

# Impacts of Factory Jobs on Fertility: Experimental Evidence from Ethiopia

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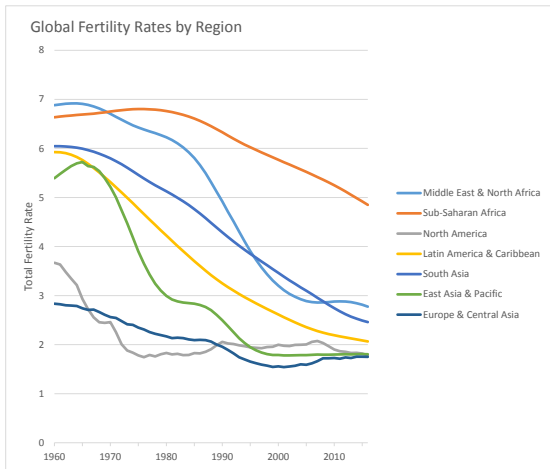
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# Motivation: High fertility rates in Africa



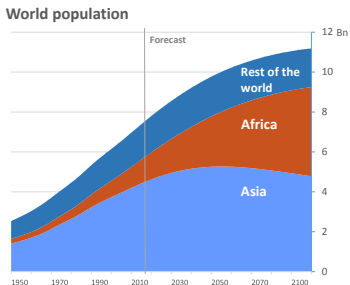
Source: UN, Population Division



# Motivation: High fertility rates in Africa

What is the problem?

High population growth



Source: UN, 2017 Revision of World Population Prospects.

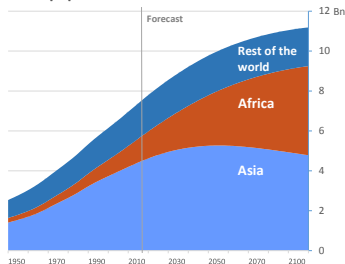


# Motivation: High fertility rates in Africa

What is the problem?

High population growth

World population

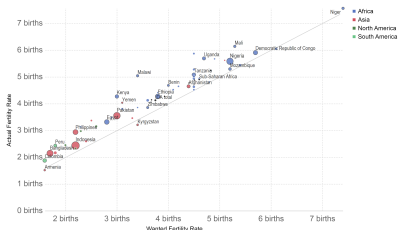


Source: UN, 2017 Revision of World Population Prospects.

Unwanted high fertility

Fertility vs wanted fertility, 2015

The wanted fertility rate is an estimate – based on survey data – of what the total fertility rate would be if all unwanted births were avoided.



Source: World Bank, WDI



# Solution?

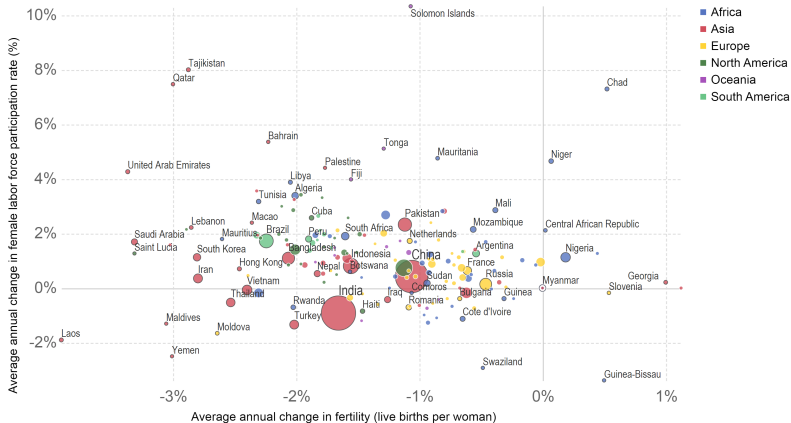
## Wage employment for women

- ▶ Women who work outside the home has fewer children(?)
- ▶ Women who work outside the home is more empowered(?)



# Fertility and female labor force participation, 1960 to 2015

The labor force participation rate corresponds to the proportion of the population ages 15 and older that is economically active. Fertility corresponds to the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with the age-specific fertility rates of the specific year.



