Does contraceptive use facilitate women's economic empowerment? Evidence from the Democratic Republic of Congo, Kenya, Nigeria, and Burkina Faso

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Abstract

Modern contraceptives are a technology that allows women and families to plan childbearing and future career opportunities. While it is hypothesized that contraceptive use can facilitate women's economic empowerment, establishing a causal relationship remains challenging due to the complex interplay and potential reverse causality between these variables. We examine the role of a woman's decision to use contraception as a driver of future economic empowerment using longitudinal data collected in 2019-2020 from Congolese, Kenyan, Nigerian, and Burkinabe women of reproductive age. Implementing an instrumental variable approach, we find that the use of any contraceptive method had a positive effect on the level of household decision-making in Kenya and Nigeria (1.7 percentage point (p.p.) and 4.1 p.p. difference) and a positive effect on the level of financial autonomy in the Democratic Republic of Congo (5.3 p.p.), Kenya (2.4 p.p.), and Burkina Faso (3.2 p.p.) when compared to nonusers of contraception.

Extended Abstract

1. Background

Women's economic empowerment (WEE) is a key component of the fifth goal of the Sustainable Development Goals, to achieve gender equality and empower all women and girls (United Nations, 2021). As such, many governments and organizations have invested in women's empowerment, and efforts to economically empower women in low- and middle-income countries (LMIC) have boomed in the past two decades (Dabla-Norris & Kochhar, 2019). WEE has become central to gender equality efforts in global health and international development circles.

Women's empowerment has been described as "the exercise of agency" (e.g., Upadhyay et al. (2014), Khader (2018)). The origins come from conceptualizations proposed by Sen (1985), in which agency is defined as the process in which a person gains the ability to live the life they want to live in pursuit of whatever values or goals are important for that individual. Similarly, Kabeer (1999) defines women's empowerment as the process by which a person acquires the ability to make strategic life decisions when those decisions were denied in the past. Together with agency, gaining resources and achieving one's own goals constitute the process of empowerment. Jejeebhoy (2000) defines women's decision-making authority in family decisions, physical autonomy or mobility, and control of resources as interdependent components of women's empowerment.

Economic empowerment is a specific form of empowerment relating to acquiring access to and agency over economic resources and productivity. Laszlo, Grantham, Oskay, and Zhang (2020) define WEE as "*the process by which women acquire access to and control over economic resources, opportunities, and markets enabling them to exercise agency and decision-making power to benefit their lives*," with an emphasis on women's ability to reach productivity levels comparable to that of men. In this study, we focus on this specific form of empowerment and operationalize its measurement by studying two dimensions, household decision-making and financial autonomy, using a cross-cultural scale validated for the context of sub-Saharan Africa (Cardona, Williams, Gummerson, Ahmed, & Anglewicz, 2023).

Access to family planning has been hypothesized to be associated with women's empowerment (Prata et al., 2017), as it grants women and families the ability to plan childbearing and future career opportunities, subsequently enhancing women's agency in the household and labor market opportunities. In developed countries, contraception was linked to delays in the age at first marriage and greater participation of women in non-traditional jobs, which in the long run led to greater participation of women in the labor market (Bailey, 2006; Bailey, Hershbein, & Miller, 2012; Claudia Goldin & F. Katz, 2002). Additionally, the use of family planning methods has been linked to

improvements in maternal health outcomes, birth spacing intervals, child health, and overall household well-being (National Academies of Sciences & Medicine, 2021; Prata et al., 2017).

In developing countries, several studies have assessed the correlation between the use of contraception and different domains of empowerment (e.g., Biswas and Kabir (2002); Feldman, Zaslavsky, Ezzati, Peterson, and Mitchell (2009)), including economic empowerment (e.g., Do and Kurimoto (2012); Gage (1995); MacQuarrie and Aziz (2021)). Do and Kurimoto (2012) found that in Namibia, Ghana, and Uganda, the use of contraception was associated with economic empowerment measured through income and participation in household decisions. A recent literature review by Prata et al. (2017) identified 21 articles studying the relationship between household decision-making and family planning in developing countries. Among them, most focused on the relationship between the use of contraception and household decision-making, and a few on ever use, future intentions to use contraception, and unmet need for contraception using data from cross-sectional surveys.

Cross-sectional studies provide valuable information at the population level but cannot measure, at the individual level, whether contraception leads to economic empowerment or vice-versa. Longitudinal studies can fill this gap by measuring the dynamic changes in the use of contraception and empowerment at the individual level. A recent study by O'Brien, Zimmermann, Eitmann, Chao, and Proctor (2023) found that contraceptive adoption of modern reversible contraceptive methods was positively associated with financial autonomy and egalitarian beliefs around household decisions in Nigeria, although the relationship was not statistically significant in Kenya and Senegal. To our knowledge, no further studies have investigated this dynamic relationship. Our study contributes to this gap of knowledge by measuring the effect of using contraception—traditional and modern methods—on subsequent levels of women's economic empowerment (WEE)—proxied by household decision-making and financial autonomy—using data from Congolese, Kenyan, Nigerian, and Burkinabe women of reproductive age interviewed first in 2019 and followed-up one year later in 2020. We hypothesize that women who reported using contraception at the first interview reported higher levels of household decision-making and financial autonomy one year later, than nonusers.

