Dynamics of Family Economic Wellbeing and

Composition of Household Income around a Birth

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Abstract

Families may face a heightened risk of economic insecurity in the time around a birth. The composition of household income – level and share of mother's earnings, father's earnings, earnings from other household members, public programs, child support, and other income – may also fluctuate in response to the timing of a birth. However, US research on dynamics of family economic wellbeing and packaging of income sources during pregnancy and following birth is limited. Using data from the Survey of Income and Program Participation (SIPP), this study provides evidence of month-to-month changes in several measures of economic wellbeing and composition of financial resources in the year leading up to and following a birth. Results show evidence of significant declines in family economic wellbeing in the months around a birth. Families' reliance on father's earnings and public programs increases after the birth, while contributions from mother's earnings and other household adults fall. Subgroup analyses document the particular vulnerability of single mothers who live with no other adults to declines in economic wellbeing around the time of a birth.

Introduction

Families may face a heightened risk of economic insecurity in the time around a birth as demands on family resources increase, and mothers' earnings often decline. Public benefit income may increase among eligible families, but benefit levels may not be sufficient to compensate for lost earnings and the additional resource needs. Studies in the European context suggest a birth is associated with reductions in several measures of family economic security (Aassve, Mazzuco, & Mencarini, 2005; Bould, Crespi, & Schmaus, 2012; Sigle-Rushton & Waldfogel, 2007). However, major differences in policies targeting new parents may limit the relevance of these findings to the US context. US research on poverty dynamics shows a birth is a common event beginning a spell of poverty, but does not shed light on the prevalence or severity of increased economic vulnerability among all families with a birth (Bane & Ellwood, 1986; McKernan & Ratcliffe, 2005; Stevens, 2012). Other relevant US studies focus on identifying the causal effects of family size, showing some evidence that larger family size reduces family income and increases risk of poverty (Angrist & Evans, 1998; Caceres-Delpiano & Simonsen, 2012). However, this work does not look particularly at the time around birth. Overall, there is surprisingly little US evidence of how family economic wellbeing fluctuates in the months leading up to and following a birth.

In addition to likely changes in overall economic wellbeing, families' relative reliance on different income sources may change in the time around a birth. Contribution of mother's earnings to household income may decline while reliance on father's earnings may increase. A large literature documents a reduction of mother's employment, work hours and wages following a birth, and there is some evidence that father's wages,

work hours and earnings rise (Angrist & Evans, 1998; Budig & England, 2001; Laughlin, 2011; Lundberg & Rose, 2000, 2002; Han, Ruhm, Waldfogel, & Washbrook, 2008; Killewald, 2013). Beyond parent's earnings, other sources of household income may change in response to the timing of a birth. Income from other household adults could fluctuate if these individuals work more or less in response to the pregnancy or birth, or if pregnancy or birth leads to changes in household structure. Additionally, pregnancy and birth may change public program eligibility or benefit levels, making it likely that families' reliance on public program income increases in this time period. Child support will also likely rise following a birth. With the exception of mother's earnings, few studies consider how the income families receive from each of these sources changes in the months around a birth. Additionally, most studies consider one income source in isolation; the changing composition of family income in response to the timing of birth has received less scholarly attention.

This study contributes to addressing these gaps in the literature by providing descriptive evidence of the dynamics of family economic wellbeing and composition of household income around a birth. Using monthly data from the Survey of Income and Program Participation (SIPP) I address the following research questions: 1) How do measures of overall family economic wellbeing change, month-to-month, in the year leading up to and following birth? 2) How do the absolute level and relative contribution to total household income of different sources of financial resources - mother's earnings, father's earnings, other household adults' earnings, public program income, child support and other income - change, month-to-month, in the year leading up to and following birth? Changes in family economic circumstances around a birth likely differ for less-

advantaged families due to differences in incentives and supports for mother's employment around birth, father's involvement and earnings potential, and eligibility for public programs. To explore this possibility, I look at variation in study outcomes by mother's educational attainment and household structure.

Family economic circumstances around a birth should be of great concern to researchers, policy makers and practitioners interested in child and family wellbeing, public benefit programs, and women's wellbeing and financial security. The time encompassing pregnancy and infancy is a period when family economic security and stability are particularly important for healthy child development (Duncan, Ziol-Guest, & Kalil, 2010; Wagmiller, Lennon, Kuang, Alberti, & Aber, 2006). In addition to families' level of income, income volatility may have independent detrimental effects on child and family wellbeing (Hill, Morris, Gennetian, Wolf, & Tubbs, 2013). Although many public benefit programs target families with children, there is little evidence of the extent to which income from public programs buffers earnings drops and increases in resource needs around a birth. Study findings will document changes in family economic wellbeing and stability during the critical time around a birth, and demonstrate the extent to which existing public benefit programs provide timely and meaningful support.

Pregnancy and birth also represent a time when women's share of household income likely declines. Women's share of household income is associated with a variety of positive outcomes for women, children and families including women's increased bargaining power and ability to exit poor-quality partnered relationships, as well as higher family investments in children (Bittman, England, Sayer, Folbre, & Matheson, 2003; Lundberg & Pollack, 2007; Sayer & Bianchi, 2000). Although research documents

reductions in women's wages, employment and work hours around birth, there is less attention to changes in share of household income. Study results will show if and when women's economic independence declines around a birth, contributing to the evidence base for policies to support women and families' wellbeing and financial security.

Background and Theoretical Framework

Family Economic Wellbeing around a Birth

The time around a birth may be a period of heightened economic vulnerability for families. A new baby increases demands on family resources. At the same time, pregnancy, birth and greater caregiving demands at home may interfere with parents' paid work. Public benefit programs, which likely increase in generosity in response to pregnancy and the increase in family size, may bolster the economic wellbeing of eligible families in the time around a birth. However, these programs may not be sufficiently generous to compensate for earnings declines and the increased demands on family resources.[2]

Most empirical work on the impact of birth on family finances is in the European context, where concerns over low fertility rates motivate attention to this issue. This research finds that a birth is associated with declines in several measures of family economic security. Looking across several industrialized countries, Sigle-Rushton and Waldfogel (2007) show reductions in size-adjusted household income – before taxes and

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[2] The related relationship between individual and family economic circumstances and fertility has received considerable theoretical and empirical attention (see for example Blau, Ferber, & Winkler, 2010; Gibson-Davis, 2009) In this paper I focus not on the fertility decision but on family economic circumstances around a birth, conditional on a live birth.

transfers - following a birth. These reductions remain even after including government transfers, although adding this income source tends to attenuate the post-birth drop (Aassve et al., 2005; Bould et al., 2012; Sigle-Rushton & Waldfogel, 2007). There is some evidence that gross household income, or income that has not been adjusted to account for family size, increases slightly in the period after a birth, suggesting that the increases in transfer income is greater than the decrease in parent's earnings, but not sufficient to compensate for the increased needs of the family (Bould et al., 2012). Although suggestive of potential patterns, differences between US and European policies shaping new parents' work and economic wellbeing likely limit the relevance of these findings to the US context.

Evidence from the US of the effects of a birth on family economic security is limited and somewhat mixed. Sigle-Rushton and Waldfogel (2007) include the US in their comparative study of the trajectories of household income following a birth, and find results similar to those I describe above.[3] However, these findings are limited by a reliance on cross-sectional data, a focus primarily on households at the middle of the educational attainment distribution, and no attention to gross, or unadjusted, household income.

Through analysis of events – such as job loss or changes in family structure – that precede a family entering poverty, the US literature on poverty dynamics shows an association between a birth and poverty entry. Using data from 1970-1982, Bane and Ellwood (1986) find that over eight percent of all poverty spells begin with a birth, and

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[3] Sigle-Rushton and Waldfogel (2007) use US data from the 2000 Current Population Survey – Annual Social and Economic Supplement, accessed through the Luxembourg Income Study.

that these spells last longer than spells that begin with any other event. Stevens (2012) finds very similar results using 1968-2003 data. Using 1988-1996 data and a multivariate approach, McKernan and Ratcliffe (2005) find that of the events that precede poverty entry, only job loss has a stronger relationship than the addition of a young child to the household to the likelihood of beginning a poverty spell. These findings suggest a relationship between a birth and declines in family economic wellbeing. However, documenting changes in family economic wellbeing around birth is not the main focus of this body of research. These studies do not provide information about prevalence or severity of declines in economic wellbeing around a birth among the universe of families who experience a birth.

A distinct line of relevant research focuses on identifying the causal effects of family size on measures of economic wellbeing. Using multiple births and parents' preference for children of both sexes to instrument for family size, Angrist and Evans (1998) find no effect of an additional child on overall family income. Caceres-Delpiano and Simonsen (2012) use a similar analytical approach with updated data and more outcome measures, and find an additional child increases family poverty and decreases family income. This research suggests a birth reduces family economic wellbeing, all else equal, but neither study restricts analysis to a time period closely following the birth, and the instrumental variables approach may limit the generalizability of these findings (Angrist & Pischke, 2009). Together, the European and US studies suggest a relationship between a birth and increased risk of economic insecurity. However, evidence from the US context of the dynamics of family economic wellbeing in the period leading up to and following a birth remains limited.

Composition of Household Income around a Birth

In addition to changes in overall economic wellbeing, the composition of household income likely changes around a birth. Pregnancy and birth may lead to fluctuations in the level of income from mother's and father's earnings, as well as from other income sources such as other household adult's earnings, cash and near-cash public programs and child support. The share of each source relative to household total is also likely to change in this time period.

Mother's and father's earnings. Economic and sociological theories as well as considerable empirical evidence all suggest women's earnings and share of household income will decrease around the time of a birth, while the level of and reliance on men's earnings will increase. Classic economic labor supply theory says individuals participate in paid work if earning potential exceeds the value of time in nonmarket work or leisure (Blundell & MaCurdy, 1999). The birth of an infant will increase the value of parents' time at home, reducing paid work hours and employment (Joesch, 1994, Klerman & Leibowitz 1999). In theory, this prediction is gender neutral. However, economic perspectives on family labor supply suggest that in different-sex couple households, women's comparative advantage for child care will allow the family to gain economically if the mother specializes in household work while the father dedicates himself to paid work (Becker, 1985; Killingsworth & Heckman, 1986; Lundberg & Rose, 2002). This theory suggests an increasing reliance on men's earnings, and decreasing reliance on women's earnings following a birth, among different-sex, co-residing couple families.

Sociological perspectives reject the idea that within-household specialization of labor arises from inherent gender differences in preferences or ability, and instead focus

on institutional structures – such as the high cost of childcare – and ideology – such as cultural conceptions of mother's and father's roles - that lead new mothers to decrease work and employment while new fathers increase work effort (Charles, Buchmann, Halebsky, Powers, & Smith, 2001; Glauber, 2008; Killwald, 2013; Kremer, 2007). There is extensive empirical evidence of reductions in mothers' employment and work hours following a birth (Angrist & Evans, 1998; Laughlin, 2011; Han et al., 2008) and some evidence that a birth is associated with an increase in fathers' work hours (Glauber, 2008; Killewald & Gough, 2013; Lundberg & Rose 2002).

Changes in men and women's wages around a birth, which operate through somewhat different mechanisms than changes in work and employment, could also contribute to differences in the composition of household income following birth. Women's wages tend to fall following a birth (Budig & England, 2001; Loughran & Zissimopoulos, 2009; Lundberg & Rose, 2000), and men's increase on average (Glauber, 2008; Killwald, 2013; Lundberg & Rose, 2000, 2002). Theoretical explanations for the wage gap between mothers and childless women include: reductions in work experience due to time out of work around pregnancy and birth; increased likelihood of changing jobs and the associated job search costs and loss of job-specific skills; lower productivity due to increased childcare responsibilities; job choices that sacrifice wages for improved work-family balance; potential employer discrimination against mothers; and heterogeneity between mothers and non-mothers (Becker, 1985; Budig & England, 2001; Lundberg & Rose, 2000; Waldfogel, 1998). In contrast, employer preferences for men with families, increased productivity stemming from greater household specialization, and men's conception of financial provision as a key part of the fatherhood role may help

explain the tendency of men's wages to increase following a birth (Glauber, 2008; Killwald, 2013; Lundberg & Rose, 2002).

Other income sources. In addition to mother's and father's earnings, expectant and new-parent families may rely on other income sources including earnings from other household adults, public programs and child support. There is less theoretical and empirical attention to how these income sources may change around a birth. However, these are important resources for some households (Kalil & Ryan, 2010; Kennedy & Fitch, 2012; Slack, Berger, Kim, & Yang, 2012); and there are reasons to expect the level and relative importance of each to fluctuate around pregnancy and birth.

Earnings of other adults in the household may change around a birth if these individuals increase work effort to respond to the higher demand on household resources, or reduce work to help with childcare, or if pregnancy and birth precipitate changes in household structure. Income from public benefit programs likely increases following a birth. Many major cash and near-cash safety net programs in the US including the Temporary Assistance for Needy Families (TANF) program, the Supplemental Nutrition Assistance Program (SNAP), the Special Supplemental Nutritional Program for Women, Infants and Children (WIC), the Earned Income Tax Credit (EITC) and the Child Tax Credit (CTC) either condition eligibility on pregnancy or having children, or calculate benefit levels based on the number of children in the household (Moffitt, 2003). Therefore, in the period around a birth, a family may become newly eligible for benefits or see benefit levels rise.

Other public programs such as Supplemental Security Income, Social Security and Social Security Disability Insurance and Unemployment Insurance may provide

support to some families in the time around a birth, although the link between pregnancy, birth and an increase in program eligibility and generosity is less direct for these programs.[4] Child support will also likely rise after a birth, as the infant makes custodial parents newly eligible, or eligible for an increase in payments (Lerman & Sorensen, 2003; Pirog & Ziol-Guest, 2006). Other sources of household income, such as property income, pensions, and investment income, may be less likely to respond to the timing of a birth.

With the exception of parent's earnings, few studies consider how the level of each of these sources of financial resources varies in the time around a birth. Additionally, much of the research on parents' earnings focuses on longer-term effects of parenthood on economic outcomes, while the shorter-term consequences of birth for parents' earnings are less well documented. There is also little evidence of changes in the relative importance to overall household income of each income source in this time period.

Differences by Socioeconomic Status and Household Structure

The dynamics of family economic security and composition of household income around a birth likely differ for more- and less-advantaged households. In this study, I focus on differences by socioeconomic status, operationalized as mother's educational

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[4] In-kind public benefit programs including childcare subsidies, public health insurance and subsidized housing are also important sources of support for low-income families with children (Kalil & Ryan, 2010; Slack et al., 2012) and may allow families to use more of their cash and near-cash income as disposable income. In this study I consider only cash and near-cash income. However, future research should consider how receipt of in-kind benefits changes around a birth, and how this matters for family economic wellbeing.

attainment, and by household structure.[5] Household structure has a major influence on both the level and composition of family income, and the particular economic vulnerability of single-mother families motivates attention to how these families fare and what resources they draw on around a birth (Cancian & Reed, 2009; Rank & Hirschl, 1999).

