Women's Empowerment, the Gender Gap in Desired Fertility, and Fertility Outcomes in Developing Countries

Matthias Doepke
Michèle Tertilt

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Matthias Doepke
Northwestern University and IZA

Michèle Tertilt
University of Mannheim and IZA

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ABSTRACT

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We document evidence on preferences for childbearing in developing countries. Across countries, men usually desire larger families than women do. Within countries, we find wide dispersion in spouses' desired fertility: there are many couples whose ideal family size differs by five children or more. This disagreement between spouses suggests that the extent to which women are empowered should matter for fertility choices. We point to evidence at both the macro and micro levels that this is indeed the case. We conclude that taking account of household bargaining and women's empowerment in analyses of fertility is an important challenge for research.

Corresponding author:
Matthias Doepke
Northwestern University
Department of Economics
2211 Campus Drive
Evanston, IL 60208
USA
E-mail: doepke@northwestern.edu

1   Introduction

Perhaps the most consequential decision that people in developing countries make is how many children to have. Through the quantity-quality tradeoff, fertility choice is closely associated with the accumulation of human capital, which is a main driver of success at the individual level and of overall economic development at the aggregate level. Not surprisingly, successful development is universally accompanied by large declines in fertility, a pattern known as the demographic transition.

One way in which fertility choice is special is that it is a joint decision of two people: it takes a mother and a father to make a child, and women and men do not always have the same preferences over fertility. In this paper, we document evidence on women's and men's preferences for childbearing in developing countries. Based on the evidence, we argue that incorporating household bargaining in analyses of fertility choice in developing countries is an important challenge for research. We also argue that there is a connection between fertility choice and the role of women's rights in economic development. If women and men have different preferences for childbearing, the extent to which women are empowered should have a bearing on fertility choices. There is evidence at both the macro and the micro level that this is indeed the case.

2   Women's Empowerment, Fertility, and Development

Across countries, there is a strong relationship between women's empowerment and fertility. As a measure of empowerment, we consider the OECD Development Centre's Social Institutions and Gender Index (SIGI), which measures discrimination against women in social institutions (formal and informal laws, social norms, and practices). The index is scaled between 0 and 1, where higher values correspond to more discrimination and hence less empowerment of women. Our fertility measure is the total fertility rate in 2010 from the World Development Indicators. Across 105 countries with available data, there is a strong positive correlation of 0.66 between SIGI and fertility (Figure 1). Some of this statistical association arises because both fertility and women's empowerment are linked to the overall level of development. However, in a regression of the fertility rate on

the logarithm of GDP per capita (World Development Indicators, PPP adjusted in current international dollars) and SIGI, we still find a highly significant and quantitatively large association between SIGI and fertility. The estimated coefficient of 3.98 implies that a one-standard deviation decline in SIGI (i.e., more empowerment) is associated with a decline in fertility of 0.57 children (see appendix for further details).

There are a number of channels that can lead to a link between women's empowerment and fertility. For example, less discrimination against women is associated with increases in female education, which in turn increases the opportunity cost of childbearing and lowers fertility. Here we are interested in a different channel, namely the possibility that women and men have different preferences over childbearing, and that women's empowerment gives women more say in the fertility decision. A study in line with this hypothesis is Ashraf, Field, and Lee (2014), who find in a field experiment in Zambia that providing women better access to birth control in a way that can be concealed from their husbands substantially lowers fertility. To explore this hypothesis, we turn to data on gender differences in preferences over childbearing.

3 Differences in Desired Fertility between Women and Men

We use data from the Demographic and Health Surveys (DHS) to document differences between women and men in desired fertility. We focus on information on the ideal number of children; for respondents who already have children, the survey question is: "If you could go back to the time you did not have any children and could choose exactly the number of children to have in your whole life, how many would that be?" Figure 1 plots the desired fertility of women against the desired fertility of men across 51 countries. Women and men's preferences are highly correlated, suggesting that there are important factors driving fertility intentions that affect both genders in a similar way. Nevertheless, there are also important differences between the preferences of women and men: in most countries, men desire more children than women do. In high fertility countries, these differences can be large, reaching as high as 4.6 children in Chad.

Figure 1: Married women's and married men's desired fertility across countries
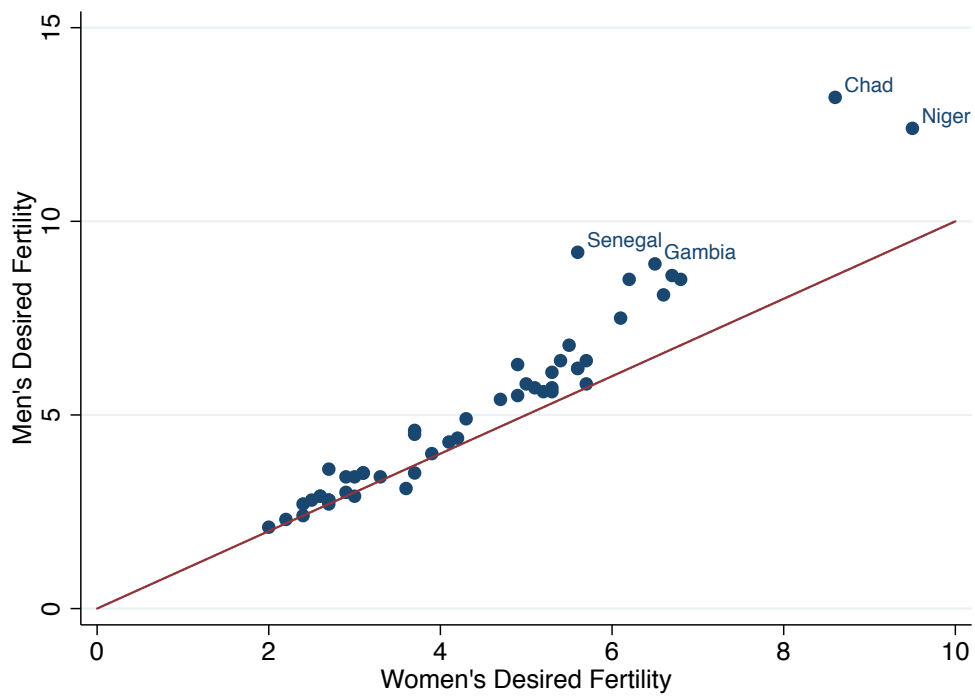
Source: Demographic and Health Surveys, various years, indicator "Mean ideal number of children for currently married women" resp. "…married men."