2. Methods

2.1. Data and Sample

This analysis uses data collected by the Performance Monitoring for Action (PMA) project. PMA collects data on key global indicators in family planning and reproductive health from women of reproductive age (15 to 49) using a standardized female questionnaire in eight countries across

Africa and Asia. PMA uses a multi-stage cluster design in which enumeration areas (EAs) are randomly selected to measure the modern contraceptive prevalence rate with a 3% margin of error. After selection, households in each EA are listed and mapped. A sample of approximately 35 households in each EA is then randomly selected, and female respondents are drawn from each selected survey household. All age-eligible female respondents in the household are invited to participate. The female survey includes basic sociodemographic characteristics, as well as measures of women's empowerment, fertility and contraceptive preferences; family planning access, choice, and use (including a contraceptive calendar); exposure to family planning information, and other measures of overall health and well-being.

For this analysis, we use two rounds of longitudinal data of women of reproductive age in the Democratic Republic of Congo, Kenya, Nigeria, and Burkina Faso. The first interview occurred between November and December of 2019, and the follow-up was between November 2020 and March 2021. In Kenya and Burkina Faso, the data are nationally representative; while in the Democratic Republic of Congo and Nigeria, the data are representative at the regional levels: Kinshasa and Kongo Central, and Lagos and Kano, respectively.

Across the four countries, PMA interviewed 23,215 women distributed as follows: 2,611 in Kinshasa, 1,949 in Kongo Central, 9,474 in Kenya, 1,469 in Lagos, 1,122 in Kano, and 6,590 in Burkina Faso. Of them, 17,705 were re-interviewed one year later, ranging attrition rates from 11.1% in Kano to 25.9% in Lagos. Due to sample size limitations in our regional samples, we pooled data from Kinshasa and Kongo Central and denoted it as the Democratic Republic of Congo, and we pooled data from Lagos and Kano and denote it as Nigeria, although we note that these samples are not nationally representative. Among the follow-up women, 11,386 (or 64.3%) reported being in-union at the baseline interview. In our analysis, one of our outcomes of interest is modeled using the women in the sample, and the other outcome uses the in-union women in the sample due to the definitions of empowerment we implement.

In addition to collecting longitudinal data from women of reproductive age, PMA collects data from health facilities that served women in the EA using a standardized Service Delivery Point (SDP) questionnaire. The sample included public and private facilities. For public facilities, PMA selects the primary, secondary, and tertiary facilities that serve each EA in the sample. For private facilities, PMA conducts a mapping and listing of all private SDPs within the EA and randomly samples up to three of these facilities. The PMA facility survey includes extensive information on contraceptive provision, stocks, costs, and other related measures. The sample of health facilities consisted of 1,727 facilities distributed as follows: 203 in Kinshasa, 153 in Kongo Central, 945 in Kenya, 127 in Lagos, 65 in Kano,

and 234 in Burkina Faso. The average number of health facilities within an EA ranged from 1.5 facilities in Burkina Faso to 3.6 facilities in Kinshasa. The SDP data can be merged to the women's data using the EA variable, and reflects the woman's local health service environment.

The data we use for this analysis is de-identified and publicly available. Data collection protocols were reviewed and approved by the institutional review boards at Johns Hopkins Bloomberg School of Public Health, and the in-country counterpart institutional review boards. More information about the design of PMA surveys is available online (https://www.pmadata.org) and in the PMA Survey Protocol (PMA, 2019).

2.2. Variables

Outcome variables

Our outcome of interest is WEE measured in the follow-up survey by two dimensions: household decision-making and financial autonomy. The psychometric properties of these two variables have been assessed elsewhere and have proven to have cross-cultural validity (Cardona et al., 2023).

We define household decision-making as a continuous variable that ranges from zero to four and is constructed as the sum of four input variables; this means that a value of zero indicates a woman does not participate in any of the decisions, and a value of four means she participates in all measured decisions. All in-union women were asked about their role in making household decisions about the following items: 1) large household purchases; 2) daily needs purchases; 3) medical treatment for herself, and 4) clothes purchases for herself. Specifically, these questions were framed as "*Who usually makes decisions about making [item] purchases*?". A woman could indicate she was the sole decision-maker, her husband or partner, both make decisions together, someone else, or refuse to respond. These questions are similar to those available in the DHS, and are aligned with the definition of direct measures proposed by Laszlo et al. (2020), given that they directly capture women's bargaining power. We transformed each question into a binary form, taking the value of one if a woman was the sole decision-maker or made decisions jointly with her husband or partner, and zero if her husband or partner was the sole decision-maker or someone else. This variable was computed only for in-union women due to the nature of the questions.