Differences in family economic wellbeing around birth. Declines in overall economic wellbeing may be particularly large for families with low educational attainment, who may have precarious employment situations that are more likely to be interrupted by pregnancy and birth (Lambert, 1999). Single mothers who do not live with a partner or other adult may also face particularly large reductions in overall economic wellbeing around a birth as they lack other workers to compensate for declines in their own earnings. However, higher-educated and married couple families may be more likely to have savings and other assets, which could make them more willing to experience earnings and income drops around a birth, and are less likely to be eligible for public benefit programs. Caceres-Delpiano and Simonsen (2012) show the impact of family size on poverty status is greater for mothers with lower levels of education, suggesting post-birth declines in overall family economic wellbeing may be greater for less advantaged families.

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[5] Mother's education is a common proxy for family socioeconomic status in studies of mothers' work and earnings in the period around a birth, and is preferable to a direct measure of income or earnings, which would likely be affected by the pregnancy and birth (see for example Han et al., 2008; Sigle-Rushton & Waldfogel, 2007). Because married and cohabiting partners tend to have similar levels of educational attainment, I use mother's educational attainment to stand in for the whole household (Blackwell & Lichter, 2004).

Differences in composition of household income around a birth. Economic and sociological theoretical perspectives, as well as past empirical findings, suggest differences by socioeconomic status and household structure in the impact of birth on parents' work, employment and wages, but the magnitude and direction of differences are ambiguous. Differences in patterns of public program income, child support and income from other household adults around birth by socioeconomic status and household structure are more straightforward to predict.

Mother's and father's earnings. Economic theories suggest an ambiguous effect of socioeconomic status and household structure on changes in parents' earnings around a birth, but suggest incentives for gender specialization may be lower in less-advantaged households. Financial pressures, which are more likely among less-educated and single mother families, increase the cost of time at home, and should lead to smaller reductions in work around a birth. However, less education and lower wages means earnings losses associated with reductions in work around a birth are smaller, and the economic incentive to return to work shortly following birth is weaker (Joesch, 1994; Klerman & Leibowitz, 1999). Because less-educated men's wages and occupational opportunities have stagnated (Autor, 2010; Blank & Shierholz, 2006), their comparative advantage in paid work, and couples' incentive to increase gender specialization of work following a birth should be weaker in households with lower educational attainment. Cohabiting couples may be less likely than married couples to increase specialization if the lower level of institutionalized commitment makes women less willing to reduce paid work hours (Han et al., 2008). In single-mother families, the issue of gender specialization is largely irrelevant.

Drawing on more sociological perspectives, institutions and social norms may also contribute to differences in mother's and father's work and employment around a birth by socioeconomic status and household structure. Again, different factors could influence study results in different directions. Disparities in access to employer and public policies such as family leave, childcare and flexible or predictable work hours make it harder for less-advantaged new mothers to combine employment and caregiving (Boushey, 2011; Lambert, 1999; O'Leary, 2007). Additionally, research suggests working-class women prefer a more traditional gender division of labor (Goldberg & Perry-Jenkins, 2004), although this finding may differ by race and ethnicity (Glauber, 2007). However, declining wages for low-skilled men and unmarried fathers' sporadic contact with mothers and higher incarceration rates suggest that earnings from fathers are likely to be lower - absolutely and relative to household total - and more variable in less-advantaged families (Edin & Nelson, 2013; Hayghe, 1993; Kalil & Ryan, 2010; Raley, Mattingly, & Bianchi, 2006; Winkler, McBride, & Andrews, 2005).

The effects of a birth on mother's and fathers' wages may also differ by socioeconomic status and household structure. Less-skilled mothers may be less vulnerable to wage declines from time out of work or changing jobs around a birth, suggesting smaller wage penalties (Anderson, Binder, & Krause, 2002). However, employers may be more likely to accommodate caregiving needs to retain high-skilled employees, so higher-skilled mothers may be less likely to experience job changes or long periods out of work, and the resulting wage declines (Anderson et al., 2002; Budig & Hodges, 2010). Single women may see smaller motherhood wage penalties than married women as marriage tends to increase specialization of labor and the ability to

rely on a spouse or partners earnings may enable married women to reduce paid work around birth (Glauber, 2007; Budig & Hodges, 2010). For men, the saliency of the fatherhood identity and provider role may be lower when they are not married to the child's mother or living with the child (Killewald, 2013). Additionally, employer perceptions of fathers as more serious and responsible may not extend to non-married or non-residential fathers (Killewald, 2013; Glauber, 2008).

Empirical evidence shows that more advantaged new mothers – those who are married, have higher levels of education and who are older at the time of birth – are less likely to work immediately (2-3 months) following birth (Han et al., 2008). The least advantaged mothers – those with less than a high school degree, and those who are very young – are less likely than all other mothers to have returned to work in the longer-term (9-12 months post-birth) and are more likely to quit a job around birth (Han et al., 2008; Laughlin, 2011). In terms of wages, lower-educated women experience lower wage declines following a birth compared to higher educated women (Anderson et al., 2002). Wage declines are highest near the median of the distribution of women's earnings and lowest at the ends (Killewald & Bearak, 2014); and married women experience a larger motherhood penalty than never-married and divorced women (Glauber, 2007). Research suggests only married men experience the fatherhood wage premium (Killewald, 2013; Glauber, 2008).

Other income sources. Income from other household adults, child support and public programs is likely higher and makes up a larger share of household income among less-advantaged expectant and new-parent families. Lower-educated and single mothers are more likely to live with and receive financial support from other adults (Kalil &

Ryan, 2010; Kennedy & Fitch, 2012). Custodial parents who have low educational attainment and who have never been married are less likely than more advantaged custodial parents to receive child support due (Grall, 2013). However, among households who receive child support, child support represents a much larger share of total household income for low-income families (Grall, 2013; Pirog & Ziol-Guest, 2006; Sorensen, 2010).

Many major US social safety net programs are means-tested, suggesting public program income will be much more relevant to the economic circumstances of less-advantaged expectant and new-parent families. Among low-income mothers of young children, SNAP and WIC participation are very common, although WIC participation rates are higher among post-partum women than among pregnant women (Hoynes & Schanzenbach, 2015; Kalil, & Ryan, 2010; Jacknowitz, & Tiehen, 2009; Slack et al., 2012). TANF use is less common, but there is evidence that TANF provides financial resources during relatively short periods of time out of the labor force for low-income new mothers (Hill, 2012; Kalil, & Ryan, 2010; Slack et al., 2012; Ybarra, 2013). Evidence linking EITC expansions with improvements in infant health among eligible families suggest that this program may also be an important source of financial support for less advantaged new-parent families (Hoynes, Miller, & Simon, 2012). However, the yearly lump-sum disbursement of the EITC at tax time means that many families with infants will not receive EITC payments reflecting the addition of the baby to the household until well after the birth.

The Present Study

Given the importance of family financial circumstances around birth to child health and development, understanding how US safety net programs serve families around a birth, and documenting changes in women's economic independence, this paper draws on nationally representative, monthly, longitudinal US data to make several contributions to the understanding of the relationship between birth and family financial circumstances. First, this is the only study I know of to document short-term, monthly changes in household-level economic wellbeing in the time around a birth. Using several measures of family economic wellbeing provides some insight into the role of alternate income sources (near-cash public programs, refundable tax credits, and unrelated household member's income) and increases in family size in changes in economic wellbeing around a birth.

Second, this study provides more fine-grained information than is currently available on short-term consequences of a birth on parents' earnings, and new evidence of how other sources of financial resources (other household adults, public programs, child support and other income) change around a birth. Third, I present information on changes in the *share* of each income source relative to total household income. These analyses will increase understanding of timing and magnitude of changes in women's share of household income – which research suggests matters for a variety of outcomes relevant to women's and children's wellbeing - around a birth, as well as changes in families' reliance on other income sources in this same time period. Finally, careful attention to differences by socioeconomic status and household structure document which groups are most vulnerable to declining economic wellbeing in this critical time, and what resources different families draw on.

Data and Methods

Data

To address all study research questions I use data from the 1996, 2001, 2004 and 2008 panels of the Survey of Income and Program Participation (SIPP), which cover the period from December 1995 through July 2013. Collected by the US Census Bureau, the SIPP is a large national survey of the US civilian, non-institutional population, with an oversample of low-income households. The SIPP has a longitudinal design with panels lasting about 2.5 to over four years. Information on all members of sampled households is collected in waves, which occur every four months. Income, program participation and household composition data are all available at the month level throughout each panel (US Census Bureau, 2001). Detailed monthly information on level and sources of household income, unique to the SIPP, allow me to assess household economic circumstances in the birth month, and in the months surrounding the birth. The large sample provides precise national estimates and sufficient sample size to conduct subgroup analysis. Potential limitations include well-know measurement error at the seam between waves, underreporting, imputation, and attrition. Although none of these issues is unique to SIPP, it is crucial to consider how each may influence results.

Seam issue. All panel surveys have a seam issue or, the tendency of respondents to over-report transitions (e.g. changes in income or program receipt) in reporting months and to under-report transitions in non-reporting months. Monthly data and frequent reporting make this issue particularly pronounced in SIPP, despite efforts by Census to address the problem (Moore, 2008). The seam issue introduces measurement error into

the study dependent variables, which should not bias estimates, but will reduce precision (Cameron & Trivedi, 2005). To limit the influence of the seam issue on study results I include an indicator variable for the reference month as a control in all multivariate analysis. This is a commonly used method to account for the seam issue in SIPP, and research suggests it preforms well in comparison to alternate methods (Ham, Li, & Shore-Sheppard, 2009).

Underreporting. Like all major national surveys, SIPP experiences underreporting of income, and underreporting rates that differ by type of income and demographic group (Czajka & Denmead, 2008). Comparisons across major national surveys and to administrative records suggest SIPP collects higher and more accurate earnings information from lower-income households. In contrast, SIPP tends to underestimate total earnings among more advantaged groups (Abowd & Stinson, 2011; Czajka & Denmead, 2008; Roemer, 2002). In terms of income from public programs, underreporting in SIPP is less severe than in other major national surveys, particularly among higher-income program recipients (Czajka & Denmead, 2008; Meyer, Mok & Sullivan, 2009).

These patterns suggest that SIPP is the best data source available to understand changes in earnings around a birth for less advantaged families. The tendency of SIPP to underestimate earnings among more-advantaged households may lead me to overstate the economic insecurity of more advantaged families, and understate subgroup differences. However, comparisons with administrative data show SIPP consistently collects around 90 percent of total earnings, suggesting the impact of underreporting on study results should be relatively small (Roemer, 2000). Additionally, comparisons with administrative

earnings data suggest SIPP may underestimate within-year variability in earnings, but not severely (Abowd & Stinson, 2011). This aspect of the data may reduce the ability to observe earnings fluctuations around a birth, leading to more conservative estimates of changes in economic wellbeing around a birth.

Data imputation. The publically available SIPP files contain no missing data. When an individual or household cannot be interviewed in a wave, or when a respondent refuses to answer an item, data are imputed. Census uses several imputation methods including logical imputation, which uses non-missing responses in a current or prior wave to infer values for missing items, and hot-deck methods, which replace missing items with data from other respondents who are similar on relevant observables (US Census Bureau, 2001). Rates of imputation of income data are high in the SIPP, but comparable to other major surveys (Czajka & Denmead, 2008). Research suggests imputation in the SIPP inflates measures of within-household income volatility (Dahl, DeLeire, & Mok, 2012). If imputation rates vary with the timing of a birth, I may overstate changes in household economic circumstances. To assess the sensitivity of findings to data imputation, I re-estimate all results excluding cases with over 30 percent of monthly observations with any imputed household earnings data.

Attrition. Like all longitudinal surveys, SIPP experiences growing rates of attrition within panels. Rates of nonresponse and attrition have increased over time. In the 2008 panel, the rate of household sample loss is 19.4 percent at wave one and increases to 46.5 percent by wave 15 (US Census Bureau, 2015). All analyses use SIPP household weights produced by Census to account for attrition as well as the complex sampling design.

Despite each of these potential limitations, SIPP is the only large, nationally representative dataset that provides month-level information on the amount and sources of household income, making SIPP the best available dataset to provide fine-grained evidence of the dynamics of economic wellbeing and composition of household income around a birth.

Sample

The study sample includes all households with births during SIPP data collection where the infant's biological mother is present in the household in the birth month.[6,7] Observations with inconsistent information on the infant's birth month or mother's identification, and where the mother is over 45 in the birth month are dropped, following

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[6] Although an interesting subgroup, I do not include births where the infant lives with a father only or with other adults in the birth month as these households are very rare in the SIPP and several of the main study research questions focus on mother's earnings and contribution to household income.

[7] Census draws the sample for the SIPP at the household level and follows the members of the original household. Any additions to the household, or to new households formed by original household members, including new babies, become part of the SIPP sample. Although SIPP collects data in four-month waves, the public use data are organized into person-month observations. Census policy on creating a person-month observation for a new infant is to create an observation in the birth month if the birth occurs on the 15th or earlier, and in the birth month + 1 if the birth occurs after the 15th of the month (L. Shaefer, personal communication, August 30, 2013). Because of this file structure, selecting cases where an individual has a person-month observation in their birth month or birth month + 1 should identify households with newborn infants. A cross tab of births identified with this method (births) and SIPP sample members under one (infants) revealed many more infants than births. Many of these infants do not have observed birth months because they were born before the data collection started, in a month when the mother is not observed due to missing data on a wave or because the birth occurred before the mother moved into a study household. However, 3,534 infants are first observed two or more months after their birth month, despite being biological children of a mother who is observed in their birth month. Because there are few significant differences between characteristics of mothers whose infants are first observed in first through third month following birth, these mother-birth observations are included in the study sample. When the infant does not appear in the household until four or more months after the birth month, I do not include the birth in the sample.

previous work (Yelowitz, 2002). I construct a household-birth-month level file including monthly observations on the household the mother resides in for the 12 months before and after the birth month. This time period provides several pre-pregnancy months to give a sense of baseline level of each outcome, and encompasses the time period following birth when the majority of US mothers return to work (Laughlin, 2011). The sample includes 11,615 births and 226,836 household-birth-month observations. Because a birth can occur at any point in the SIPP study timeframe, sample sizes are largest in the birth month and fall as distance from the birth month increases.

Measures

    Dependent variables.

