economic attainment rather than as a stepping stone to economic success. Marriage then has become normatively defined as a “luxury good”: a status reserved for those who have finished school, secured a steady job, and accumulated basic assets (Cherlin 2005; Furstenberg 2003). Given the very poor labor market prospects faced by many low-SES men, the priority placed on these markers of economic success may also be driven by women’s reluctance to marry men that they may end up having to support (Edin 2000). Disparities in marriage by SES are then generated by the extreme difficulty that many less-advantaged men and women face in meeting this economic bar (Edin and Tach 2012; Edin et al. 2004). In the broader vocabulary of cultural sociology, women of

high and low SES share a common schema for marriage, but low-SES women are constrained by limited access to the materials this schema demands for respectable marriage (Johnson-Hanks et al. 2011).

Scholars suggest that high-SES women have economic bars for childbearing and good parenting that are similarly high as those for marriage (Johnson-Hanks et al. 2011; Lareau 2003). However, the same appears not to be the case among low-SES unmarried women. Although low-SES unmarried women see marriage as normatively “expensive,” the economic bar for fertility among poor unmarried women is much lower. The strong version of this argument suggests that among low-SES unmarried women, the decision to have a child is effectively disconnected from economic concerns (Edin and Kefalas 2005a; Gibson-Davis 2009). Carlson (2012:222) succinctly summarized this apparent puzzling difference in the marriage and fertility schemas of unmarried low-SES women, writing that what is “particularly notable in light of the ‘marriage bar’ is that there appears to be no corresponding ‘fertility bar,’ . . . This contrast is especially striking since marriage could potentially save money (given the economies of scale), while children objectively cost money.” Gibson-Davis (2009:147) argued that in contrast to marriage, for low-SES unmarried women, “childbearing is an accepted and expected part of the life course and is independent of financial circumstances.” A somewhat more conservative statement of the argument is that although economic factors might matter for nonmarital childbearing, such economic factors matter still more for marriage among low-SES unmarried women.

Prior Empirical Research

A consistent narrative emerges from recent qualitative and ethnographic research with poor and working-class young people in the United States that tightly links marriage with economic attainment. Respondents report that steady work and the accumulation of wealth must precede marriage (Gibson-Davis et al. 2005; Smock et al. 2005). This schema of marriage entry—even for low-SES couples—accords primary importance to economic factors. The narratives of childbearing offered by these same young people are starkly different. In these reports, it is not so much that unmarried low-SES women say that economic resources are immaterial for childbearing, but rather that economic resources are rarely mentioned when discussing having children. The economically disadvantaged young women that Edin and Kefalas (2005a) studied discussed how having children provides them with intimacy and love otherwise missing in their lives and gives them a sense of purpose in the face of limited economic opportunity: “economic reality has infused poor youth with the sense that they have nothing to lose by an early or ill-timed birth” (Edin et al. 2004:1014). This is not to say that these unmarried low-SES women necessarily set out to have children. Rather, many of these births are unintended (Finer and Henshaw 2006), and such unintended births are much more common among less-educated women than women with a college degree (Musick et al. 2009).

However, although few pregnancies among low-SES unmarried women are explicitly intended, a growing number of studies have shown that significant ambivalence exists about pregnancy (Augustine et al. 2009; Edin and Kefalas 2005a; Edin et al. 2007; Miller et al. 2013; Yoo et al. 2014). In their interviews with unmarried parents, Edin et al. (2007) found that roughly 65 % of pregnancies were neither completely

planned nor accidental. Instead, the couples often wanted children but were unsure whether the current circumstances were ideal. This spectrum of ambivalence has also been found in nationally representative studies (Yoo et al. 2014) and among fathers (Augustine et al. 2009).

In sum, the idea that emerges from the qualitative evidence is that among unmarried low-SES women, economic factors are enormously consequential for restraining marriage but matter much less for childbearing. These compelling ideas and findings have proven difficult to test with large-scale representative data and the standard tools of demographic analysis. However, several studies, generally focusing on either fertility or marriage and using varied analytical approaches, provide preliminary support.

Focusing on the idea that the normative standard for respectable marriage is quite high, Schneider (2011) showed that personal assets, in addition to income and employment, are important predictors of first marriage. Watson and McLanahan (2011) found that men with incomes below the area-level median are much less likely to be married, controlling for their absolute level of income—evidence, they suggested, that normative and relative standards of marriageability reduce marriage among those of lower SES. Combined with extensive literature documenting a positive relationship between men's and women's own income and their employment and marriage (e.g., Burstein 2007), there is significant support for the idea of a high economic standard for marriage, embraced across the SES distribution, that leads to lower marriage rates among the poor.

Less research has investigated the link between economic distress and nonmarital fertility among low-SES women. Income inequality appears to be positively related to teen and nonmarital fertility among low-SES women (Kearney and Levine 2014), and earlier research has found that tract-level female unemployment rates are positively associated with nonmarital fertility among nonblack women (Billy and Moore 1992). In some contrast, research using the Fragile Families and Child Wellbeing Study (FFCWS) has found that higher rates of unemployment are associated with significantly lower risks of subsequent births among women who were unmarried (Curtis and Waldfogel 2009). In one of the few studies to jointly examine nonmarital fertility and marriage using this theoretical formulation, Gibson-Davis (2009) found that income gains and transitions to homeownership among unmarried parents were predictive of entry into marriage but not of having a higher-order birth.

Together, these studies provide support for the idea that broad subscription to high economic standards reduces marriage for those at the bottom of the SES distribution, but that economic resources are relatively disconnected from fertility decisions for low-SES unmarried women, perhaps because of perceptions of limited economic opportunity.