4   The Role of Age Gaps and Polygamy

The observation of a difference in desired fertility between women and men may seem to suggest a gap between desired and actual fertility for at least one gender. However, this is not necessarily the case: it is possible for men and women to have different *realized* levels of fertility. Such differences can arise if there are age gaps between wives and husbands and if cohorts vary in size (Tertilt 2005). For example, if there is a 20-year age gap between husbands and wives, and if cohort sizes double every 20 years, there will be two women for every man, and hence each man will have (on average) twice as many children as each woman. In this example, the gap in the number of women and men in a given marriage market (defined by the age gap) can result either in some women not marrying and not having children (which lowers average fertility for women), or men could have children with multiple women, through sequential marriage, through having children outside of marriage, or through polygamy.

Indeed, while illegal in much of the world, polygamy is still common in Africa, and the countries where women's and men's fertility intentions are particularly far apart are all countries where polygamy is widely practiced. Field et al. (2016) document differences in realized fertility across women and men, and find that these are substantial in a number of countries with widespread polygamy.

These findings show that accounting for gender gaps in realized fertility and for polygamy is important. However, this does not imply that there is little disagreement between women and men about childbearing. There are differences between women's and men's preferences over childbearing even in countries where there is no polygamy and age gaps between spouses are relatively small. More importantly, at the micro level we also observe a wide variation in fertility preferences *within* couples, even when we consider only monogamous couples.

5   Differences in Fertility Intentions at the Micro Level

To illustrate the wide range of fertility preferences within couples, Figure 2 plots the distribution of the difference between a married man's ideal number of children and that of his wife for two countries in the DHS, Burkina Faso and Ethiopia.

Figure 2: Kernel density plots of the difference in ideal number of children between the husband and wife for women age 45 and older by country
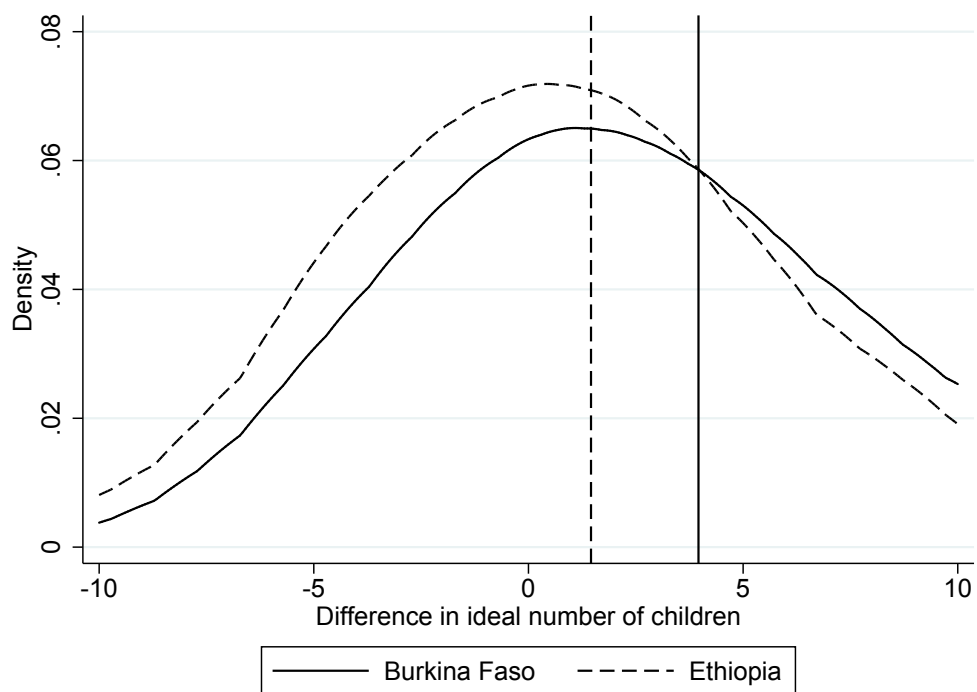
Source: Demographic and Health Surveys, Burkina Faso 2010–2011, Ethiopia 2011-2012. Vertical lines denote mean of difference in desired fertility for each country.

In Burkina Faso, polygamy is common, whereas in Ethiopia it is rare. We focus on couples where the wife is at least 45 years old, so that the wife's fertility is completed. In both countries, men on average desire larger families. In Burkina Faso, an average husband desires 4.0 children more than his wife does, and in Ethiopia, the mean of the gap in desired fertility between husbands and wives is 1.5. However, the main feature of the data displayed in Figure 2 is the extremely wide distribution of gaps in desired fertility, with many couples where the ideal family size deviates by five children or more.

Table 1 presents coefficient estimates for regressions of the wife's realized fertility on desired fertility for these couples. Realized fertility is correlated with the desired fertility of both spouses. In Ethiopia the men's preferences seem to matter more, whereas the opposite is true in Burkina Faso, where polygamy is much more common. One interpretation of this observation is that in a polygamous country, a man's desired fertility may be realized with other wives or future wives, so that his preferences are less pivotal for determining the number of children with a specific wife. In contrast, in a monogamous country such as Ethiopia, we would expect that the impact of women's and men's desired fertility on the actual number of children corresponds to the overall distribution of power in decisionmaking between the sexes.

When we interact desired fertility with an indicator for above-median education of the wife, we find that in both Burkina Faso and Ethiopia the desired fertility of more educated women has a larger impact on realized fertility compared to less educated women. To the extent that more educated women have more bargaining power in marriage, this finding offers support for a role of female empowerment in fertility decisions.

The data do not offer strong insight into the root causes of disagreement on fertility. We have considered a number of potential determinants of the gap in desired fertility between husband and wife, such as the age gap between the spouses, the education gap, the age of the wife, the labor force participation status of the wife, whether the couple is polygamous, and various indicators of the wife's role in making household decisions. Some of these variables have a significant impact on the difference in desired fertility in some specifications, but none of them plays an

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Table 1: Regressions of wife's realized fertility on wife's desired fertility $\bar{n}_f$, husband's desired fertility $\bar{n}_m$, and interaction with indicator for above-median female education h_f

	(1) Burkina Faso	(2) Burkina Faso	(3) Ethiopia	(4) Ethiopia
$\bar{n}_f$	0.38	0.32	0.16	0.08
	(0.07)	(0.08)	(0.06)	(0.05)
$\bar{n}_m$	0.19	0.12	0.20	0.12
	(0.05)	(0.06)	(0.06)	(0.06)
$h_f \times \bar{n}_f$		0.36		0.34
		(0.14)		(0.15)

Notes: Sample restricted to couples where the wife is at least 45 years old and where desired fertility does not exceed 15. Regressions also include constant and, in (2) and (4), indicator for high female education and interaction with husband's desired fertility. Standard errors in parentheses. See appendix for full results.

important role in both Burkina Faso and Ethiopia and after controlling for other factors. Moreover, in none of the specifications that we considered (details are available in the appendix) does the R^2 exceed 0.07, suggesting that only a small fraction of the variation in fertility preferences within couples is accounted for.

