QUALITY OF CONTRACEPTIVE USE AND WOMEN’S PAID WORK AND EARNINGS IN PERI-URBAN ETHIOPIA

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ABSTRACT
Economic and reproductive empowerment mutually reinforce each other. However, while many studies have examined the importance of economic empowerment for reproductive empowerment, few have investigated the reverse relationship, especially in Sub-Saharan Africa. This study uses retrospective contraceptive-use history and panel data from two time points from a peri-urban community in Ethiopia to explore the impact of quality of contraceptive use as measured by duration of use and type of method on a woman’s ability to participate in the labor force, receive payment for work, and contribute to family income. Multivariate regression models were implemented based on the nature of the outcome variable. Women who reported more consistent use had statistically significant higher odds of working in the labor force and receiving cash payments. The findings illustrate the critical role of contraceptive use in enabling women to participate in the labor force and receive payment for their work.

KEYWORDS
Contraceptive use, women’s paid work, Ethiopia, economic empowerment, reproductive rights

JEL Codes: J30

INTRODUCTION
Women’s economic rights, especially in relation to their right to work in the labor market and earn income, have been demonstrated to advance economies, secure more inclusive growth, lift communities and households out of poverty, and foster gender equality (Costa, Silva, and Vaz 2009; Cuberes and Teignier 2014). The realization of optimal sexual and reproductive health, particularly access to modern contraception, can play a critical role in paving the way for women’s economic empowerment (for a review, see Finlay and Lee [2018]). Women bear a higher physical and
opportunity cost of bearing children and continue to be responsible for a greater share of the household care burden. This makes it hard for them to invest in their human capital and frequently relegates them to seek employment in the informal economy with insecure work conditions and volatile earnings, where economic rights are circumscribed and there is a high probability of remaining in poverty (ILO 2018). Access to modern contraception can provide women greater control over their childbearing decisions, reduce their care burden, and foster economic empowerment.

There are several theoretical pathways by which access to and availability of modern contraceptives may potentially increase women’s social and economic freedoms and promote economic empowerment both directly as well as indirectly. Directly, the use of modern contraception provides women with the concrete ability to delay a pregnancy, which gives women the opportunity to make decisions about their future lives by investing in their education or making strategic decisions about their current and future labor market participation and taking advantage of economic opportunities, such as starting a business (Goldin and Katz 2002; Bailey 2006; Silverman, Birdsall, and Glassman 2016). Similarly, optimal spacing and limiting births can reduce women’s overall care burden and enable more continued participation in the formal labor market and increase their lifetime earnings as opposed to being segregated into the informal sector, or more part-time and interrupted work, which offers flexibility but reduced earnings (International Planned Parenthood Federation 2017). Indirectly, due to the predominance of female-based methods, modern contraceptive use allows women greater control over reproductive decision making than was possible with traditional contraceptive methods as its use is not contingent on a man’s consent or knowledge, and hence allows women greater freedom to make their own reproductive decisions and align them with economic activities of their choosing (Bailey 2006). Ultimately, access to modern contraception provides women the opportunity to earn and learn, acquire more skills, reduce their care burden, and enter the formal labor market, raising their lifetime earnings and contribution to family income, which in turn can influence behaviors at the household level and beyond and advance gender equity (Canning and Schultz 2012; Sonfield et al. 2013).

Clearly, there are strong theoretical linkages between adoption of modern contraceptive methods and economic empowerment, but the empirical evidence linking them is limited. Much of the rigorous evidence looking at the relationship between contraceptive use and women’s paid work comes from the United States and developed economies, where historical data is available that documents the availability of the pill (Canning and Schultz 2012). These studies have documented how pill use allowed young women to invest in their education and careers,
delay marriage and first births, as well as increase women’s labor force participation (Goldin and Katz 2002; Bailey 2006). From developing countries, the Matlab study from Bangladesh (Canning and Schultz 2012) and the Pro-Familia study from Colombia (Miller 2010) primarily provide robust evidence on the linkages between contraceptive use and economic empowerment. However, there is hardly any evidence from Sub-Saharan Africa on this relationship. Furthermore, available studies focus on overall contraceptive uptake and do not examine how quality of contraceptive use in terms of length of use and effectiveness of method adopted can impact a woman’s ability to participate in paid work (Sonfield et al. 2013). This is critical to understand, especially in settings such as Sub-Saharan Africa, where contraceptive methods are often restricted within the marital context, and spacing of births is a primary concern. Moreover, in this context, supply-side factors and stock-outs make access to method of choice difficult (Shiferaw et al. 2017). Finally, studies that examine the relationship between reproductive and economic empowerment largely rely on frequency of women’s participation in the labor force as a proxy for women’s economic empowerment, which ignores the reality of many women, especially in a context such as Sub-Saharan Africa, where paid work is extractive and oppressive and undertaken out of economic imperative for survival and does not necessarily contribute toward their empowerment (Kabeer 2012). Hence, there is a need for research to examine more nuanced measures of economic empowerment that embrace the quality of labor market work beyond mere participation in the labor force, such as participation in the formal workforce or being paid for work as well as contribution to family income, which potentially enhance women’s bargaining power in the household and are more likely to be truly empowering (Finlay and Lee 2018).