Contributions of the Current Study

We advance this line of research by using the circumstances of the Great Recession to assess the effects of exposure to very poor economic conditions on fertility and marriage among unmarried low-SES women. Although the Great Recession marked a pronounced departure from the normal economic conditions under which the preceding theory was developed, exposure to recessionary economic conditions provides an opportunity to test some of these ideas rigorously.

First, we suggest that theory would predict that state-level economic conditions, such as unemployment rates, should be negatively related to marriage entry among low-SES unmarried women because deteriorating economic conditions make marriage still more “unaffordable” given the high economic standards for marriage held by this already disadvantaged population. We would also expect that state-level economic conditions should be negatively related to marriage among high-SES women because theory suggests similarity in the marriage bar across SES.

Second, the strong version of the aforementioned theories, as articulated by Edin and Kefalas (2005a) and Gibson-Davis (2009), holds that nonmarital fertility among low-SES women and economic conditions are effectively disconnected. We would expect, then, no negative relationship between state-level unemployment and having a non-marital birth for low-SES women.

However, these expectations may be too demanding a test of the idea that economic conditions differentially affect the fertility and marriage of unmarried low-SES women. Rather than being an issue of the presence or absence of effects, we might instead expect a difference in the degree of the effect of economic conditions on marriage and fertility. Consequently, it is also possible that poor economic conditions have negative effects on the fertility of low-SES women, but that (1) the negative effects of state-level unemployment on the marriage entry of low-SES unmarried women are larger than the negative effects of state-level unemployment on the fertility of unmarried low-SES women; and (2) the negative effects of state-level unemployment on the fertility of low-SES unmarried women are smaller than those on higher-SES women or married women.

This work is one of a small number of studies to consider the class dynamics of marriage and fertility in the context of the Great Recession. To our knowledge, the only other work that comes close is a demographic investigation using data from North Carolina (Ananat et al. 2013). That study did not examine marriage but it did find evidence of reductions in births to African American teens during the Great Recession. Research using the National Survey of Family Growth (NSFG 2006–2010) has also found a negative association between state-level unemployment and married women’s pregnancy (and a positive association with teen pregnancy) and a negative association between state-level mortgage foreclosure rates and unpartnered women’s pregnancy (Percheski and Kimbro 2014). Finally, a descriptive analysis showed reductions nationally in fertility among women living in poverty during the years of the Great Recession (Cherlin et al. 2013).

Data and Analysis

American Community Survey

We use the public-use microdata of the American Community Survey (ACS) from 2008–2012, using data made available by IPUMS (Ruggles et al. 2010). Each sample is a 1-in-100 national random sample with a response rate greater than 97 %. The ACS is well suited for our purposes because it contains representative samples of women in all states, collects information on both marriage and fertility, includes multiple measures of

SES, and covers the full period of poor macro-economic conditions that marked the Great Recession.

We are interested in marriage and nonmarital fertility, so we keep only the at-risk women in our main analysis: that is, women who are not married (never married, divorced, or widowed) or who were married in the previous 12 months. However, we exclude women who became divorced or widowed in the previous 12 months because their exposure to the risk of marriage or having a nonmarital birth is unclear. Some ambiguity exists regarding how to treat women who married within the past year when estimating the likelihood having a nonmarital birth because it is unclear how much of that year was spent at risk of having a nonmarital birth. We include these women to keep our analysis sample the same between models estimating marriage and nonmarital fertility, but our results are robust to excluding them.

Consistent with the fertility literature, we exclude women over age 44. We also exclude women under 19 because these women are predominately still enrolled in high school, and we seek to disentangle enrollment from attainment. We also remove some potentially confounding effects of migration, which shifted in response to the Great Recession (Cherlin et al. 2013), by excluding foreign-born women who migrated to the United States after 2006. Finally, we exclude all students currently enrolled in school, including college, from the analysis. Therefore, our results are generalizable to the population of women ages 19–44 in the United States who (1) were either unmarried or had married within the past 12 months; (2) were not currently enrolled in school; and (3) had not emigrated to the United States after 2006.¹ After imposing these sample restrictions, the total available sample is 805,445.

Fertility and Marriage

Beginning in 2008, the ACS collected information on whether women had a birth or married in the 12 months prior to the survey.² These questions are relatively recent additions to the ACS but are beginning to be deployed in demographic research. For instance, Cohen (2014) used a similar question on divorce in his analysis of the effects of the Great Recession. These questions were, however, extensively tested by the U.S. Census Bureau and are well validated (Elliott et al. 2010). In our sample of women at risk of a marriage or nonmarital birth, 7 % reported a marriage, and 6 % reported a birth in the previous 12 months.

Socioeconomic Status

Despite the voluminous literature on the role of race/ethnicity in structuring marriage and fertility (e.g., Schneider 2011; Wu 2008), the literature reviewed earlier is careful to focus on class rather than race/ethnicity. We follow this work and focus on class, which

¹ We primarily focus on unmarried women with no more than a high school diploma. Among these women ages 19–44, 13 % reported still being in school. Among unmarried women ages 19–44 with at least a high school diploma, 39 % reported being in school (with 77.5 % working toward an undergraduate degree and 22.5 % working toward a graduate degree).

² In 2012, there were problems in the collection of data on women who gave birth in the past 12 months in 59 of the ACS Public Use Microdata Areas, leading to the suppression of 0.5 % of the data. We omit affected cases from the analysis of both fertility and marriage.

we conceptualize principally based on educational attainment. We classify women with less than a high school diploma or only a high school diploma (including a GED) and no time in college as low SES, and women with a bachelor's degree or more education as high SES.