6 Household Bargaining and the Link from Fertility Intentions to Outcomes

The fact that many couples in developing countries disagree about the ideal family size suggests that household bargaining should matter for fertility outcomes. In addition, if women's bargaining power increases in the course of development as women's rights are expanded, this should affect fertility decisions and hence the speed of the demographic transition, which in turn feeds back into human capital accumulation and growth.

The observations discussed above already establish an empirical correlation between women's empowerment and fertility. We now consider how such a link

would arise in economic models of household decision making. In Doepke and Tertilt (2009), we contrast two extremes in terms of women's empowerment within the household. One is a setting of patriarchy, in which men make all the decisions. In such a setting, the realized fertility of a couple would be equal to the man's desired fertility alone.

The other extreme is a setting of equal rights and equal say in bargaining over fertility. In a recent study of bargaining over fertility in a developed-country context, Doepke and Kindermann (2016) argue that in this case each spouse should have veto power over having (additional) children. Their empirical results show that this is indeed the case: additional children are likely to be born only if *both* spouses want to expand the family. If there is a lack of ability to make compensating transfers between the spouses (for example, because of limited long-term commitment), Doepke and Kindermann (2016) show that in this case fertility will tend towards the minimum of the two spouses' desired fertility.

Combining these results, holding constant desired fertility of women and men, moving from patriarchy to equal rights will shift realized fertility from being given by man's desired fertility to the minimum of the woman's and the man's fertility. If there is wide variation in desired fertility within couples (which the data suggests is the case), a substantial fall in the overall fertility rate will result.

7 A Research Agenda

Our results point to an important research agenda on the role of joint decision making in the household for fertility outcomes in developing countries. Most of the existing literature on fertility choice is set in the framework of the unitary model of the household, which abstracts from gender differences in fertility intentions entirely. The study by Doepke and Kindermann (2016) builds on the assumption of veto power for each spouse, which matches well the data for developed countries, but may be less appropriate for developing countries where women have fewer rights. Other papers (such as Rasul (2008)) consider disagreement, but decisions end up being made by the woman alone. What is needed is research that fills the gap between these polar cases and that can capture the full variety in family institutions and relative power in family decision making

that we find in developing countries.

This research agenda could also benefit from better data on couples' fertility intentions. Most of the data is about "ideal family size," and it is not obvious how to interpret such a survey question from the perspective of an economic model. A question that maps more easily into a bargaining model of the household is one where each spouse is asked whether they, given the current situation of the household, would like to have a/another baby within the next few years. Such data has recently become available (from the Gender and Generations Programme) for a set of developed countries (Doepke and Kindermann 2016), but is not widely available for developing countries. Gathering data of this kind could be fruitful for advancing research on the role of household bargaining for fertility decisions, and ultimately for human capital accumulation and growth, in the overall process of economic development.

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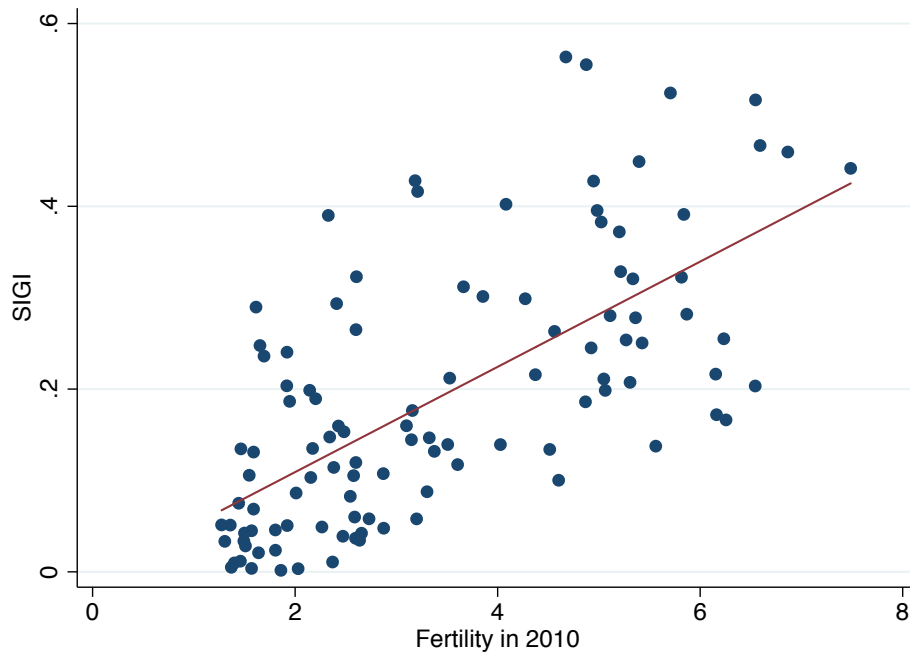
Figure 3: SIGI and total fertility rate in 2010

Data Appendix

This appendix provides regression tables and additional empirical results.

A   Women's Empowerment, Fertility, and Development

Across countries, there is a strong relationship between women's empowerment
and fertility. As a measure of empowerment, we consider the OECD Development
Centre's Social Institutions and Gender Index (SIGI), which measures discrim-
ination against women in social institutions (formal and informal laws, social
norms, and practices). The index is scaled between 0 and 1, where higher values
correspond to more discrimination and hence less empowerment of women. Our
fertility measure is the total fertility rate in 2010 from the World Development
Indicators. In Figure 3 we plot the SIGI value in 2014 and the fertility rate for each
of the 105 countries with available data. There is a strong positive correlation of
0.66 between SIGI and fertility.

We next explore how much of this association can be explained by the overall

level of development. Table 2 reports results from regressing the fertility rate on the logarithm of GDP per capita (2010, World Development Indicators, PPP adjusted in current international dollars) and SIGI. We find a highly significant and quantitatively large association between SIGI and fertility. The estimated coefficient of 3.98 implies that a one-standard deviation decline in SIGI (i.e., more empowerment) is associated with a decline in fertility of 0.57.

Table 2: SIGI regressions

	(1)	(2)
	Fertility	Fertility
GDP per capita, PPP	-0.937***	-0.933***
	(0.0562)	(0.0913)
SIGI		3.981***
		(0.696)
Constant	11.47***	10.62***
	(0.533)	(0.857)
Observations	189	105
R^2	0.599	0.691

Each column is the output from a separate regression. Dependent variable in all regressions is the total fertility rate in 2010. Standard errors reported in parentheses. * $p<.10$, ** $p<.05$, *** $p<.01$.