We define financial autonomy as a continuous variable that ranges from zero to three and is constructed as the sum of three variables capturing women's savings capacity, financial knowledge, and financial goals. This dimension captures the resource component that is part of the theorized definition of economic empowerment (Buvinic, O'Donnell, Knowles, & Bourgault, 2020; Kabeer, 1999). Specifically, women were asked the following questions: 1) "*Do you currently have any savings for the future, such as a bank account, savings group, or cash?*"; 2) "*Do you know where to go for*

financial information or advice?"; and 3) "*Do you have financial goals toward which you are working?"*. Similar to household decision-making, we use these questions in a binary form, taking the value of one if a woman provided a positive answer and zero otherwise. This variable was constructed for all women.

Treatment variables

We are interested in measuring the effect of the use of contraception at baseline on subsequent economic empowerment. To measure the use of contraception, the PMA survey asked women to report whether they or their partner were doing something or using any method to delay or avoid getting pregnant. Those who provided a positive response were later asked to report on the method they used from a 16-method list. Modern methods listed were female and male sterilization, implants, intrauterine contraceptive devices (IUD), injectables, contraceptive pill (oral contraceptives), male and female condoms, emergency contraception, diaphragm, contraceptive foam/contraceptive jelly, standard days method, and lactational amenorrhea method. Traditional methods listed were periodic abstinence (rhythm, calendar method) and withdrawal (coitus interruptus). We constructed two binary variables with this information, one to measure the use of any contraceptive method and the other to measure the use of any modern contraceptive method. The first variable equaled one if a woman indicated she was using any modern methods listed, and zero if she used a traditional or no method. The second variable equaled one if she indicated she was using any modern or traditional method and zero if she was not using a method.

Control variables

We included a set of demographic and socioeconomic characteristics as control variables. These variables were the place of residence (urban/rural), household wealth quintiles, age grouped into three categories (15-24 years, 25-34 years, and 35-49 years), whether a woman wants more children, number of children grouped as 0-1, 2-3, and 4+, education level categorized as None/Primary, Post-primary/Secondary, and Tertiary/College, and the proportion of women working in the EA. We included the proportion of working females as a control variable because prior studies have identified this variable as a relevant factor for economic empowerment. For the financial autonomy outcome, we also included a variable measuring partnership status as a binary variable (in-union or not in-union).

Instrumental variables

We constructed two instrumental variables, one using data collected in the women's questionnaire and the second using data from the SDP survey. Our first instrumental variable is the average number of outlets in the EA on which women reported they heard family planning messages out of five media

outlets—radio, TV, magazine, mobile phone, and social media. Our second instrumental variable is the proportion of public health facilities in the EA that offer family planning services.

2.3. Statistical approach

First, we describe the distribution of women by levels of household decision-making and financial autonomy reported at follow-up by contraceptive status reported at baseline. Next, we tabulate the distribution of the baseline demographic and socioeconomic characteristics to understand the compositional characteristics of the women included in the analytical samples by partnership status (in-union and not in-union).

Second, we estimate a set of Ordinary Least Squares (OLS) models that regress our outcomes of interest measured at follow-up on women's baseline reports of using any method of contraception and any modern method of contraception, separately, controlling for demographic and socioeconomic characteristics. We also looked at this association measuring all variables at the same time to assess whether contraceptive users had a higher average level of economic empowerment than nonusers.

The main empirical challenge in identifying the causal effect of our relationship of interest is that women's economic empowerment also affects the decision to use contraceptives, leading to endogeneity bias. To address the issue of endogeneity, we employ an Instrumental Variable (IV) approach using the two instrumental variables described in the prior section using a two-stage least squares (2SLS) estimator. In the first stage, we separately regress the indicator variable for the use of any method of contraception and the indicator variable for the use of any modern method of contraception on our instrumental variables, controlling for demographic and socioeconomic characteristics. In the second stage, we regress our outcomes of interest on the indicator variables predicted in the first stage, controlling for demographic and socioeconomic characteristics.

Analyses were weighted for the complex survey design of the PMA survey. In addition, they were weighted to account for the likelihood of attrition from baseline to follow-up using inverse propensity weights (IPW) with control variables measured at baseline. First, we estimated a probit model on the probability that a woman who participated at baseline was surveyed at follow-up using age, marital status, education, number of children, and wealth as regressors. The resulting attrition weight was the inverse of this predicted probability.

3. Results

Our sample consisted of 17,705 women of reproductive age who participated of both the baseline and follow-up interviews in 2019 and 2020 interviewed in the Democratic Republic of Congo (Obs. = 3,478), Kenya (Obs. = 6,934), Nigeria (Obs. = 2,086), and Burkina Faso (Obs. = 5,207). Of these

women, 64.3% (Obs. = 11,386) reported they were married or living with a partner at the time of the baseline interview.