We also assess the robustness of our results to alternatively defining SES by women's own income, by household poverty, and by constellations of poverty and education. For women's own earned income, we code women into income quartiles and focus on the bottom quartile. We also measure household poverty status as a function of household income. Low-SES respondents were coded as the family's total income being either less than 200 % of the official federal poverty level (FPL) or less than 100 %.

Individual-Level Controls

We adjust our models for respondent's age in years; age squared; race/ethnicity; parity (a measure of "own children living in the household" coded as no children, one child, or 2 or more children) that excluded children born in the previous 12 months; number of previous marriages (none, 1, 2 or more) that excluded a marriage in the last 12 months; and whether the woman was foreign-born. For our race/ethnicity measure, we use a six-category measure of race, classifying respondents as (1) white, non-Hispanic, (2) black, non-Hispanic, (3) Asian, non-Hispanic, (4) non-Hispanic Native American or Other, (5) multiracial, non-Hispanic, or (6) Hispanic. Groups (4) and (5) each make up <2 % of the sample.

Table 1 contains summary statistics for our individual-level measures, stratifying the sample into low- and high-SES unmarried women. The mean age of the sample is 30. Approximately one-half (55 %) are non-Hispanic white, 20 % are non-Hispanic black, and 18 % are Hispanic. The large majority of these unmarried women have never been married (81 %). The sample of low-SES women is composed of larger shares of racial/ethnic minorities and is more likely to have had a previous birth than the high-SES sample of women.

State-Level Unemployment

Our approach exploits temporal and geographic variation in the severity of the recession across places and years to estimate the association between economic conditions and marriage and fertility. We operationalize exposure to the economic shocks of the Great Recession with data on state-level unemployment rates. This state-level unemployment data is drawn from the U.S. Bureau of Labor Statistics Local Area Unemployment Statistics (LAUS) program, which publishes monthly unemployment rates for every state and the District of Columbia. These data have been widely used in recent studies of recession effects (e.g., Cohen 2014; Pilkauskas et al. 2012).

We expect that state-level unemployment rates capture multiple ways in which the Great Recession affected individuals' economic positions. Perhaps most clearly, area-level unemployment captures a diluted measure of the potentially strong effects of individual-level unemployment on these demographic outcomes. Although a minority of state residents experience unemployment, the effects are potentially large. However, state-level unemployment likely also captures aspects of household economic distress,

Table 1 Descriptive statistics for women at risk of marriage or a nonmarital birth, 2008–2012

	Range	Low SES Mean	High SES Mean	All Mean
Dependent Variables				
Married in past year	0–1	0.05	0.09	0.07
Birth in past year	0–1	0.09	0.02	0.06
Individual-Level Independent Variables				
Age	19–44	29.7	31.2	30.4
Proportion born in the United States	0–1	0.82	0.88	0.86
Race/Ethnicity (proportions)				
Non-Hispanic white	0–1	0.46	0.69	0.55
Non-Hispanic black	0–1	0.23	0.12	0.20
Non-Hispanic Asian	0–1	0.02	0.08	0.04
Non-Hispanic Native American and other	0–1	0.01	0.01	0.01
Non-Hispanic multirace	0–1	0.02	0.26	0.02
Hispanic	0–1	0.26	0.09	0.18
Previous Marriages (proportions)				
Never married	0–1	0.81	0.85	0.81
Married once	0–1	0.15	0.13	0.16
Married 2+ times	0–1	0.04	0.02	0.04
Previous Children (proportions)				
No children	0–1	0.61	0.85	0.68
One child	0–1	0.17	0.09	0.15
2+ children	0–1	0.21	0.07	0.17
<i>N</i>		335,047	226,862	805,445

Notes: Low SES is defined as having no more than a high school diploma or equivalent. High SES is defined as having at least a bachelor's degree. The total sample includes all women at risk of marriage or a nonmarital birth, regardless of education level. Descriptives are weighted to account for sampling. Proportions may not add to 1 due to rounding.

short of unemployment, such as lost income, job immobility, the need to provide (or the loss of) social support within one's network, and even feelings of economic insecurity and uncertainty (Schneider 2015; Schneider et al. 2014).

Whatever the mechanism, these measures of the recession are plausibly exogenous to individual-level behavior. We do not expect that a respondent's marriage or birth would shift state-level economic conditions nor would such conditions suffer from problems of omitted variable bias at the individual level. We link these measures of state-level economic conditions during the Great Recession to ACS respondents using the respondents' state of residence one year prior to the survey. We know only the year—not month—of the survey, so we use a weighted average of monthly state-level unemployment. Online Resource 1 provides details on the construction of the measure of state-level unemployment. We then lag the unemployment measure by nine months to account for gestation. For marriage, because it is less clear what the appropriate lag

should be, we primarily use a nine-month lag. However, we also consider alternative lags in our robustness checks.

To illustrate the variation in unemployment, Fig. 1 charts the unemployment rate nationally as well as for three states with high (Michigan), medium (New York), and low (Wyoming) unemployment rates over the months from which we draw data for our analyses (May 2006–December 2012). Over this period, we observe monthly state-level unemployment rates from 1.8 % to 14.5 %. This translates in our state-level unemployment rates to a measure with a range from 2.6 % to 13.4 % (with a mean of 6.2 % and a standard deviation of 2.3 %).

Alternative Measures of State Economic Conditions

In addition to the unemployment rate, we also assess the sensitivity of our results to a number of other measures of the state macro-economy. First, we test alternative constructions of our unemployment measure that use the seasonally adjusted unemployment rates and employment-to-population ratio.

