

Household shocks and preventive healthcare for children: Evidence from Ugandan panel survey

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The study in a nutshell

■ What I study:

- how health and income shocks at household level affect investment in preventive healthcare for children in the context of Uganda

■ What I find:

- Households when hit by income shock are more likely to take the infants in the household for preventive healthcare
- Same findings in case of health shock
- Further findings indicate increase in time away from labour market due to shock leads to higher uptake of health-promoting activities for children

Motivation

- a stylized fact in literature: households in low-income countries invest very little in preventive healthcare (**Dupas, 2011**) ;
one possible explanation -> high opportunity cost of time
- This means, in times of negative shock, the households are even more resource-constrained; so even lower investment in preventive healthcare?
- if it is income shock, possibly a strong income effect would result (**Ferreira & Schady, 2009**)
- but, if a health shock, wouldn't it mean increased awareness about health? (e.g. if health has both consumption and investment effects, then household with lower health stock would value better health and thus preventive healthcare more (**Grossman, 1972**))
- need for empirical investigation

Literature

- Two studies on effects of aggregate income shock on preventive healthcare for children
 - **Miller & Urdinola (2010):** aggregate income shock as proxied by world coffee price fluctuation leading to countercyclical investments in child-health by parents, in Columbian context => stronger substitution effect
 - **Fichera & Savage (2015):** aggregate positive income shock instrumented with rainfall measurements in Tanzania leading to increase in vaccinations in children => stronger income effect

- No study yet on effect of health shock in household on use of preventive healthcare for children

- If considering the literature on effect of shocks on child human capital investment
 - Effects of income shock on children's schooling/education hours: **Beegle et al. (2006), Bandara et al.(2015)** and **Björkman-Nyqvist (2013), Shah & Steinberg (2017)**
 - Effects of health shock on children's educational outcomes: **Bratti & Mendola (2014), Alam (2015), Bandara et al. (2015)**

Research gap

- No study yet examining the effect of health shock on children's healthcare
(although health shock ranks the highest in terms of incidence, idiosyncrasy, costs and impact among the poor (**Wagstaff & Lindelow, 2014**))

- No study on idiosyncratic income shock on investment in children's healthcare;
more focus on aggregate shock
 - literature mostly argues on no substitution effect in case of idiosyncratic shocks (**Ferreira & Schady, 2009**)
 - Idiosyncratic shocks might not have strong manifestation because easy to insure away (**Townsend, 1994**)

- But then, aggregate income shocks could hamper the supply of services and thus confound with true demand
 - => in that regard, idiosyncratic shocks more appropriate

Ugandan context

- Financially poor country in SSA; ranked 163/188 in HDI (UNDP Report, 2015)
- Under 5 child mortality -> 54.6 per 1000 live births (UNDP Report, 2016)
- 75% of disease burden could be stopped by immunization, hygiene , sanitation, and other preventive healthcare practices (UMoH, 2010)
- Every Ugandan child is entitled to be fully vaccinated (UNEPI) and every Ugandan is entitled to a basic healthcare coverage for free at public health facilities (UNMHCP, 2001)
- Yet, 52% of infants (12-23 months) fully vaccinated; 40% immunized before the first birthday (UBoS, 2012)

Data and variables of interest

■ Data

- 4 waves of Ugandan National Panel Survey (UNPS) in 2009-10, 2010-11, 2011-12 and 2013-14
- 2975 hh.s in wave 1, 2716 in wave 2 and 2850 in wave 3; 3119 in wave 4
- Retention rate of original hh.s between waves 1 and 2 is 89% and between 2 and 3 is 92.4% ; between 3 and 4 is 60.25%

■ Main variables

- Outcome variable: intake of [Vitamin A supplementation](#) by children (12-24 months) in last 6 months
- Income shock proxy: household-reported shock due to variation in prices of agricultural input/output in the last 6 months from time of survey
- Health shock measure: household-reported shock due illness of the main income-earner or other household member in the last 6 months from time of survey