In Table 1, we present descriptive statistics of the outcome, treatment, control, and instrumental variables used in our analysis among in-union women stratified by country. Among in-union women, the average level of household decision-making ranged from 2.1 in Burkina Faso to 3.2 in Kenya. The contraceptive prevalence rate (CPR) (or the proportion of women using any contraceptive method) ranged from 28.3% in Nigeria to 59.8% in Kenya, while the modern contraceptive prevalence rate (mCPR) (or the proportion of women using any modern contraceptive method) ranged from 19.3% in Nigeria to 56.6% in Kenya. In Kenya and Burkina Faso, the difference between the CPR and mCPR is less than 4%, while this difference is 9.1% in Nigeria and 20.5% in the Democratic Republic of Congo.

In Table 2, we present the same descriptive statistics as in Table 1, but for all women. The average level of financial autonomy was 0.95 among Congolese, 1.08 among Burkinabe, 1.70 among Kenyan, and 1.98 among Nigerian women. The CPR and mCPR ranged from 24.7% in Nigeria to 45.7% in Kenya and from 17.4% in Nigeria to 43.1% in Kenya, respectively. Similar to in-union women, the differences between the CPR and mCPR were low in Kenya and Burkina Faso, while it was 7.3% in Nigeria and 16.5% in the Democratic Republic of Congo.

In Figures 1 and 2, we show the distribution of women by level of household decision-making and level of financial autonomy by contraceptive status reported at baseline. The average levels of household decision-making are statistically significantly higher among contraceptive users compared to contraceptive nonusers—regardless of whether it is any method of contraception or any modern method of contraception—except in the Democratic Republic of Congo. The difference in the level of household decision-making between users of any contraceptive method and nonusers was 1.09 in Nigeria, 0.26 in Burkina Faso, and 0.09 in Kenya, and between users of any modern contraceptive method and nonusers was 0.92 in Nigeria, 0.24 in Burkina Faso, and 0.06 in Kenya. The average levels of financial autonomy are statistically significantly higher among contraceptive users compared to contraceptive nonusers—regardless of whether it is any method of contraception or any modern method. The difference in these levels was similar across countries, ranging from 0.15 in the Democratic Republic of Congo to 0.38 in Kenya when looking at the use of any contraceptive method, and ranging from 0.11 in the Democratic Republic of Congo to 0.34 in Kenya when looking at the use of any modern contraceptive method.

In Tables 4 and 5, we present the results from the OLS and IV regressions. In both tables, the first column contains the results from a sample that pools the four countries and includes country

fixed effects, the next columns contain country-level results for the Democratic Republic of Congo, Kenya, Nigeria, and Burkina Faso. In Table 4, we observe that the level of household bargaining was statistically significantly higher among users of any contraceptive method compared to nonusers in Nigeria and Burkina Faso—0.183 (95% Confidence Interval (CI): 0.011 - 0.355) and 0.179 (95% CI: 0.096 - 0.263), respectively—and statistically significantly higher among users of modern contraceptive methods compared to users of traditional contraceptives and nonusers in Burkina Faso—0.169 (95% CI: 0.084 - 0.254). In Table 5, we observe that the level of financial autonomy was statistically significantly higher among users of any contraceptive method compared to nonusers and statistically significantly higher among users of modern contraceptive methods compared to users of traditional contraceptives and nonusers across the four countries.

However, as described in the statistical approach section, the OLS results suffer from endogeneity bias, which is taken into account in the IV estimates presented in the second panel of Tables 4 and 5. In Kenya and Nigeria, the difference in the level of household decision-making between users of any contraceptive method compared to nonusers is 1.731 (95% CI: 0.993 - 2.470) and 4.098 (95% CI: 1.951 - 6.244), respectively, and increases to 1.822 (95% CI: 1.040 - 2.604) and 7.337 (95% CI: 1.559 - 13.115), respectively, when comparing users of any modern contraceptive method compared to users of traditional methods or nonusers. In Burkina Faso, we observe a different pattern in which nonusers have a higher level of household decision-making compared to nonusers, which we need to explore further. As for financial autonomy, we find significantly higher levels of financial autonomy among users of any contraceptive method compared to nonusers in the Democratic Republic of Congo (5.313 (95% CI: 1.939 - 8.687)), Kenya (2.409 (95% CI: 1.557 - 3.261)), and Burkina Faso (3.221 (95% CI: 1.966 - 4.476)). We find a similar pattern when we compare users of any modern contraceptive method to users of traditional methods or nonusers.