We also create several measures of state-level housing distress using the Mortgage Bankers Association's (MBA) National Delinquency Survey, a quarterly survey of lenders that includes data on the mortgage delinquency rate, mortgage foreclosure rate, and mortgage foreclosure start rate. These measures are reported only quarterly, but for delinquency and foreclosure inventory, we linearly interpolate between quarters to spread out the inventories across months; and for the mortgage foreclosure start rate, we use the Denton method (Bloem et al. 2001), which allows for expression of the time trend of the quarterly flows in the imputed monthly time series.

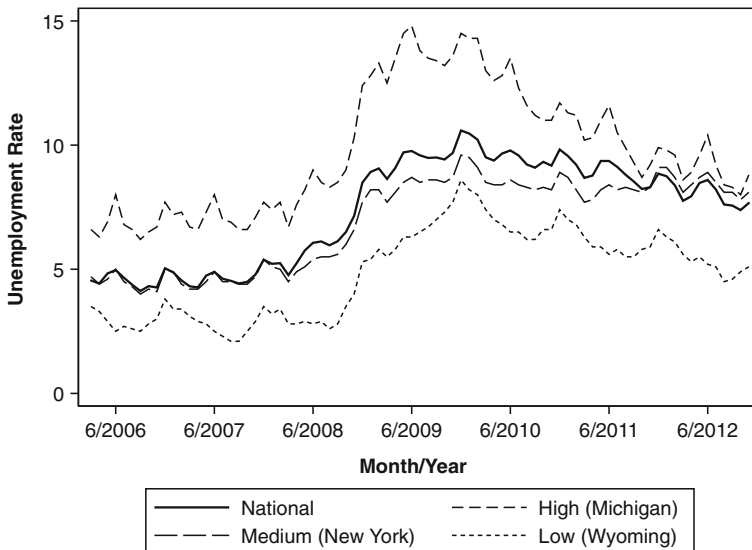


Fig. 1 Monthly unemployment rates nationally and for three states with high, medium, and low levels of unemployment (May 2006–December 2012)

Analytic Strategy

Main Models

We estimate logistic regression models of the association between state-level unemployment and the likelihood that unmarried women married and the likelihood that unmarried women had a child in the prior 12 months. We run models by SES subgroup as defined by the individual measures of educational attainment reported in the ACS and described earlier.

For person i who lived in state j one year before the survey, the individual-level regression equation we estimate is

$$\ln\left(\frac{P_{ij}}{1-P_{ij}}\right) = \alpha + \beta_1 U_{ij} + \sum_p \pi_p Z_{ijp} + \sum_j \gamma_j D_j.$$

P_{ij} is the probability of a marriage or nonmarital birth (depending on the model), and U_{ij} is the lagged unemployment rate for state j (described earlier and in Online Resource 1) for person i 's survey year. Z_{ijp} are the individual-level controls of age in years, age squared, race/ethnicity, whether foreign-born, and number of previous births and marriages; and D_j is a dummy variable for state j . Our focus is on β_1 , the coefficient on the lagged state-level unemployment rate.

We weight individuals to represent the national population and adjust the standard errors for clustering within states. The state fixed effects deal with unobserved time-invariant state-specific factors that could bias the relationship between unemployment and our outcomes. Year fixed effects would net out unobserved year-specific factors common across all states. However, because we employ a very short panel (2008–2012) that coincides with the period of the Great Recession, including year fixed effects would risk overcontrolling and minimizing recession effects.

Robustness

We also assess the robustness of our main results to a wide variety of modeling and measurement alternatives. First, we examine several alternative operationalizations of individual-level SES using the measures (described earlier) of women's own income, household poverty, and poverty and education. We also examine the robustness of the results to focusing on first marriages and first births. In addition, we present evidence of the robustness of our results to different measures of macro-economic conditions (as described earlier). Finally, in Online Resource 2, we present a robustness test designed to address the possibility that the Great Recession could affect nonmarital fertility by affecting sorting into marriage.

Models of the Relative Impacts of Unemployment

The models described earlier test the strong version of the disconnection argument: namely, that exposure to poor economic conditions will have no relationship with nonmarital fertility among low-SES women. We also test two weaker versions of the disconnection theory: (1) poor macro-economic conditions will have stronger effects on

marriage than on nonmarital fertility among low-SES women; and (2) any negative effects of economic conditions on low-SES women's nonmarital fertility will be weaker than the negative effects of exposure to such conditions on other women, whether married or high-SES, but that the effects of economic conditions on marriage will be similar for women of different SES.

To test the first proposition, we calculate the differences in the predicted probability of marriage and nonmarital fertility for varying levels of unemployment. If unemployment matters more for marriage than nonmarital fertility, we would expect that the plot of the differences would be increasing with unemployment. If the line is flat or negatively sloped, that would be evidence against even this weak version of the disconnection theory. We conduct this test for the preferred models and each of the robustness checks that use alternative operationalizations of low SES.

To test the second proposition, we pool women of different marital statuses and educational attainments—categorizing them as low-SES unmarried, low-SES married, high-SES unmarried, and high-SES married—and estimate an interaction between this categorical measure and the state-level unemployment rate. Because of the nonlinearity of logistic regression, interaction terms cannot be readily evaluated by looking at their sign, magnitude, or statistical significance; and it is problematic to directly compare logistic regression coefficients between different subgroups because traditional tests can confound the magnitude of regression coefficients with unobserved heterogeneity (Ai and Norton 2003; Long 2009; Mood 2010). To avoid this problem, we instead estimate a linear probability model (LPM) with interaction terms (Angrist and Pischke 2009). Although the LPM has some limitations, we note that our coefficients from the LPM match almost exactly with average marginal effects calculated from logistic regression models (results available on request), which gives us more confidence in the suitability of the LPM.

