Title: Food Security and the Inclusion of Family Planning within Social Safety Net Programs: A Present Value Costing Analysis in Two Landlocked Countries

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Extended Abstract:

Background

The importance of food security is both axiomatic, from a health, humanitarian, or rights-based[1] perspective, and also instrumental, from a development or life-course perspective. Food insecurity and dietary inadequacy in utero and early childhood lead to permanent physical and cognitive deficits and have been shown to worsen educational, employment, and earnings outcomes later in life.

In many countries, domestic and international development interventions focused on education and income generation are thus collectively undermined by a persistently high prevalence of food insecurity among children. When food insecure children become economically insecure adults, they are less able to provide for their own children, thereby exacerbating the intergenerational transmission of deprivation and vulnerability. Food insecurity is not only a symptom and a consequence of poverty, it is also among its chief causes.

In the last decade, social safety nets have emerged as a key tool to combat hunger. Safety nets are a subset of social protection entitlement programs which provide subsistence food or cash transfers to vulnerable, often food insecure population segments. The World Bank made its first safety net loan to Bolivia in 1987. Since that time, its safety net portfolio has grown to over 40 countries, including the well-known Progresa/Oportunidades program in Mexico and the Productive Safety Net Program in Ethiopia. The Bank estimates that two-thirds of developing country safety net programs strengthened their implementation during the 2008 financial crisis, during which global food and fuel prices spiked.

Tajikistan and Niger both have nascent national (cash transfer) safety net programs which target substantial proportions of their populations, seek to improve food security, and receive technical and financial support from the World Bank. Both countries are highly food insecure with limited arable land. Both are landlocked and cut off from global markets, have overwhelmingly rural populations but poor domestic infrastructure, and will be disproportionately affected by climate change. Tajikistan has moderate fertility with a TFR of 3.8 while Niger is one of the fastest growing countries in the world with a TFR of 7.6. The two countries are thus taken as a comparative case study which bookends rates of population growth of potential concern to policy makers.

[1] The U.N. General Assembly adopted the International Covenant on Economic, Social, and Cultural Rights in 1966. This resolution includes recognition of "the right of everyone to an adequate standard of living for himself and his family, including adequate food, clothing and housing, and to the continuous improvement of living conditions" (United Nations General Assembly, 1966, pt. 3).

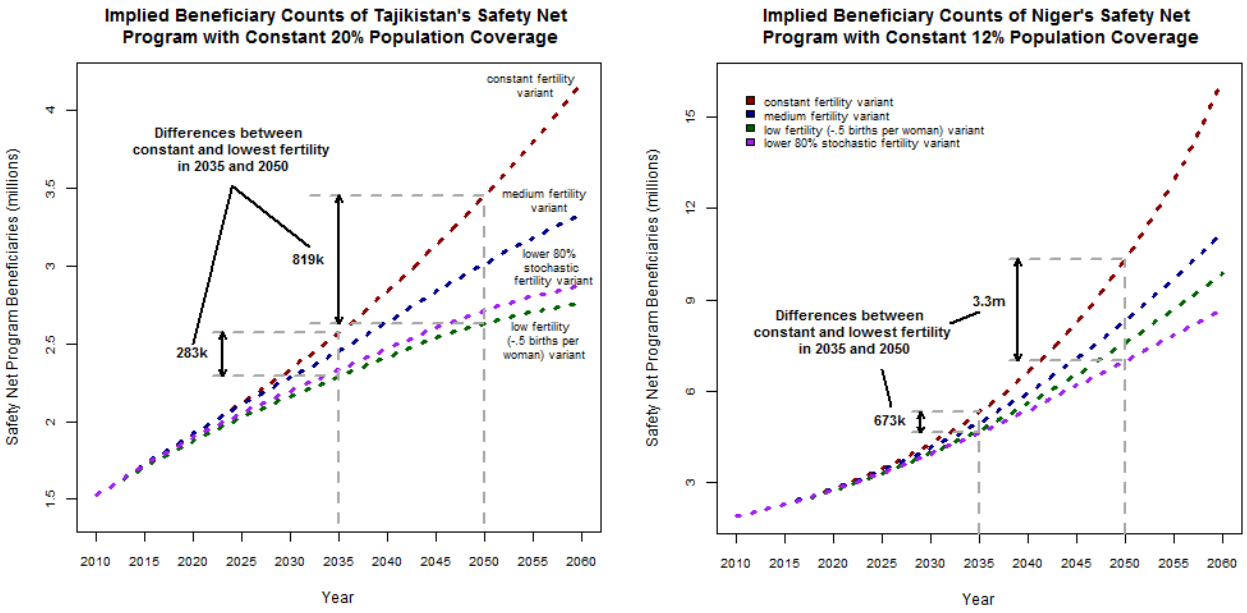
Table 1: Poverty and Safety Net Program Profiles of Tajikistan and Niger