B   Differences in Desired Fertility between Women and Men

We now use data from the Demographic and Health Surveys (DHS) to document differences between women and men in desired fertility. We focus on information on the ideal number of children; for respondents who already have children, the survey question is: "If you could go back to the time you did not have any children and could choose exactly the number of children to have in your whole life, how many would that be?" The summary statistics for the sample of countries with available DHS data are reported in Table 3. In the full sample, the average total

fertility rate is 3.95. The desired number of children is on average higher for men than women (5.13 compared to 4.15). The average difference between men and women is 0.77. Because polygamy can play a role in the observed differences in desired fertility between men and women, we report the summary statistics separately for the sample of countries with available polygamy data, as well as for countries with below and above median polygamy level. In countries with high levels of polygamy, both men and women on average desire a higher number of children. However, the difference between men and women within the same country is also higher at 1.62 compared to 0.38 for countries with below median polygamy. At the same time, countries with high levels of polygamy also have higher values of SIGI, implying lower female empowerment in these countries.

In Tables 4 and 5, we explore how polygamy and female empowerment are associated with the gender gap in desired fertility. In particular, we regress the mean difference in ideal number of children between married men and married women on the percentage of men with multiple wives (% polygamy) and SIGI. In Table 5, we also control for log GDP per capita in all specifications. The results suggest that both polygamy and low levels of female empowerment are key predictors of the gap in desired fertility between men and women, even after controlling for the level of development.

Table 3: Summary statistics from Demographic and Health Surveys

	All Mean (SD)	Polygamy Available Mean (SD)	Below Median Polyg. Mean (SD)	Above Median Polyg. Mean (SD)
Total fertility rate 15-49	3.95	4.55	3.85	5.37
	(1.35)	(1.24)	(1.08)	(0.87)
Ideal children for married men	5.13	5.82	4.34	7.55
	(2.50)	(2.51)	(1.56)	(2.32)
Ideal children for married women	4.15	4.87	3.96	5.93
	(1.53)	(1.64)	(1.29)	(1.36)
Difference in ideal children	0.77	0.95	0.38	1.62
	(0.97)	(1.04)	(0.45)	(1.15)
SIGI	0.19	0.27	0.24	0.31
	(0.14)	(0.11)	(0.10)	(0.12)
% Polygamy		9.94	3.91	16.97
		(8.16)	(2.58)	(6.62)
Observations	116	39	21	18

Data from the most recently available Demographic and Health Surveys (various). "Polygamy available" refers to the sample of countries where polygamy data is available. % Polygamy refers to the percentage of married/in union men with 2 or more wives. In the sample with available data, the median polygamy level is 7.8%. Mean and standard deviations (in parentheses) are reported.

Table 4: Explaining cross-country differences in desired fertility between men and women

	(1)	(2)	(3)	(4)	(5)	(6)
% Polygamy	0.0977***			0.0900***		
	(0.0192)			(0.0206)		
% Polygamy (Missing coded as 0)		0.0921***			0.0869***	
		(0.0163)			(0.0191)	
SIGI			4.368***	1.525	0.907	2.158*
			(1.213)	(1.188)	(0.923)	(1.112)
Polygamy over 20%						1.411***
						(0.470)
Constant	-0.0197	0.0726	-0.252	-0.343	-0.0978	0.159
	(0.144)	(0.0848)	(0.250)	(0.309)	(0.189)	(0.331)
Observations	39	51	47	36	47	36
R^2	0.585	0.621	0.281	0.613	0.639	0.411
Y-Mean	0.951	0.773	0.791	0.981	0.791	0.981

Each column is the output from a separate regression. Dependent variable in all regressions is the difference in mean ideal number of children between married men and married women. % Polygamy refers to the percentage of married/in union men with 2 or more wives. In columns (2) and (5), countries with missing polygamy data are assigned 0% polygamy. Polygamy over 20% is a dummy that indicates if the country has over 20% polygamy. Standard errors reported in parentheses. * p <.10, ** p <.05, *** p <.01.

Table 5: Explaining cross-country differences in desired fertility between men and women – controlling for GDP

	(1)	(2)	(3)	(4)	(5)	(6)
% Polygamy	0.107***			0.0979***		
	(0.0217)			(0.0223)		
GDP per capita, PPP	0.211*	0.202*	-0.179	0.215	0.204*	-0.0273
	(0.122)	(0.106)	(0.124)	(0.134)	(0.112)	(0.131)
% Polygamy (Missing coded as 0)		0.104***			0.0970***	
		(0.0201)			(0.0214)	
SIGI			3.859***	1.646	1.090	2.127*
			(1.319)	(1.186)	(0.938)	(1.152)
Polygamy over 20%						1.399***
						(0.499)
Constant	-1.752	-1.643*	1.304	-2.132*	-1.861*	0.382
	(1.068)	(0.953)	(1.172)	(1.206)	(1.036)	(1.200)
Observations	39	51	47	36	47	36
R^2	0.604	0.642	0.300	0.632	0.659	0.411
Y-Mean	0.951	0.773	0.791	0.981	0.791	0.981

Each column is the output from a separate regression. Dependent variable in all regressions is the difference in mean ideal number of children between married men and married women. GDP per capita refers to logarithm of GDP per capita, PPP in constant international 2011 dollars. % Polygamy refers to the percentage of married/in union men with 2 or more wives. In columns (2) and (5), countries with missing polygamy data are assigned 0% polygamy. Polygamy over 20% is a dummy that indicates if the country has over 20% polygamy. Standard errors reported in parentheses. * p <.10, ** p <.05, *** p <.01.

C   Differences in Fertility Intentions at the Micro Level

We next utilize the microdata from the Demographic and Health Surveys for Burkina Faso (2010-2011) and Ethiopia (2011-2012). To reduce dependence on outliers, in the following results we restrict attention to couples whose desired number of children for both the man and the woman are less than 15. Because we are interested in the relationship between desired fertility and actual fertility, we also restrict attention to couples whose fertility is likely to be completed, i.e. couples with the woman at least 40 or 45 years old. We report the summary statistics for this sample in Table 6 for Burkina Faso and Ethiopia separately. In Burkina Faso, the age gap between the husband and the wife is on average 5.9 years for women who at least 40 years old/6.8 years for women who at least 45 years old. Total fertility is on average 6.4/6.6 for women and 8.6/8.9 for men. Desired fertility on average is close to actual for women, slightly less for men. Within the same couple, the difference in desired fertility is on average 0.9/1.0. Polygamy is high in Burkina Faso, with almost 40% of the women living in a polygamous household. Women also do not have much say in the household. Only 25% have some say in own health care and 20% have some say in large household purchases.