    Family economic wellbeing. I construct three measures of family economic wellbeing. *Income-to-needs* is the ratio of total family income to the official federal poverty threshold.[8] A value of 1.5, for example, indicates the family income in that month is at 150 percent of the federal poverty level (FPL). Following the US Census Bureau definition of poverty, the calculation of total family income used as the numerator of this measure includes pre-tax money income from all household members who are related by birth or marriage, captured in the total family income variable in the SIPP (Short, 2014).[9] SIPP also provides a variable indicating the official poverty threshold for

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[8] Throughout this paper, I use the terms "family" and "household" loosely and interchangeably. SIPP defines a family as a group of individuals who live together and are related by birth or marriage. Census uses the same definition in calculating the official poverty rates. SIPP defines a household as all individuals who live together.
[9] Census uses data from the Current Population Survey (CPS) to produce official poverty estimates. There are some minor differences in how total family income is measured between the CPS and the SIPP. First, SIPP includes lump sum or one-time payments such as inheritances, while CPS only includes income received in a regular or periodic manner. Additionally, SIPP includes gross income from self-employment, while CPS

the family in the reference month, which is the denominator of this measure. Although the official poverty measure has many shortcomings as an indicator of economic wellbeing, it continues to be widely used in research and is the basis for eligibility criteria of several means-tested public programs (Blank & Greenberg, 2008; Meyer & Sullivan, 2012; Short, 2014).

Next, *alternative income-to-needs*, adjusts the *income-to-needs* measure to account for resources from near-cash public programs, refundable tax credits and unrelated household adults. These sources of income are not included in the official poverty measure but are important to both family economic wellbeing and to understanding the impact of government programs on families' economic circumstances (Blank & Greenberg, 2008; Short, 2014). To create this measure, I make three additions to family income. First, I add the cash value of SNAP and WIC benefits, both provided in the SIPP.[10] Because SIPP does not have direct measures of taxes and tax credits, I use the National Bureau of Economic Research TAXSIM Model to estimate the value of the EITC and CTC (Feenberg & Coutts, 1993).[11] I include income from refundable tax

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uses net self-employment income (US Census Bureau, 2001, 2011). Finally, starting in the 2004 panel, SIPP includes an estimate of the cash value of other food assistance and clothing assistance in the total family income variable, which would not be included in the CPS measure (J. J. Hisnanick (US Census), personal communication, September 3, 2014). Because SIPP is more successful at collecting income information from those at the bottom of the income distribution, poverty estimates using SIPP data find fewer poor people that than the official estimates using the CPS (Short, 2014b).

[10] SIPP respondents report the dollar value of monthly SNAP benefits. For WIC, respondents report WIC receipt, and Census provides an estimate of the monthly dollar value of the benefit based on program information from the Department of Agriculture. The amount used for 2009 was $42.41 per recipient (Short, 2014b).

[11] Using SIPP data, I estimate the filing status, annual earned income of the mother and spouse (if applicable), and the number and ages of dependents. For households where I do not observe the full tax year, I estimate annual income based on the average monthly earned income during the portion of the year that I do observe. Following Hoynes and

credits in the February following the tax year, based on administrative data showing over half of EITC refunds are paid in this month (LaLumia, 2013). Finally, I include the income of non-related household members, including cohabiting partners. I divide this calculation of total household income by the family federal poverty threshold variable in the SIPP, scaled up to account for the additional non-related individuals I include in the resource-sharing unit. This measure gives a more holistic account of family economic wellbeing and provides insight into the extent to which near-cash public programs, refundable tax credits and income from unrelated household adults bolster the economic wellbeing of families in the period around a birth.

The third measure of family economic wellbeing, *gross household income*, is the numerator of the *alternative income-to-needs* variable: total family pre-tax money income, plus near-cash public program income, refundable tax credits and income from unrelated household members. Examining changes in gross household income in the period around a birth will provide evidence of the extent to which changes in the first two measures of family economic wellbeing are driven by changes in income or by the additional needs created by the increase in family size.

Composition of household income. To explore changes in composition of household income around a birth I construct several additional outcome measures. *Mother's earnings* and *father's earnings* measure monthly total wage and salary income and self-employment income for each parent. *Other adult's earnings* measures the total

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colleagues (2012), I assign dependents to be the number of children (18 and under) in the household at the end of the tax year. Using this information, TAXSIM provides estimates of the amount of EITC and CTC the family is eligible for. This method may underestimate refundable tax credit amounts for families where another taxpayer in the household (a grandparent or the unmarried partner of the mother) claims the children as dependents to maximize credit amounts.

earned income of any household adults other than the mother and father of the newborn.

Public program income sums the dollar value of major cash and near-cash safety net

programs and refundable tax credits, again including tax credit income in February.[12]

Child support gives the monthly amount of child support and child support pass-through

income received. The residual category, *other income*, captures all other sources of

income reported by the household including investment and property income, many

forms of retirement income, income from private charities and from relatives or friends.

To explore changes in families' relative reliance on each income source, I

construct an additional series of outcome variables that divide each income source by

gross household income. These measures put each source of income in the context of the

actual household total, providing slightly different information than the level of each

income source. For example, the mean level of public program income may be low

compared to the mean gross household income, but if public program income makes up a

large share of the household income of lower income households, the mean share of

public program income will be higher than the mean levels would suggest. Additionally,

research suggests that men and women's share of household income predicts a variety of

outcomes relevant to women and children's wellbeing, motivating separate attention to

expectant and new parent's *share* of household income (Bittman et al., 2003; Lundberg &

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[12] The public programs I include in this measure (see the Appendix for a complete list) encompass the major cash and near-cash social safety net programs (Burt & Nightingale, 2010). Although I do not include other public retirement programs in the measure of public program income, I do include social security income because it is considered a safety net program. The mean monthly income from social security is very low (between $45-$50) and does not respond to the timing of the birth, as expected given that social security is a retirement program.

Pollack, 2007; Sayer & Bianchi, 2000). The Appendix provides details on the sources of income included in each of the study outcome variables.

Independent variable. The main independent variable is the length of time before or after the birth, measured with a series of indicator variables for the birth month and each month in the year before and after the birth month.

Moderating factors: Family socioeconomic status and household structure. Mother's educational attainment - measured with indicators for less than high school, high school, some college and a bachelor's degree or above – serves as a proxy for family socioeconomic status. Household structure is measured with four dummy variables indicating if the mother is single (including never married, widowed, divorced, separated, and married, spouse absent) and living without other adults (18 and older); single and living with other adults; cohabiting; or married and living with her spouse. I identify a cohabiting household when the mother is designated as an unmarried partner of the household reference person, or is designated as the household reference person, and an unmarried partner of the reference person is present in the household record.[13] Both educational attainment and household structure likely change for some women during the year before and after a birth, and may be affected by pregnancy and birth. Because I conceptualize these factors as moderators, I restrict these variables to be fixed at the birth month value within each birth observation.

Analytic Approach

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[13] This method, commonly used to identify cohabiting couples in SIPP, misses couples where neither partner is designated as the household reference person, a generally more disadvantaged group (Kennedy & Fitch, 2012).

First, I present weighted mother and household characteristics in the birth month as well as the weighted mean of each study outcome in the month one year (12 months) prior to the birth month, which I use throughout the analysis as a pre-pregnancy baseline.

Next, I address the first research question by estimating month-to-month changes in each of the three measures of family economic wellbeing in the year before and after the birth month. To facilitate comparisons across subgroups at different levels of economic wellbeing, I estimate the mean *percent* change in each economic wellbeing measure from the pre-pregnancy level.[14] To do this, I regress the log transformation of each outcome on the indicators for distance from the birth month, using the observation twelve months prior to the birth month as the reference category. Because some households have zero or negative values on the measures of family economic wellbeing, and the log function is undefined for values at or below zero, I replace the outcome with $1 (or the numerator of the outcome with $1 in the case of *income-to-needs* and *alternative income-to-*needs) if it is equal to or below zero.[15, 16]

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[14] I adapt this method from a recent study of household income dynamics around divorce (Tach & Eads, 2015).

[15] Negative values are very uncommon. Only around 0.05 percent of household-birth-month observations have negative values on the three economic wellbeing outcome variables. Zeros are somewhat more common, and the prevalence of zeros varies by the outcome. About 4.6 percent of household-birth-month observations have zeros on *income-to-needs*, and 0.6 percent of household-birth-month observations have zeros on *alternate income-to-needs* and *gross household income*. Negative values on income may be related to investment and self-employment income, are more common among higher socioeconomic status individuals and are often dropped in studies of low-income populations (see, for example, Shaefer & Edin, 2013). Research suggests that while some zero income observations in survey data are cases of misreporting, many actually represent households with no income, of the types included in the measure (Nichols & Zimmerman, 2008).

[16] I report sensitivity of study results alternate versions of the log transformation (replacing zeros and negatives with $500 instead of $1, and setting zeros and negatives to the 10th percentile of the given outcome) in the robustness checks section.

To address the second research question, I document month-to-month changes in the composition of household income in the year before and after a birth. In these analyses, instead of the monthly percent change, I estimate the mean monthly level of each of the composition of household income outcomes (level and share of household income, by source). While the mean *percent* change is easier to interpret and increases the ability to compare across subgroups when assessing overall family economic wellbeing, estimates of the mean *level* of each outcome are more meaningful when assessing changes in composition of household income. I produce these estimates by regressing the level of each composition of household income outcome on the indicators for distance from the birth month, again with the month one year before the birth month as the excluded category. The general form for the mean percent change models is given in equation (1) and the general form for the mean level models is given in equation (2):

(1) $\ln (y_{it} + 1) = \alpha + \Sigma_{(-11, \dots, 12)}\, \beta_t\, M_{it} + \gamma_t + SEAM_{it} + \varepsilon_{it}$

(2) $y_{it} = \alpha + \Sigma_{(-11, \dots, 12)}\, \beta_t\, M_{it} + \gamma_t + SEAM_{it} + \varepsilon_{it}$

where α is the intercept, M_{it} are the series of dummies indicating each of the months from the month 11 months before the birth month to the month one year (12 months) following the birth month, γ_t is a year fixed effect, and *SEAM*$_{it}$ is an indicator for the reporting month. The year fixed effect controls for nationwide trends in the study outcomes over the study time period (1995-2013), and the indicator for the reporting month should reduce the influence of the seam issue in SIPP on study results (Ham et al., 2009).[17]

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[17] Supplementary analysis showed some differences by SIPP panel (indicating differences over time) in level of income from different sources. Father's earnings and gross household income are lower in the 1996 and 2008 panels than in the 2001 and 2004 panels. Mother's earnings are lower and more responsive to birth in 1996 and 2001 panels than in the later panels, and public program income is higher in the 2008 panel

In equation (1), the coefficients on the month indicators, β_t, give estimates of the mean monthly percent change in each of the study outcomes relative to the pre-pregnancy baseline level. It is common to interpret the coefficients on binary independent variables in log dependent variable models as giving the percent change in the dependent variable as the indicator goes from zero to one. However, more precisely, the transformation $(100 \times [(e^{\beta})\text{-}1])$ gives the percent change in the dependent variable as the indicator goes from zero to one (Giles, 2011). Coefficients and standard errors in all tables and figures presenting results from equation (1) are transformed in this way, so can be correctly interpreted as estimates of the mean percent change in each outcome, from the baseline level. Coefficients on the month indicators in equation (2) estimate the mean level change in the outcome from the pre-pregnancy baseline (12 months before the birth month). I add the weighted mean of the outcome in the baseline month to each estimate from equation (2) to calculate the monthly mean of each outcome, adjusted for macro trends and the seam issue in SIPP.

Standard criteria for statistical significance of OLS regression coefficients provide tests of significant changes in each outcome relative to the month one year before the birth month. In all multivariate models, standard errors are clustered at the state level, which accounts for the complex survey design as well as the fact that households with more than one birth during SIPP data collection appear in the data as separate household-birth observations. All analyses are weighted with SIPP household weights, provided by

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than in the three earlier panels. Although beyond the scope of the current study, future research should explore how changes in macroeconomic context, public policies and norms around employment of mother's of young children affect dynamics of family economic wellbeing and composition of household income around a birth. In all multivariate analysis presented in this paper, year fixed effects remove trends in the outcome variables.

Census, which are constructed to account for oversampling and attrition (US Census Bureau, 2001).

To assess whether dynamics of family economic wellbeing and composition of household income around a birth vary by socioeconomic status and household structure, I first conduct the described analysis for the full sample, then estimate separate models for subsamples defined by mother's educational attainment and household structure. In the mean percent change models (equation (1)) I test for significant differences across subgroups by pooling the data and including interactions between the month indicators and the subgroup indicators. The t statistics on the interactions provide a test for significant differences in each monthly estimate, across the subgroups. In the test for significant differences by mother's educational attainment, high school is the reference category; and in the test for significant differences by household structure, married, spouse present is the reference category.

Results

Table 1 reports weighted estimates of mother and household characteristics in the birth month. The SIPP provides a national sample. So as expected, the distribution mother's age, race and ethnicity, birth order and household structure in the birth month are roughly similar to national estimates using vital statistics data over the same time period (Martin, Hamilton, Osterman, Curtin, & Matthews, 2015).

Family Economic Wellbeing

Table 2 gives the mean of the three measures of family economic wellbeing as well as the level and share of household income from each source in the month one year

before the birth month. This month is used as a pre-pregnancy baseline in analyses of changes in family economic wellbeing around birth. Looking at the first two economic wellbeing measures, across all subgroup, *alternative income-to-needs* is higher than *income-to-needs*, showing that near-cash public program income, refundable tax credits, and earnings from unrelated household adults improve family economic wellbeing in the pre-pregnancy period. This improvement in economic wellbeing after accounting for additional income sources is greater for less-advantaged households. Cohabiting households see the greatest percent increase in economic wellbeing (70.9 percent) after adding the additional income sources. This large gain is expected as, by definition, cohabiting households include unrelated adults. Also as expected, *gross household income* is highest for households where mothers have a bachelor's or greater and married couple households, and lowest for households where mothers have less than a high school degree, and single mother households without other adults.

Income-to-needs. Tables 3-5 present the results of the regressions of the log transformation of each of the three measures of economic wellbeing on the month indicators, or equation (1). Figure 1 presents the same findings graphically. These results address the first research question by providing estimates of the mean monthly percent change in each measure of family economic wellbeing relative to pre-pregnancy levels. Table 3 and the first row of Figure 1 report results for *income-to-needs*. On average, families experience declines in *income-to-needs* that begin three months before the birth month, reach the lowest levels, around 35 percent lower than the pre-pregnancy baseline, in the first and second months of the infant's life, and that do not recover to pre-pregnancy levels during the year following the birth. Households where mothers have

high educational attainment (some college, or bachelor's and above) experience declines in *income-to-needs* that start later in pregnancy and that are less severe in magnitude than households where mother's educational attainment is lower. Cohabiting households and single mother households with no other adults experience major declines in *income-to-needs* around birth (roughly 84 and 71 percent lower than pre-pregnancy in the birth month, respectively). These drops in economic wellbeing are significantly larger than declines experienced by married couple households. Significant differences start early in pregnancy and continue through the year following birth.