Indicator	Tajikistan	Niger
Poverty Rate, National Poverty Line (year)	47.2% (2009)	59.5% (2008); 48.9% (2011)
Poverty Rate, $1.25/day PPP (year)	6.5% (2009)	40.8% (2011)
Poverty Rate, $2/day PPP (year)	27.4% (2009)	76.1% (2011)
Targeted Percentage of the Population in Safety Net Program	20%	12% (20% of poor, based on 2008 national poverty line data)
Annual per capita safety net program benefit	$14.51	$34.97

Methodology

Figures 1a and 1b show the range of implied safety net beneficiary counts in each country by 2050 based on divergent growth trajectories. While these figures include the UN constant and low fertility variants (with -.5 births), all calculations which follow are based on differences between the medium and stochastic 10th percentile growth forecasts.

Figures 1a and 1b: Implied safety net program beneficiary streams in Tajikistan and Niger



One potential weakness of the analysis is the presumed constant proportional targeting, as articulated by national governments and in World Bank documentation. An ideal program would provide benefits to all citizens below a certain consumption threshold and the proportion of the population eligible at any given time would be affected by prevailing economic conditions. In fact, the programs are not designed to be responsive in this way.

Two forecast periods are examined: a 25 year period and a 40 year period, both anchored with 2010 as the reference year given data availability. For each year, the safety net beneficiary count is multiplied by the country-specific per capita program benefit, in constant 2010 U.S. dollars. Each annual budgetary commitment is then converted to a 2010 present discount value with the following formula:

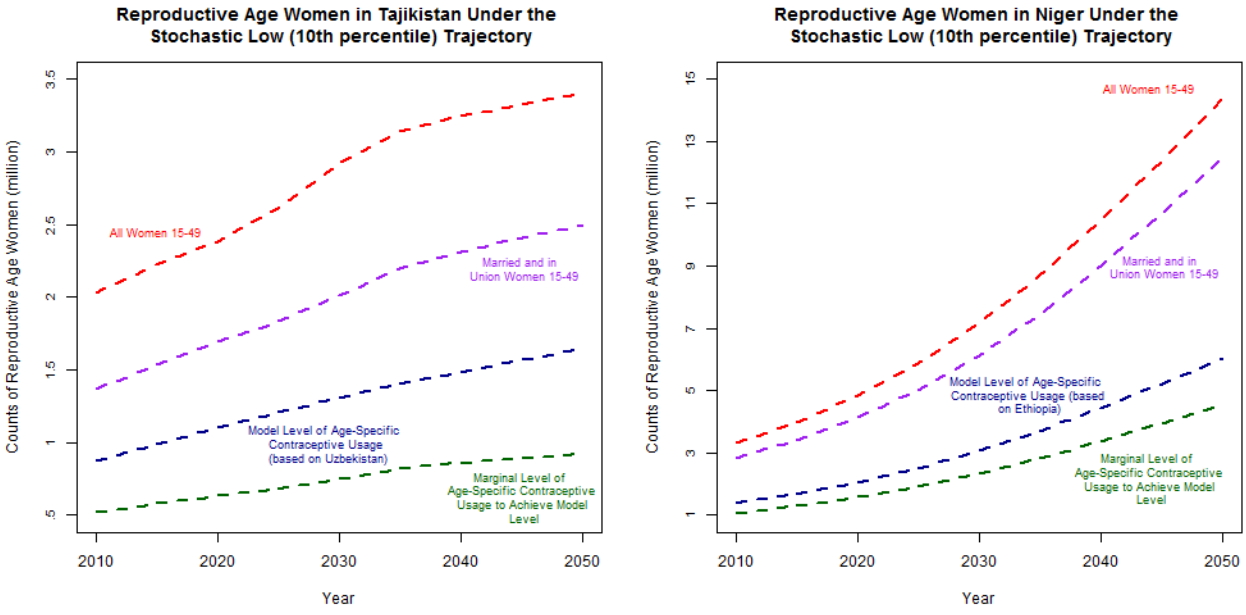
$$PDV = \sum_{i=2010}^{2050} Annual\ Commitment_i * e^{(-discount\ rate*(Year_i-2010))}$$

Annual interest rates of both 3 percent and 5 percent are used to show sensitivity of results.

Safety net cash transfer costs are then compared to the contraceptive commodity costs required to reduce fertility to the lower forecast levels. The Reproductive Health Interchange (RHI) database maintained by the UNFPA records data on contraceptive orders and shipments for over 140 countries. Data on contraceptive shipments to Tajikistan and Niger between January 1, 2014 and June 15, 2015 are used in the analysis. The average annual cost per user weighted by the proportion of total imported coverage years per method is $1.73 in Tajikistan and $2.58 in Niger.

