

The Great Recession, the worst economic contraction since the Great Depression, most likely led to a decrease in the fertility rate (Sobotka, Skirbekk and Philpov 2011). Evidence has found that individuals facing unemployment, or living in a community where economic unease is high, are hesitant to take on the additional costs of a child (Bongaarts and Feeney 1998). Morgan et al. (2011) found that the GR was associated with a 2 to 5% drop in the total fertility rate (TFR); a larger drop in the TFR than that experienced during the recessions of the 1980s and 1990s.

Even though the TFR dropped during the GR, the nonmarital fertility ratio (NMFR), or the proportion of births born out-of-wedlock, rose. The NMFR, which had been increasing steadily since the 1980s, continued to climb between 2007 and 2009, and reached an all-time high of 41% (it attenuated slightly in 2010 to 40.8%) (Hamilton, Martin and Ventura 2012; Martin et al. 2010). The increase in the NMFR is puzzling, given that female headed households, even before the GR, were the most economically fragile of households types, with poverty rates that were six times as high as those for married parent families (DeNavas-Walt, Proctor and Smith 2008). The rise in the NMFR during the GR suggests that, during one of the most severe economic contractions in modern America, a larger proportion of children were born into the households that were already economically marginalized. Moreover, given that the GR disproportionately affected those who were young, minority, and had less education (Hout, Levanon and Cumberworth 2011; Smeeding et al. 2011) – characteristics typical of many unwed mothers – it appears as though the GR had a paradoxical effect of increasing the proportion of children born to a population likely suffering the brunt of the GR's effects.

Yet, any examination of how the GR affected the NMFR must take into consideration the three factors of the NMFR: the proportion of women who are married, the number of married women who give birth (the marital fertility rate), and the number of unmarried women who give birth (the nonmarital fertility rate). Holding the other two factors constant, the NMFR will positively covary with the nonmarital fertility rate, and negatively covary with the marital fertility rate and the proportion of women who are married. Thus, an increase in the NMFR during the GR could represent an increase in the nonmarital fertility rate, but it could also represent a decrease in the proportion of women who are married or the marital fertility rate (or some combination thereof).

This study uses decomposition analysis to examine how the NMFR's three constituent factors - the proportion of women who are married, the marital fertility rate, and the nonmarital fertility rate – contributed to changes in the NMFR during the Great Recession. Birth and marriage data come from the National Vital Statistics and Current Population Survey, respectively. Analyses focus on changes in the NMFR during the years 2007-2009, and examine how two key factors of the GR, unemployment and foreclosure rates, moderated the changes in the NMFR. Analyses also compare changes in the NMFR from 2007-2009 to those from 2005-2007, to see if trends in the NMFR differed pre-GR to the GR. The study focuses on the marriage and fertility behavior of women ages 15-44, and all models are conducted separately for Non-Hispanic Whites, non-Hispanic Blacks, and Hispanics.

Understanding how the NMFR changed during the GR is more than a matter of demographic interest. Lowering the NMFR has long been the subject of policy intervention, as reducing the number of children born into female-headed households would arguably be an effective (though by no means sufficient) means of reducing the number of children and families in poverty. Yet,

the marriage and fertility behaviors that underlie the NMFR represent distinct areas for intervention, and it remains an open question as to which behavior is the more promising avenue for reducing the NMFR. This study illuminates the relative responsiveness of each of the NMFR's components, and provides understanding as to which behaviors are more likely to respond to changes in economic circumstances. Additionally, an analysis of the relative responsiveness of marriage and fertility to economic downturns informs current theories of family formation. Qualitative evidence has suggested that nonmarital fertility is relatively unresponsive to economic contractions because low-income mothers (among whom nonmarital fertility is concentrated) report that they view economic circumstances as largely orthogonal to the decision to have a child (Edin and Kefalas 2005; Gibson-Davis 2009). This hypothesis, implicitly suggests that changes in nonmarital fertility, as opposed to changes in marriage or marital fertility, account for relatively more of the observed rise in the NMFR during the GR.