Results

Exposure to Recessionary Economic Conditions and Marriage and Nonmarital Fertility Among Low-SES Women

The first column of Table 2 presents the results from the logistic regression model examining the relationship between state-level unemployment and the likelihood that low-SES women transitioned to marriage in the prior 12 months. The results show a negative association between state-level unemployment and the likelihood of marriage.

Unmarried low-SES women residing in states with higher levels of unemployment are less likely to transition to marriage. However, theory would predict that similar economic conditions would not reduce fertility among these women because fertility is relatively disconnected from economic factors. The second column of Table 2 presents a model that tests this proposition. Here, we see a negative relationship between state-level unemployment and the likelihood that low-SES women will have a nonmarital birth.

To size these relationships, Fig. 2 plots the predicted probability of marriage and nonmarital fertility across observed state levels of unemployment rates for women with an educational attainment of a high school diploma or less. We find that the probability

Table 2 Coefficients from logistic regression models predicting fertility and marriage for low-SES women, 2008–2012

	Marriage	Fertility
State-Level Unemployment	−0.033***	−0.028***
Age	−0.011	0.156***
Age ²	−0.001*	−0.004***
Race (ref. = non-Hispanic white)		
Non-Hispanic black	−1.077***	0.321***
Non-Hispanic Asian	−0.047	0.056
Non-Hispanic Native American and other	−0.221**	0.386***
Non-Hispanic multirace	−0.360***	0.184***
Hispanic	−0.318***	0.379***
Born in the United States	−0.441***	−0.202***
Previous Marriages (ref. = never married)		
Married once	0.418***	0.116***
Married 2+ times	0.569***	−0.270***
Previous Children (ref. = no children)		
One child	0.785***	0.323***
2+ children	0.890***	0.114***
State Fixed Effects	Yes	Yes
<i>N</i>	335,047	335,047

Notes: Logistic regression models account for survey weights, and standard errors are adjusted for the clustering within states. State fixed effects and constant term are not shown.

* $p < .05$; ** $p < .01$; *** $p < .001$

of marriage (dashed line) declines with rising unemployment, falling from 5.2 % when unemployment is 4 % (the fifth percentile) to 4.0 % when unemployment is 12 % (the 95th percentile). We also find that the probability of a birth declines significantly as unemployment increases (solid line). The probability of a birth for unmarried women with a high school diploma or less falls from 9.2 % when unemployment is 4 % to 7.5 % when unemployment is 12 %—an 18.5 % reduction in fertility.

Robustness

Alternative Measures of Socioeconomic Status

Our preferred models operationalize low SES using women's own education. Education has the advantage of being a relatively stable measure and of being a clear marker of disadvantage. We also reestimate the models focusing on unmarried low-SES women defined in several alternate ways: (1) women in the bottom quartile of income, (2) women living in households with incomes of less than 200 % of the FPL, (3) women living in households with incomes of less than 100 % of the FPL, and (4) women living in households with incomes of less than 200 % of the FPL who themselves did not have more than a high school education. The first four rows of

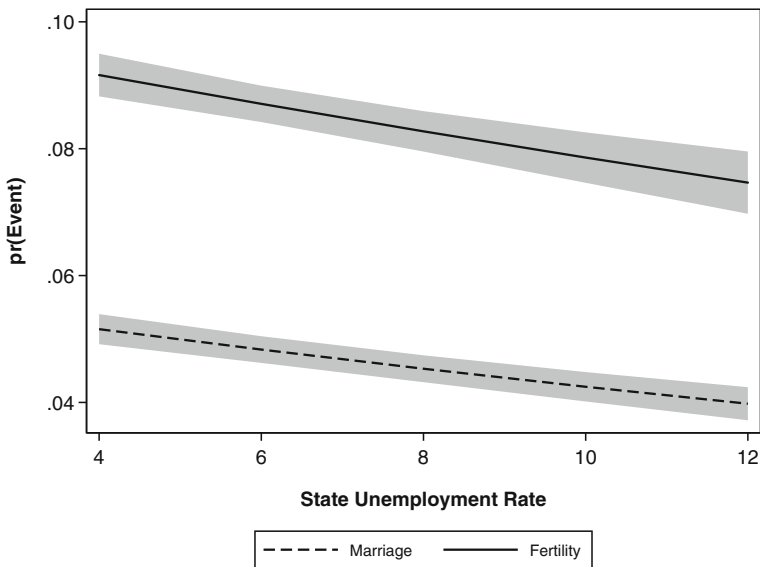


Fig. 2 Predicted probability of marriage and nonmarital fertility for low-SES women by state-level unemployment rate (shading shows the 95 % confidence intervals)

Table 3 (panel A) present the results. As with our preferred measure of low SES, we find significant negative associations between state-level unemployment and nonmarital fertility among low-SES women when SES is defined in each of the ways described earlier.

For entry into marriage, the operationalization of SES matters somewhat more. We find negative associations of a similar magnitude to the preferred model when we use income, but the coefficients appear smaller, albeit still negative and significant, when we use 200 % of FPL and the combined poverty and education marker (see panel A of Table 3). Interestingly, we find no evidence of associations between state-level unemployment and marriage for women living in households with incomes of less than 100 % of the FPL.³

First Births and Marriages

We assess the sensitivity of the results to focusing on first marriages and first births. Rows 5 and 6 of Table 3 show similar negative associations between state-level unemployment and first marriages and first births for unmarried low-SES women. Row 7 shows that the coefficient on state-level unemployment is smaller, although still significant and negative, when we focus on higher-order births to unmarried low-SES women (see panel B of Table 3).

³ We also assess whether our results hold when the models are estimated separately for non-Hispanic whites, non-Hispanic blacks, and Hispanics. Within the Hispanic subgroup, we also separately examine women who migrated from abroad and native-born Hispanics. In each case, we observe significant and similar negative relationships between unemployment and nonmarital fertility among women with a high school diploma or less. We also find similar negative relationships with marriage, although the coefficient on unemployment for non-Hispanic black women is not significant.