Alternative income-to-needs. Table 4 and the second row of Figure 1 report results for the second measure of family economic wellbeing, *alternative income-to-needs*, which adds income from near-cash public programs, refundable tax credits and unrelated household adults to the income-to-needs calculation. On average, all households experience significant declines in *alternative income-to-needs* from pre-pregnancy, starting in the month before the birth and without a full recovery by the end of the year following the birth. In the full sample, declines start later in the pregnancy and are smaller in magnitude compared to declines in *income-to-needs*, suggesting that these additional sources of income, on average, buffer the declines in economic wellbeing associated with a birth. Households with higher educated mothers experience significantly larger declines in *alternative income-to-needs* in the fourth through eight months following the birth month compared to households with lower-educated mothers. This finding suggests the additional income sources primarily benefit less advantaged households. Similarly, the dramatic declines in economic wellbeing among households where the mother is cohabiting or single and living alone become much smaller in

magnitude, although still significant, after accounting for income from near-cash public programs, refundable tax credits, and unrelated household adults. Among married couple households, declines are similar in magnitude using both the *income-to-needs* and the *alternative income-to-needs* outcomes.

Gross household income. Table 5 and the last row of Figure 1 report results for the final measure of family economic wellbeing, *gross household income*, which measures total household income without accounting for the higher demands on family resources associated with the increase in family size. On average, *gross household income* falls around the birth month. Significant declines from the pre-pregnancy baseline begin two months before the birth and reach a maximum of 10.4 percent lower than pre-pregnancy levels in the birth month. By the fourth month following the birth month the difference in *gross household income* from pre-pregnancy levels becomes insignificant. The smaller but still significant declines in family economic wellbeing using this measure suggests that some of the reduction in *income-to-needs* and *alternative income-to-needs* is attributable to increases in family size, but that families do experience significant declines in resources available to the household in the months around the birth.

Point estimates of percent change in gross household income from pre-pregnancy to the birth month suggest households with very low and very high levels of education experience the largest percent reductions in *gross household income* around a birth. Percent declines in *gross household income* in the birth month are significantly larger for cohabiting households, and smaller for households with a single mother living with other adults, compared to married couple households. Results show mothers who are single and living with no other adults experience large declines in *gross household income*, starting

in early pregnancy and reaching a low of 38.8 percent below pre-pregnancy levels in the birth month.

Composition of Household Income

Level of income by source. Table 2 reports the weighted mean level of each income source in the month one year before the birth month for the full sample and for each subgroup. Higher mother's educational attainment is associated with higher pre-pregnancy earnings for both mothers and fathers. Low pre-pregnancy earnings for mothers who are single and living with other adults (mean = $688) suggests this group likely includes many young mothers living with their parents or other relatives, who may still be in school.[18] In cohabiting households, father's pre-pregnancy earnings (mean = $1,613) are higher than mother's earnings but much lower than father's earnings in married couple households (mean = $4,376). Higher mother's educational attainment is associated with lower income from other household adult's earnings and public programs and higher levels of other income. Income from each of these three sources is highest in households where the mother is single and living with other adults. Child support income is low overall in the pre-pregnancy month, but highest for households where the mother is single and living along or cohabiting (mean = $79, $70, respectively), and in households where the mother has a high school degree (mean = $47).

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[18] Mothers are, on average, much younger in the birth month in the single, with other adults household structure category (mean age = 21.97) than in all other households structure categories (mean age, single, no other adults = 26.70; mean age, cohabiting = 25.81; mean age, married, spouse present = 29.68), which supports the assumption that many of the households where the mother is single and living with other adults are households where young mothers live with their parents or other relatives.

Figures 2a-2c report the weighted mean level of income from each source, in each of the months in the year before and after the birth month, estimated using equation (2).[19] These results address the second research question, providing insight into how composition of household income changes in the time around a birth. In the full sample (Table 2a) women's earnings decline throughout the pregnancy and reach the lowest point two months after the birth month. In the third month after the birth month, mother's earnings, on average, begin to rise, but remain lower than the pre-pregnancy level a full year following the birth month. Father's earnings, on average, increase steadily throughout the two years around the birth, with a small average decline in the birth month and the month following the birth month. Income from other household adult's earnings declines steadily. On average, public program income begins to rise two months before the birth month, and declines again starting in the seventh month following birth. Child support income increases steadily starting in the birth month. Other income rises slowly through the pregnancy, peaking around the birth, returning to pre-pregnancy levels by the year following the birth.

Results suggest that changes in the composition of household income around a birth differ by socioeconomic status (Figure 2b) and household structure (Figure 2c). Households where the mother has under a high school education see levels of mother's earnings fall earlier in pregnancy but recover sooner and more thoroughly following birth. Unlike in the other educational attainment subgroups, in households where mothers have a high school education, father's earnings do not decline around birth. Declines in

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[19] Regression results from equation (2) are reported as figures. Full tables of coefficients on month indicators are not reported to save space, but are available from the author by request.

mother's earnings are sharper in households where the mother is single and living alone or cohabiting. Other adults' earnings decline to the birth month in households where mothers are single and living alone. The increase in father's earnings during pregnancy is particularly steep in households where the mother is cohabiting. Because household structure is measured in the birth month, these patterns suggest changes in household structure during pregnancy. Patterns of level of income by source around the birth for married couple households look similar to the patterns for household where the mother has a bachelor's or above, although the levels are somewhat lower.

Share of income by source. The final rows of Table 2 give the weighted mean of the share of each income source, relative to gross household income, at the pre-pregnancy baseline. Figures 3a-3c present the monthly mean share provided by each income source in the year before and after a birth. These analyses put each income source in the context of household total and give additional insight into changes in the composition of household income around a birth. In the full sample (Figure 3a) mother's share of gross household income decreases more than the level of mother's earnings, and father's share increases more. The contribution to household income of public programs and the increasing importance of this income following the birth is significantly higher than the results for the level of income by source (Figure 2a) suggest. This pattern of differences in results between the share and the level results is similar across subgroups (Figures 3b-3c). The increases in the gap between mother's and father's share of household income following a birth look similar in magnitude across subgroups. Among single mother households with no other adults, public program income surpasses mother's earnings as

the largest contributor to household income in mid-pregnancy, and contributes over half of gross household income in the birth month.

Robustness Checks

Results are robust to a number of alternate specifications. Findings are substantively unchanged in specifications that remove the year fixed effects, that include state fixed effects, that drop negative income observations, and that use versions of the mother's educational attainment and household structure variables measured at the month level (in the preferred specification these variables are fixed at the birth month value). Tests of robustness to treatment of zero income cases and imputed data in SIPP deserve discussion in greater detail.

Experiences of Zero and Very Low Income around a Birth

To test the sensitivity of study results to the choice of replacing zero and negative income observations with $1 in the log dependent variable models, I re-estimate study results using two alternative versions of the log transformation. In the *income-to-needs* analysis, replacing zero and negative income observations with $500 instead of $1 decreases post-birth declines in economic wellbeing among less advantaged groups and attenuates subgroup differences. Setting zero and negative income observations to the 10th percentile of the outcome has a similar but effect, but with smaller size changes. Changes are similar for *alternative income-to-needs* and *gross household income*, but much smaller in magnitude. These analyses suggest that zero and negative income observations do not drive study findings, but do have some influence on results, and that alternate versions of the log transformation reduce the ability of these cases to contribute

to study findings. For this reason, I prefer the specification that replaces zero and negative income observations with $1.

Motivated by this finding that very low-income observations contribute to overall study results, and to provide more information about experiences of extreme poverty around the birth of a child, I conduct a series of supplemental analyses. Table 7 documents the prevalence of zero and very-low income observations in the study sample. Among the full sample, about 4.5 percent of household-birth-month observations have zero income. Only about 0.6 percent have zero income after accounting for near-cash public program income, refundable tax credits and income from unrelated household adults. Higher mother's educational attainment is associated with lower likelihood of reporting zero income. Over one quarter of cohabiting households report zero income, but the higher likelihood of zero income among this group disappears after accounting for alternative income sources. Households where the mother is single and living with no other adults are the most likely to report zero income by both measures. Observations with very low income (defined as less than 25 percent of the FPL, or under 0.25 on the study *income-to-needs* outcome) are very common. In the full sample, about 23.9 percent of household-birth-month observations have income below 25 percent of the FPL. The prevalence of experiences of very low income is somewhat lower when I add near-cash public program income, refundable tax credits and income from unrelated household adults. Subgroup differences mirror those in the zero income analysis.

Risk of experiencing zero or very low income is elevated in the months around the birth (Figure 4), although not when using the measure of zero income that adds additional income sources. If spells of zero or very low income around a birth are brief,

they may be less worrisome than if they are long. Table 8 reports the mean length of zero and very low income spells that include the birth month. For households that experience zero income in the birth month, the mean length of the zero income spell is over seven months. Zero income spells are less common and shorter, on average, after adding near-cash public program income, refundable tax credits and income from unrelated household adults. For households that experience very low income in the birth month, the mean length of the very low income spell is roughly 13 months. These results suggest that experiences of zero and very low income that encompass a birth tend to be relatively long.

Sensitivity to Data Imputation

To assess the sensitivity of findings to data imputation in SIPP, I re-estimate results excluding births with over 30 percent of monthly observations with any imputed household earnings data. Dropping cases with a high percentage of imputed earnings data has one substantive effect on study conclusions. The finding that households where mother's educational attainment is some college experience significantly lower declines in *income-to-needs* around the birth compared to households where the mother has a high school education reduces to insignificance. However, within the high school subgroup, those households with high levels of imputed earnings data have a significantly higher likelihood of being less advantaged on observable demographic characteristics. The association between high levels of imputed earnings and indicators of social advantage does not exist in the some college subgroup. This suggests differences in the characteristics of the cases dropped, rather than the effects of data imputation, drive the change in findings after dropping cases with high levels of imputed data. All other study

results were substantively unchanged after dropping cases with a high percentage of imputed earnings data.

Discussion and Conclusions

This study documents dynamics of overall family economic wellbeing and composition of household income in the year before and after a birth among a nationally representative sample of US households. Subgroup analyses explore differences by socioeconomic status and household structure. This is the first US study I know of to provide fine-grained information on short-term changes in overall family economic wellbeing around a birth. Results show that, on average, families experience significant declines in economic wellbeing - measured as the family income as a percent of the FPL - in the time around a birth. Declines begin in late pregnancy, are largest in magnitude (around 35 percent lower than pre-pregnancy) in the two months after the birth month, and remain significant through the infant's first year of life. Declines in economic wellbeing are smaller in magnitude but still significant after adding income sources not include in the official poverty measure: near-cash public programs, refundable tax credits and income from unrelated household adults. Declines in gross household income, which does not adjust for the increased resource needs associated with the arrival of a baby, are smaller and less long-lasting, but still significant.

Findings are in line with US research suggesting a relationship between the birth of a child and family economic insecurity (Angrist & Evans, 1998; Bane & Ellwood, 1986; Caceres-Delpiano & Simonsen, 2012; McKernan & Ratcliffe, 2005; Stevens, 2012). The first two findings also mirror results of European studies showing significant

pre- to post-birth drops in measures of household income that adjust for family size, and smaller declines after adding income from public benefits (Aassve et al., 2005; Bould et al., 2012; Sigle-Rushton & Waldfogel, 2007). However, there is some evidence that in European countries, unadjusted, or gross household income actually rises following a birth (Bould et al., 2012). In contrast, I find significant declines in gross household income around a birth. Differences in the generosity of public programs serving families with young children likely explain the differences in results across contexts.

This study gives considerable attention to how changes in economic wellbeing around a birth differ for more- and less-advantaged households.   After adding income from near-cash public programs, refundable tax credits and unrelated household adults, I find few significant differences in percent change in economic wellbeing by mother's educational attainment. However, I show that single mother households with no other adults are particularly vulnerable to large declines in economic wellbeing around a birth.

The analysis of changes in composition of household income in the year before and after birth provides detailed information on fluctuations in parents' earnings around birth; new insights into families' changing reliance on other income sources; and a unique focus on changes in the share of each income source relative to household total. In general, results in this section conform to expectations based on theory and previous research. Among all households other than single-mother households, I find women's earnings fall around a birth, men's rise, and the growing gap between mother and father's earnings is larger when measured as share of household income than when measured as levels of each income source. These findings are in line with prior research on men and women's employment, work and wages following a birth, as well as with economic and

sociological theories predicting an increase in gender specialization in work following a birth (Becker, 1985; Charles, et al., 2001; Joesch, 1994; Lundberg & Rose, 2000).

Theory and evidence provided ambiguous predictions for how changes in parent's earnings around birth would differ by socioeconomic status and household structure. Results suggest less-advantaged new mother's earnings fall earlier in pregnancy but begin to recover more quickly following birth, suggesting mothers may be motivated by financial pressures to return quickly to work. Among all subgroups other than single mother households, I find little evidence of subgroup differences in changes in men and women's share of household income around birth. I find public programs and other household adults make significant contributions to household income around birth among less-advantaged households. As expected, public program income increases around a birth. In contrast, income from other household adults decreases, suggesting pregnancy and birth lead parents to prefer to live without other adults, or other household adults reduce work to help provide childcare.

This study has several limitations. First, all study results present average outcomes. Subgroup analyses provide some information on the heterogeneity of family financial circumstances around a birth. However, even within subgroups I estimate average effects, which limits the ability to document the range of households' experiences. Next, in the analysis of economic wellbeing around birth, percent changes are used to increase the ability to compare the magnitude of declines across subgroups at very different income levels. While the percent change analysis has this advantage, it is also likely that a change in economic wellbeing of the same percent magnitude may have different meanings for families at different levels of economic wellbeing.

A related limitation is that this study uses only cash and near-cash income to measure family economic wellbeing. In more advantaged households, assets and savings may buffer changes in cash and near-cash income around a birth, and in less advantaged households in-kind benefits such as subsidized housing and public medical insurance may play a similar role. Future research should consider the contribution of these resources to the economic wellbeing of families in the time around a birth. Finally, this study is limited by its descriptive nature. Although theory suggests potential mechanisms, the analysis does not provide evidence of what drives the changes in family economic wellbeing and composition of household income documented in this study. Future research should consider what factors help explain the likelihood, magnitude and duration of declines in family economic wellbeing around a birth.

Despite these limitations, this study provides valuable new information on families' economic circumstances around a birth, showing evidence of average declines in family economic wellbeing, decreases in women's share of household income and growing reliance on public programs around a birth. Family economic security during infancy is important to healthy child development and mother's share of household income is positively associated with women's bargaining power, ability to leave harmful relationships and family investment in children (Lundberg & Pollack, 2007; Sayer & Bianchi, 2000; Wagmiller, et al., 2006). Many US social safety net programs serve families with children. This study suggests that these benefit programs help buffer declines in overall economic wellbeing around birth, but could do more. Scholars suggest child benefit policies, common in other industrialized countries, could improve the economic wellbeing of families with infants (Waldfogel, 2010). Additionally, policies

supporting mother's employment such as paid family leave and childcare subsidies could increase both women's contributions to household income and overall family economic wellbeing around a birth (Blau, 2003; Rossin-Slater, Ruhm, & Waldfogel, 2013). This study expands the knowledgebase available to researchers, practitioners and policy makers interested in understanding and improving women and families' economic wellbeing during the critical time around a birth.

