Impact of Parental Health Shocks on Children's Educational Outcomes

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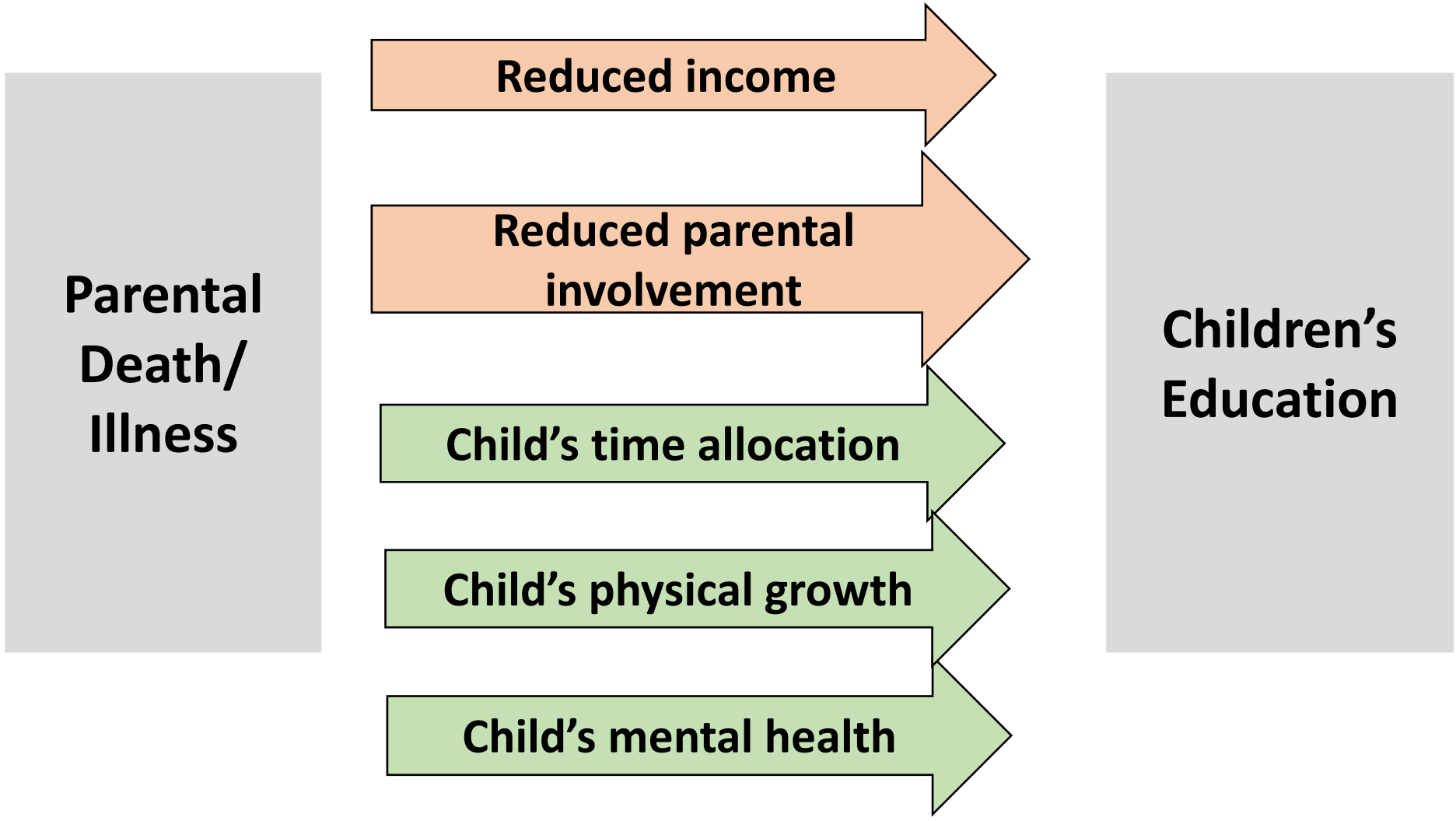
Research questions

- We examine the effects of shocks
  - Death of parents (mother, father or both)
  - Serious illness of parents
  - Serious illness followed by death of parents
- On child's well-being measured by
  - school enrollment
  - grade progression

Channels of Impact



Parental Death: Effects by Age

- Dhanaraj (2016) used data in India and found that adverse parental health shocks led to temporary delay in primary school enrolment for the younger cohort while schooling attainment was significantly reduced for the older cohort.
- Case et al. (2014) found that five years after the 2004 Indian Ocean tsunami, there were deleterious impacts of the tsunami on older boys and girls, whereas the effects on younger children were more muted. Older children who lost their parents to the tsunami spent more time working and had substantially lower levels of education.