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## Selection problem



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## Selection problem

- ▶ Workers are different from non-workers on unobservables



# Literature

## Female labor force participation and fertility

- ▶ Income effect
  - ▶ Becker 1960, Becker and Lewis 1973, Willis 1973.
- ▶ Substitution effect
  - ▶ Mincer 1963, Becker 1965, Willis 1973.
- ▶ Empowerment effect
  - ▶ Becker 1960, Basu 2006, Van den Broeck and Maertens 2015.



# Our contribution

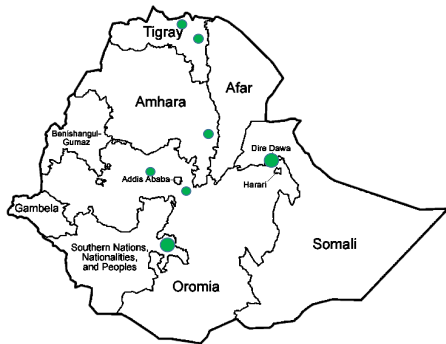
- ▶ First causal investigation of jobs on married women's fertility choices by use of randomized controlled trial.





# Job randomization

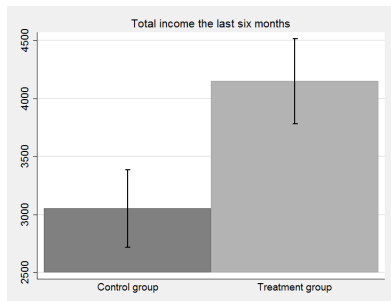
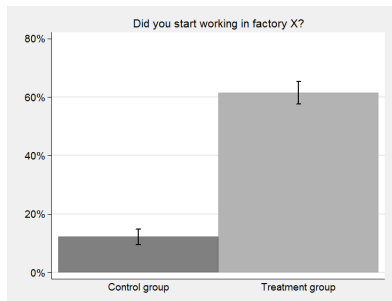
- ▶ 21 factories in five regions
- ▶ Job offer randomization to eligible married women
- ▶ Baseline + three follow-up surveys
- ▶ Sample size: 1872 (846)



# Manufacturing



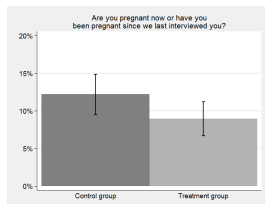
# Employment and income



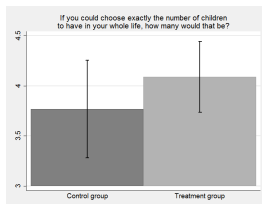
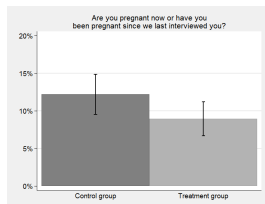
# Employment and fertility outcomes



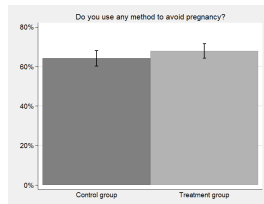
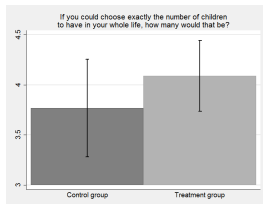
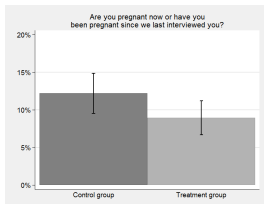
# Employment and fertility outcomes



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# Employment and fertility outcomes

Table 1: Impact of the job offer on fertility outcomes

	<u>Pregnant</u>		<u>Preferred fertility</u>		<u>Contraceptive use</u>	
	OLS	IV	OLS	IV	OLS	IV
Treatment	-0.032 (0.022)	-0.267*** (0.081)	0.181 (0.134)	-0.717* (0.418)	0.011 (0.032)	0.046 (0.113)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Block	Yes	Yes	Yes	Yes	Yes	Yes
Observations	846	846	843	843	757	757
Adjusted R-squared	0.046	-	0.247	0.203	0.0.179	0.177
Control mean	0.12	0.14	3.8	4.2	0.70	0.69