4. Next Steps

We intend to implement the following extensions to the analysis presented in this version:

1. Expand our analysis to other countries on which PMA has collected longitudinal data to assess the generalizability of our findings and to test whether other West African countries show a similar pattern to the one we found in Burkina Faso. Countries we intend to include are Cote d'Ivoire and Niger.
2. Conduct a set of heterogeneity analyses. For example, by area of residence. Burkinabe women mainly resided in a rural area, which could explain the difference in the results for household decision-making compared to the other three countries.

3. Explore other instrumental variables taking advantage of the rich data collected in the SDP survey. We intend to test: i) proportion of health facilities that offer long-acting reversible contraception, ii) proportion of health facilities that offer short-acting reversible contraception, iii) proportion of health facilities that charge for long-acting reversible contraception, iv) proportion of health facilities that charge for short-acting reversible contraception, v) average number of days in the EA on which health facilities provide family planning services.
4. Conduct a set of falsification tests. We intend to test whether proxy variables of the health system constructed with data collected in the SDP questionnaire work as predictors for the use of contraception. Some of the variables we want to consider are the number of physicians per capita, nurses per capita, and public facilities per capita in the EA. We want to test these EA variables because our problem needs to be specifically about family planning access and should not be due to other things because that would be problematic and related to self-selection to EAs that have limited access to contraception.
5. Conduct a set of robustness checks, such as limiting the financial autonomy sample to sexually active women.

Tables and Figures

Table 1: Descriptive statistics, in-union women

Variables	Dem. Rep. Congo			Kenya			Nigeria			Burkina Faso		
	Mean/ Prop.	SD	Obs.	Mean/ Prop.	SD	Obs.	Mean/ Prop.	SD	Obs.	Mean/ Prop.	SD	Obs.
Outcome variables												
Household decision-making, follow-up	2.638	1.332	1,875	3.176	1.248	4,465	2.313	1.583	1,443	2.133	1.298	3,716
Financial autonomy, follow-up	.899	.843	1,884	1.853	1.022	4,469	1.992	.946	1,445	1.114	.826	3,719
Treatment variables												
Use of any contraceptive method, baseline (*ref. Nonuse*)	.477		1,885	.598		4,469	.283		1,447	.315		3,723
Use of any modern contraceptive method, baseline (*ref. Nonuser or user of traditional*)	.272		1,885	.566		4,469	.193		1,447	.295		3,723
Stopper (*ref. Continuer or switcher*)	.165		1,030	.107		2,800	.163		551	.201		1,643
Control variables, baseline												
Urban (*ref. Rural*)	1.000		1,885	.282		4,469	.621		1,447	.173		3,723
Wealth quintile			1,885			4,469			1,447			3,723
1. Lowest quintile	.187			.221			.187			.361		
2. Lower quintile	.194			.241			.196			.355		
3. Middle quintile	.203			.209			.201			.284		
4. Higher quintile	.199			.168			.207					
5. Highest quintile	.218			.161			.208					
Age			1,885			4,469			1,447			3,723
15-24	.189			.200			.179			.272		
25-34	.400			.429			.400			.374		
35-49	.412			.372			.421			.354		
Wants more children (*ref. No more/don't know*)	.609		1,744	.518		4,315	.651		1,316	.779		3,567
Parity			1,881			4,469			1,447			3,720
0-1	.244			.216			.215			.221		
2-3	.340			.387			.340			.293		
4+	.417			.397			.446			.486		
Education			1,882			4,469			1,445			3,721
None/Primary	.305			.573			.490			.881		
Post-Primary/Secondary	.605			.303			.310			.109		
Tertiary/College	.090			.124			.200			.009		
% females working in EA	.953	.134	1,885	.848	.229	4,469	.975	.065	1,447	.787	.209	3,723
Instrumental, baseline												
Avg. no. media outlets heard FP	.932	.704	1,885	1.975	.838	4,469	1.424	.893	1,447	.955	.555	3,723
% public facilities offer FP services	.319	.344	1,855	.871	.227	4,329	.700	.276	1,413	.939	.248	3,433