Summary statistics

Variable	Mean	Std. Dev.
<i>Infant related variables:</i>		
Infants (12-24 months) who received Vitamin A supplements in last 6 months from interview time	0.73	0.44
Infants (12-24 months) who has received DPT3 vaccine	0.85	0.36
Infants (12-24 months) who has received measles vaccine	0.84	0.37
Infants (12-24 months) who were breastfed	0.96	0.19
Infants (12-24 months) who slept under bed net the prior night	0.60	0.49
Infants (12-24 months) whose mother lives in the same household	0.92	0.27
<i>Household related variables:</i>		
Household members away from household due to work	0.08	0.29
Household members present in the household all year round	4.26	2.54
Number of children up to 5 years of age present in the household	2.03	0.95
Average sickness intensity of the other household children up to 5 years of age	0.02	0.10
<i>Health shock related variables:</i>		
Households suffering from health shock in the last 6 months	0.06	0.24
Total span of health shock	2.77	3.10
Relative intensity of the health shock suffering in the last 6 months	0.25	0.65
<i>Income shock related variable:</i>		
Households suffering from income shock in the last 6 months	0.02	0.14
Total span of income shock	2.90	2.32
Relative intensity of the income shock suffering in the last 6 months	0.52	1.16

This table provides the mean over all four waves of survey unless otherwise noted. Note: The household and shock statistics are for only those households which had at least one infant between 12 to 24 months in at least one wave.

Empirical strategy (1)

- linear probability model specification to separately study the effect of each kind of shock

$$Y_{iht} = \beta_0 + \beta_1 X_{iht} + \beta_2 Shock_{ht} + \alpha_h + \mu_t + \gamma_a + \varepsilon_{iht} \quad (1)$$

- Y_{iht} is the binary variable denoting the intake of Vitamin A supplementation by infant i in household h in survey wave t
- $Shock_{ht}$ is the binary variable on experience of shock by household h during the last 6 months prior to the survey interview date
 - => in case of health shock, it is indicated by illness of the main income-earner or any other hh.member
 - => in case of income shock, it is indicated by increase (decrease) in price for agricultural input (output)
- X_{iht} is set of controls consisting of individual and household level characteristics in survey wave t
- α_h household fixed effect, μ_t survey wave fixed effect, γ_a age fixed effect
- For health shock model, standard errors clustered at parish level and for income shock model, at district level

Empirical strategy (2)

- Role of intensity of the shock during the last 6 months

$$\Rightarrow \text{relative intensity of shock in last 6 months} = \frac{\text{no. of months suffered in last 6 months}}{\text{no. of months suffered before last 6 months}}$$

- Thus, the following specification

$$Y_{iht} = \beta_0 + \beta_1 X_{iht} + \beta_2 Shock_{ht} + \beta_3 ShockIntensity_{ht} + \alpha_h + \mu_t + \gamma_a + \varepsilon_{iht} \quad (2)$$

Main results

Effect of health shock on intake of Vitamin A supplementation by infant in the household in last 6 months

	(1)	(2)
Shock	0.15** (0.07)	0.12* (0.07)
ShockIntensity	-	0.20** (0.10)
Controls	Yes	Yes
Household FE	Yes	Yes
Surveywave FE	Yes	Yes
Age FE	Yes	Yes
No. of obs.	837	837
R-sq.	0.61	0.62

** significance at 5 %, * significance at 10% ; SE clustered at parish level (in parentheses)

Effect of income shock on intake of Vitamin A supplementation by infant in the household in last 6 months

	(1)	(2)
Shock	0.36** (0.16)	0.28* (0.17)
ShockIntensity	-	0.15*** (0.06)
Controls	Yes	Yes
Household FE	Yes	Yes
Surveywave FE	Yes	Yes
Age FE	Yes	Yes
No. of obs.	480	480
R-sq.	0.65	0.66

*** significance at 1%, ** significance at 5 %, * significance at 10% ; SE clustered at district level (in parentheses)

Main results

- Effect of health shock

- With experience of health shock in the household in the prior six months, the probability to take the infant in the household for preventive healthcare during the same time interval increases
- for the household where the shock had started prior to the last 6 months: with increase in relative intensity of the shock in the last 6 months, the probability to take the infant in the household for preventive healthcare during the same time interval increases

- Effect of income shock

- similar to health shock

Investigating possible channels of effect of health shock

- Increased awareness about importance of health?
- If child healthcare is time-intensive, then more time away from labour market due to sickness/to get remedial care could decrease the additional cost of getting preventive healthcare for the child?