*First stage results:*

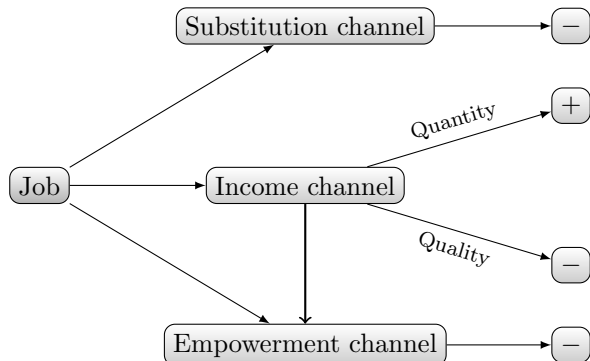
Any wage job the last 6 months	0.304***	0.301***	0.295***
Robust standard error	(0.036)	(0.037)	(0.039)
F statistic for IV in first stage	3 969	4 011	727

Baseline controls includes: age, religion, education level, total hh-income the last six months, number of hh-members, and a dummy whether the respondent had any wage job the last six months (in OLS regressions). Robust standard errors in parenthesis. \*\*\* $p > 0.001$ , \*\* $p > 0.05$ , \* $p > 0.01$ .





# Mechanisms

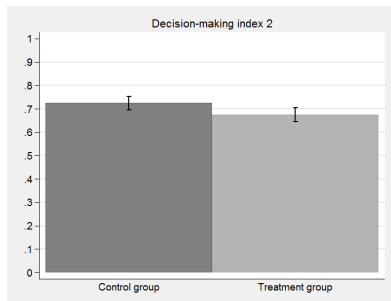
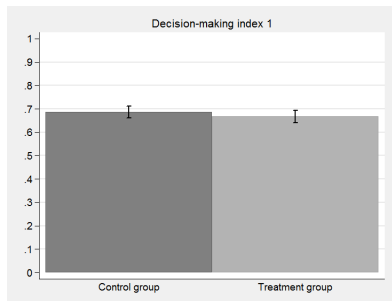


## Employment and decision-making power

Who in your household usually has the final say about the following decisions?

1. Whether to send or not send children to school
2. What to do if a child falls sick
3. What to do if the respondent falls sick
4. Whether to have children or to have more children
5. Which family planning methods to use
6. Whether or not you should earn money outside the house
7. Whether you can visit your family or relatives
8. The use of the wife's earned income
9. The use of the man's /husband's earned income
10. Purchase of small daily food purchases
11. Purchase of bulk or expensive food items
12. Large purchases of items like furniture, cattle, TV, or other assets
13. Purchase of children's clothing and shoes
14. Whether to open bank account or borrow money
15. Whether to start a new business

# Employment and decision-making power



# Employment and decision-making power

Table 2: Impact of the job offer on household decision-making power

	Decision-making index 1		Decision-making index 2	
	OLS	IV	OLS	IV
Treatment	-0.017 (0.022)	0.110 (0.077)	-0.042 (0.030)	0.084 (0.115)
Controls	Yes	Yes	Yes	Yes
Block	Yes	Yes	Yes	Yes
Observations	846	846	585	585
Adjusted R-squared	0.145	0.101	0.165	0.134
Control mean	0.69	0.68	0.71	0.71

*First stage results:*

Any wage job the last 6 months	0.304***	0.288***
Robust standard error	(0.036)	(0.047)
F statistic for IV in first stage	3 979	20 739

Decision-making index 1 includes all 15 household decisions, while Decision-making index 2 includes only decisions regarding family planning and child care. The last two columns only include households with at least one child. Baseline controls includes: age, religion, education level, total hh-income the last six months, number of hh-members, and a dummy whether the respondent had any wage job the last six months (in OLS regressions). Robust standard errors in parenthesis. \*\*\* $p > 0.001$ , \*\* $p > 0.05$ , \* $p > 0.01$ .