Parental Death: Effects by Parent's Gender

- Himaz (2013) used data for Ethiopia and found that the death of a mother during the child's middle childhood (8-12 years age) were associated with reduced school enrolment.
- Giminez et al. (2013) used data in Taiwan and found that children's educational attainment was, on an average, more affected by the death of a mother than the death of a father.
- Evans and Miguel (2007), Case and Ardington (2006) and Chen et al. (2009) found that maternal death has a much larger impact on child education than paternal death.

Parental Death: HIV/AIDS in Africa

- Bandara et al. (2015) found that death in the household led to a significant increase in labor hours worked by a child in Tanzania.
- Beegle et al. (2010) showed that orphans in Tanzania had completed one year less of schooling than non-orphans.
- Woldehanna and Hagos (2012) found that children in Ethiopia are forced to drop out of school because they are required to work at home or outside.
- Zivin et al. (2009) used data for Kenya and found that health improvements in adults affected by HIV/AIDS resulted in a higher school attendance among children.

Parental Death: HIV/AIDS in Africa

- Evans and Miguel (2007) showed that a child in Kenya was approximately 5% less likely to be in school after the mother died.
- Case and Ardington (2006) used data for South Africa and found that maternal death negatively affects subsequent enrollment, school attainment, and education spending.
- Case et al. (2004) found that orphans in sub-Saharan Africa were less likely to be in school than non-orphans, including non-orphans who resided in the same household.

Parental Illness

- Alam (2015) found that father's illness led to a reduction in ability to afford education for children through a decrease in household's income.
- Dornan and Woodhead (2015) concluded that illness of one or both parents intensified demands on a child's time for caring for young siblings, and reduced the likelihood that children remained in school.
- Bratti and Mendola (2014) found that children whose mothers reported poorer health were less likely to be enrolled in school in Bosnia-Herzegovina.
- Sun and Yao (2010) using Chinese panel data found that primary-school age children and girls are more susceptible to the adverse effects of parental health shocks than boys.