Data and Methods

Birth data for the NMFR come from Natality Files from National Vital Statistics, and includes all births in the US. The data include demographic information about the mother and father, the health conditions of the mother and baby, and geographic locators, such as state and county. Marriage data come from the March wave of the Current Population Survey (CPS), a nationally representative sample of households overseen by the Census. To derive the share of women married, and the nonmarital and marital fertility rates, I combined the birth and marriage data with population data from the National Cancer Institute's Surveillance and Epidemiology and End Results (SEER) data. The SEER data come from the US Census Bureau's Population Estimates Program, in collaboration with the National Center for Health Statistics, and provides state-level estimates of population by gender, race and ethnicity, and age. The fertility rate is the number of births over the count of women of a given subgroup (e.g., the number of births to black women ages 15-19 over the number of black women ages 15-19). The share married is the number of women married over the count of women of a given subgroup. Fertility rates and proportion married were calculated at both the national and state level. The NMFR also requires data on the age distribution; age data is taken from the SEER data.

Unemployment rates will come from the Bureau of Labor Statistics (BLS). The BLS produces both state-level estimates of unemployment rates. Foreclosure data will come from the Mortgage Bankers' Association National Delinquency Survey (NDS), which is a sample of 44 million mortgage loans, covering 85-88% of currently existing mortgages. The NDS is routinely used in the popular press and in scholarly journals to estimate the number of homes in foreclosure. The NDS is available for states on a quarterly or yearly basis.

Analysis uses the standardization and decomposition techniques developed by Das Gupta (1993), and adapted and adopted by Smith et al. (1996). The NMFR is the ratio of nonmarital births (NMB) to all births (where MB=marital births), as in:

$$NMFR = NMB / (NMB + MB)$$

It can be expressed, for any given year t , as a function of four factors:

$$NMFR_t = f(A_t, P_t, M_t, N_t)$$

where A is the proportion of women of a given reproductive age, P is the proportion of women who are married, M is the number of married women with a birth (the marital fertility rate), and N is the number of non-married women with a birth (the nonmarital fertility rate). The bars over A, P, M, and N refer to their distribution over the six age groups that are commonly taken to represent women of reproductive age (i.e., 15-19, 20-24, 25-29, 30-34, 35-39, and 40-44). A, P, M, and N are then standardized (to reflect differences in sample populations), and the difference between any two years t and u in the NMFR is the difference in the year-specific standardized ratios:

$$NMFR_t - NMFR_u = [NMFR_t(A) - NMFR_u(A)] + [NMFR_t(P) - NMFR_u(P)] + [NMFR_t(M) - NMFR_u(M)] - [NMFR_t(N) - NMFR_u(N)]$$

By definition, the component changes in A, P, M, and N must sum to the overall changes in the NMFR, and hence the relative contribution of each factor in the change of the NMFR can be identified. The difference in P_t and P_u , for example, represents how the NMFR would have changed if the only change between years t and u had been a change in the proportion of women who were married, and the other three factors were held constant.

Note that though decomposition analysis is useful in identifying how components of the NMFR contributed to a change in the NMFR, it is only a descriptive analysis and cannot be used to identify any causal linkages between the NMFR and the GR. Additionally, no method currently exists for comparing whether the change in one component of the NMFR is significantly different from the change in another component of the NMFR (Smith et al. 1996).

Preliminary results

Preliminary results (see Table 1) present, for each racial and ethnic subgroup, the difference in the NMFR between 2007 and 2009, and for each component, the difference in the standardized NMFR between 2007 and 2009 if the other three components are held constant. If the difference is negative, then the component resulted in the NMFR going down; if the difference is positive, then the component resulted in the NMFR going up. Results are presented for the overall sample, and then by the unemployment rate of the women's state of residence. High unemployment was greater than 10% in 2009, and low unemployment less than 7% (the full study considers other unemployment thresholds, as well as results for foreclosure).

Results suggest that overall, for Blacks and Whites, marital behavior was more responsive than nonmarital fertility, and that changes in the NMFR were driven primarily by changes in marriage. For Blacks, the NMFR standardized for all factors except for the proportion married would have increased from 71 to 73%. By itself, then, the Black decline in the proportion married led to a 2.08 percentage point increase in the NMFR; for whites, the decline in the proportion married led to 1.7 percentage point increase in the NMFR. Hispanics were the only group where changes in the nonmarital fertility rate completely offset the changes in the proportion married, suggesting that Hispanics during the GR changed their marriage and nonmarital fertility behaviors in approximately equivalent ways. The unemployment results suggest that marriage and fertility behaviors, particularly of Blacks, varied depending on the level of unemployment, as Blacks living in states with low levels of unemployment saw relatively little change in the proportion married.

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