Table 3 State-level unemployment coefficient for various robustness checks

	Marriage	Fertility	N
A. Other Definitions of Low SES			
1. Bottom income quartile	-0.036***	-0.039***	202,626
2. Below 200 % of poverty line	-0.012*	-0.034***	358,268
3. Below 100 % of poverty line	0.003	-0.041***	191,247
4. Below 200 % of poverty line and no more than HS diploma	-0.014*	-0.032***	244,142
B. Other Subgroups			
5. First marriage	-0.034***		269,704
6. First birth		-0.033***	208,345
7. High-order birth		-0.019***	126,702
C. Alternatives to Unemployment Rate			
8. Five-month lag	-0.036***		335,047
9. Proportion change (% change over 12 months)	-0.079*	-0.014	335,047
10. Seasonally adjusted	-0.033***	-0.028***	335,047
11. Employment to population ratio	0.035***	0.029***	335,047
12. Delinquency inventory	-0.024***	-0.019***	335,047
13. Foreclosure starts	-0.552***	-0.389**	335,047
14. Foreclosure inventory	-0.037***	-0.029**	335,047

Notes: Each cell contains the estimate from a separate logistic regression model of the effect of state-level economic conditions on marriage or fertility for women with the specified characteristics. The models summarized in group A are estimated for unmarried women and show the effects of state-level unemployment rates. The models summarized in group B are estimated for unmarried women using our standard definition of low SES and show the effects of state-level unemployment rates. The models summarized in group C are estimated for unmarried women using our standard definition of low SES and show the effects for various other state-level economic indicators. Each model controls for the same individual-level characteristics and state fixed effects as in Table 2. Each model accounts for survey weights, and standard errors are adjusted for the clustering within states.

* $p < .05$; ** $p < .01$; *** $p < .001$

Alternative Macro-Economic Measures

Our preferred models use a nine-month lagged measure of state-level unemployment to allow for gestation. However, marriage may be responsive to a shorter lag. Row 8 of Table 3 shows that the results for marriage are robust to using a five-month lag. Row 9 of Table 3 includes a measure of the percentage change in unemployment calculated as $(state_unemployment_{t-9} - state_unemployment_{t-21}) / state_unemployment_{t-21}$. The coefficients are negative, indicating that worsening unemployment lowers the likelihood of marriage and nonmarital fertility among low-SES women. However, the estimates for fertility are not significant. Rows 10–14 of Table 3 show the results of reestimating our models of marriage and nonmarital fertility among low-SES women, using the seasonally adjusted unemployment rate, employment-to-population ratio, and our three measures of housing distress (see panel C of Table 3). In each case, we find similar results to our main models for both marriage and nonmarital fertility. Note that the coefficients for employment to population ratio are positive because greater labor force participation denotes positive economic conditions.

Relative Impacts of Unemployment on Marriage and Nonmarital Fertility

We next test an alternative formulation of the disconnection theory: specifically, that while economic conditions may be negatively related to nonmarital fertility, the relationship between economic conditions and marriage will be stronger. In Fig. 3, we plot the differences between the probability of a birth and of a marriage based on the coefficients presented in Table 3. Figure 3 plots five lines: one for the probabilities based on Table 2, and then one for each of the first four rows of Table 3 (the models that estimate both marriage and nonmarital fertility using alternative operationalizations of SES). A positively sloping line would indicate that the negative association between unemployment and marriage was increasingly stronger than the negative association between unemployment and nonmarital fertility, which is an expectation in line with the disconnection theory. We find *negatively* sloping lines for low-SES women in all five models. The least negatively sloping line is from our primary model based on defining low-SES by education—but even so, we do not find any support that economic shocks might have more pronounced consequences on marriage than on nonmarital fertility among low-SES women.

Relative Impacts of Unemployment for High- and Low-SES Women

We next test the possibility that these negative effects of state economic conditions on the fertility of unmarried low-SES women are smaller than the effects on other women who are more advantaged or are married. Table 4 presents these comparisons. The first column shows that state-level unemployment has a negative association with low-SES women's marriage and that, in accord with theory, this relationship is not significantly

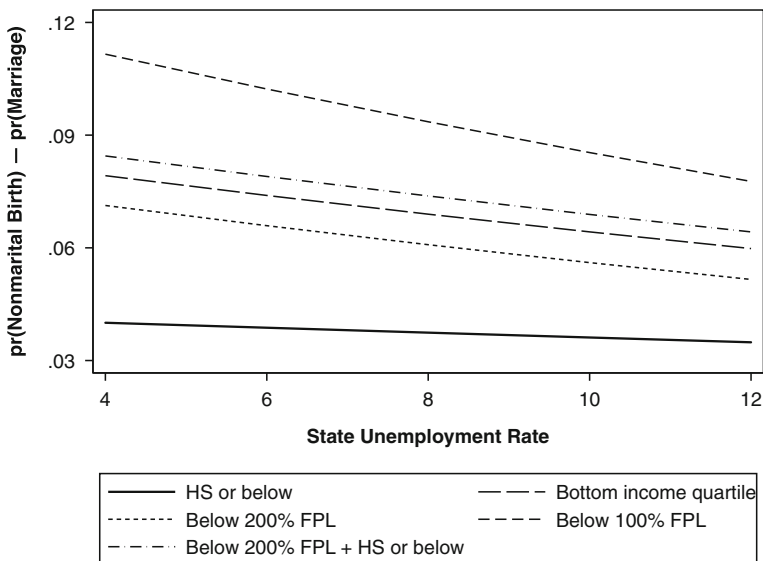


Fig. 3 Differences in the predicted probability of marriage and nonmarital fertility for low-SES women by state-level unemployment rate

Table 4 Coefficients from linear probability models of state-level unemployment on marriage and fertility for different SES by marital status subgroups (ref. = unmarried low-SES women)

	Marriage	Fertility
State-Level Unemployment (UR)	-0.0015***	-0.0019***
Married Low SES × UR		0.00080*
Unmarried High SES × UR	-0.00016	0.0015***
Married High SES × UR		0.00046
<i>N</i>	564,652	1,279,593

Notes: Both models control for the same individual-level characteristics and state fixed effects as in Table 2 as well as the main effects for SES and marital status. Both models account for survey weights, and standard errors are adjusted for the clustering within states.