Preview of empirical results

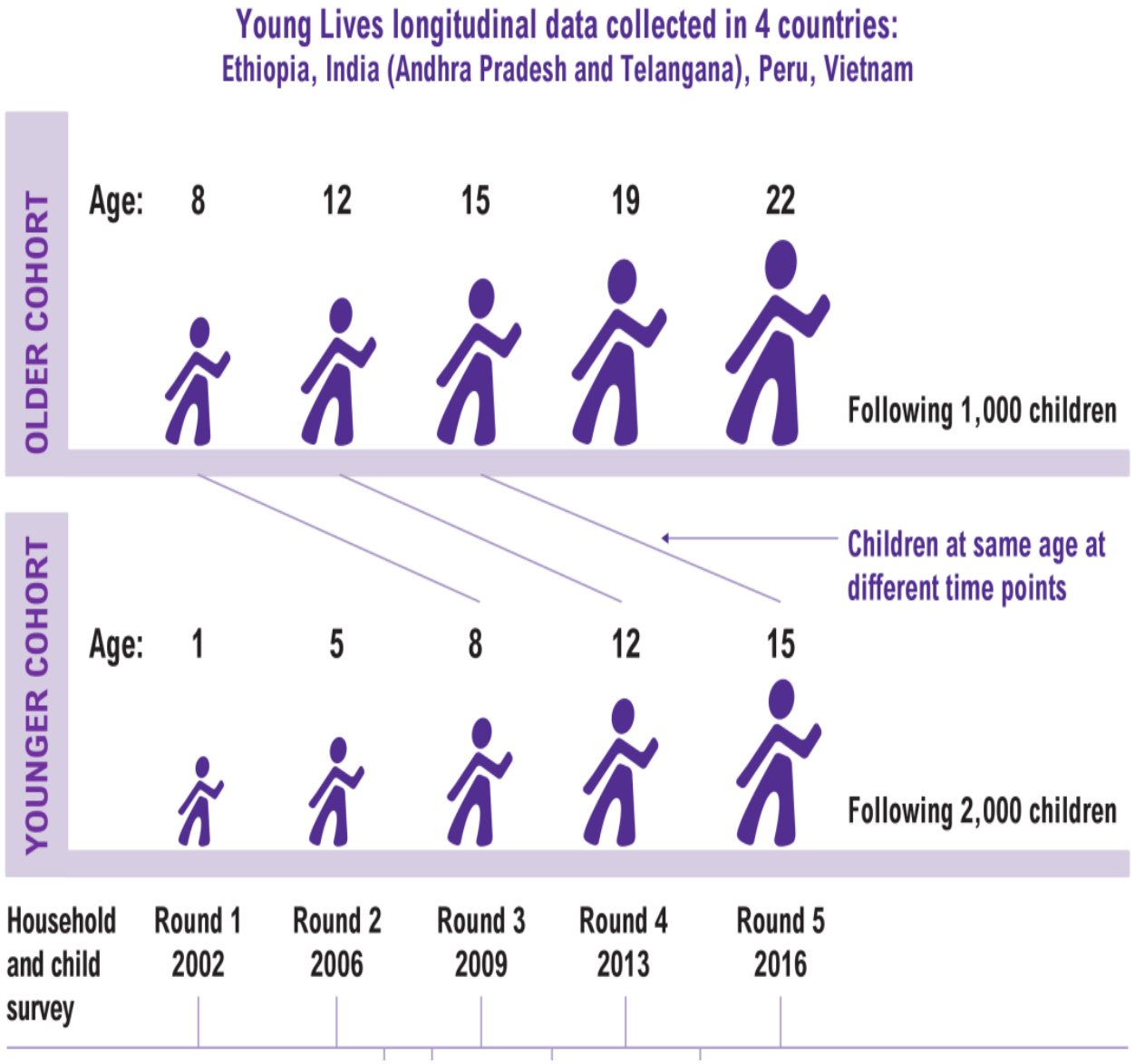
- The effect of **parental loss**, and in particular a mother, has a pronounced negative effect on child's grade attainment in Ethiopia.
  - This effect disappears once we include controls for household's and household's head characteristics.
  - This effect is not observed for India and Peru.
- **Parental illness**:
  - Has a negative and significant impact on grade attainment in India: similar sized impacts for maternal and paternal illnesses.
  - No statistically significant impact is observed for Ethiopia and Peru.

Dataset

- **Young Lives Study** (YLS) - is a longitudinal study of childhood poverty conducted by the University of Oxford
- Data are collected in
  - Ethiopia, India, Peru, Vietnam
- Random sample is designed to include a high proportion of poor children, but it also includes other children.
- Attrition rate in YLS is about 5 per cent across the whole sample between Rounds 1 and 4.
  - The attrition rate is not only low in absolute terms, but also when compared with attrition rates for other longitudinal studies in developing countries

Dataset

- The survey follows two cohorts
  - Older cohort born in 1994-1995:
  - Younger cohort born in 2001-2002
- We choose children of school-going age
  - 7-8 years old
  - 11-12 years old
  - 14-15 years old



Incidence of Parental Shock in the Young Lives Study

Cohort	Data collected: Years	Data collected: Rounds	Age when observed	No. of Obs.	Death of Father (%)	Death of Mother (%)	Illness of Father (%)	Illness of Mother (%)
Old Cohort	2006 and 2009	2 and 3	11-12 and 14-15	3,372	**4.4**	**1.8**	**19.4**	**24.7**
Young Cohort	2009 and 2013	3 and 4	7-8 and 11-12	7,591	**3.5**	**1.9**	**16.5**	**19.6**

Summary: Educational Outcomes

		Children with no Shocks		Children with Shocks			
				Parental Death		Parental Illness	
Age/ Cohort		Obs. (1)	Mean (2)	Obs. (3)	Mean (4)	Obs. (5)	Mean (6)
7-8 / YC	enrol	6104	**0.95**	150	**0.87*** (0.0031)**	1202	**0.86*** (0.0001)**
	chgrade	6104	**1.39**	150	**1.26* (0.0673)**	1202	**1.11*** (0.0001)**
11-12/ YC & OC	enrol	8931	**0.96**	281	**0.93** (0.0124)**	1708	**0.96 (0.8181)**
	chgrade	8931	**5.10**	281	**4.48*** (0.0001)**	1708	**4.92*** (0.0001)**
14-15/ OC	enrol	2595	**0.86**	102	**0.75*** (0.007)**	580	**0.82*** (0.0079)**
	chgrade	2595	**7.55**	102	**6.59*** (0.0001)**	580	**6.90*** (0.0001)**