In comparison, Ethiopian couples also have large age gaps of around 6 years. Total fertility is also similar to that of Burkina Faso with 7 children on average for women. There is, however, a larger difference between actual and desired fertility. On average, women's ideal number of children is almost 2 less than actual. The difference in ideal number of children between the husband and wife is similar to that in Burkina Faso. Men on average desire one more child than their wives. Polygamy is rare in Ethiopia. Only 5% of women live in polygamous households. While women are less likely to work (64% compared to 83% in Burkina Faso), they have much more say in household decisions. A large majority of women have some say in the four categories we examine: own health care, large household purchases, visits to family or relatives, and what to do with money the husband earns.

To illustrate the wide range of fertility preferences within couples, Figure 4 plots the distribution of the difference between a married man's desired fertility and

Table 6: Summary statistics for DHS microdata

(a) Burkina Faso, 2010-2011

	Women 40+ Mean (SD)	Men with wives 40+ Mean (SD)	Women 45+ Mean (SD)	Men with wives 45+ Mean (SD)
Age	43.60	50.38	46.74	52.63
	(2.85)	(5.15)	(1.38)	(4.52)
Age gap	6.78		5.89	
	(4.76)		(4.43)	
Years of education	1.24	1.84	1.27	1.96
	(3.30)	(3.94)	(3.58)	(4.19)
Education gap	0.59		0.67	
	(2.22)		(2.06)	
Total children	6.42	8.59	6.64	8.92
	(2.38)	(4.58)	(2.54)	(4.67)
Ideal number of children	6.43	7.32	6.45	7.52
	(2.17)	(3.17)	(2.18)	(3.21)
Difference in ideal number of children	0.90		1.08	
	(3.35)		(3.49)	
Polygamy	0.38		0.40	
	(0.49)		(0.49)	
Worked in past 12 months (woman)	0.83		0.85	
	(0.38)		(0.36)	
Female HH decision index	0.97		0.98	
	(1.15)		(1.16)	
Woman has some say in ...				
- own health care	0.25		0.25	
	(0.44)		(0.43)	
- large household purchases	0.20		0.19	
	(0.40)		(0.40)	
- visits to family or relatives	0.45		0.46	
	(0.50)		(0.50)	
- what to do with money husband earns	0.07		0.09	
	(0.26)		(0.28)	
Observations	573	573	222	222

Mean and standard errors (in parentheses) are reported for couples in the Demographic Health Surveys for Burkina Faso from 2010-2011. Couples with woman or man with desired children greater than or equal to 15 are dropped. Female HH Decision index is the sum of variables in which the woman has some say, either as the sole decision maker or joint with the husband: own health care, large household purchases, visits to family/relatives, what to do with money husband earns.

(b) Ethiopia, 2011-2012

	Women 40+ Mean (SD)	Men with wives 40+ Mean (SD)	Women 45+ Mean (SD)	Men with wives 45+ Mean (SD)
Age	43.54	49.63	46.56	52.24
	(2.92)	(5.36)	(1.44)	(4.36)
Age gap	6.08		5.68	
	(4.88)		(4.44)	
Years of education	1.15	2.66	0.98	2.32
	(2.96)	(3.92)	(2.89)	(3.66)
Education gap	1.47		1.31	
	(2.71)		(2.36)	
Total children	7.05	7.46	7.42	7.64
	(2.79)	(3.01)	(2.64)	(2.63)
Ideal number of children	5.35	6.53	5.71	6.28
	(3.30)	(3.09)	(3.27)	(2.93)
Difference in ideal number of children	1.19		0.57	
	(4.34)		(3.91)	
Polygamy	0.05		0.03	
	(0.22)		(0.17)	
Worked in past 12 months (woman)	0.64		0.63	
	(0.48)		(0.49)	
Female HH decision index	3.04		3.02	
	(1.25)		(1.31)	
Woman has some say in ...				
- own health care	0.76		0.75	
	(0.43)		(0.43)	
- large household purchases	0.68		0.66	
	(0.47)		(0.47)	
- visits to family or relatives	0.81		0.84	
	(0.40)		(0.37)	
- what to do with money husband earns	0.79		0.77	
	(0.41)		(0.42)	
Observations	617	617	246	246

Mean and standard errors (in parentheses) are reported for couples in the Demographic Health Surveys for Ethiopia from 2011-2012. Couples with woman or man with desired children greater than or equal to 15 are dropped. Female HH Decision index is the sum of variables in which the woman has some say, either as the sole decision maker or joint with the husband: own health care, large household purchases, visits to family/relatives, what to do with money husband earns.
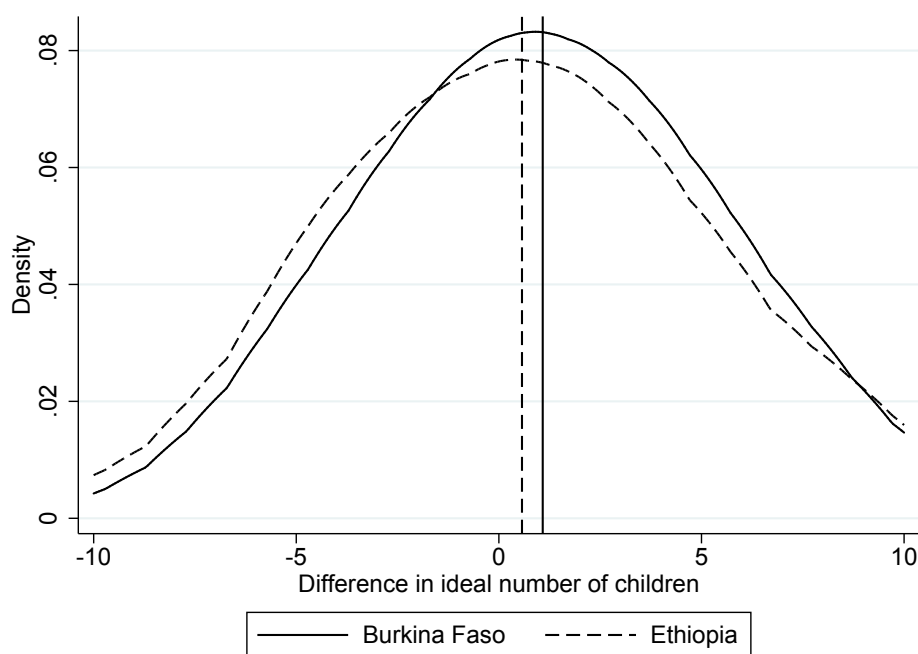
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that of his wife. This is analogous to Figure 2 in the main text, except that here we restricted the sample to couples with desired children less than 15.