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Table 1. Mother and Household Characteristics in the Birth Month

	Mean or proportion	Range
Under 19	0.071	0-1
20-24	0.206	0-1
25-29	0.295	0-1
30-34	0.270	0-1
over 35	0.159	0-1
White non-Hispanic	0.635	0-1
Black non-Hispanic	0.118	0-1
Hispanic	0.181	0-1
Other race/ethnicity	0.067	0-1
Less than high school	0.153	0-1
High school	0.237	0-1
Some college	0.300	0-1
BA or above	0.310	0-1
First birth	0.333	0-1
Second birth	0.347	0-1
Third or higher birth	0.321	0-1
Single, no other adults	0.107	0-1
Single, with other adults	0.112	0-1
Cohabiting	0.064	0-1
Married, spouse present	0.718	0-1
Number other adults (18+) in household	0.341	0-8
Father in household	0.804	0-1
N	11,615	

Notes. Do not sum to one because of rounding. Mean (continuous variables) and proportion (dichotomous variables) are weighted using SIPP household weights. Number of observations is unweighted.

Table 2. Mean Pre-Pregnancy Outcome (12 Months before Birth Month) by Mother's Educational Attainment and Household Structure in the Birth Month

	Full sample	Less than HS	HS	Some college	BA or above	Single, no other adults	Single, with other adults	Co-habiting	Married, spouse present
Measures of economic wellbeing									
Income-to-needs	2.65	0.92	1.36	2.20	4.64	1.02	1.46	1.23	3.17
Alternative income-to-needs	2.80	1.11	1.56	2.38	4.72	1.32	1.64	2.10	3.24
Gross household income	6,318	3,566	4,444	5,578	9,399	2,776	4,789	4,335	7,205
Composition of household income, level									
Mother's earnings	1,873	396	1,061	1,585	3,302	1,175	688	1,226	2,199
Father's earnings	3,331	1,158	1,807	2,952	5,611	352	57	1,613	4,376
Other household adults' earnings	691	1,337	1,036	672	202	621	3,133	920	321
Public program income	255	551	361	221	87	459	637	415	157
Child support	33	32	47	45	13	79	56	70	20
Other income	135	92	130	104	184	90	218	91	133
Composition of household income, share									
Mother's earnings	0.28	0.12	0.24	0.30	0.36	0.40	0.13	0.28	0.28
Father's earnings	0.46	0.28	0.39	0.47	0.57	0.07	0.01	0.34	0.59
Other household adults' earnings	0.11	0.28	0.17	0.09	0.02	0.12	0.56	0.15	0.04
Public program income	0.10	0.26	0.15	0.09	0.02	0.31	0.23	0.18	0.05
Child support	0.01	0.02	0.02	0.02	0.00	0.05	0.02	0.03	0.00
Other income	0.03	0.03	0.03	0.02	0.03	0.03	0.04	0.02	0.03
N	6,744	1,064	1,580	2,002	2,098	741	823	390	4,790

Notes. Dollar amounts (gross household income and composition of household income, level outcomes) are monthly and expressed in 2013 dollars. Means are weighted using SIPP household weights. Number of observations is unweighted. Father's earnings are non-zero in single, no other adults subgroup because other adults are defined as adults other than the focal child's mother or father. A mother could be classified as single with no other adults if she lives with the father of the infant, but is not married to him and does not identify him an unmarried partner

Table 3. Mean Percent Change in Income-to-needs from Pre-Pregnancy Level, by Distance from Birth Month

		Mother's educational attainment				Household structure			
	Full sample	Less than HS	HS	Some college	BA or above	Single, no other adults	Single, with other adults	Cohabiting	Married, spouse present
-11	3.66**	0.56	4.63	5.96***	3.48*	2.28	-3.56	5.17	4.25**
	(1.59)	(5.99)	(3.87)	(2.15)	(1.95)	(7.91)	(5.07)	(7.11)	(1.65)
-10	3.43**	1.70	5.08	5.92**	3.04	5.58	-0.53	1.56	3.38*
	(1.59)	(6.08)	(5.36)	(2.55)	(2.52)	(8.78)	(5.75)	(11.11)	(1.72)
-9	1.73	-1.09	6.47	3.13	1.08	-4.30	3.63	-5.92	2.25
	(2.33)	(7.14)	(6.06)	(4.97)	(2.30)	(8.99)	(5.96)	(13.77)	(2.26)
-8	0.66	-0.68	0.83	5.11	0.58	-7.43	-0.58	-10.25	2.25
	(2.36)	(8.63)	(5.51)	(4.88)	(2.96)	(8.57)	(6.39)	(13.09)	(2.27)
-7	-2.25	-9.01	-2.71	1.39	3.09	**-23.69***	-0.99	-25.72**	3.04
	(2.44)	(8.53)	(5.03)	(4.76)	(2.70)	**(8.52)**	(6.49)	(12.56)	(2.26)
-6	-2.53	-7.15	-5.28	3.10	3.69	**-27.86***	-1.92	**-39.35***	4.82*
	(2.60)	(9.31)	(4.70)	(4.77)	(3.14)	**(8.24)**	(7.28)	**(11.08)**	(2.47)
-5	-2.20	-9.77	-5.66	4.99	4.89*	**-24.88**	-4.66	**-44.16***	5.95**
	(2.42)	(8.36)	(4.54)	(4.69)	(2.85)	**(9.45)**	(6.64)	**(9.45)**	(2.58)
-4	-4.46*	-13.47	-7.65	4.47	3.39	**-31.97***	-3.95	**-51.80***	6.09**
	(2.32)	(8.26)	(4.63)	(4.32)	(2.86)	**(8.44)**	(8.52)	**(8.10)**	(2.46)
-3	-7.83***	-13.48	-14.77***	**2.71**	**1.35**	**-39.42***	-10.11	**-54.89***	5.00**
	(2.26)	(8.67)	(4.52)	**(3.80)**	**(2.86)**	**(7.67)**	(7.34)	**(7.24)**	(2.18)
-2	-13.30***	-15.12*	-21.17***	**-4.77**	**-1.17**	**-51.25***	-10.76	**-69.58***	3.67
	(1.97)	(7.70)	(3.81)	**(3.27)**	**(2.73)**	**(6.83)**	(7.15)	**(5.04)**	(2.29)
-1	-18.69***	-17.95***	-26.77***	**-13.69*****	**-1.82**	**-56.98***	-11.78*	**-80.39***	1.25
	(1.96)	(6.41)	(3.99)	**(3.49)**	**(2.17)**	**(6.11)**	(6.52)	**(3.35)**	(2.59)
0	-30.71***	-33.33***	-36.30***	-26.56***	**-14.24*****	**-71.04***	-19.38***	**-84.34***	-9.78***
	(1.86)	(5.10)	(3.86)	(3.44)	**(1.93)**	**(3.87)**	(6.57)	**(2.38)**	(2.34)
1	-35.21***	-34.25***	-40.58***	-30.51***	**-21.22*****	**-68.89***	-32.76***	**-79.13***	-18.66***
	(1.80)	(4.79)	(3.57)	(3.49)	**(1.61)**	**(4.47)**	(5.78)	**(3.31)**	(2.28)
2	-35.22***	-34.19***	-37.86***	-30.65***	**-23.34*****	**-62.78***	-33.87***	**-77.19***	-21.09***
	(1.95)	(5.52)	(3.99)	(3.49)	**(1.66)**	**(4.69)**	(5.85)	**(4.08)**	(2.28)
3	-32.02***	-28.53***	-34.18***	-25.22***	**-23.31*****	**-54.87***	-25.06***	**-73.19***	-21.10***
	(1.96)	(5.80)	(4.20)	(3.62)	**(1.89)**	**(5.78)**	(5.37)	**(4.63)**	(2.14)
4	-29.13***	-26.14***	-29.01***	-21.36***	-22.69***	**-48.67***	-19.02***	**-70.36***	-20.55***
	(2.09)	(6.24)	(4.53)	(3.92)	(2.06)	**(7.08)**	(5.82)	**(5.26)**	(2.33)
5	-26.87***	-20.87***	-23.94***	-21.75***	-21.11***	**-46.49***	-19.75***	**-67.92***	-18.44***
	(2.36)	(6.54)	(4.58)	(4.19)	(1.92)	**(7.59)**	(6.33)	**(5.53)**	(2.39)
6	-26.59***	-17.01**	-21.98***	-23.24***	-22.17***	**-49.61***	-20.42***	**-65.24***	-18.13***
	(2.12)	(7.73)	(4.25)	(3.92)	(2.39)	**(6.02)**	(6.49)	**(6.68)**	(2.24)
7	-25.99***	-15.42*	-20.87***	-22.35***	-21.55***	**-47.37***	-23.04***	**-65.33***	-17.55***
	(2.54)	(8.90)	(4.79)	(4.33)	(2.06)	**(6.64)**	(6.85)	**(7.08)**	(2.65)
8	-25.18***	-20.66**	-22.15***	-18.31***	-19.61***	**-49.26***	-23.87***	**-65.50***	-16.58***
	(2.61)	(8.79)	(5.01)	(3.86)	(2.15)	**(7.03)**	(7.23)	**(7.71)**	(2.71)
9	-24.69***	-18.57**	-21.24***	-17.45***	-21.33***	**-43.24***	-24.31***	**-62.60***	-18.17***
	(2.76)	(8.29)	(5.67)	(4.05)	(1.96)	**(7.57)**	(7.69)	**(7.96)**	(2.88)
10	-24.76***	-13.61	-22.23***	-17.56***	-22.43***	**-44.39***	-25.07***	**-58.32***	-18.94***
	(2.45)	(8.55)	(5.56)	(3.36)	(2.27)	**(8.07)**	(7.81)	**(8.73)**	(2.68)
11	-23.64***	-14.81*	-17.98***	-17.59***	-21.43***	**-37.06***	-28.63***	**-60.90***	-17.42***
	(2.55)	(7.52)	(5.55)	(4.40)	(2.30)	**(8.90)**	(7.98)	**(8.60)**	(2.78)
12	-24.50***	-20.69**	-20.82***	-13.29**	-21.36***	**-37.76***	-31.71***	**-55.78***	-18.54***
	(2.77)	(7.83)	(5.79)	(5.16)	(2.29)	**(9.62)**	(8.95)	**(9.95)**	(2.74)
N	226,836	36,713	55,614	67,548	66,961	23,700	28,162	14,215	160,759

Notes. Table reports coefficients from equation (1) in the text. Bold indicates sig. difference from high school (mother's educational attainment) or married, spouse present (household structure) at $p < 0.05$ level. Analyses are weighted using SIPP household weights. Standard errors are clustered at the state level. All models include year fixed effects and an indicator for the reporting month. Coefficients and standard errors are transformed as described in the text.
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4. Mean Percent Change in Alternative Income-to-Needs from Pre-Pregnancy Level, by Distance from Birth Month

		Mother's educational attainment				Household structure			
	Full sample	Less than HS	HS	Some college	BA or above	Single, no other adults	Single, with other adults	Cohabiting	Married, spouse present
-11	2.66**	-1.92	4.23	5.00***	2.31	5.04	-4.32	4.69	2.86*
	(1.10)	(2.98)	(3.00)	(1.80)	(1.91)	(4.53)	(3.21)	(3.07)	(1.47)
-10	1.34	-2.02	0.76	4.55**	1.72	6.00	-3.05	-1.04	1.14
	(1.24)	(3.63)	(3.33)	(2.00)	(2.41)	(4.12)	(4.79)	(5.31)	(1.72)
-9	-0.10	-3.46	3.27	0.91	-0.11	4.00	2.74	-8.79	-0.83
	(1.95)	(4.40)	(3.88)	(3.94)	(1.95)	(5.63)	(5.36)	(6.21)	(2.14)
-8	0.12	-1.21	-0.43	3.23	0.53	0.39	0.70	-5.30	0.04
	(2.13)	(4.70)	(3.58)	(4.23)	(2.80)	(6.10)	(6.15)	(4.88)	(2.28)
-7	-0.72	-4.23	-1.09	1.80	2.20	-9.37	1.23	**-13.20**	1.04
	(2.06)	(4.80)	(3.31)	(4.25)	(2.62)	(6.24)	(5.67)	**(4.98)**	(1.91)
-6	1.06	2.74	-1.04	4.97	3.02	-9.80	1.39	-7.08	2.95
	(2.24)	(6.11)	(3.14)	(4.13)	(3.39)	(6.88)	(5.79)	(4.62)	(2.19)
-5	1.16	-2.81	0.19	5.99	4.30	-9.79	-1.36	-3.92	3.12
	(2.18)	(5.41)	(3.34)	(4.57)	(3.34)	(6.56)	(4.78)	(4.61)	(2.17)
-4	0.54	-3.68	0.00	6.44	3.81	-7.75	1.37	-6.37	2.20
	(2.12)	(4.71)	(3.74)	(4.18)	(3.09)	(5.83)	(5.70)	(6.03)	(2.07)
-3	-0.74	0.03	-3.43	6.18	1.89	**-12.17****	0.12	-4.23	1.26
	(1.87)	(4.88)	(3.50)	(3.79)	(2.88)	**(5.97)**	(5.29)	(6.32)	(1.96)
-2	-2.85	0.06	-4.02	2.51	0.75	**-21.64***	1.67	-9.69	0.34
	(1.83)	(4.79)	(3.15)	(3.61)	(2.87)	**(5.54)**	(5.31)	(6.09)	(2.05)
-1	-5.48***	-1.21	-6.66*	-0.15	-0.69	**-24.74***	-0.05	-12.89**	-1.91
	(1.92)	(4.60)	(3.66)	(4.07)	(2.37)	**(5.39)**	(5.02)	(5.85)	(2.14)
0	-15.62***	-14.83***	-12.31***	-11.36***	-11.91***	**-36.95***	-5.50	-21.52***	-11.98***
	(1.87)	(3.78)	(3.28)	(3.55)	(2.00)	**(4.92)**	(4.43)	(5.26)	(1.96)
1	-22.36***	-18.21***	-19.09***	-18.53***	-19.81***	**-34.61***	-16.41***	-22.98***	-20.43***
	(1.77)	(3.86)	(2.91)	(3.64)	(1.69)	**(5.14)**	(3.22)	(5.15)	(2.01)
2	-23.53***	-19.63***	-17.59***	-20.63***	-21.77***	**-32.39***	**-15.65***	-25.78***	-22.33***
	(1.73)	(3.67)	(2.94)	(3.47)	(1.74)	**(5.49)**	**(3.61)**	(4.80)	(1.81)
3	-22.25***	-14.32***	-17.13***	-18.29***	-22.40***	-25.44***	**-14.75***	-25.84***	-22.00***
	(1.72)	(3.56)	(3.16)	(3.66)	(1.80)	(5.95)	**(3.85)**	(4.52)	(1.81)
4	-20.49***	-12.99***	-13.51***	-15.26***	**-22.80***	-23.39***	**-10.01**	-20.04***	-21.42***
	(1.87)	(3.93)	(3.53)	(3.72)	**(2.06)**	(6.40)	**(4.22)**	(5.43)	(2.01)
5	-19.69***	-11.74***	-13.55***	-14.16***	**-21.73***	-22.70***	-12.60***	-23.31***	-19.90***
	(2.04)	(4.20)	(3.41)	(4.05)	**(1.95)**	(6.77)	(4.56)	(5.33)	(2.10)
6	-19.25***	-7.50	-12.79***	-15.02***	**-21.93***	-23.21***	-13.56***	-18.16***	-19.80***
	(1.90)	(4.75)	(3.12)	(3.89)	**(2.32)**	(5.98)	(4.62)	(4.72)	(1.97)
7	-19.75***	-8.82	-13.59***	-15.89***	**-21.05***	-23.76***	-13.28***	-21.03***	-20.34***
	(2.28)	(5.39)	(3.22)	(4.25)	**(1.94)**	(6.32)	(4.49)	(5.31)	(2.18)
8	-18.46***	-13.25**	-14.11***	-11.33***	-18.89***	-25.48***	-15.55***	-20.60***	-18.46***
	(2.06)	(5.21)	(3.48)	(3.67)	(1.93)	(5.64)	(4.18)	(5.04)	(2.25)
9	-18.19***	-9.63*	-14.34***	-11.37***	-19.98***	-21.55***	-13.25***	-21.39***	-19.17***
	(2.15)	(5.14)	(3.63)	(3.74)	(1.85)	(6.59)	(4.45)	(4.64)	(2.40)
10	-18.66***	-7.60	-15.49***	-12.05***	-20.58***	-19.19**	**-12.06**	-23.20***	-20.23***
	(2.15)	(5.09)	(3.86)	(3.56)	(2.36)	(7.74)	**(4.77)**	(4.81)	(2.38)
11	-17.56***	-5.64	-13.08***	-12.14***	-19.67***	-13.90	-15.46***	-25.88***	-18.64***
	(2.15)	(4.90)	(3.85)	(4.12)	(2.28)	(8.45)	(5.10)	(5.23)	(2.39)
12	-19.28***	-10.56**	-13.93***	-12.66***	-20.82***	-19.72**	-19.67***	-26.15***	-19.46***
	(2.19)	(5.25)	(3.59)	(4.35)	(2.04)	(8.52)	(5.74)	(5.06)	(2.34)
N	226,836	36,713	55,614	67,548	66,961	23,700	28,162	14,215	160,759