We begin to address these challenges with unique data from Sebeta, a rapidly growing town close to Addis Ababa, Ethiopia. Given the increasing popularity of modern contraceptive methods and women’s rising labor force participation in Ethiopia, especially in the urban areas, a peri-urban site in Ethiopia was deemed well suited for conducting an analysis on quality of contraceptive use as well as women’s labor force participation. According to the demographic and health surveys (DHS), modern contraceptive methods are rising in popularity in Ethiopia, with a 30 percent increase in use among married women since 2000 (Measure DHS and ICF Macro 2016). Women’s labor force participation is also on the rise, with 38 percent of women ages 15–49 years currently working (Measure DHS and ICF Macro 2016). The study team collected detailed and nuanced measures that assessed quality of women’s paid work and contraceptive use and examined the relationship between duration of contraceptive use and type of method used on women’s ability to work for pay, her earnings,
and her contribution to family income. Using these data, we examined two key research questions. First, we examined if a woman who used a modern contraceptive method consistently for a longer duration of time was more likely to be working for pay, be paid, and be making a greater contribution to family income as compared to a woman who has been using a method for a shorter duration of time. In addition, we assessed if a woman who reports using a more effective contraceptive method is more likely to be working, be paid, and be making a greater contribution to family income as compared to a woman who is using a less effective method.

A key challenge while examining these relationships is the simultaneity inherent between reproductive and economic empowerment outcomes. To address this challenge, we used two strategies. For the contraceptive duration analysis, we relied on retrospective data collected using the calendar method, which meticulously documents a woman’s contraceptive-use history going back month-by-month. Demographic surveys such as the DHS routinely include a month-by-month calendar for a five-year reference period before the survey for the recording of fertility-related events such as contraceptive use. As in the case of all retrospective data collection methods, the approach is subject to recall bias. However, the calendar method uses a timeline method of data collection that has been designed to reduce bias by assisting respondents in recalling information by placing events in a chronological sequence and offering event clues to help guide their memory (Glasner and van der Vaart 2009). For the type of method analysis, we took advantage of the panel design of the study and used data from two time points. Specifically, we conducted the analysis with baseline contraceptive-use measures and utilized work measures from the follow-up survey data to address issues of temporality, while controlling for participation in paid work at baseline.

LITERATURE REVIEW

Contraceptive use and women’s economic empowerment

In the US, studies have been able to establish that contraception not only allows women’s greater labor force participation but also improves the quality of their participation. For example, Martha J. Bailey (2006) found that the availability of the pill greatly increased young women’s labor force participation as well as the number of hours worked for pay as compared to women of earlier decades without access to the pill. The study also found that early legal access to contraception increased women’s formal labor force participation by 8 percent. Similarly, Claudia Goldin and Lawrence F. Katz (2000) found that access to the pill allowed more women in the US to choose professional career tracks like law and medicine. Their
study estimated that the pill accounted for an over 30 percent increase in the proportion of women in skilled careers between 1970 and 1990. Moreover, US women with early legal access to contraception accumulated 650 extra hours of paid work experience by age 35, which in turn allowed for advancement in their careers and greater long-term earnings (Goldin and Katz 2002). There is also indication that in the US, adoption of contraception led to an increase in women’s earnings and was responsible for reducing the wage gap between women’s and men’s salaries (Bailey, Hershbein, and Miller 2012).

Limited studies from developing-country contexts also suggest that availability of modern contraception fosters women’s economic empowerment. For example, a study using survey data in Bolivia showed that contraceptive use was associated with working for pay outside the home (Barnett and Stein 1998). The Matlab study from Bangladesh, where families in seventy-one of the 141 villages were part of a treatment area in which trained community health workers visited households to provide contraceptives as well as maternal and child health services and supplies, found that women in villages with the outreach program reported earnings that were 40 percent higher than those in the comparison areas. These women also accumulated more household assets and were more productive than women from the comparison communities (Canning and Schultz 2012).