Multiple steps are taken to estimate how many reproductive age women in each country will require contraceptives. First, age-specific rates of exposure to the risk of pregnancy are calculated based on nuptiality patterns and existing contraceptive usage rates. Analogous exposure rates are computed for paired countries which have already undergone substantial fertility transitions. The difference between these modeled age-specific rates and observed rates is then used to calculate the number of women in each age group which would require family planning inputs. These age-specific counts of women are depicted in Figures 2a and 2b, below. For each year, they are then multiplied by the country-specific average contraceptive costs and the same discounting procedure outlined above is applied over the same two forecast periods.

Figures 2a and 2b: Modeled counts of Reproductive Age Women in Tajikistan and Niger which require access to modern contraceptive methods to reduce fertility in the medium term



Main Results

Table 2: Present Discount Values of Cumulative Safety Net Program Transfers in Niger and Tajikistan (with constant proportional targeting criteria)

Country	Period	Annual Benefit Per Capita	Annual Discount Rate	Medium Fertility Variant (a)	Stochastic Low Fertility Variant (10^{th} percentile) (b)	Difference Between Medium and Stochastic Low Variants (a – b)
Niger	2010-2035	$34.97	3%	1,937,834,596	1,891,388,660	**46,445,937**
			5%	1,511,411,674	1,479,949,399	**31,462,275**
	2010-2050	$34.97	3%	3,224,681,034	3,030,704,523	**193,976,511**
			5%	2,178,006,829	2,071,607,135	**106,399,694**
Tajikistan	2010-2035	$14.51	3%	516,239,182	506,292,861	**9,946,321**
			5%	411,532,552	404,562,182	**6,970,370**
	2010-2050	$14.51	3%	739,401,388	712,768,661	**26,632,727**
			5%	528,002,814	512,473,850	**15,528,965**

Table 3: Present Discount Values of Cumulative Contraceptive Transfers in Niger and Tajikistan with Constant (2012 Observed) Age-Specific Nuptiality and Modeled Age-Specific Contraceptive Usage

Country	Period	Annual Contraceptive Cost per User (country average)	Annual Discount Rate	Full Modeled Level (including the value of transfers to women already using a modern method)	Marginal Level (transfers required to raise observed usage rates to model levels)
Niger	2010-2035	$2.58	3%	105,338,644	**80,513,538**
			5%	82,101,386	**62,753,789**
	2010-2050	$2.58	3%	175,497,798	**133,673,194**
			5%	118,472,666	**90,320,021**
Tajikistan	2010-2035	$1.73	3%	35,287,840	**20,398,367**
			5%	28,133,739	**16,285,064**
	2010-2050	$1.73	3%	50,114,714	**28,893,510**
			5%	35,881,269	**20,729,092**

Table 4: Comparison of Cumulative Safety Net Program Savings and Contraceptive Investments

Country	Period	Safety Net Annual Benefit Per Capita	Annual Discount Rate	Savings Associated with shifting from Medium to Stochastic Low Population Growth Trajectories (a)	Costs Associated with Contraceptive Investments for Marginal Users, based on country-specific average costs (b)	Difference between Savings to Safety Net Programs and Investments in Contraception (a-b)	Proportion of Contraceptive Investments which could be Covered by Savings to Safety Net Programs
Niger	2010-2035	$34.97	3%	46,445,937	80,513,538	-34,067,601	**57.7%**
			5%	31,462,275	62,753,789	-31,291,514	**50.1%**
	2010-2050	$34.97	3%	193,976,511	133,673,194	60,303,317	**145.1%**
			5%	106,399,694	90,320,021	16,079,673	**117.8%**
Tajikistan	2010-2035	$14.51	3%	9,946,321	20,398,367	-10,452,046	**48.8%**
			5%	6,970,370	16,285,064	-9,314,694	**42.8%**
	2010-2050	$14.51	3%	26,632,727	28,893,510	-2,260,783	**92.2%**
			5%	15,528,965	20,729,092	-5,200,127	**74.9%**

Conclusion

In rapidly growing Niger, the potential cost savings to the new national safety net cash transfer program associated with lower fertility over a 40-year period would more than cover robust family planning program investments over the same period. Over a shorter 25-year period, savings to the safety net program would still offset more than half of the required family planning investment.

In Tajikistan, a country with medium fertility, savings to the new safety net program associated with slower growth are still substantial and would still offset most family planning program investments over the longer 40-year period.

In both countries, the paper goes on to show that the per capita cash transfer levels are likely inadequate to drive meaningful welfare improvements. Hypothetical "best practice" transfer levels are also modeled for each case. When safety net benefits are raised to a technically sound level, the savings associated with slower population growth increase substantially. Over the 40-year period and at a 3 percent annual discount rate, safety net program savings in Niger are more than double the modeled contraceptive investment. In Tajikistan, the savings are more than four times larger than the implied family planning investment. This analysis offers further evidence that robust family planning investments in the near term are more than paid for by savings to social protection programs in the medium term.