* $p < .05$; *** $p < .001$

different from the relationship with the marriage entry of high-SES women: the interaction term is close to 0 and is nonsignificant.

The second column of Table 4 considers fertility as the outcome. Examining the interaction terms shows that compared with low-SES unmarried women, unemployment rates have a smaller and significantly different relationship with fertility for both married low-SES women and unmarried high-SES women. The relationship between state-level unemployment and fertility is no different for unmarried low-SES women and married high-SES women: it is significant and negative for both.

Discussion

An influential body of theory and qualitative research has advanced the idea that economically disadvantaged women have a very high, nearly unattainable, economic standard for marriage but have few such economic prerequisites for fertility. This theory artfully integrates structural economic constraints and cultural schemas to explain important demographic divides in marriage and nonmarital fertility by class in the contemporary United States.

We leverage the sharp economic downturn of the Great Recession to test some of the key ideas of this theory. We find that low-SES women exposed to worse economic conditions were somewhat less likely to marry than those living in relatively less-distressed states and at less-distressed times. The relatively modest size of this effect is somewhat surprising given the emphasis in recent literature on marriage and SES on the role of economic prerequisites for marriage.

We also find robust evidence of negative associations between exposure to poor economic conditions and nonmarital fertility among low-SES women. These relationships do not appear to be confined to higher-order births or to be due solely to marital sorting. Further, the impacts of poor economic conditions on the fertility of unmarried low-SES women are generally equal to or larger than the recession effects on marriage among low-SES women and are also larger than recession effects on the fertility of married women and high-SES women. Our results suggest that

economic factors are both absolutely and relatively important in shaping the nonmarital fertility of poor women.

This finding differs from the results of prior qualitative research. Although low-SES women encounter a steady economic deprivation in their normal lives that may have become disconnected from fertility decisions, we suggest that the economic shocks of the Great Recession were so strong that they upset this dynamic and led low-SES women (as well as higher-SES women) to forgo births, at least in the short term (Myrskylä et al. 2013). The Great Recession produced an enormous amount of economic uncertainty, apart from increased hardship, and these feelings of uncertainty appear to have influenced other household behaviors (e.g., Brooks-Gunn et al. (2013) on parenting, and Schneider et al. (2014) on intimate partner violence) during the Great Recession, and Sobotka et al. (2011) suggested that uncertainty about the future may play a very important role in fertility responses to recession. In support of this idea, in recent work on the Great Recession in the United States, Schneider (2015) found that fertility declined with falling consumer confidence, net of area-level unemployment and foreclosure rates. Such a dynamic would not conflict with the empirical reality that many poor unmarried women have children, but would provide important nuance to the theory insofar as low-SES women do moderate their fertility in the face of sudden economic disruption.

At the same time, perhaps apart from sharp increases in material deprivation and economic uncertainty, the Great Recession brought with it a new cultural narrative—one that linked reduced fertility and the recession, and was at odds with any prevailing schema among low-SES women that disconnected economic resources and fertility. Popular media was replete with stories on how the recession might affect and was affecting family life. Could such narratives and depictions have induced women to enact the fertility response that these stories purported was already occurring?

Although many of the births to low-SES unmarried women are unintended by traditional demographic measures, these women and their partners also display substantial ambivalence about pregnancy, and so the Recession may have acted to shift these ambivalent desires toward avoidance. For instance, a qualitative study of women in Texas found that even as they often used inconsistent or ineffective contraceptive practices, low-income respondents expressed financial concerns about the cost of having another child (Aiken et al. 2015). Further, recent work based on interviews with low-SES men found substantial ambivalence about having a child and some evidence that economic resources play at least some role in their discussions of nonmarital fertility (Augustine et al. 2009). It is plausible, then, that the subset of low-SES women or their partners with ambivalent desires about children might have been more likely to take the necessary precautions to avoid pregnancy (e.g., contraception use) during recessionary conditions. Alternatively, even if contraceptive practices changed relatively little due to the recession, given high levels of economic constraint and uncertainty, more low-SES unmarried women may have opted to terminate their pregnancies. Research has shown some, albeit indirect, evidence of this behavior in a study of women in North Carolina (Ananat et al. 2013).

We expect that both of these factors, in interaction, explain why we find recession-related reductions in nonmarital fertility among low-SES women. Low-SES unmarried women and their partners may rarely intend to have a birth, but there is substantial ambivalence about childbirth, even when the economy is relatively good. These men

and women may think that it would be ideal to have a more stable economic situation before having a child, but given few prospects of such economic improvement, they often do not take effective steps toward pregnancy avoidance. We expect that the sharp shocks and widespread economic uncertainty of the Great Recession may have pushed some couples along the spectrum of ambivalence toward more concerted avoidance. The effects are relatively small. Not all couples changed their intentions and behaviors; rather, the intentions and behaviors—that is, the degree of ambivalence—of some couples was indeed responsive to economic factors.