# Channels: Income or Substitution?

Table 3: Impact of the job offer on income and substitution channels

	Income channel		Substitution channel	
	OLS	IV	OLS	IV
Treatment	0.203*** (0.034)	2.229*** (0.269)	-0.008 (0.035)	0.084 (0.121)
Controls	Yes	Yes	Yes	Yes
Block	Yes	Yes	Yes	Yes
Observations	846	846	840	840
Adjusted R-squared	0.184	-	0.072	0.062
Control mean				

Income channel is defined as a dummy equal to 1 if respondent earned more equal to or more than the median wage the last six months. The substitution channel is defined as a dummy equal to 1 if the respondent wish to return to work three months or less after birth (hypothetically). Baseline controls includes: age, religion, education level, total hh-income the last six months, number of hh-members, and a dummy whether the respondent had any wage job the last six months (in OLS regressions). Robust standard errors in parenthesis. \*\*\* $p > 0.001$ , \*\* $p > 0.05$ , \* $p > 0.01$ .



## Preliminary conclusions

- ▶ Jobs seems to decrease fertility (in the short run) and decrease preferred lifetime fertility.
- ▶ No change in contraceptive use.
- ▶ The impacts of a job on fertility is most probably an income effect, and not a substitution or empowerment effect.



# Employment and income

Table 4: Impact of the job offer on employment and income

	Employment in factory	Total income last 6 months (ETB)
Treatment	0.444*** (0.030)	1,018*** (297.4)
Controls	Yes	Yes
Block	Yes	Yes
Observations	846	846
Adjusted R-squared	0.375	0.089
Control mean	0.12	3,052

Baseline controls includes: age, religion, education level, total hh-income the last six months, number of hh-members, and a dummy whether the respondent had any wage job the last six months. Robust standard errors in parenthesis. \*\*\* $p > 0.001$ , \*\* $p > 0.05$ , \* $p > 0.01$ .



# Balance

**Table 5:** Baseline summary means, standard deviations, and tests of randomization balance

Baseline (n=846)	Control	Treatment	Diff.
Age	25.6 (6.7)	25.9 (7.3)	-0.2 [0.631]
Years of schooling completed	8.6 (3.6)	8.8 (3.4)	-0.2 [0.461]
Muslim	0.23 (0.42)	0.17 (0.38)	0.06 [0.031]
Ethiopian Orthodox	0.67 (0.48)	0.65 (0.48)	0.02 [0.808]
Have ever given birth	0.70 (0.46)	0.69 (0.46)	0.1 [0.687]
Number of children	1.38 (1.45)	1.28 (1.35)	0.10 [0.311]
Any wage job the last six months	0.19 (0.39)	0.26 (0.44)	-0.07 [0.013]
Earnings the last six months (ETB)	2 695 (5 234)	2 403 (4 111)	292 [0.365]
Total HH-income the last six months (ETB)	18 492 (13 281)	18 326 (13 092)	164 [0.856]
Total household members	3.4 (1.4)	3.4 (1.4)	0.06 [0.674]

Standard deviations in parenthesis. Two-tailed p-values in square brackets.





# Difference between actual and wanted fertility

**Figure 6.6 Trends in wanted and actual fertility**

*Wanted and actual number of children per woman*

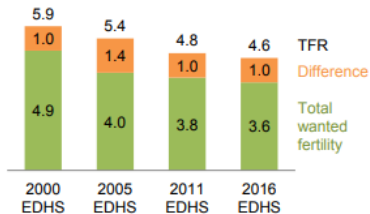
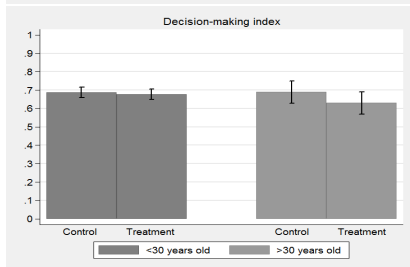
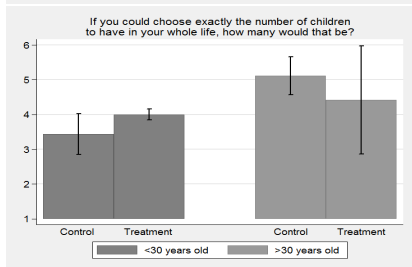
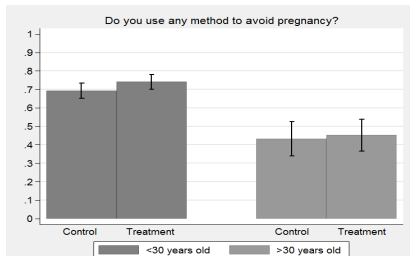
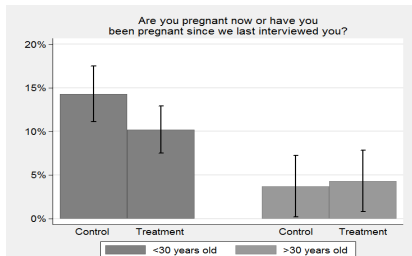