Yet, studies from the developing countries have highlighted the critical importance of being cautious when viewing paid work as a measure of empowerment since paid work is often driven by the need to survive in these contexts and may not always be empowering. Hence, there is a need to look at the quality of paid work, to assess if paid work is empowering, and to explore other dimensions of quality such as participation in formal sector work, full-time labor market work, or paid work in this context. For example, a study among young women in Madagascar found teen mothers were more likely to drop out of school and were 60 percent more likely to participate in the labor market as compared to young women who were not yet mothers (Herrera Almanza, Sahn, and Villa 2016). However, these teen mothers were working in the informal economy, where they did not receive social protection through taxation and social security benefits. The study also indicated that a one-year delay in the age at which a teen mother had her first child led to an 8 percent decrease in her chance of working in the informal sector. Similarly, another study looking comprehensively at the relationship between fertility and women’s labor force participation in Sub-Saharan Africa found a positive relationship between the two – women with more children worked for pay more. In this case, women needed to provide for their children and thus worked for pay more, rather than substituting their time away from paid work to care for the extra child (Canning and Finlay 2012).
**Delayed birth and women’s economic empowerment**

In the US, studies relying on historical data have been able to demonstrate the impact of the availability of modern contraception on human capital investments and labor market outcomes of women specifically by influencing the timing of first birth. For instance, Goldin and Katz (2002) in their pioneering study show that initial increase in access to the pill led to a substantial increase in the number of unmarried, college-educated women investing in careers that required several years of education. The availability of the pill enabled women to delay marriage, increased age at first birth, and lowered the cost of investing in their professional education.

Evidence from the developing countries also indicates that availability of contraception may have enabled delaying births for human capital accumulation. For example, a study from Colombia using observational data found that rollout of family planning services enabled women to postpone their first pregnancy, expand their educational prospects, and ultimately increase their participation in the formal labor market (Miller 2010). In Africa, a study in rural KwaZulu-Natal, South Africa found that teen mothers (younger than 20 years) had poorer educational and health outcomes than their peers who did not have a teen birth. The study also found that first births in earlier teen years (before age 17) had more pronounced negative effects on educational outcomes as compared to births in later teen years (ages 17–19; Ardington, Menendez, and Mutevedzi 2015). A study in Madagascar found that teenage pregnancy was associated with increased likelihood of dropping out of school and reduced cognitive skills (Herrera Almanza and Sahn 2018).

**Birth spacing and women’s economic empowerment**

Studies from Sub-Saharan Africa highlight the importance of birth spacing for economic empowerment in this context. In a study from Burundi, women reported that they wanted to space their births three to five years apart (Finlay et al. 2018). They explained that when children are born too close together, it was difficult for the mother to simultaneously care for the children and work for pay. They discussed that when a woman has one child under the age of 3, she can continue her informal work of trading or farming. However, if the woman has two children under the age of 3, she is unable to work for pay and care for her children. Similarly, in Navrongo, Ghana, survey respondents who adopted family planning did so for spacing birth intervals and not for limiting the total number of children (Binka, Nazzar, and Phillips 1995).

**Lifetime fertility and women’s economic empowerment**

Using data from twenty-six Sub-Saharan African countries, a study assessed the impact of an additional child on women’s labor force participation
using twins as an instrumental variable and found that caring for an additional child reduced the likelihood of a woman’s paid work by 6 percent and these effects were stronger for older and more educated women (de Jong, Smits, and Longwe 2017). Another study used variation in abortion law as an instrument for fertility and found that at the global level a woman would increase her labor force participation by two years by having one less child (Bloom et al. 2009). A longitudinal study from Cebu in Philippines found that among women who continuously worked for pay, women with fewer children had greater increases in their earnings over time (Barnett and Stein 1998).

STUDY CONTEXT AND SITE

Ethiopia is located in eastern Africa and is bordered by Eritrea, Djibouti, Somalia, Sudan, South Sudan, and Kenya. It is the second most populated country in Sub-Saharan Africa after Nigeria and has a population of 102.4 million (World Bank n.d.a). Over the last decade, Ethiopia’s economy has experienced strong growth, averaging 10.5 percent a year from 2005/06 to 2015/16, compared to the regional average of 5.4 percent (World Bank n.d.b). However, Ethiopia continues to be one of the poorest countries in the world with a per capita income of US$660 (World Bank n.d.a). Ethiopia was ranked in the low human development category in 2016, positioned at 174 out of 187 countries and territories (United Nations Human Development Programme 2016). The average life expectancy at birth for an average Ethiopian is 65.5 years (World Bank n.d.a). Although the majority of Ethiopians have little or no formal education, with men faring better than women, remarkable improvements are being made in the education sector. According to the Ethiopian DHS (Measure DHS and ICF Macro 2016), the percentage of women with no education has decreased over the last decade, from 66 percent in 2005 and 51 percent in 2011 to 48 percent in 2016. Among men, too, a similar trend is noticed with the percentage of men with no education declining from 43 percent in 2005 to 30 percent in 2011 and 28 percent in 2016.