Observations from Summary Statistics

- Death
  - 4% of children: father's death.
  - 2% of children: mother's death.
- Serious Illness
  - 16-20% of children: father's illness.
  - 20-24% of children: mother's illness.
- Enrolment Rates
  - Significantly lower rates among children with parental health shocks
- Grade Attainment
  - Significantly lower attainment among children with parental health shocks

Regression Model

- $Y_i = \beta_0 + \beta_1 . \boldsymbol{S}_i + \beta_2 . \boldsymbol{X}_i + \delta_0 F_i + (\alpha_1 I_i + \alpha_2 P_i + \alpha_3 V_i) + e_i$

- Y : Educational Outcomes
  - Enrolment Rates or Grade Attainment
- $\boldsymbol{S}$: Parental Shock
  - Death or Serious Illness
  - Only father, only mother, both parents
- $\boldsymbol{X}$: Household Characteristics
  - household wealth index, rural residence, household size, household head's age, household head's education and household head's gender
- F : Dummy variable for child is female
- I, P, V : Dummy variables for India, Peru and Vietnam

Impact of Parental Health Shock on School Enrolment

	7-8 Years Old		11-12 Years Old		14-15 Years Old	
OLS	Death (1)	Illness (2)	Death (3)	Illness (4)	Death (5)	Illness (6)
Father only	-0.01	**-0.03****	-0.01	-0.0011	**-0.12****	-0.05
	(0.0328)	(0.0142)	(0.0195)	(0.0078)	(0.0526)	(0.0276)
Mother only	-0.08	**-0.03****	**-0.06***	**0.01****	0.01	**-0.04***
	(0.0522)	(0.0136)	(0.0357)	(0.0060)	(0.0603)	(0.0233)
Both parents	**-0.78*****	**-0.08*****	**0.05*****	0.01	0	**-0.06***
	(0.0132)	(0.0264)	(0.0133)	(0.0140)	(.)	(0.0351)
Child female	0.01**	0.01**	0.0049	0.0049	-0.0003	0.0024
	(0.0053)	(0.0053)	(0.0035)	(0.0035)	(0.0119)	(0.0119)
Constant	0.77***	0.78***	0.89***	0.89***	0.78***	0.79***
	(0.0183)	(0.0185)	(0.0133)	(0.0135)	(0.0453)	(0.0453)
R-sq.	0.1894	0.1918	0.0413	0.0407	0.1225	0.1230
Total Obs.	6964	6964	10377	10377	3049	3049
Shock Obs.	114	1179	234	1689	77	573

Notes: i) Parenthesis shows robust standard errors. ii) All regressions control for household characteristics and country dummy variables. iii) For the age group 14-15 years, there are no observations with both parents death.

Impact of Parental Health Shock on Grade Attainment

	7-8 Years Old		11-12 Years Old		14-15 Years Old	
OLS	Death (1)	Illness (2)	Death (3)	Illness (4)	Death (5)	Illness (6)
Father only	0.09	**-0.07***	-0.14	0.07	-0.05	-0.17
	(0.0923)	(0.0361)	(0.1045)	(0.0507)	(0.2518)	(0.1174)
Mother only	-0.10	-0.03	-0.23	-0.01	-0.44	**-0.22****
	(0.1056)	(0.0339)	(0.1974)	(0.0457)	(0.4175)	(0.1052)
Both parents	**-0.58*****	**-0.22*****	0.05	-0.15	0	**-0.38****
	(0.0352)	(0.0431)	(0.2866)	(0.0989)	(.)	(0.1641)
Child female	0.09***	0.09***	0.11***	0.11***	0.15***	0.16***
	(0.0172)	(0.0172)	(0.0257)	(0.0258)	(0.0555)	(0.0552)
Constant	0.43***	0.47***	2.92***	2.91***	5.15***	5.21***
	(0.0539)	(0.0548)	(0.0972)	(0.0983)	(0.2313)	(0.2313)
R-sq.	0.2881	0.2900	0.3909	0.3910	0.4225	0.4245
Total Obs.	6964	6964	10377	10377	3049	3049
Shock Obs.	114	1179	234	1689	77	573

Notes: i) Parenthesis shows robust standard errors. ii) All regressions control for household characteristics and country dummy variables. iii) For the age group 14-15 years, there are no observations with both parents death.