Table 2: Descriptive statistics, all women

Variables	Dem. Rep. Congo			Kenya			Nigeria			Burkina Faso		
	Mean/ Prop.	SD	Obs.	Mean/ Prop.	SD	Obs.	Mean/ Prop.	SD	Obs.	Mean/ Prop.	SD	Obs.
Outcome variables												
Financial autonomy, follow-up	.950	.847	3,475	1.695	1.056	6,934	1.978	.959	2,084	1.082	.843	5,198
Treatment variables												
Use of any contraceptive method, baseline (*ref. Nonuse*)	.409		3,478	.457		6,934	.247		2,086	.288		5,207
Use of any modern contraceptive method, baseline (*ref. Nonuser or user of traditional*)	.244		3,478	.431		6,934	.174		2,086	.269		5,207
Stopper (*ref. Continuer or switcher*)	.186		1,586	.135		3,466	.194		653	.210		2,027
Control variables, baseline												
In-union (*ref. Not in-union*)	.520		3,477	.589		6,933	.689		2,086	.763		5,207
Urban (*ref. Rural*)	1.000		3,478	.305		6,934	.692		2,086	.229		5,207
Wealth quintile			3,478			6,934			2,086			5,207
1. Lowest quintile	.185			.202			.174			.342		
2. Lower quintile	.181			.227			.198			.326		
3. Middle quintile	.200			.209			.195			.331		
4. Higher quintile	.207			.184			.213					
5. Highest quintile	.227			.178			.219					
Age			3,478			6,934			2,086			5,207
15-24	.408			.396			.332			.384		
25-34	.294			.314			.332			.309		
35-49	.298			.290			.337			.308		
Wants more children (*ref. No more/don't know*)	.716		3,239	.611		6,696	.719		1,877	.801		4,998
Parity			3,473			6,933			2,086			5,203
0-1	.494			.439			.407			.358		
2-3	.241			.283			.261			.242		
4+	.265			.277			.332			.401		
Education			3,474			6,934			2,084			5,205
None/Primary	.219			.492			.379			.777		
Post-Primary/Secondary	.659			.380			.407			.206		
Tertiary/College	.122			.128			.214			.017		
% females working in EA	.955	.129	3,478	.851	.229	6,934	.973	.067	2,086	.794	.199	5,207
Instrumental, baseline												
Avg. no. media outlets heard FP	.981	.655	3,478	2.012	.834	6,934	1.530	.875	2,086	1.002	.565	5,207
% public facilities offer FP services	.263	.320	3,434	.868	.227	6,714	.695	.266	2,052	.927	.263	4,755

Figure 1: Distribution of women by level of household decision-making by contraceptive status reported at baseline