According to DHS data, Ethiopian women begin childbearing early. The median age at first birth for women is 19.2 years. Nearly four in ten (38 percent) women give birth by age 18 (Measure DHS and ICF Macro 2016). The current total fertility rate (TFR) is 4.6 children per woman. This means that an Ethiopian woman who is at the beginning of her childbearing years will give birth to just under five children by the end of her reproductive period if fertility levels remain constant over the childbearing years. There are large variations between rural and urban TFR; the TFR in rural areas was 5.2 children compared to 2.3 children per woman in urban areas (Measure DHS and ICF Macro 2016). There has been only a slight decline in TFR between 2011 and 2016. Knowledge of contraceptives is almost
universal. The government sector is the major provider of contraceptive services and caters to 82 percent of modern contraceptive users. Thirty-six percent of currently married women were using a contraceptive method with only 1 percent using a traditional contraceptive method (Measure DHS and ICF Macro 2016). Among contraceptive users, the injectable (23 percent) is the most popular method, followed by the implant (8 percent). There has been a substantial increase in the uptake of modern contraceptives since the year 2000, when only 6 percent of currently married women were using modern contraceptives (Measure DHS and ICF Macro 2011). However, one in five married women in Ethiopia continue to have an unmet need for family planning, with 13 percent wanting to delay childbearing and 9 percent wanting to stop childbearing (Measure DHS and ICF Macro 2016).

Levels of employment are increasing among Ethiopian women, but the trend is uninterrupted. According to the Ethiopia DHS, employment in the last 12 months among women ages 15–49 years increased from 29 percent in 2005 to 38 percent in 2011 but decreased in 2016 to 33 percent. While the share of women working in the agricultural sector is on the decline, it continues to be the largest employer, with 42 percent of the women engaged in agricultural occupations in 2016 (Measure DHS and ICF Macro 2016). Women are increasingly being employed in sales and services, and the proportion of women in these sectors has gone up from 33 percent in 2011 to 37 percent in 2016 (Measure DHS and ICF Macro 2016). In terms of payment for work, overall, 46 percent of women are not paid for their work, while 40 percent are paid in cash (Measure DHS and ICF Macro 2016). Women employed in the nonagricultural sector (62 percent) are more likely to be paid in cash as compared to women working in the agricultural sector (8 percent). Also, women in the agricultural sectors as compared to nonagricultural sector workers are likely to work for a family member (51 percent versus 26 percent) and to be seasonal workers (67 percent versus 15 percent).

Our study was conducted in a rapidly growing peri-urban town close to the capital city of Addis Ababa. In peri-urban Ethiopia light and heavy industries are expanding, as is the service sector, and women’s labor force participation is on the rise.

METHODS

Data and sampling design

Data for this study were collected as part of a larger ongoing study called Family Health and Wealth Study (FHWS) spanning five Sub-Saharan African countries that aims to examine individual and family-level health and wealth consequences of family size. The study has followed 500–1,000
family cohorts in peri-urban areas in Egypt, Ethiopia, Ghana, Malawi, Nigeria, and Uganda. Our study uses data collected in Ethiopia. We chose to use the data from one country and not combine several countries with similar datasets because of the belief that each country context is unique and that our analytical exploration requires a more nuanced understanding of cultural, religious, and contextual factors that affect the demand and supply of contraceptive methods. Moreover, loss-to-follow up and data quality issues made similar analysis on other study countries less appropriate.

Households were eligible for the study if their occupants included a couple formally married or in a stable union. A probability sample of households where the wife was of childbearing age (15–49 years) and the husband was aged 20–59 years was selected for the study. The enumeration areas (EAs) were selected probability proportional to size, and twenty households with eligible couples per EA were targeted for each. A household census was conducted within each EA, followed by systematic selection of households. Occupants were enumerated, and eligible couples identified. Both partners of eligible couples were consented; if one or both did not consent to participate in the study, the field team selected another eligible couple from the same household or an adjacent household. In cases where a family head had multiple wives, only one randomly selected wife was interviewed. Across all EAs, couple participation rates were above 95 percent and interview completion rates were uniformly high. The survey questionnaire, administered separately to husbands and wives, covered a range of questions on contraceptive use, labor market work, and income, among other topics. The first round of the Ethiopian FHWS in 2010 consisted of 998 couples; the second round reinterviewed 746 couples (75 percent) two years later. Due to the focus on quality of contraceptive use, our analytical sample consisted of 557 women contraceptive users. Given the focus on women’s paid work and contraceptive use, the woman’s dataset was our primary dataset, the man’s dataset was used to construct a few control and co-variates, such as household wealth and the husband’s characteristics.