Notes. Table reports coefficients from equation (1) in the text. Bold indicates sig. difference from high school (mother's educational attainment) or married, spouse present (household structure) at p < 0.05 level. Analyses are weighted using SIPP household weights. Standard errors are clustered at the state level. All models include year fixed effects and an indicator for the reporting month. Coefficients and standard errors are transformed as described in the text.
*** p<0.01, ** p<0.05, * p<0.1

Table 5. Mean Percent Change in Gross Household Income from Pre-Pregnancy Level, by Distance from Birth Month

|		Mother's educational attainment				Household structure			
	Full sample	Less than HS	HS	Some college	BA or above	Single, no other adults	Single, with other adults	Cohabiting	Married, spouse present
-11	2.31**	-2.39	3.53	4.69**	2.07	4.93	-4.80	4.14	2.58*
	(1.07)	(3.17)	(3.26)	(1.85)	(1.93)	(4.70)	(3.44)	(3.19)	(1.46)
-10	1.02	-2.58	0.70	3.88*	1.38	5.88	-3.19	-2.39	0.92
	(1.24)	(3.83)	(3.51)	(1.97)	(2.33)	(4.38)	(5.35)	(5.62)	(1.69)
-9	-0.55	-4.74	3.28	0.28	-0.53	2.87	2.29	-9.57	-1.07
	(1.95)	(4.58)	(4.05)	(4.12)	(1.93)	(5.51)	(5.76)	(6.37)	(2.17)
-8	-0.20	-2.54	-0.45	2.88	0.20	-0.87	0.09	-5.82	-0.05
	(2.16)	(5.04)	(3.72)	(4.43)	(2.74)	(6.36)	(6.39)	(5.21)	(2.29)
-7	-1.23	-5.70	-1.27	1.00	1.75	-11.11*	0.33	**-14.28***	0.87
	(2.05)	(4.99)	(3.38)	(4.44)	(2.62)	(6.20)	(5.87)	**(4.45)**	(1.90)
-6	0.44	1.02	-1.44	4.22	2.24	**-12.13***	1.18	-8.35*	2.60
	(2.20)	(6.11)	(3.35)	(4.31)	(3.42)	**(6.80)**	(6.05)	(4.91)	(2.13)
-5	0.39	-5.01	-0.66	5.37	3.50	**-13.31****	-1.10	-5.52	2.72
	(2.18)	(5.19)	(3.52)	(4.71)	(3.34)	**(6.50)**	(5.06)	(3.96)	(2.16)
-4	-0.10	-5.77	-0.74	5.63	3.19	**-12.06****	2.71	-8.58	1.97
	(2.12)	(4.49)	(4.01)	(4.23)	(3.10)	**(5.68)**	(5.90)	(5.45)	(2.10)
-3	-1.46	-2.64	-4.27	5.10	1.45	**-16.92*****	2.26	-6.71	0.92
	(1.85)	(4.85)	(3.66)	(3.79)	(2.93)	**(5.89)**	(5.55)	(5.79)	(1.95)
-2	-3.42*	-2.96	-4.48	1.52	0.34	**-26.62*****	4.45	-12.19**	0.24
	(1.81)	(4.76)	(3.19)	(3.65)	(2.95)	**(5.49)**	(5.65)	(5.48)	(2.08)
-1	-5.84***	-4.55	-6.91*	-0.71	-0.99	**-29.54*****	2.99	**-15.38***	-1.79
	(1.88)	(4.77)	(3.71)	(4.03)	(2.39)	**(5.31)**	(5.55)	**(6.13)**	(2.15)
0	-10.40***	-13.68***	-7.05*	-5.59	-5.97***	**-38.75*****	**3.85**	**-18.97*****	-5.64***
	(1.90)	(4.33)	(3.58)	(3.83)	(2.20)	**(5.05)**	**(5.01)**	**(5.82)**	(2.06)
1	-10.23***	-10.17**	-7.05**	-5.31	-6.56***	**-30.28*****	-2.46	-13.39**	-6.92***
	(2.04)	(4.49)	(3.50)	(4.33)	(2.11)	**(5.71)**	(4.15)	(5.87)	(2.41)
2	-8.71***	-8.89**	-2.15	-4.96	-5.76***	**-24.21*****	0.09	-14.18**	-6.17***
	(2.02)	(4.13)	(3.72)	(4.16)	(2.06)	**(6.54)**	(4.49)	(5.76)	(2.22)
3	-5.51***	-1.96	0.64	-0.29	-4.85**	-14.63**	3.15	-12.87**	-4.16*
	(2.04)	(3.97)	(4.09)	(4.53)	(2.28)	(7.24)	(4.73)	(5.34)	(2.27)
4	-3.39	-0.17	4.37	3.55	-5.15*	-12.72*	**8.18**	-4.84	-3.42
	(2.22)	(4.75)	(4.64)	(4.57)	(2.58)	(7.53)	**(5.53)**	(5.56)	(2.43)
5	-2.50	1.18	4.42	4.70	-3.90	-11.47	3.56	-8.73*	-1.47
	(2.38)	(4.95)	(4.44)	(4.80)	(2.41)	(8.06)	(5.60)	(5.20)	(2.59)
6	-2.12	4.99	5.68	3.22	-4.08	-11.42	2.59	-3.63	-1.59
	(2.21)	(5.42)	(4.07)	(4.68)	(2.89)	(7.13)	(5.84)	(5.11)	(2.47)
7	-2.95	2.73	4.59	2.20	-3.46	-12.01	2.36	-7.15	-2.52
	(2.67)	(5.79)	(4.06)	(5.09)	(2.41)	(7.55)	(5.60)	(5.65)	(2.73)
8	-1.60	-2.29	2.89	7.63*	-0.56	**-14.95****	-1.17	-6.92	-0.22
	(2.36)	(5.95)	(4.22)	(4.35)	(2.46)	**(6.52)**	(5.35)	(5.35)	(2.80)
9	-1.15	1.53	3.05	7.97*	-2.03	-9.68	0.29	-7.79	-0.87
	(2.45)	(5.89)	(4.62)	(4.49)	(2.25)	(7.83)	(5.74)	(5.22)	(2.99)
10	-2.00	3.82	1.38	6.35	-2.76	-6.81	0.64	-9.59*	-2.46
	(2.46)	(6.05)	(5.03)	(4.21)	(2.88)	(9.20)	(5.67)	(5.38)	(2.92)
11	-0.76	6.15	3.90	6.07	-1.56	-0.64	-3.15	-12.45**	-0.68
	(2.47)	(5.78)	(4.80)	(4.84)	(2.89)	(10.25)	(6.18)	(6.16)	(2.91)
12	-2.49	0.87	3.43	5.89	-2.98	-7.13	-7.40	-11.83**	-1.39
	(2.62)	(6.04)	(4.64)	(5.20)	(2.56)	(10.16)	(7.10)	(5.78)	(2.88)
N	226,836	36,713	55,614	67,548	66,961	23,700	28,162	14,215	160,759

Notes. Table reports coefficients from equation (1) in the text. Bold indicates sig. difference from high school (mother's education) or married, spouse present (family type) at p < 0.05 level. Analyses are weighted using SIPP household weights. Standard errors are clustered at the state level. All models include year fixed effects and an indicator for the reporting month. Coefficients and standard errors are transformed as described in the text.
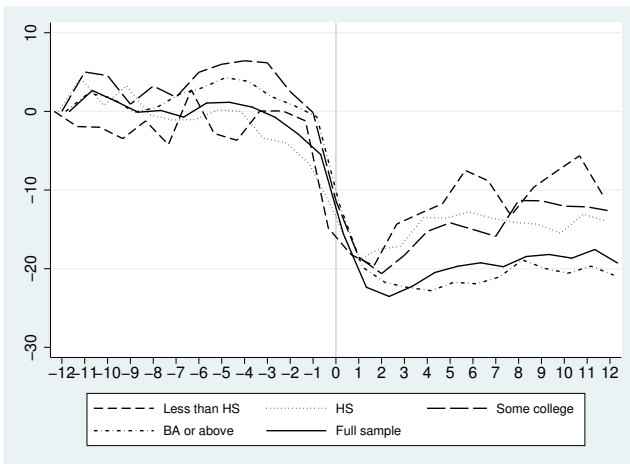*** p<0.01, ** p<0.05, * p<0.1

Figure 1: Mean Percent Change in Economic Wellbeing from Pre-Pregnancy Level, by Distance from Birth Month
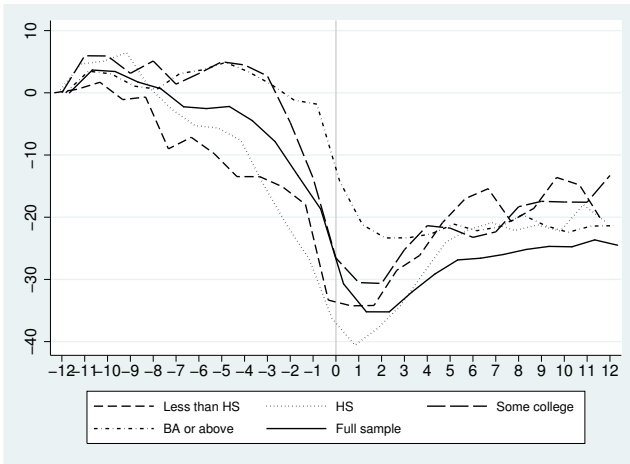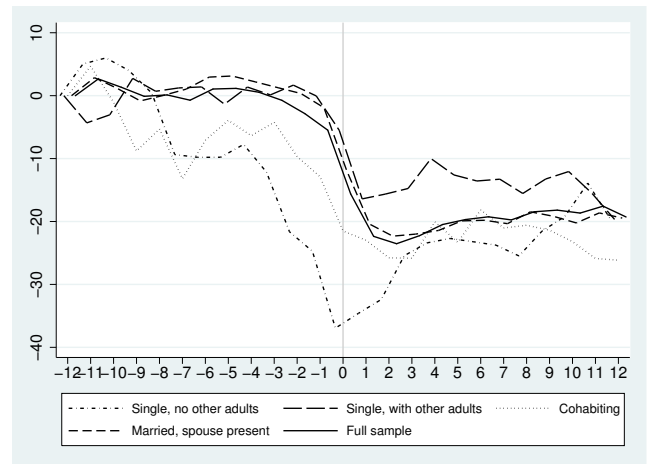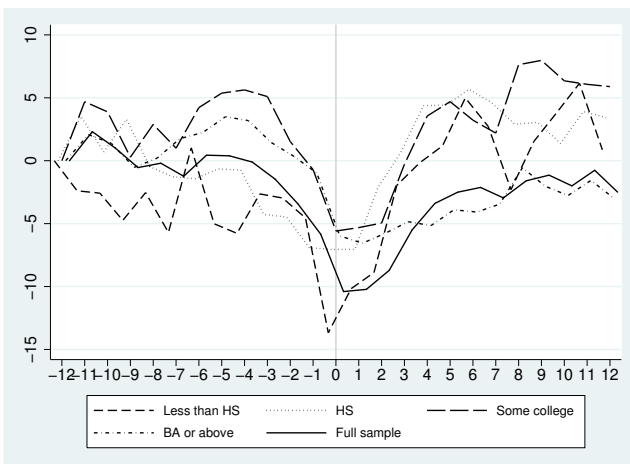

Income-to-needs
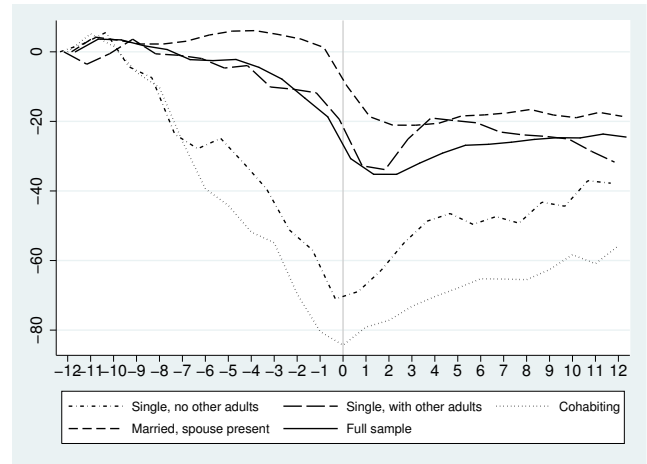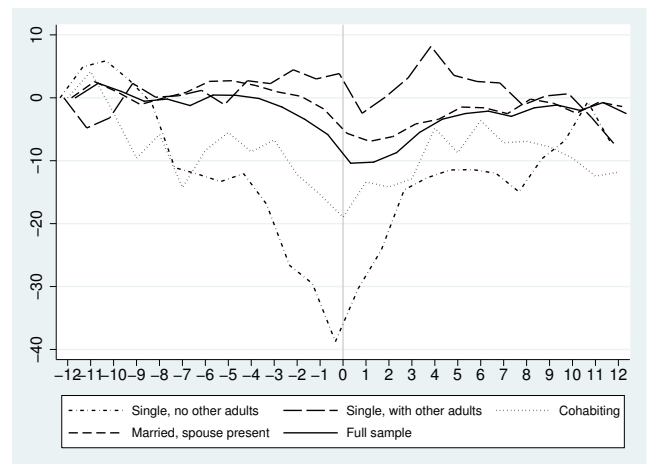
Income-to-needs

Alternative Income-to-needs

Alternative Income-to-needs

Gross household income

Gross household income

Notes. Figures display coefficients from equation (1) in text, reported in Tables 3-5, and can be interpreted as the mean percent change in the outcome from pre-pregnancy level (measured in the month one year before the birth month). Measure of economic wellbeing used listed below each sub-figure. Details of the specification included in text.