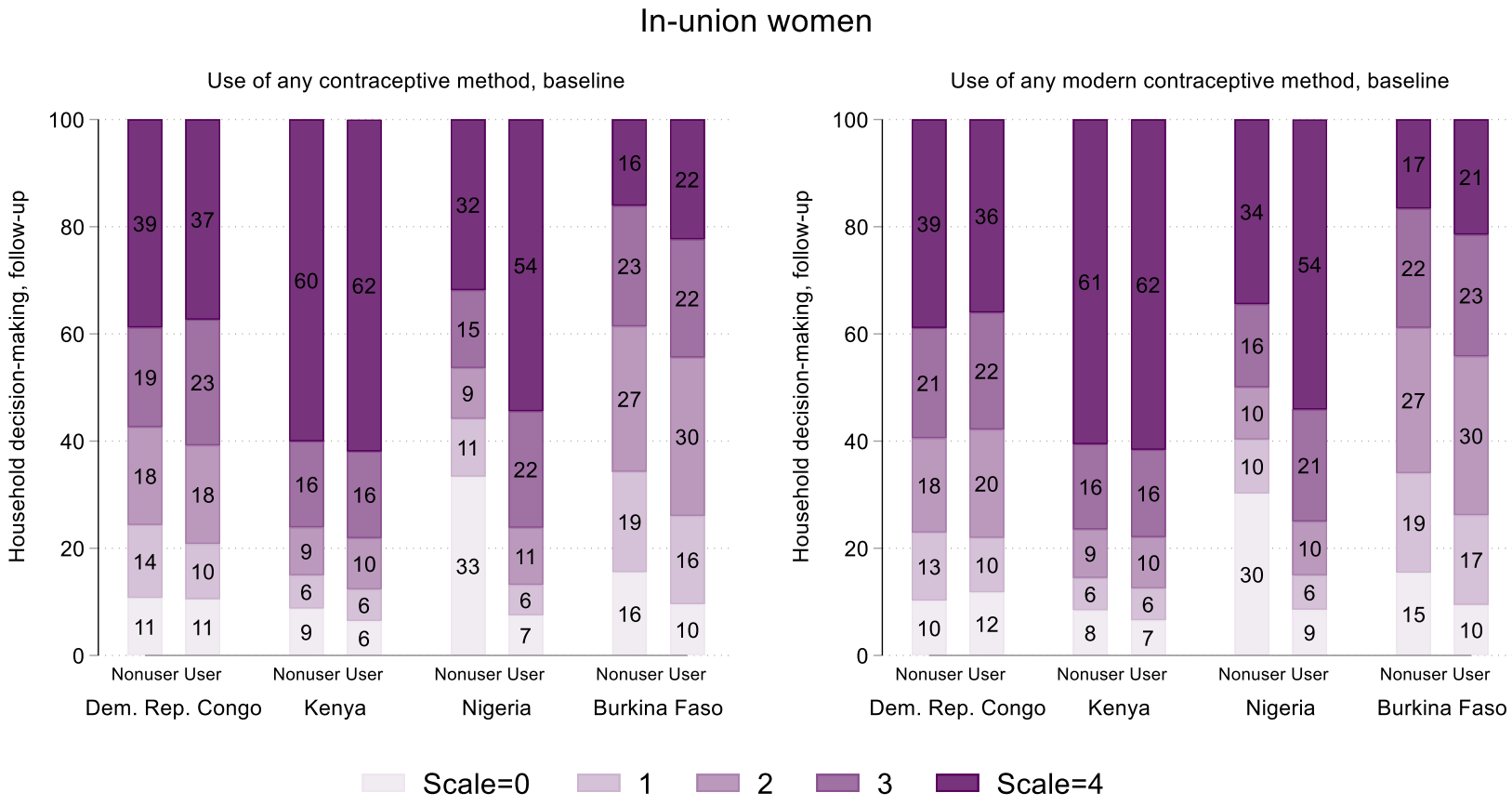

Figure 2: Distribution of women by level of financial autonomy by contraceptive status reported at baseline

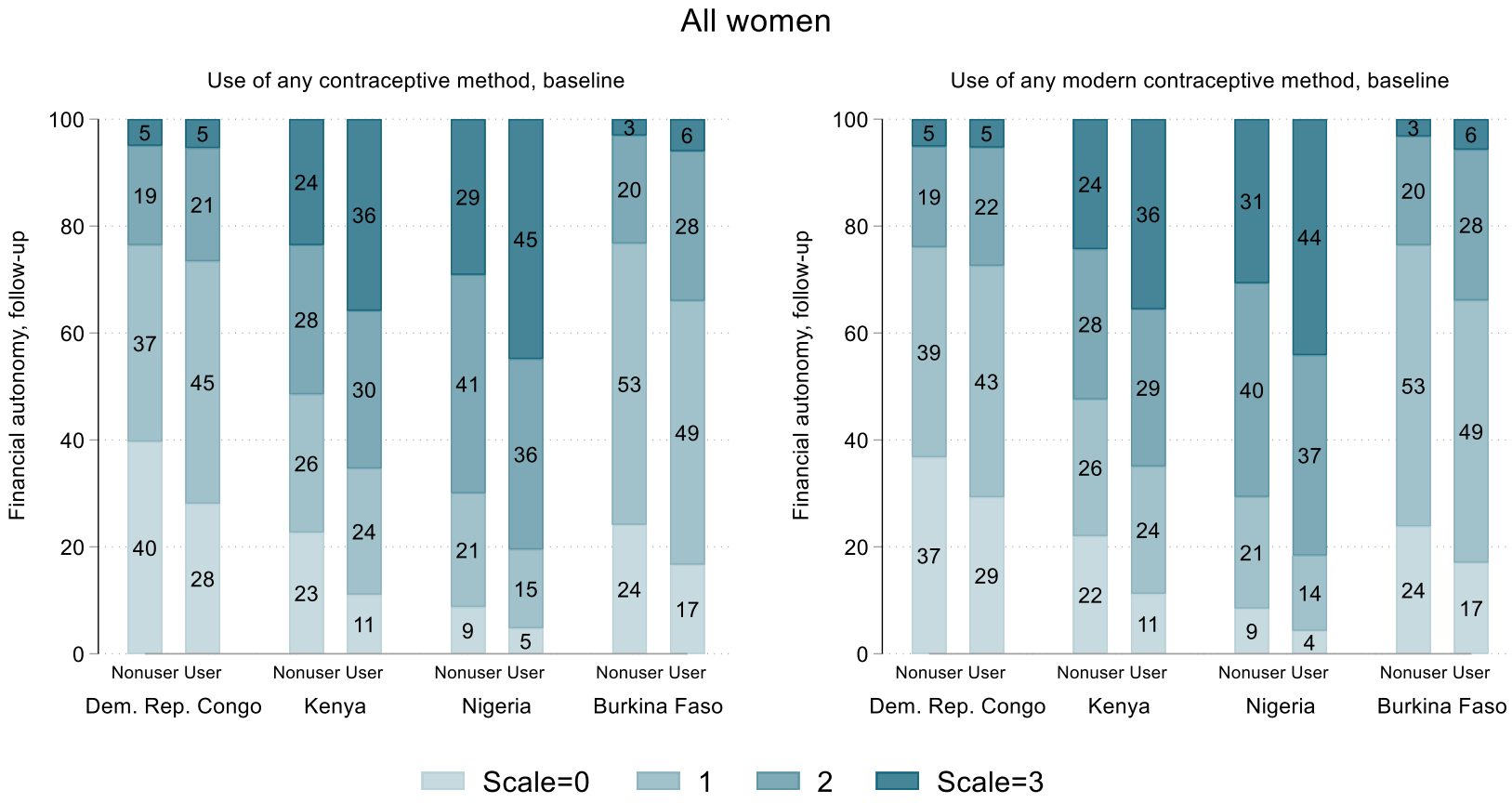

Table 3: The effects of baseline use of any contraceptive method and any modern contraceptive method on follow-up household decision-making, in-union women