Figure 4: Distribution of difference in desired children between men and women for couples with women 45+, desired children less than 15

In Table 7, we consider a number of potential determinants of the difference in the desired number of children between husband and wife, such as the age gap between the spouses, the education gap, the age of the wife, the labor force participation status of the wife, whether the couple is polygamous, and various indicators of the wife's role for making household decisions. Some of these variables have a significant impact on the difference in desired fertility in some specifications, but none of them plays an important role in both Burkina Faso and Ethiopia and after controlling for other factors. Moreover, in none of the specifications that we considered does the R^2 exceed 0.07, suggesting that only a small fraction of the variation in fertility preferences within couples is accounted for.

Finally, we utilize the microdata to explore how female empowerment within a couple can explain the differences between actual and desired fertility. Tables 8

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Table 7: Explaining differences in desired children between men and women for couples with women 40+

(a) Burkina Faso

	(1)	(2)	(3)	(4)	(5)
Age	0.0105	0.0116	0.0131	0.00884	0.0114
	(0.0561)	(0.0562)	(0.0560)	(0.0560)	(0.0559)
Age gap	0.0128	0.0101	0.0123	0.0123	0.0118
	(0.0300)	(0.0307)	(0.0301)	(0.0300)	(0.0301)
Education gap	-0.130**	-0.122**	-0.127**	-0.127**	-0.124**
	(0.0581)	(0.0601)	(0.0586)	(0.0594)	(0.0598)
Polygamy=1	1.546***	1.468***	1.505***	1.544***	1.502***
	(0.371)	(0.396)	(0.379)	(0.371)	(0.379)
Woman has say in own health care		0.396			
		(0.544)			
Woman has say in large household purchases		-0.350			
		(0.517)			
Woman has say in visits to family or relatives		-0.295			
		(0.365)			
Woman has say in what to do with money husband earns		-0.673			
		(0.691)			
Female HH decision index			-0.142		-0.144
			(0.136)		(0.136)
Worked in past 12 months (woman)				0.252	0.261
				(0.434)	(0.433)
Constant	-0.155	-0.0305	-0.113	-0.290	-0.253
	(2.476)	(2.513)	(2.489)	(2.506)	(2.517)
Observations	573	567	573	573	573
R^2	0.0622	0.0685	0.0646	0.0630	0.0654
Y-Mean	0.895	0.877	0.895	0.895	0.895

Each column is the output from a separate regression. Dependent variable in all regressions is the difference in ideal number of children between the man and woman within the couple. Couples with woman or man with desired children greater than or equal to 15 are dropped. Female HH Decision index is the sum of variables in which the woman has some say, either as the sole decision maker or joint with the husband: own health care, large household purchases, visits to family/relatives, what to do with money husband earns. Standard errors reported in parentheses. * $p <.10$, ** $p <.05$, *** $p <.01$.

(b) Ethiopia

	(1)	(2)	(3)	(4)	(5)
Age	-0.119	-0.115	-0.125	-0.120	-0.125
	(0.0877)	(0.0832)	(0.0860)	(0.0875)	(0.0857)
Age gap	0.0655	0.0561	0.0504	0.0660	0.0508
	(0.0465)	(0.0461)	(0.0463)	(0.0464)	(0.0462)
Education gap	0.125	0.123	0.123	0.127	0.125
	(0.0934)	(0.0876)	(0.0904)	(0.0933)	(0.0901)
Polygamy=1	1.182	0.803	0.823	1.166	0.799
	(0.940)	(1.015)	(0.999)	(0.939)	(1.000)
Woman has say in own health care		-0.608			
		(0.659)			
Woman has say in large household purchases		-0.258			
		(0.599)			
Woman has say in visits to family or relatives		-1.184*			
		(0.699)			
Woman has say in what to do with money husband earns		0.156			
		(0.634)			
Female HH decision index			-0.449**		-0.454**
			(0.210)		(0.210)
Worked in past 12 months (woman)				0.189	0.243
				(0.471)	(0.466)
Constant	5.751	7.086*	7.459*	5.627	7.317*
	(3.992)	(3.940)	(4.119)	(3.973)	(4.094)
Observations	617	611	617	617	617
R^2	0.0247	0.0472	0.0408	0.0251	0.0415
Y-Mean	1.193	1.194	1.193	1.193	1.193

Each column is the output from a separate regression. Dependent variable in all regressions is the difference in ideal number of children between the man and woman within the couple. Couples with woman or man with desired children greater than or equal to 15 are dropped. Female HH Decision index is the sum of variables in which the woman has some say, either as the sole decision maker or joint with the husband: own health care, large household purchases, visits to family/relatives, what to do with money husband earns. Standard errors reported in parentheses. * $p <.10$, ** $p <.05$, *** $p <.01$.

and 9 report results for couples with women at least 40 while Tables 10 and 11 report those for couples with women at least 45 years old. In our baseline specification, we regress the wife's actual fertility on the desired fertility of the woman and the man. We next add different variables that can capture female empowerment in the household such as high female education, a high age gap, a high education gap, a high female household decision index, and if the woman worked. We interact these variables with the desired fertility of man and woman to see how empowerment changes the bargaining power of the woman relative to the man.

From Tables 8 and 10, we observe that the desired fertility of the woman is more predictive of her actual fertility than that of her husband in Burkina Faso. We see an opposite pattern in Ethiopia. This difference is most likely driven by much higher rates of polygamy in Burkina Faso, so that men are able to achieve desired fertility through multiple wives.

Next, consider the role of female empowerment for fertility decisions. Consider Tables 10 and 11, which provide results for older women who have already completed their fertility. A high level of female education is associated with a larger impact of the wife's desired fertility on actual fertility in both countries. To the extent that more educated women are more empowered, this is consistent with the hypothesis that women's empowerment increases women's say over their own fertility. However, in the analogous regressions for women at least 40 years old in Table 8 we see that in couples where the wife has more education *both* the wife's and the husband's desired fertility is more closely associated with the outcome. A potential explanation is that when the woman has more education, the couple is better at controlling fertility. Education also plays a role when it is measured as the education gap between spouses: in Ethiopian couples with a large education gap (i.e. the husband has a lot more education than the wife), the husband's fertility preferences matter considerably more for the fertility outcome compared to couples with a small education gap. However, in Burkina Faso the education gap does not have large effects. The age gap, the female household decision index, and female labor supply do not have a strong association with fertility outcomes in either country.