**Measures**

*Dependent variable*

We utilized three measures to analyze women’s market work and income-generating abilities from the follow-up survey. To construct the work status variable, a series of questions were utilized to determine if a woman was working in the labor market. Firstly, the women were asked if they had done any work other than housework in the seven days prior to the survey. The
women who reported negatively to the former question were then asked to respond to the statement,

As you know, some women take up jobs for which they may or may not be paid in cash or kind. Others sell things, have a small business, or work on the family farm or in the family business. In the last seven days, have you done any of these things or any other work.

Lastly, the women were asked if they had done any work other than housework in the past twelve months. To measure remuneration for work, we created a dummy variable that distinguished women receiving payment for their work versus women who were not paid or were not working in the labor market. Finally, the measure on contribution to family income was limited to women who were paid in cash for their work. To generate this measure, we calculated the proportion of family income contributed by the woman's earnings. We log transformed the variable to normalize the distribution of the variable.

**Independent variable**

We constructed two contraceptive-use measures to assess quality of use. Both measures were limited to current contraceptive users. The duration of use was measured as the length of the last episode of continuous use. We constructed this measure from the female partners' recall of their contraceptive-use patterns at follow-up, going back sixty months. The measure for type of method used was constructed as a categorical variable that differentiated methods by their level of effectiveness in preventing pregnancy. Given their level of effectiveness, we placed long-acting and permanent modern methods such as implants, intrauterine device (IUD), and female sterilization as one category. The injectable, as the most popular and because it is a highly effective short-acting method formed one category. Lastly, the less effective modern short-acting methods such as pills, condoms, and traditional methods were categorized into one group. We constructed this measure using the women's baseline data.

**Background variables**

A range of sociodemographic, household-level, and spousal variables known to influence contraceptive use and women's ability to work for pay were included in our analysis, such as respondents' age, education, spousal educational difference, husband's occupation, household wealth, religion, parity, and childcare arrangements for children under 6 years of age. Age and education were measured as continuous variables indicating
age and schooling in years. To assess spousal educational difference, we subtracted the female partner’s years of schooling from the male partner’s years of schooling. Husband’s occupation was a four-category variable that differentiated between agricultural and daily laborers, salaried professionals, petty traders, and the unemployed and retired. Religion was treated as a binary variable differentiating between (1) Christians and (2) Muslims and other religions. Household wealth was constructed through a principal component’s analysis of household assets and housing characteristics, such as ownership of consumer items and type of dwelling. The index score was then used to divide the households into quintiles that indicated poorest, poor, middle, richer, and richest. Parity, which specifies the number of times a woman has given birth, was assessed using the female partners’ response on a series of questions about her childbirth history. We also assessed childcare arrangements that respondents had for children below 6 years of age. The women were asked to indicate if their children were sent to a preschool or if a family member took care of their children.

Statistical analysis

Multivariate logistic regression models were used to analyze the association of duration of use and type of method used with paid work status (yes, no), as well as the association with receiving remuneration (paid in cash versus unpaid or not working in the labor market). In addition, we estimated multivariate linear regressions models to analyze the relationship of duration of contraceptive use and type of method used with the woman’s contribution to family income.

RESULTS

Descriptive statistics

Since the focus of our analysis was quality of contraceptive use as measured by duration of use and type of method used, our analytical sample was restricted to contraceptive users. As a result, our final analytical sample consisted of 511 women for the duration analysis and 557 women for the type of method analysis. Also, the analysis for contribution to family income was restricted to women who received cash payment (n = 170).