Figure 2a: Level of Income by Source and Distance from Birth Month
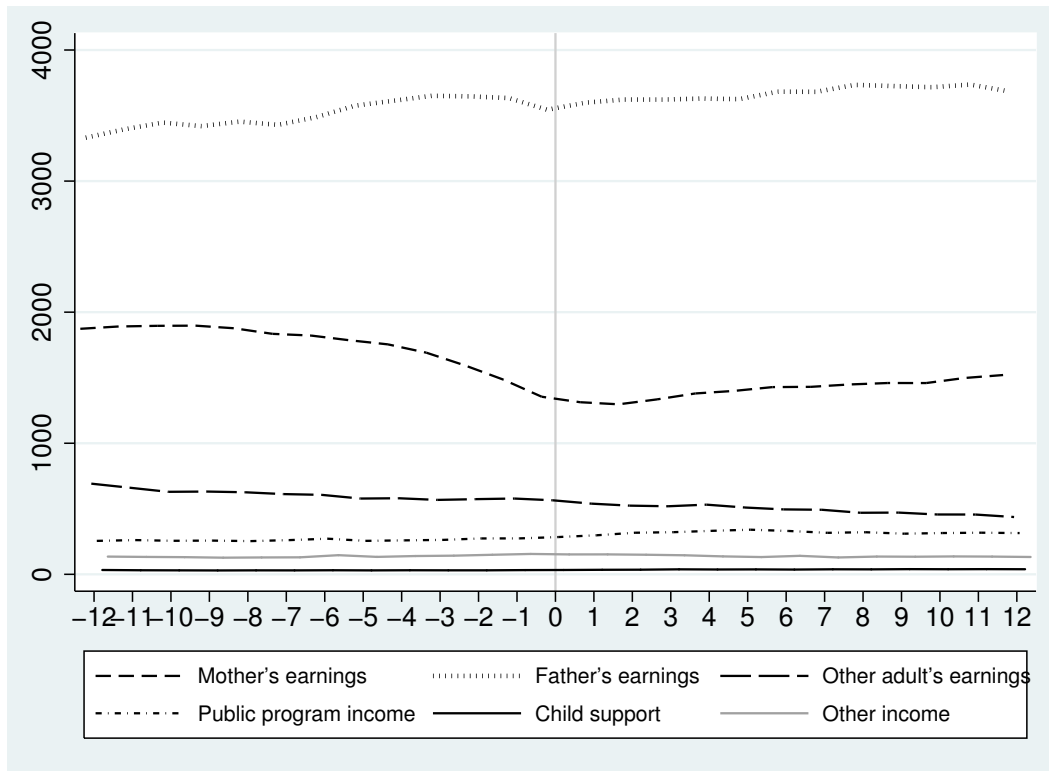
Full sample
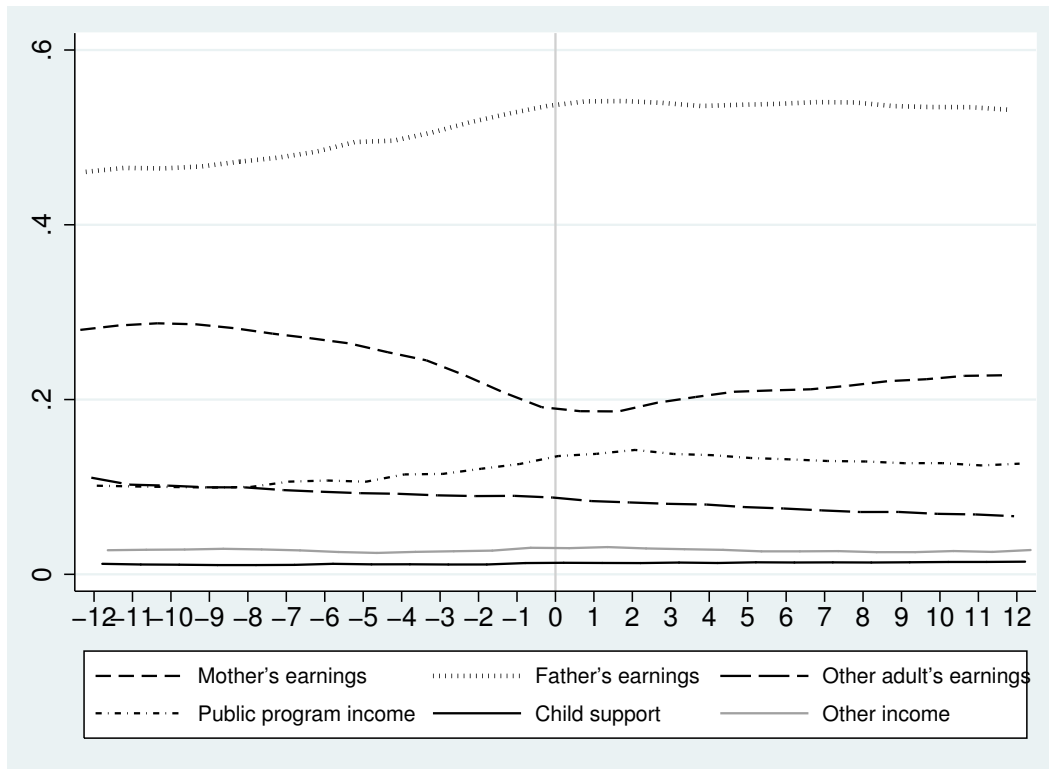Notes. Figures display coefficients from equation (2) in text (added to the weighted mean of each income source in the month one year before the birth month), and can be interpreted as the mean monthly level of each income source. All income expressed in 2013 dollars. Details of the specification included in text.
Sample size: 226,836 (Full sample)

Figure 2b: Level of Income by Source and Distance from Birth Month
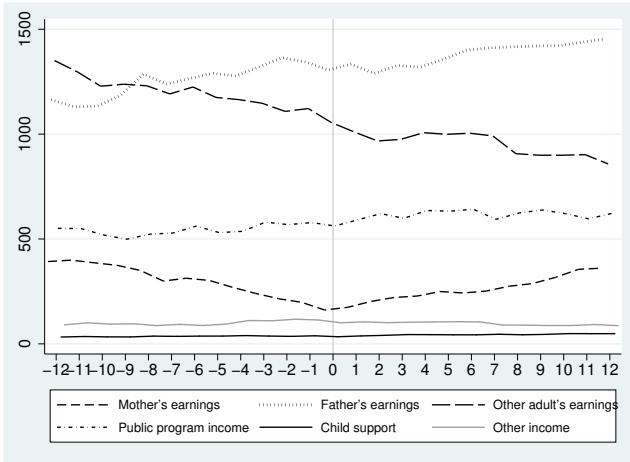
Less than high school
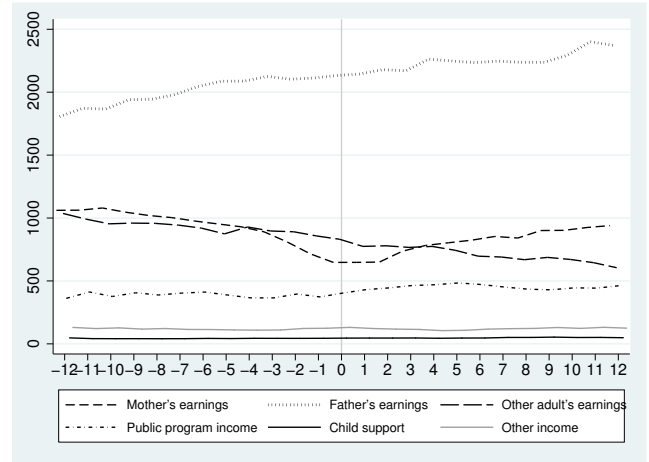
High school
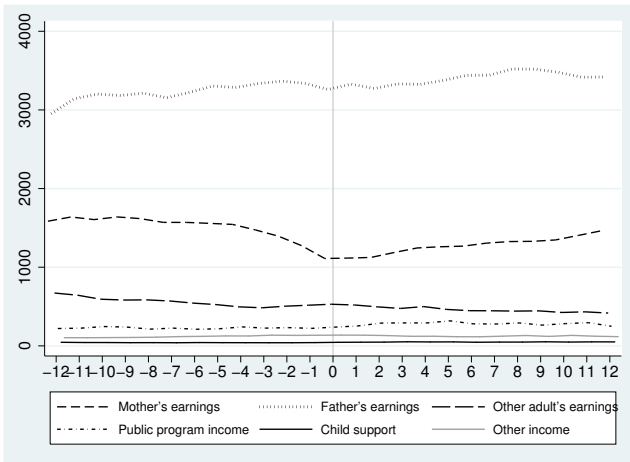
Some college
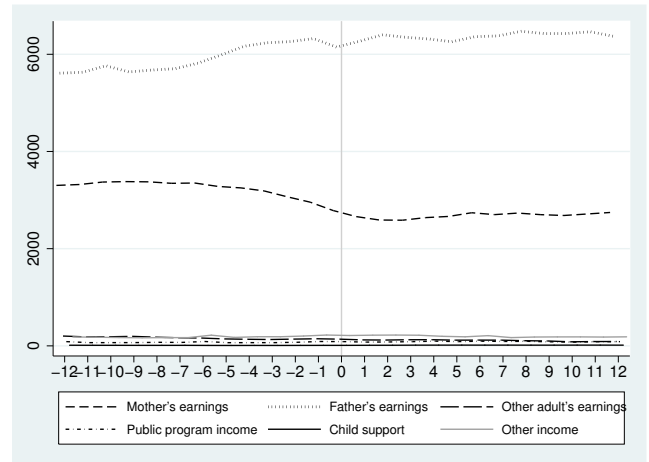
BA or above

Notes. Figures display coefficients from equation (2) in text (added to the weighted mean of each income source in the month one year before the birth month), and can be interpreted as the mean monthly level of each income source. All income expressed in 2013 dollars. Sample listed below each sub-figure. Details of the specification included in text. Sample size: 36,713 (Less than HS); 55,614 (HS); 67,548 (Some college); 66,961 (BA or above)

Figure 2c: Level of Income by Source and Distance from Birth Month
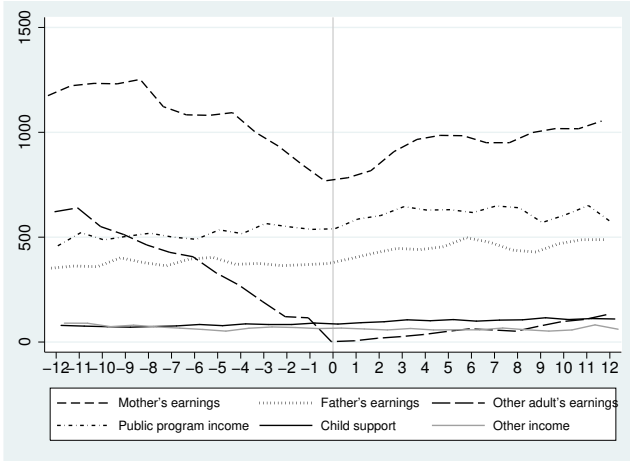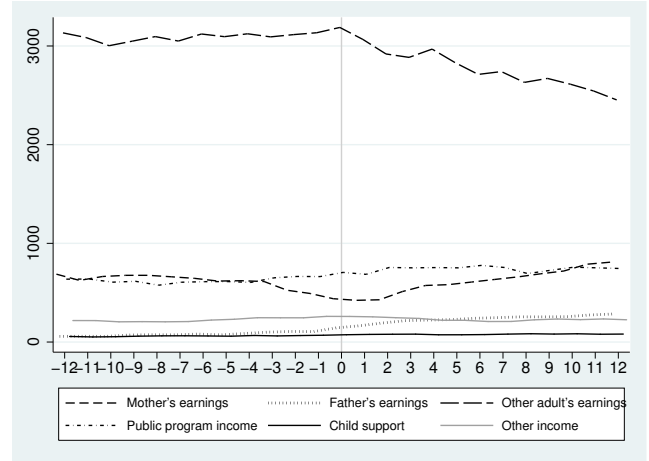
Single, no other adults