Table 8: Relationship between actual and desired fertility at the micro level for couples with women 40+

(a) Burkina Faso

	(1) Total children	(2) Total children	(3) Total children	(4) Total children
Ideal children (woman)	0.412*** (0.0424)	0.324*** (0.0474)	0.397*** (0.0502)	0.373*** (0.0483)
Ideal children (man)	0.177*** (0.0291)	0.128*** (0.0325)	0.240*** (0.0377)	0.180*** (0.0331)
High female education=1		-3.583*** (0.533)		
High female education=1 × Ideal children (woman)		0.378*** (0.0750)		
High female education=1 × Ideal children (man)		0.118 (0.0856)		
High age gap=1			0.823 (0.625)	
High age gap=1 × Ideal children (woman)			0.0262 (0.0839)	
High age gap=1 × Ideal children (man)			-0.140** (0.0555)	
High education gap=1				-1.141 (0.722)
High education gap=1 × Ideal children (woman)				0.247** (0.108)
High education gap=1 × Ideal children (man)				-0.0651 (0.0778)
Constant	2.498*** (0.309)	3.605*** (0.392)	2.153*** (0.383)	2.759*** (0.387)
Observations	573	573	573	573
R^2	0.238	0.273	0.246	0.245
Y-Mean	6.527	6.527	6.527	6.527

Each column is the output from a separate regression. Dependent variable in all regressions is the wife's total number of children. Couples with woman or man with desired children greater than or equal to 15 are dropped. High female education refers to women with above median education level for those age 40+. High age (education) gap refers to women whose age (education) difference with their husband is above the median husband-wife difference for women 40+. In Burkina Faso, median years of education is 0, median age gap is 8, and median education gap is 0. Standard errors reported in parentheses. * $p<.10$, ** $p<.05$, *** $p<.01$.

(b) Ethiopia

	(1) Total children	(2) Total children	(3) Total children	(4) Total children
Ideal children (woman)	0.157***	0.0742**	0.120**	0.174***
	(0.0350)	(0.0368)	(0.0466)	(0.0450)
Ideal children (man)	0.260***	0.144***	0.283***	0.195***
	(0.0362)	(0.0386)	(0.0482)	(0.0455)
High female education=1		-4.453***		
		(0.601)		
High female education=1 × Ideal children (woman)		0.208**		
		(0.0820)		
High female education=1 × Ideal children (man)		0.241***		
		(0.0812)		
High age gap=1			-0.249	
			(0.686)	
High age gap=1 × Ideal children (woman)			0.0848	
			(0.0707)	
High age gap=1 × Ideal children (man)			-0.0432	
			(0.0749)	
High education gap=1				-1.019
				(0.649)
High education gap=1 × Ideal children (woman)				-0.0596
				(0.0704)
High education gap=1 × Ideal children (man)				0.165**
				(0.0735)
Constant	3.925***	5.729***	4.017***	4.370***
	(0.322)	(0.369)	(0.388)	(0.422)
Observations	617	617	617	617
R^2	0.128	0.237	0.130	0.138
Y-Mean	6.514	6.514	6.514	6.514

Each column is the output from a separate regression. Dependent variable in all regressions is the wife's total number of children. Couples with woman or man with desired children greater than or equal to 15 are dropped. High female education refers to women with above median education level for those age 40+. High age (education) gap refers to women whose age (education) difference with their husband is above the median husband-wife difference for women 40+. In Ethiopia, median years of education is 0, median age gap is 6, and median education gap is 0. Standard errors reported in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$.

Table 9: Relationship between actual and desired fertility at the micro level for couples with women 40+ (using alternative female empowerment variables)

(a) Burkina Faso

	(1) Total children	(2) Total children	(3) Total children
Ideal children (woman)	0.412***	0.390***	0.488***
	(0.0424)	(0.0510)	(0.125)
Ideal children (man)	0.177***	0.167***	0.247***
	(0.0291)	(0.0341)	(0.0665)
High female HH decision index=1		-0.691	
		(0.637)	
High female HH decision index=1 × Ideal children (woman)		0.0519	
		(0.0888)	
High female HH decision index=1 × Ideal children (man)		0.0222	
		(0.0618)	
Worked in past 12 months (woman)=1			1.434*
			(0.744)
Worked in past 12 months (woman)=1 × Ideal children (woman)			-0.0899
			(0.133)
Worked in past 12 months (woman)=1 × Ideal children (man)			-0.0877
			(0.0741)
Constant	2.498***	2.785***	1.326**
	(0.309)	(0.388)	(0.657)
Observations	573	573	573
R^2	0.238	0.241	0.243
Y-Mean	6.527	6.527	6.527

Each column is the output from a separate regression. Dependent variable in all regressions is the wife's total number of children. Couples with woman or man with desired children greater than or equal to 15 are dropped. Female HH Decision index is the sum of variables in which the woman has some say, either as the sole decision maker or joint with the husband: own health care, large household purchases, visits to family/relatives, what to do with money husband earns. High female HH decision index refers to women with above median index for those age 40+. In Burkina Faso, median female HH decision index is 2. Standard errors reported in parentheses. * p <.10, ** p <.05, *** p <.01.

	(1) Total children	(2) Total children	(3) Total children
Ideal children (woman)	0.157***	0.0910**	0.136***
	(0.0350)	(0.0441)	(0.0520)
Ideal children (man)	0.260***	0.128**	0.203***
	(0.0362)	(0.0529)	(0.0504)
High female HH decision index=1		-3.058***	
		(0.617)	
High female HH decision index=1 × Ideal children (woman)		0.122*	
		(0.0671)	
High female HH decision index=1 × Ideal children (man)		0.195***	
		(0.0710)	
Worked in past 12 months (woman)=1			-0.959
			(0.635)
Worked in past 12 months (woman)=1 × Ideal children (woman)			0.0346
			(0.0700)
Worked in past 12 months (woman)=1 × Ideal children (man)			0.0968
			(0.0715)
Constant	3.925***	5.819***	4.508***
	(0.322)	(0.456)	(0.465)
Observations	617	617	617
R^2	0.128	0.178	0.132
Y-Mean	6.514	6.514	6.514

Each column is the output from a separate regression. Dependent variable in all regressions is the wife's total number of children. Couples with woman or man with desired children greater than or equal to 15 are dropped. Female HH Decision index is the sum of variables in which the woman has some say, either as the sole decision maker or joint with the husband: own health care, large household purchases, visits to family/relatives, what to do with money husband earns. High female HH decision index refers to women with above median index for those age 40+. In Ethiopia, median female HH decision index is 4. Standard errors reported in parentheses. * $p <.10$, ** $p <.05$, *** $p <.01$.