Table 1 shows the sociodemographic characteristics of the sample at baseline. The women were on average 29 years old (SD = 3.7). Almost 40 percent of the sample had postsecondary education. The majority of the women had one or two children (49 percent), and only 12 percent of the women had no children. A large proportion (85.4 percent) of the
Table 1 Descriptive statistics on key study variables among contraceptive users at baseline

| Variables                                | % or mean/SD |
|------------------------------------------|--------------|
| **Childcare for under 6 yrs (n = 557)**  |              |
| Family                                   | 85.4         |
| Preschool                                | 14.6         |
| **Parity (n = 557)**                     |              |
| No children                              | 12.2         |
| One child                                | 25.9         |
| Two children                             | 23.1         |
| Three or more children                   | 18.5         |
| **Religion (n = 557)**                   |              |
| Christian                                | 85.1         |
| Muslim and others                        | 14.9         |
| **Education (n = 547)**                  |              |
| No school                                | 18.1         |
| Primary                                  | 26.1         |
| Secondary                                | 16.6         |
| Postsecondary                            | 39.3         |
| **Spousal educational difference in years (n = 544)** | 2.0 (3.7)    |
| **Mean age in years (n = 557)**          | 29.0 (6.3)   |
| **Husband’s occupation (n = 557)**       |              |
| Agriculture/daily labor                  | 30.2         |
| Salaried                                 | 51.3         |
| Petty trader                              | 14.9         |
| Unemployed/retired/student                | 3.9          |

women with children under 6 years of age had family members to help with childcare, while the rest sent their children to preschool. The majority of the husbands were working for pay; half of them (51.3 percent) were salaried workers.

Table 2 provides a description of the study outcomes and predictors at baseline and follow-up. Fifty-eight percent of the women were working in the labor market when the follow-up survey was conducted. Among the women who were working in the labor market, 33.7 percent were being paid in cash. Among contraceptive users, the injectable was the most popular method, with 54 percent of the women using the method at baseline. The median duration of continuous use was 29 months at the time of the follow-up survey.
Table 2 Description of study outcomes and predictors at baseline and follow-up among contraceptive users (n = 557)

| Variables                        | Baseline % or mean (SD) | Follow-up % or mean (SD) |
|----------------------------------|-------------------------|--------------------------|
| **Baseline**                     |                         |                          |
| Paid work status (n = 557)       |                         |                          |
| Working in the labor market      | 45.4                    | 58.5                     |
| Unemployed                       | 54.6                    | 41.5                     |
| Income (n = 557)                 |                         |                          |
| Paid in cash                     | 33.7                    |                          |
| Unpaid/not working for pay       | 66.3                    |                          |
| Contribution to family income (n = 177) | 0.13 (0.27) |                  |
| Method used (n = 557)            |                         |                          |
| Injectable                        | 54.1                    |                          |
| Long-acting & permanent          | 16.5                    |                          |
| Implants                          | 11.9                    |                          |
| IUD                               | 3.9                     |                          |
| Female sterilization              | 0.72                    |                          |
| Other (pill, periodic abstinence) | 29.4                    |                          |
| Median duration of use (n = 557; months) | 29 (21)                   |                          |

Notes: aDetailed measures of work were not collected at baseline. bLong-acting and permanent methods includes implants, IUDs, and female sterilization. cOther includes pills, periodic abstinence, and other traditional and modern methods.

Contraceptive use measures

Duration of use

Duration of contraceptive use was associated with work status and payment for work but not with contribution to family income. Table 3 documents the association of women’s duration of contraceptive use with her work status. In the multivariate analysis, the odds of working in the labor market increased by 1 percent (OR: 1.01; SE: 0.05) with each additional month of consistent contraceptive use. Table 4 shows the association of women’s duration of contraceptive use with cash payment. The women who used contraceptives for a longer duration of time had higher odds of receiving payment in cash (OR: 1.01; SE: 0.01) as opposed to women who used contraceptives for a shorter duration of time after adjusting for other co-variates in the model.
Table 3 Results from the multivariate logistic regression analysis of duration of contraceptive use on women’s employment status at follow-up ($n = 511$)

| Covariates          | Adjusted $^a$ odds ratios (standard errors) |
|---------------------|--------------------------------------------|
| Duration of use     | 1.01 (0.05)**                              |
| **Childcare**       |                                            |
| Non-eligible        | 1.00                                       |
| Preschool           | 0.73 (0.15)                                |
| Family members      | 0.67 (0.23)*                               |
| **Parity**          |                                            |
| No children         | 1.00                                       |
| One child           | 0.81 (0.38)                                |
| Two children        | 0.44 (0.16)**                              |
| Three or more children | 0.37 (0.14)**                          |
| **Wealth quintile** |                                            |
| Poorest             | 1.00                                       |
| Poor                | 0.77 (0.21)                                |
| Middle/rich/richest | 0.46 (0.11)**                              |

Notes: **, * denote statistical significance at the 5 and 10 percent levels, respectively. $^a$Model also adjusted for respondent’s age and religion, spousal educational difference, and husband’s occupation.