	Outcome 1: Household decision-making (follow-up)				
Variables	Pooled	Dem. Rep. Congo	Kenya	Nigeria	Burkina Faso
OLS					
Use of any contraceptive method (baseline)	**0.125*****	-0.029	0.043	**0.183****	**0.179*****
	[0.074 - 0.176]	[-0.155 - 0.097]	[-0.038 - 0.123]	[0.011 - 0.355]	[0.096 - 0.263]
Observations	10,944	1,732	3,992	1,308	3,911
R-squared	0.195	0.115	0.046	0.436	0.126
Use of any modern contraceptive method (baseline)	**0.097*****	-0.070	0.031	0.146	**0.169*****
	[0.045 - 0.150]	[-0.211 - 0.070]	[-0.048 - 0.110]	[-0.038 - 0.330]	[0.084 - 0.254]
Observations	10,944	1,732	3,992	1,308	3,911
R-squared	0.195	0.115	0.046	0.436	0.125
IV					
Use of any contraceptive method (baseline)	**1.199*****	-0.341	**1.731*****	**4.098*****	**-2.201*****
	[0.740 - 1.659]	[-1.437 - 0.756]	[0.993 - 2.470]	[1.951 - 6.244]	[-3.544 - -0.857]
Observations	10,520	1,714	3,863	1,260	3,681
F-statistic	**79.73**	**11.53**	**34.38**	**10.43**	**13.61**
Use of any modern contraceptive method (baseline)	**1.342*****	-0.019	**1.822*****	**7.337****	**-2.376*****
	[0.818 - 1.865]	[-1.130 - 1.093]	[1.040 - 2.604]	[1.559 - 13.115]	[-3.855 - -0.896]
Observations	10,520	1,714	3,863	1,260	3,681
F-statistic	**66.51**	**13.74**	**31.06**	3.579	**12.13**

Notes: Robust standard errors, corrected for arbitrary nonindependence of observations within an enumeration area (community), were used to construct the 95% CIs in brackets. All 2SLS and reduced form regressions control for area of residence (in Kenya and Burkina Faso), wealth, age, wants more children, number of children, education, and female labor force participation in the community. Employed IVs are average number of outlets in the EA on which women reported they heard family planning messages and the proportion of public health facilities in the EA that offer family planning services. *** p<0.01, ** p<0.05, * p<0.1

Table 4: The effects of baseline use of any contraceptive method and any modern contraceptive method on follow-up financial autonomy, all women

	Outcome 2: Financial autonomy (follow-up)				
Variables	Pooled	Dem. Rep. Congo	Kenya	Nigeria	Burkina Faso
OLS					
Use of any contraceptive method (baseline)	**0.155*** **	**0.078*** **	**0.174*** **	**0.120** **	**0.147*** **
	[0.126 - 0.184]	[0.020 - 0.135]	[0.123 - 0.224]	[0.022 - 0.218]	[0.101 - 0.193]
Observations	16,831	3,240	6,699	1,864	5,027
R-squared	0.249	0.171	0.169	0.144	0.093
Use of any modern contraceptive method (baseline)	**0.154*** **	**0.077** **	**0.165*** **	**0.119** **	**0.136*** **
	[0.124 - 0.184]	[0.012 - 0.142]	[0.114 - 0.216]	[0.013 - 0.224]	[0.090 - 0.183]
Observations	16,831	3,240	6,699	1,864	5,027
R-squared	0.249	0.171	0.169	0.144	0.092
IV					
Use of any contraceptive method (baseline)	**2.673*** **	**5.313*** **	**2.409*** **	0.616	**3.221*** **
	[2.144 - 3.202]	[1.939 - 8.687]	[1.557 - 3.261]	[-0.209 - 1.441]	[1.966 - 4.476]
Observations	16,216	3,213	6,485	1,816	4,700
F-statistic	**69.520**	5.089	**25.510**	**13.650**	**14.940**
Use of any modern contraceptive method (baseline)	**2.953*** **	**5.368*** **	**2.462*** **	1.087	**3.486*** **
	[2.341 - 3.565]	[2.295 - 8.442]	[1.577 - 3.346]	[-0.470 - 2.645]	[2.073 - 4.900]
Observations	16,216	3,213	6,485	1,816	4,700
F-statistic	**60.800**	6.409	**24.280**	4.935	**13.580**

Notes: Robust standard errors, corrected for arbitrary nonindependence of observations within an enumeration area (community), were used to construct the 95% CIs in brackets. All 2SLS and reduced form regressions control for area of residence (in Kenya and Burkina Faso), wealth, age, wants more children, number of children, education, and female labor force participation in the community, and marital status. Employed IVs are average number of outlets in the EA on which women reported they heard family planning messages and the proportion of public health facilities in the EA that offer family planning services. *** p<0.01, ** p<0.05, * p<0.1

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