Single, with other adults
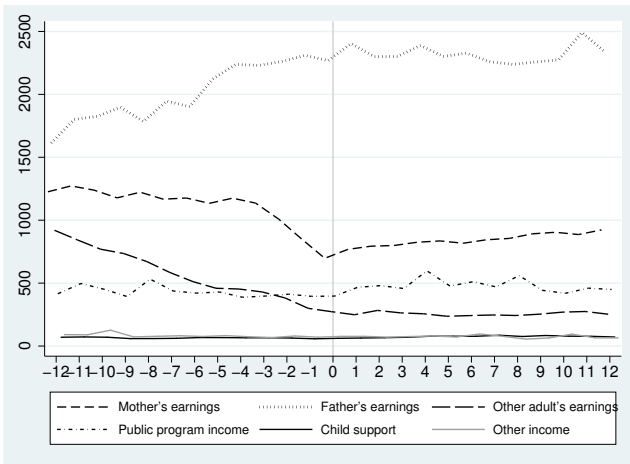
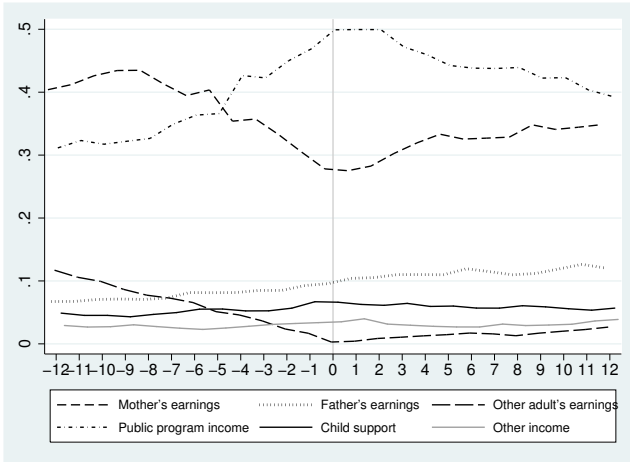Cohabiting
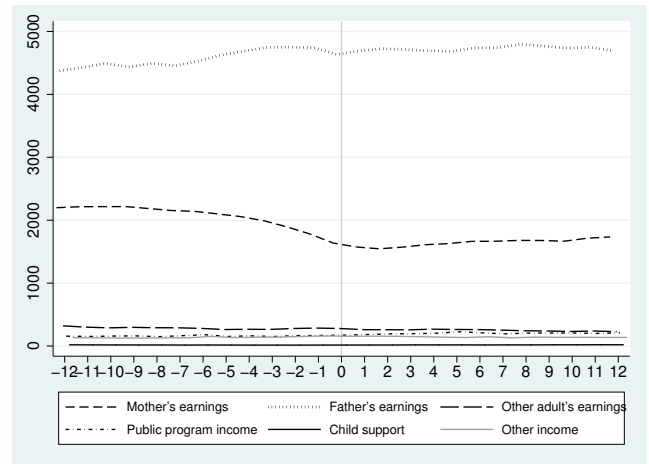
Married, spouse present

Notes. Figures display coefficients from equation (2) in text (added to the weighted mean of each income source in the month one year before the birth month), and can be interpreted as the mean monthly level of each income source. All income expressed in 2013 dollars. Sample listed below each sub-figure. Details of the specification included in text. Father's earnings are non-zero in the single, no other adults subgroup because I define other adults as adults other than the new infant's mother and father. So a mother could be classified as single with no other adults if she lives with the father of the focal child, but is not married to him and does not identify him as partner. Sample size: 23,700 (Single, no other adults); 28,162 (Single, with other adults); 14,215 (Cohabiting); 160,759 (Married, spouse present)

Figure 3a: Share of Gross Household Income by Source and Distance from Birth Month
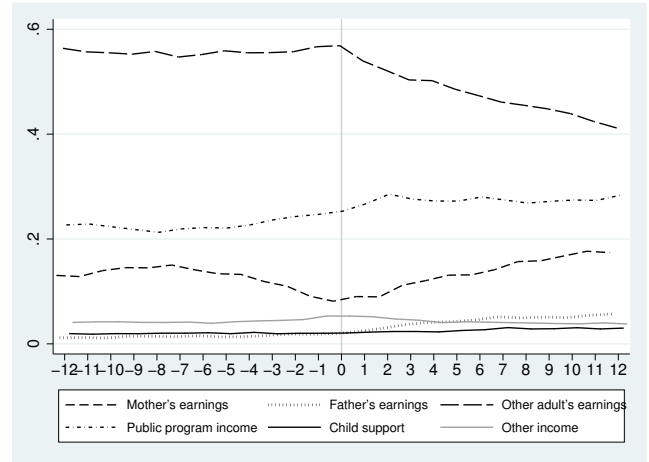

Full sample

Notes. Figures display coefficients from equation (2) in text (added to the weighted mean of each outcome in the month one year before the birth month), and can be interpreted as the mean monthly contribution of each income source to gross household income. Details of the specification included in text. Sample size: 226,836 (Full sample)

Figure 3b: Share of Gross Household Income by Source and Distance from Birth Month

Less than high school

High school
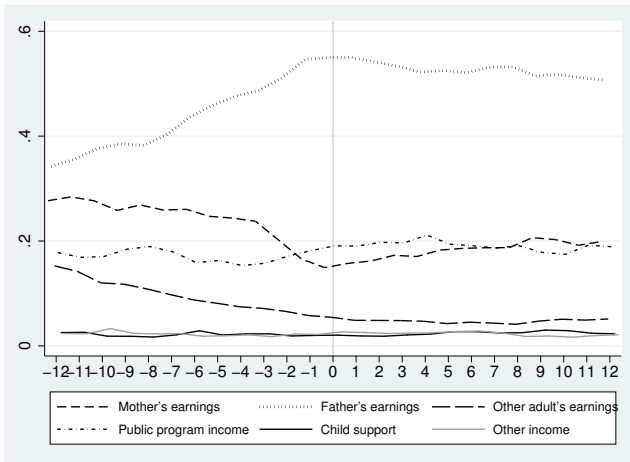
Some college

BA or above

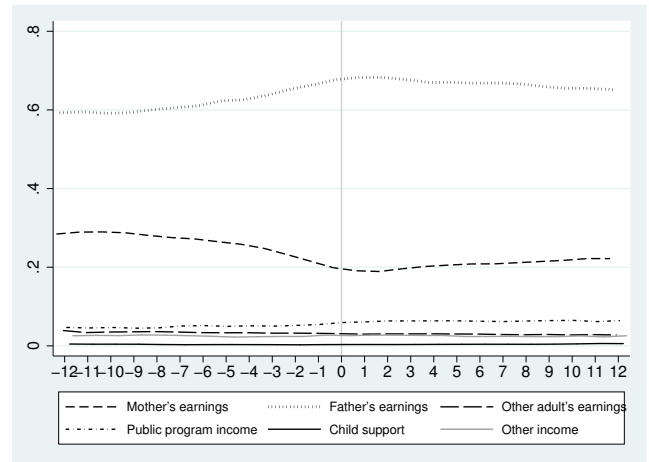Figure 3c: Share of Gross Household Income by Source and Distance from Birth Month

Single, no other adults

Single, with other adults

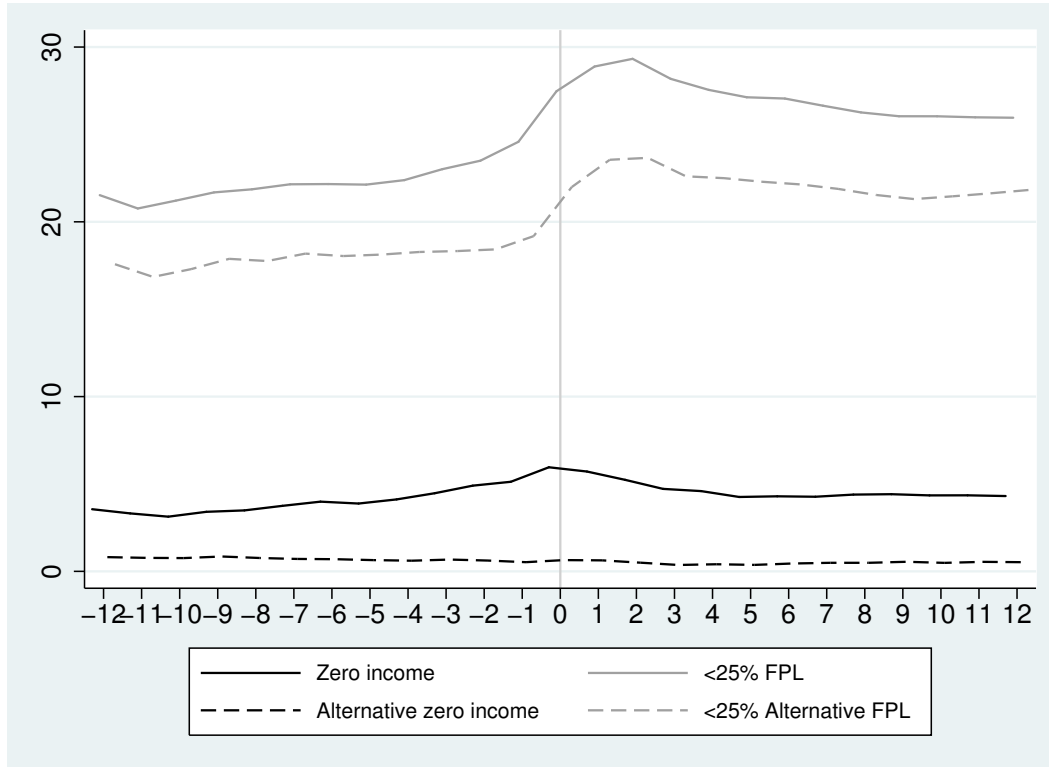Cohabiting

Married, spouse present

Notes. Figures display coefficients from equation (2) in text (added to the weighted mean of each outcome in the month one year before the birth month), and can be interpreted as the mean monthly contribution of each income source to gross household income. Sample listed below each sub-figure. Details of the specification included in text. Sample size: 23,700 (Single, no other adults); 28,162 (Single, with other adults); 14,215 (Cohabiting); 160,759 (Married, spouse present)

Table 6. Percent of Household-Birth-Month Observations with Zero or Very Low Income by Mother's Educational Attainment and Household Structure

	Zero income	Alternative zero income	<25% FPL	<25% Alternative FPL	N
Full sample	4.46	0.59	23.93	19.11	226,836
Less than high school	9.89	1.09	43.35	33.48	36,713
High school	7.18	0.75	34.64	26.95	55,614
Some college	3.68	0.57	22.59	18.17	67,548
BA or above	0.61	0.26	8.03	7.35	66,961
Single, no other adults	12.75	1.58	44.29	29.82	23,700
Single, with other adults	5.92	0.52	32.89	25.50	28,162
Cohabiting	25.12	0.57	48.01	18.22	14,215
Married, spouse present	1.35	0.46	17.71	16.72	160,759

Notes. Weighted with SIPP household weights. Sample is at the household-birth-month level (n=226,836). Zero income indicates a value of zero on all income included in the numerator of the study income-to-needs outcome variable. Alternative zero income indicates a value of zero on all income included in the numerator of the alternative income-to-needs study outcome variable, which adds near-cash public programs, refundable tax credits and unrelated household adult's earnings. <25% FPL indicates income below 25 percent of the federal povery level (FPL), or less than 0.25 on the income-to-needs study outcome variable. <25% Alternative FPL indicates values of less than 0.25 on the study alternative income-to-needs outcome variable, which adds near-cash public programs, refundable tax credits and unrelated household adult's earnings.

Figure 4: Percent of Households with Zero or Very Low Income by Distance from Birth Month

Notes. Figures display coefficients from equation (2) in text (added to the weighted mean in the month one year before the birth month), and can be interpreted as monthly percent of households with zero or very low income. Sample is full study sample (n=226,836 mother-birth-months). *Zero income* indicates a value of zero on all income included in the numerator of the study income-to-needs outcome variable. *Alternative zero income* indicates a value of zero on all income included in the numerator of the alternative income-to-needs study outcome variable, which includes near-cash public programs, refundable tax credits and unrelated household adult's earnings. *<25% FPL* indicates income below 25 percent of the federal povery level, or less than 0.25 on the income-to-needs study outcome variable. *<25% Alternative FPL* indicates values of less than 0.25 on the study alternative income-to-needs outcome variable, which adds near-cash public programs, refundable tax credits and unrelated household adult's earnings.

Table 7. Length of Zero or Very Low Income Spells, for Households with Zero or Very Low Income in Birth Month

	Households with spell encompasing birth month (weighted percent)	Households with spell encompasing birth month (N)	length of spell encompasing birth month (months)	
			Mean (weighted)	Range
Zero income	6.03	729	7.65	1-25
Alternative zero income	0.66	76	3.94	1-15
<25% FPL	25.83	3,329	13.14	1-25
<25% Alternative FPL	20.21	2,642	12.59	1-25

Notes. Analyses are weighted with SIPP household weights, where indicated. Sample is full sample at household-birth level (n= 11,615 mother-births). The maximum spell length is truncated by the study timeframe of 25 months. Zero income indicates a value of zero on all income included in the numerator of the study income-to-needs outcome variable. Alternative zero income indicates a value of zero on all income included in the numerator of the alternative income-to-needs study outcome variable, which adds near-cash public programs, refundable tax credits and unrelated household adult's earnings. <25% FPL indicates income below 25 percent of the FPL, or less than 0.25 on the income-to-needs study outcome variable. <25% Alternative FPL indicates values of less than 0.25 on the study alternative income-to-needs outcome variable, which adds near-cash public programs, refundable tax credits and unrelated household adult's earnings.

Appendix: Sources of Income Included in Study Outcome Variables

Family Economic Wellbeing

Income-to-needs
Total pre-tax money income from all household members related by marriage or birth /
Official poverty threshold

Alternative income-to-needs
[Total pre-tax money income from all household members related by marriage or birth +
SNAP + WIC + EITC + CTC + Total income from non-related household members] /
Official poverty threshold, scaled up to include non-related household members

Gross household income
[Total pre-tax money income from all household members related by marriage or birth +
SNAP + WIC + EITC + CTC + Total income from non-related household members]

Composition of Household Income

Level of income, by source

Mother's earnings
Wages and salary
Income from self-employment

Father's earnings
Wages and salary
Income from self-employment

Other adults' earnings
Wages and salary
Income from self-employment

Public program income
Supplemental Nutrition Assistance Program (SNAP)
Special Supplemental Nutritional Program for Women, Infants and Children (WIC)
Earned Income Tax Credit (EITC)
Refundable portion of Child Tax Credit (CTC)
Aid to Families with Dependent Children / Temporary Assistance to Needy Families
Federal and state Supplemental Security Income
General assistance or general relief amount
Other welfare
Social Security
State unemployment compensation amount

Child support
Child support
Child support pass through

Other income
Dividend income
Interest income
Property/rental income
Food assistance
Clothing assistance
Short-term cash assistance
Railroad retirement amount
Supplemental unemployment benefits amount
Other unemployment compensation (strike pay, union benefits, Trade Adjustment Act benefits)
Veterans' compensation or benefits amount
Workers' compensation amount
State temporary sickness or disability benefits amount
Employer or union temporary sickness policy amount
Payments from a sickness, accident, or disability insurance policy purchased on own
Employer disability payment amount
Foster childcare payment amount
Alimony payment amount
Company or union pension amount
Federal civil service or other Federal civilian employee pension amount
U.S. military retirement amount
National Guard or Reserve Forces retirement amount
State government pension amount
Local government pension amount
Income from paid-up life insurance policies or annuities amount
Estates and trusts amount
Other payments for retirement, disability, or survivor amount
GI bill education benefits amount
Income assistance from a charitable group amount
Money from relatives or friends amount
Lump sum payment amount
Rent from roomers or boarders amount
National Guard or Reserve pay amount
Incidental or casual earnings amount
Other cash income not included elsewhere amount

Share of household income, by source

Income source / *Gross household income*