Results by Age

- 7-8 years old
  - Death of both parents lowers enrolment and grade attainment.
  - Serious illness of either parents lowers enrolment and grade attainment.
- 11-12 years old
  - Mother’s death reduces enrolment; death has no impact on grade attainment
  - Serious illness has no impact on enrolment or grade attainment.
- 14-15 years old
  - Father’s death lowers enrolment.
  - Serious illness adversely affects both enrolment and grade attainment.
- Among all age groups, a female child has higher levels of grade attainment.

Differentiating Impact by Death Type

- A sudden death of a parent versus death preceded by prolonged illness.
- A family's coping mechanism in the two scenarios may be different.
- Unfortunately, the YLS data does not record the cause of a parent's death.
- We try to differentiate the two types of deaths by an approximate measure.

Differentiating Impact by Death Type

- Consider two types of parental deaths:

1. Sudden Death: A parent dies without illness recorded in the current or previous round
2. Anticipated Death: A parent's serious illness in the current or previous round is followed by death

Impact on School Enrolment by type of Death

	7-8 Years Old		11-12 Years Old		14-15 Years Old	
OLS	Father (1)	Mother (2)	Father (3)	Mother (4)	Father (5)	Mother (6)
Only Death	-0.01	**-0.10***	-0.02	**-0.07***	**-0.13****	**0.13*****
	(0.0329)	(0.0588)	(0.0198)	(0.0379)	(0.0610)	(0.0301)
Illness &	-0.17	-0.21	-0.002	**0.03*****	-0.07	-0.05
Death	(0.1171)	(0.1332)	(0.0603)	(0.0123)	(0.1247)	(0.1650)
Child female	0.02***	0.02***	0.005	0.005	-0.006	-0.005
	(0.0056)	(0.0055)	(0.0035)	(0.0035)	(0.0122)	(0.0122)
Constant	0.87***	0.87***	0.88***	0.88***	0.77***	0.77***
	(0.0169)	(0.0169)	(0.0133)	(0.0132)	(0.0446)	(0.0445)
R-sq.	0.11	0.11	0.04	0.04	0.07	0.07
Total Obs.	6964	6964	10377	10377	3049	3049
Death Obs.	67	48	162	78	62	15

Notes: i) Parenthesis shows robust standard errors. ii) All regressions control for household characteristics.

Impact on Grade Attainment by type of Death

	7-8 Years Old		11-12 Years Old		14-15 Years Old	
OLS	Father (1)	Mother (2)	Father (3)	Mother (4)	Father (5)	Mother (6)
Only Death	0.10	**-0.21***	-0.11	**-0.51****	0.12	-0.83
	(0.0945)	(0.1155)	(0.1235)	(0.2233)	(0.2856)	(0.6407)
Illness &	-0.06	-0.21	-0.23	**0.51****	-1.030	**-1.63*****
Death	(0.2686)	(0.2816)	(0.2762)	(0.2124)	(0.7008)	(0.4313)
Child female	0.10***	0.10***	0.13***	0.13***	0.17***	0.18***
	(0.0185)	(0.0185)	(0.0285)	(0.0285)	(0.0606)	(0.0604)
Constant	0.69***	0.69***	3.83***	3.83***	6.16***	6.19***
	(0.0574)	(0.0574)	(0.1065)	(0.1064)	(0.2592)	(0.2600)
R-sq.	0.17	0.17	0.26	0.26	0.32	0.32
Total Obs.	6964	6964	10377	10377	3049	3049
Death Obs.	67	48	162	78	62	15

Notes: i) Parenthesis shows robust standard errors. ii) All regressions control for household characteristics.

Results by Death Type

- 7-8 years old
  - Mother’s sudden death has a significant adverse impact on enrolment and grade attainment
- 11-12 years old
  - Mother’s sudden death has a significant adverse impact on enrolment and grade attainment
  - However anticipated death has a positive impact on both outcomes.
- 14-15 years old
  - Father’s sudden death lowers enrolment.
  - Mother’s anticipated death lowers grade attainment.

Conclusions

- Parental health shocks have an adverse impact on educational outcomes among children
- Evidence seen
  - School enrolment, grade attainment
  - Three different age groups
  - Death, Serious illness
- The impact may differ depending on whether death was sudden or preceded by illness
- Despite parental health shocks, girls outperformed boys in grade attainment

Extensions

- Test how results vary by countries
- Make use of data on time allocation by children to understand the coping mechanism
- Possible addition of school survey data