An alternative way to reconcile these findings is simply to note that the samples used in the motivating qualitative research are quite different from the broadly representative sample that we employ. The poor women interviewed by Edin, Kefalas, Gibson-Davis, and others were generally selected on already having a nonmarital birth and on being poor. In our work, we focus on all low-SES women at risk of a nonmarital birth—a pool that includes both those who had a baby and those who did not. Certainly some women had children despite the economic recession, but we show that many delayed fertility because of it. In short, our work points to the importance of recognizing heterogeneity within the population of poor unmarried women. Some may have children despite experiencing real economic hardship, but our results show that the average effect of an economic shock as large as the Great Recession is indeed negative.⁴

Our work is subject to several limitations. First, the ACS data have limitations. For example, the ACS does not release the month in which a given interview occurred and does not contain data on the month in which a birth took place, so our measure of state-level unemployment is necessarily imprecise. As detailed in Online Resource 1, we construct a weighted average of monthly state-level unemployment for each state and survey year, but it would be far better to create such an average based on each survey month. Unfortunately, such data are not available (Citro and Kalton 2007). However, we expect that this primarily serves to introduce imprecision rather than bias into our estimates. The ACS also contains no retrospective information on SES, only measuring education, poverty, and income at the time of interview. Ideally, we would be able to ascertain women's SES in the period prior to conception and thus avoid the risk that the occurrence of marriage or nonmarital fertility affected SES. Although our use of education as the primary stratifying variable minimizes these concerns, this remains a limitation of the data. The ACS also does not contain county or metropolitan statistical area (MSA) identifiers for large proportions of the sample. Our focus on state-level measures allows us to include all women, but our work is somewhat limited by our inability to examine how economic conditions at smaller levels of geographic aggregation affect marriage and nonmarital fertility.

⁴ We do not limit our analysis sample using exactly the same criteria as Edin and Kefalas (2005). Edin and Kefalas (2005) limited their sample to women who have had a nonmarital birth (and generally focus on those who have had a teen birth), but it is difficult to identify women based on those characteristics in the ACS. One of our robustness tests—estimating the effect of state-level unemployment on higher-parity births among low-SES unmarried women—comes somewhat closer. Here, if we assume that women having a higher-parity nonmarital birth also had a nonmarital first birth, we successfully parallel the qualitative work in conditioning on a prior nonmarital birth. When we do this, we do find a smaller effect of economic conditions on nonmarital fertility, although it is still negative and significant. It is also important to bear in mind that this is a model of higher-order births, whereas the qualitative research considered many retrospective reports of first births.

Second, in our analysis comparing the effects of the Great Recession on high and low-SES women as well as married and unmarried women, we implicitly assume that state-level unemployment rates capture shocks equally felt across these groups. It is certainly possible, though, that some felt the shocks of the Recession more strongly than others. However, the direction of that inequality is ambiguous. Unemployment rates increased more among the poor than among the affluent (even though the proportional increase in the unemployment rate was similar), but the housing crisis and shocks to the stock market were likely to affect higher-SES women more than their lower-SES counterparts; our results using markers of housing distress are quite similar to our results using unemployment.

Third, we are not able to uncover the mechanisms by which low-SES unmarried women reduced their fertility because data on sexual behavior, the use of contraceptive technology, and miscarriage and termination are not included in the ACS. Although prior qualitative research has attributed some of the supposed disconnect between economic standing and fertility to inconsistent use of contraception, our results suggest that low-SES unmarried women or their partners must have taken steps, either through contraception or termination, to purposefully reduce fertility in the face of the recession.

Marriage has classically been seen as an important proximate determinant of fertility (Bongaarts 1978), and we find some evidence that it did indeed decline among this low-SES subgroup as a result of the recession. However, we show (Online Resource 2) that the recession-related declines in nonmarital fertility are apparent even among the subgroup of low-SES women least likely to wed, suggesting that the marriage mechanism is an unlikely pathway to these reductions in nonmarital fertility. More likely is that declines in fertility operated through an increased or more effective use of contraceptive technology or an increased use of abortion. Relatively little work has focused on how abortion changed during the recession, although Ananat et al. (2013) inferred an increase in abortion from the fact that economic conditions zero to four months after expected conceptions are related to observed teen births in North Carolina. In addition, relatively little work has focused on how the recession might have affected the use of contraceptive technology, although hints of an increase in usage have been found (Finer et al. 2012).

Finally, another possibility is that fertility could have been reduced through more stress-induced miscarriage. The literature shows that miscarriage increases in response to stressors (Nepomnaschy et al. 2006), and the Great Recession could certainly have increased stress (e.g., Conger et al. 1999), but research on the stress–miscarriage link has not been extended to the Great Recession. Evidence of this mechanism would moderate our findings and suggest much less purposeful action by low-SES women to reduce their fertility in the face of economic recession. Future work, perhaps using the NSFG, could usefully examine how the recession influenced the use of contraceptive technology among this population and perhaps even shifted the proportion of births to low-SES women that were intended rather than unintended.

In sum, we exploit the largest increases in unemployment since the Great Depression to conduct one of the only quantitative tests of the idea that economic resources are tightly linked with normative standards of marriageability but disconnected from fertility decisions among unmarried low-SES women. We find evidence of a negative association between area-level unemployment and marriage. However, we also find a similar negative association between area-level unemployment and low-SES women's

nonmarital fertility, suggesting that economic considerations are not disconnected from nonmarital fertility among the disadvantaged. Future work should further investigate this phenomenon. However, our results are robust to alternative model specifications and hold up to additional tests of the theory that compare recession effects on marriage and fertility among unmarried low-SES women and compare recession effects on the fertility of unmarried low-SES women with married and higher-SES women.

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