Table 4 Results from multivariate logistic regression analysis of duration of contraceptive use on women’s remuneration at follow-up ($n = 511$)

| Covariates          | Adjusted $^b$ odds ratios (standard errors) |
|---------------------|--------------------------------------------|
| Duration of use     | Paid cash                                  |
|                     | 1.01 (0.01)**                              |
| **Childcare**       |                                            |
| Non-eligible        | 1.00                                       |
| Preschool           | 0.58 (0.15)**                              |
| Family members      | 0.63 (0.24)                                |
| **Parity**          |                                            |
| No children         | 1.00                                       |
| One child           | 0.77 (0.25)                                |
| Two children        | 0.34 (0.14)**                              |
| Three or more children | 0.25 (0.11)**                          |
| **Wealth quintile** |                                            |
| Poorest             | 1.00                                       |
| Poor                | 0.69 (0.21)                                |
| Middle/rich/richest | 0.33 (0.10)**                              |

Notes: Reference group: unpaid and unemployed women. **, * denote statistical significance at the 5 and 10 percent levels, respectively. $^b$Model also adjusted for respondent’s age and religion, spousal educational difference, and husband’s occupation.
Method type

Method type was only associated with the woman’s contribution to family income after accounting for work at baseline and other covariates. Table 5 shows the association of method type with contribution to family income. The proportion of family income contributed by women who used injectable at baseline was 30 percent less than women who used other short-acting or traditional methods after adjusting for co-variates.

Table 5 Results from multivariate linear regression of type of method used at baseline on women’s contribution to family income at follow-up (n = 170)

| Covariates                        | Adjusted coefficients<sup>b</sup> (standard errors) |
|-----------------------------------|------------------------------------------------------|
| **Method type**                   |                                                      |
| Other methods                     | 1.00                                                 |
| Injectable                         | −1.03 (0.48)**                                       |
| Long-acting/permanent             | −0.19 (0.58)                                         |
| **Childcare**                     |                                                      |
| Non-eligible                      | 1.00                                                 |
| Preschool                         | 0.15 (0.46)                                          |
| Family members                    | −0.08 (0.69)                                         |
| **Parity**                        |                                                      |
| No children                       | 1.00                                                 |
| One child                         | 1.27 (0.65)*                                         |
| Two children                      | 0.13 (0.77)                                          |
| Three or more children            | 0.20 (0.81)                                          |
| **Education**                     |                                                      |
| No school                         | 1.00                                                 |
| Primary                           | 0.49 (0.67)                                          |
| Secondary                         | −0.57 (0.89)                                         |
| Postsecondary                     | 0.68 (0.79)                                          |
| **Wealth quintile**               |                                                      |
| Poorest                           | 1.00                                                 |
| Poor                              | −1.94 (0.59)**                                       |
| Middle/rich/richest               | −2.65 (0.60)**                                       |

Notes: ***, * denote statistical significance at the 5 and 10 percent levels, respectively.
<sup>a</sup>Model also adjusted for respondent’s age and religion, spousal educational difference, and husband’s occupation, as well as participation in work at baseline. <sup>b</sup>Coefficients are log transformed.

Other co-variates

Among other covariates, not surprisingly, a woman’s work status was highly associated with parity, wealth, and childcare. Wealthier women
had reduced likelihood of working in the labor market or receiving remuneration as compared to poorer women. Women at higher parity (two or more children) had reduced likelihood of working in the labor market or receiving remuneration as compared to women at lower parity or no children. Also, not surprisingly, women with smaller children with family-based childcare arrangements were less likely to work for pay as opposed to women with older or no children. Finally, wealthier women’s income contributed to a smaller proportion of the overall family income as compared to the poorest women.

DISCUSSION

We explored if the quality of a woman’s contraceptive use as measured by duration of use and type of method used positively influences meaningful economic outcomes such as her ability to work in the labor market, receive remuneration for her work, and make a greater contribution to her family income. We found evidence suggesting that consistent contraceptive use was associated with a woman’s ability to work in the labor market as well as receive payment for work, although it was not related to her contribution to the family income. The multivariate regression analyses suggest that women who report a longer duration of contraceptive use are statistically significantly more likely to work in the labor market as well receive cash payment for their work at follow-up even after accounting for their work status at baseline and other relevant factors. While the size of the odds ratios seems small with the odds of working in the labor market and receiving payment increasing by a 1 percent with each additional month of consistent contraceptive use, given that most women use contraceptives for more than a month, the net association is not trivial. In contrast, using a more effective method was not associated with a woman’s ability to participate in labor market work or receive cash payment but did influence her contribution to family income. However, this relationship was not in the hypothesized direction, while we expected women who used a more effective method to make a higher contribution to the family income, our findings indicate that women who used injectable as opposed to less effective methods were likely to contribute a smaller proportion of the family income. An explanation for this could lie in the differences we noted in women’s contribution to family income by wealth quintile and injectable use patterns. Although, injectables were the most popular method and used across wealth quintiles, a larger proportion of the wealthier women were using the injectable and their contribution to family income tended to be smaller given the larger family income, which was not the case with poorer women.