Table 10: Relationship between actual and desired fertility at the micro level for couples with women 45+

(a) Burkina Faso

	(1) Total children	(2) Total children	(3) Total children	(4) Total children
Ideal children (woman)	0.380***	0.317***	0.301***	0.346***
	(0.0701)	(0.0766)	(0.0711)	(0.0825)
Ideal children (man)	0.186***	0.121**	0.239***	0.209***
	(0.0494)	(0.0558)	(0.0572)	(0.0591)
High female education=1		-4.299***		
		(0.919)		
High female education=1 × Ideal children (woman)		0.357**		
		(0.141)		
High female education=1 × Ideal children (man)		0.235		
		(0.178)		
High age gap=1			-0.959	
			(1.247)	
High age gap=1 × Ideal children (woman)			0.240	
			(0.163)	
High age gap=1 × Ideal children (man)			-0.126	
			(0.0879)	
High education gap=1				-0.488
				(1.137)
High education gap=1 × Ideal children (woman)				0.194
				(0.147)
High education gap=1 × Ideal children (man)				-0.0808
				(0.108)
Constant	2.867***	3.923***	3.132***	2.875***
	(0.528)	(0.603)	(0.605)	(0.648)
Observations	222	222	222	222
R^2	0.207	0.246	0.226	0.213
Y-Mean	6.802	6.802	6.802	6.802

Each column is the output from a separate regression. Dependent variable in all regressions is the wife's total number of children. Couples with woman or man with desired children greater than or equal to 15 are dropped. High female education refers to women with above median education level for those age 45+. High age (education) gap refers to women whose age (education) difference with their husband is above the median husband-wife difference for women 45+. In Burkina Faso, median years of education is 0, median age gap is 6, and median education gap is 0. Standard errors reported in parentheses. * $p<.10$, ** $p<.05$, *** $p<.01$.

(b) Ethiopia

	(1) Total children	(2) Total children	(3) Total children	(4) Total children
Ideal children (woman)	0.159***	0.0757	0.203***	0.159**
	(0.0580)	(0.0544)	(0.0720)	(0.0703)
Ideal children (man)	0.199***	0.123**	0.242***	0.0934
	(0.0609)	(0.0586)	(0.0749)	(0.0727)
High female education=1		-4.971***		
		(1.068)		
High female education=1 × Ideal children (woman)		0.337**		
		(0.151)		
High female education=1 × Ideal children (man)		0.150		
		(0.173)		
High age gap=1			1.710	
			(1.151)	
High age gap=1 × Ideal children (woman)			-0.133	
			(0.122)	
High age gap=1 × Ideal children (man)			-0.116	
			(0.126)	
High education gap=1				-2.143*
				(1.100)
High education gap=1 × Ideal children (woman)				-0.00929
				(0.119)
High education gap=1 × Ideal children (man)				0.310**
				(0.120)
Constant	4.778***	6.266***	4.195***	5.578***
	(0.523)	(0.519)	(0.573)	(0.624)
Observations	246	246	246	246
R^2	0.0912	0.216	0.102	0.118
Y-Mean	6.976	6.976	6.976	6.976

Each column is the output from a separate regression. Dependent variable in all regressions is the wife's total number of children. Couples with woman or man with desired children greater than or equal to 15 are dropped. High female education refers to women with above median education level for those age 45+. High age (education) gap refers to women whose age (education) difference with their husband is above the median husband-wife difference for women 45+. In Ethiopia, median years of education is 0, median age gap is 6, and median education gap is 0. Standard errors reported in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$.

Table 11: Relationship between actual and desired fertility at the micro level for couples with women 45+ (using alternative female empowerment variables)

(a) Burkina Faso

	(1) Total children	(2) Total children	(3) Total children
Ideal children (woman)	0.380***	0.356***	0.538***
	(0.0701)	(0.0828)	(0.179)
Ideal children (man)	0.186***	0.161***	0.345***
	(0.0494)	(0.0541)	(0.109)
High female HH decision index=1		-0.945	
		(1.075)	
High female HH decision index=1 × Ideal children (woman)		0.0352	
		(0.152)	
High female HH decision index=1 × Ideal children (man)		0.0595	
		(0.102)	
Worked in past 12 months (woman)=1			2.783***
			(0.985)
Worked in past 12 months (woman)=1 × Ideal children (woman)			-0.201
			(0.194)
Worked in past 12 months (woman)=1 × Ideal children (man)			-0.198
			(0.122)
Constant	2.867***	3.304***	0.676
	(0.528)	(0.677)	(0.770)
Observations	222	222	222
R^2	0.207	0.211	0.225
Y-Mean	6.802	6.802	6.802

Each column is the output from a separate regression. Dependent variable in all regressions is the wife's total number of children. Couples with woman or man with desired children greater than or equal to 15 are dropped. Female HH Decision index is the sum of variables in which the woman has some say, either as the sole decision maker or joint with the husband: own health care, large household purchases, visits to family/relatives, what to do with money husband earns. High female HH decision index refers to women with above median index for those age 45+. In Burkina Faso, median female HH decision index is 2. Standard errors reported in parentheses. * p <.10, ** p <.05, *** p <.01.

	(1) Total children	(2) Total children	(3) Total children
Ideal children (woman)	0.159***	0.0930	0.105
	(0.0580)	(0.0695)	(0.0827)
Ideal children (man)	0.199***	0.0897	0.151
	(0.0609)	(0.0893)	(0.0958)
High female HH decision index=1		-2.929***	
		(1.013)	
High female HH decision index=1 × Ideal children (woman)		0.151	
		(0.115)	
High female HH decision index=1 × Ideal children (man)		0.161	
		(0.120)	
Worked in past 12 months (woman)=1			-0.949
			(1.081)
Worked in past 12 months (woman)=1 × Ideal children (woman)			0.0907
			(0.119)
Worked in past 12 months (woman)=1 × Ideal children (man)			0.0701
			(0.126)
Constant	4.778***	6.469***	5.387***
	(0.523)	(0.673)	(0.831)
Observations	246	246	246
R^2	0.0912	0.136	0.0955
Y-Mean	6.976	6.976	6.976

Each column is the output from a separate regression. Dependent variable in all regressions is the wife's total number of children. Couples with woman or man with desired children greater than or equal to 15 are dropped. Female HH Decision index is the sum of variables in which the woman has some say, either as the sole decision maker or joint with the husband: own health care, large household purchases, visits to family/relatives, what to do with money husband earns. High female HH decision index refers to women with above median index for those age 45+. In Ethiopia, median female HH decision index is 4. Standard errors reported in parentheses. * $p <.10$, ** $p <.05$, *** $p <.01$.