Figure 1: Source: DHS Ethiopia, 2016



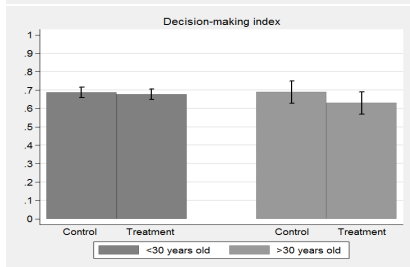
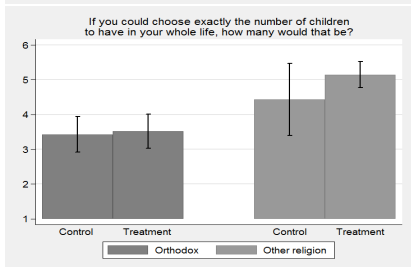
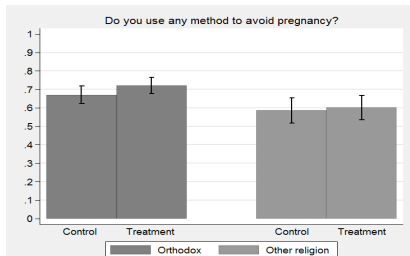
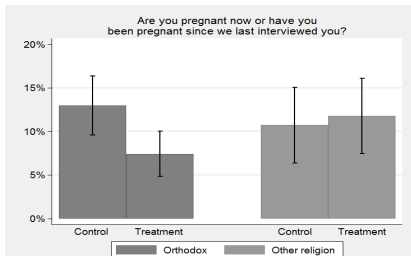
# Heterogeneity analysis

Age



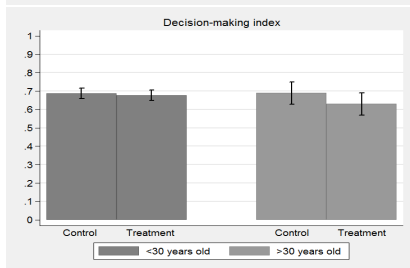
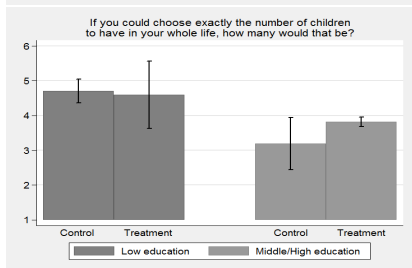
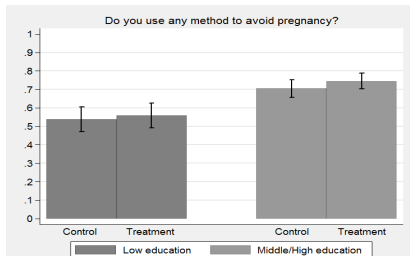
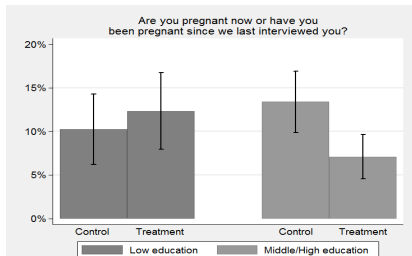
# Heterogeneity analysis

## Religion



# Heterogeneity analysis

## Education level



# Heterogeneity analysis

No child at baseline