Investigating possible channels of effect of health shock

Effect of household health shock on the average labour weeks spent by a permanent household member

	(1)	(2)
Shock	-0.08*** (0.03)	-0.14*** (0.05)
Controls	Yes	Yes
Household FE	Yes	Yes
Surveywave FE	Yes	Yes
No. of obs.	1614	477
R-sq.	.76	.78

*** significance at 1%; SE clustered at parish level (in parentheses); controls include: count of other shocks in hh. in past year, number of permanent hh.members, number of hh.members away from household due to work, number of hh.members at the prime years of age

- ⇒ With experience of health shock in the prior 6 months, the average labour weeks spent by a household member decreases
- ⇒ Thus, when forced to have more out-of-labour-market time, the opportunity cost of taking the infant for preventive healthcare should decrease

Investigating possible channels of effect of income shock

- Finding: negative income shock increases the probability of getting preventive healthcare for children in the household
- Explanation
 - use of buffer stock to smooth income?

Investigating possible channels of effect of income shock

- Additional controls on types of main coping strategies post-shock, such as *'use of savings'* and *'reduced consumption/changed preferences on consumption'*

Effect of income shock on intake of Vitamin A supplementation by infant in the household in last 6 months

	(1)	(2)	(3)
Shock	0.36** (0.16)	0.28* (0.17)	0.07 (0.24)
ShockIntensity	-	0.15*** (0.06)	0.20*** (0.07)
Controls	Yes	Yes	Yes
Used savings to cope	-	-	0.06 (0.36)
Changed consumption preferences to cope	-	-	0.60* (0.34)
Household FE	Yes	Yes	Yes
Surveywave FE	Yes	Yes	Yes
Age FE	Yes	Yes	Yes
No. of obs.	480	480	480
R-sq.	0.65	0.66	0.66

*** significance at 1%, ** significance at 5 %, * significance at 10% ; SE clustered at district level

- ⇒ The probability of getting preventive healthcare for the infants in the household increases if the household uses changed consumption patterns as its main coping strategy
- ⇒ Leisure cheaper compared to consumption -> increased leisure hours lead to increase in time investment on child healthcare

Robustness checks

- Attrition bias
 - Checked if probability to exit the sample is affected by the incidence of shocks -> no effect
 - Since `refreshing` of sample in 4th wave, checked the main results with a panel of hh.s which are present in all the first 3 waves -> similar results
- District fixed effects for income shock
 - Estimated effects smaller than that in hh.fixed effects model, nor stat.significant

Inference

■ Primacy of time in child healthcare

- In case of both shocks, when the the out-of-labour-market time increases, households are more likely to take children for preventive healthcare
 - For health shock it works with decrease in average labour weeks in the household
 - => opportunity cost of taking child for preventive healthcare should fall given that atleast one adult is forced to be away from labour market due to illness
 - For income shock, if the household supplies less labour and thus settles for reduced consumption due to change in relative prices of consumption and leisure, then the household is more likely to invest the leisure time in preventive healthcare activities for the children

Inference

- The relative intensity measure of shock gives a deeper insight ...
 - Higher the suffering in the last 6 months relative to the suffering before the last 6 months, higher the probability to take the infant for preventive healthcare
 - For health shock, does it hint on theory of scarcity (Shafir & Mullainathan, 2013) ...that resource-constrained hh.s seem to 'tunnel' their attention only to the immediate scarcity at hand and do not necessarily adhere to it when the scarcity is not immediate?
 - For income shock, substitution effect rules but only for a short while?

Thank you!

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