Family Planning and Development: Aggregate effects of Contraceptive Use

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Discussion:

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Contribution

Structural model of unwanted births in a quantity-quality fertility model. Calibrate the model to recent Kenyan data.

Contraception $\rightarrow$ unwanted fertility $\rightarrow$ education and income

Q: What are the aggregate effects of family planning interventions?

- demand-side policies (reducing disutility of contraception use and abortion)
- supply side policies (reduction in the cost of contraceptives and abortion) and comparison with policies that subsidize education.

Subsidizing abortion is the best cost-effective policy for increasing income per capita and reducing income inequality.

Bongaarts vs. Pritchett battle

John Bongaarts [...] does not agree that excess (unwanted) fertility is just a **small** *random error around actual fertility. He is at pains to stress that the level of unwanted fertility is* **large**. *I have little disagreement. As an analogy, suppose that people in the United States were surveyed about their desired weight and everyone, regardless of his or her actual weight, would like to weigh 10 pounds less. We could then say things like "undesired weigh in the USA is nearly one million tons." Such a finding a finding about the magnitude of unwanted weight, though interesting, would not explain why some people were heavy and others light. Nor would the fact that the weight was undesired imply that there existed any diet plan that would rid Americans of their unwanted weight. [...] Countries move from high fertility to low fertility not because* **unwanted** *fertility goes down, but because* **desired** *fertility goes down. Whatever the magnitude of unwanted fertility, family planning programs aimed at lowering fertility may have empirically the same effect on fertility as most diets have on weight: none.*

Pritchett, L. H. (1994). The Impact of Population Policies: Reply. *Population and Development Review. 20(3): 621–630.*

1. Facts

Contraception – unwanted fertility – education

To reinforce the facts:

1. use other measures for unwanted fertility.

2. use the individual dataset from DHS for Kenya as a robustness.

Measuring unwanted fertility

We could measure unwanted fertility in many ways and the predictions would change... a lot!

Time measures (all women in reproductive age)

1. unwanted fertility = total fertility rate − total wanted fertility rate
2. unwanted fertility = % who did want last child, either then or later

Cohort measures (limit to 40-49 years old women)

3. unwanted fertility = children ever born − ideal number of children
4. unwanted fertility = % with 2 or + children than what they wanted
5. unwanted fertility = % with 2 or + children than what they wanted and the husband did not wanted more

Measuring unwanted fertility – Kenya

Unwanted fertility	mean	se	obs.	sample	DHS
1.	1.2			all women	KE 2007
2.	23%	0.02	3,968	all women	KE 2003
3.	2.4	0.08	873	women 40+	KE 2003
4.	41%	0.02	1,290	women 40+	KE 2003
5.	18%	0.01	1,053	women 40+	KE 2003

Issues:

- the gap might be rational if the husband's preference for children is high $\rightarrow$ the gap is the result of a bargaining process
- ex post rationalization bias: women declare their ideal fertility in conformity with their actual fertility

No perfect measure for unwanted fertility...
Mention the possible issues and defend your measure.

Individual level data (DHS Kenya 2003) – Table 1

	Dep. variable: unwanted fertility (children ever born − ideal fertility)			
ever used modern contr.	−0.385*	−0.085	−0.388*	−0.088
	(0.208)	(0.211)	(0.208)	(0.195)
ln(GDP per capita)		−0.837***	−0.976***	−0.785***
		(0.116)	(0.124)	(0.123)
wanted fertility			−0.381***	−0.441***
			(0.043)	(0.045)
education				−0.155***
				(0.021)
education^2				0.002***
				(0.000)
Observations	873	871	871	871
Adjusted R2	0.006	0.073	0.163	0.217

Robust standard errors in parentheses, clustered at the cluster level.

*** p<0.01, ** p<0.05, * p<0.1.

Sample: Women of 40+ years old for whom unwanted ≥ 0.

GDP per capita at the cluster level (proxied with night-light data from Ghosh et al., 2010).

Individual level data (DHS Kenya 2003) – Table 2

	Dep. variable: education in single years			
children ever born − ideal fertility	-0.444^{***}	-0.625^{***}	-0.251^{**}	-0.448^{***}
	(0.097)	(0.093)	(0.108)	(0.110)
wanted fertility		-0.947^{***}		-0.778^{***}
		(0.101)		(0.087)
ln(GDP per capita)			2.163^{***}	1.613^{***}
			(0.419)	(0.406)
Observations	873	873	871	871
Adjusted R2	0.035	0.139	0.116	0.181

Robust standard errors in parentheses, clustered at the cluster level.

*** p<0.01, ** p<0.05, * p<0.1.

Sample: Women of 40+ years old for whom unwanted ≥ 0.

GDP per capita at the cluster level (proxied with night-light data).

2. Model (simple version)

When $q = 0$ (intensity of contraception) $n = N$.
$\rightarrow$ You reproduce the negative relationship between fertility and income thanks to the use of contraceptives (that increases with income).
Very demographer way to think.

include $\tilde{h}(e) = h_0 + h_1 e^{\zeta}$ also in the simple version of the model (section 5.2 in Jones, Schoonbroodt and Tertilt, 2010).

Discussion on χ and ϕ_q. Why doesn't c_y depend on χ? What if you also assume non-homothetic preferences over human capital also in the simple version of the model?

3. Calibration

Maximum number of unwanted pregnancies, $N = 10$.

- From the data, the mean of the number of children ever born to women 40+ is 5.8 for women who never used a modern contraceptive method and 6.5 if never used any method.
- Model for "modern contraceptives" (not for modern vs. traditional), so might overestimate the role of the supply channel.

The price for abortion ($\phi_a = 0.0033$) is much lower than the price of contraception ($\phi_q = 1$). Intuition?

Interpretation for the efficiency of contraception parameter ($\theta = 347.53$)?

Further thoughts

In the data, abortion seems to be U-shaped with respect to education. In the model abortion is negatively related to education. Intuition for this? How does it affect your results on inequality?

What if the efficiency of contraception depended on education?

If you shut down the contraception intensity channel, how much of the negative relationship between fertility and education can you explain?

Can you have multiple abortions? In that case, you could also see what would happen if some women got sterilized after an abortion (many countries applied related policies).

Further references

Kelly S. Ragan (2017). Sex and the Single Girl: The Deep Roots of Demand for Contraceptive Innovation. *Unpublished*.

Holger Strulik (2015). Contraception and Development: A Unified Growth Theory. Forthcoming in *International Economic Review*.