The study expands the evidence base on the economic benefits of contraceptive use for women and their families in an understudied context.
Peri-urban Ethiopia, with its upsurge in availability and use of modern contraception as well as women’s labor force participation, provides a very good context for understanding how quality of contraceptive use can foster meaningful paid work outcomes, indicative of empowerment, for women. Going beyond just a focus on current method use, our study looked at duration of use as well as type of method and found that while consistency in use was positively associated with participation in labor market work and receiving remuneration for work, type of method did not have an impact on these outcomes. A likely explanation for this is that contraceptive availability in Ethiopia is currently driven by supply-side factors and not based on consumer preferences, so women are not able to use their preferred methods (Shiferaw et al. 2017). However, in the future, as more methods become available and women are able to exercise their contraceptive choices, we are more likely to see an impact of type of method used on women’s economic contribution.

Our study has several limitations that need further discussion. Although we relied on retrospective historical calendar data and utilized data from two time points to address issues of reverse causality, these approaches have their limitations and do not fully account for the endogeneity bias inherent in the relationship between contraceptive use and economic empowerment. Moreover, while the data collectors were given extensive training on how to elicit good calendar data, recall bias is always challenging to minimize. Similarly, we lost 25 percent of our sample at follow-up and hence there is a danger of selection bias. However, we checked for differences between the lost-to-follow up sample and retained sample on key socioeconomic and contraceptive use variables and found no statistically significant differences. Furthermore, 24 percent of the women in our sample indicated they worked in addition to doing housework but did not receive payment for their work. Future studies need to understand the meaning of work for women in this setting for improved measurement of labor market work variables. Finally, the generalizability of our findings is limited to women who are 15–49 years old and in a marriage or stable partnership from similar peri-urban sites.

However, despite these limitations, there are several advantages to our study. Our study is a unique research effort that expands knowledge on the relationship between quality of contraceptive use and women’s labor market work; an understudied topic in an understudied region. To better understand the relationship between contraceptive use and women’s economic empowerment in a context where work might not always be empowering, we utilized three measures for a more nuanced understanding of the quality of labor market work. Similarly, in a scenario where availability of modern contraceptives is driven by supply-side factors and stock-outs are common, we looked at both consistency in use as well as type of method for a more diverse understanding of women’s reproductive
strategies. Finally, the study utilized robust analytical methodologies such as retrospective data and panel data at two time points to address reverse causality and adjusted for several confounding variables, including spousal education, spousal occupation, and childcare arrangements, which can inhibit or support a woman’s ability to work in the labor market and use contraception.

Our study reiterates that consistent use of modern contraceptives enables women to work in the labor market and earn an income for their work and that ultimately family planning programs can play a critical role in the socioeconomic empowerment of women. This may be especially critical for poorer families and can help families and communities find pathways out of poverty. A feature of the context that we were exploring is that poorer women in our sample were more likely to work in the labor market and receive payment for their work as compared to wealthier women. Their families also tended to rely more on their income, as their contributions to the family income were larger than the wealthier women. Hence, access to cheap and reliable modern contraceptive methods can provide poor families the much-needed additional income and provide women more continual access to employment to enable them to leave the cycle of poverty. Furthermore, our study findings provide an added impetus for family planning programs to understand and tackle method discontinuity because of the far-reaching effects it can have on women’s economic productivity and earnings.

Finally, data limitations, particularly the lack of data that could capture details about the nature and quality of paid work and the desire or imperative to earn, prevented a more in-depth analysis of the impact of contraception and method choice on the quality of labor market work. This highlights the need for better employment data that describe key attributes of the work, including those characteristics that allow definitions of formal and informal and capture more subtle aspects of the terms and conditions of employment. We also lack data that mirror those of the retrospective analysis of contraceptive use and discontinuity that could also capture information about when women work in the labor market and when they withdraw from the labor market and why. Were we to have such data, a fuller exploration of the use of modern contraceptive methods, timing and spacing of births, and access to care could be woven into our analysis of economic empowerment and women’s labor force participation.

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