Updating great expectations: the effect of peer salary information on future own-earnings beliefs

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Motivation

- Bulk of search theory assumes prospective workers are well-informed and cognitively-unbiased
- Existing evidence generally suggests otherwise ... BUT there is little research on *how* job seekers respond to new information, esp. in thin formal labour markets
- We ask (1): how do graduate job seekers in Mozambique respond to information about graduate earnings?
- And also (2): does the type of information matter?
- Focus on changes in expectations as 1st order response

Model of updating beliefs

Define **public news** about peer earnings as the gap between current info. signal (x) and prior beliefs (w):

$$x_t - w_{it-1}$$

Implies a standard 'update towards signal' model:

$$w_{it+1} = w_{it} + \beta(x_{t+1} - w_{it}) + \nu_{it+1}$$

Extend to allow for private information (z), which we proxy from observed (baseline) characteristics and work outcomes:

$$w_{it+1} = (1-\delta)w_{it} + \beta(x_{it+1} - w_{it}) + \delta z_{it+1} + \mu + \lambda_{t+1} + \xi_{it+1}$$

$$\Delta w_{it+1} = \beta(x_{it+1} - w_{it}) + \delta(\hat{z}_{it+1} - w_{it}) + \mu + \lambda_{t+1} + \xi_{it+1}$$

... where in the last expression we predict z from a zero stage, yielding a private news component.

Data and experiment

- Information experiment embedded in a longitudinal tracking survey in Mozambique
- Representative sample of 2100 final-year university students, followed over 18 months 2018-2019
- Randomized to 5 experimental arms with 3 SMS types:
  1. *General message:* mean wage of entire sample
  2. *University-specific message:* mean wage of sub-sample that attended the same university
  3. *Field-specific message:* mean wage of sub-sample in the same study field

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Survey results at Dec.1st:  of all graduates
in Mozambique (class of 2017), 59% are working
and their average wage = 14,000 Mts / mes.
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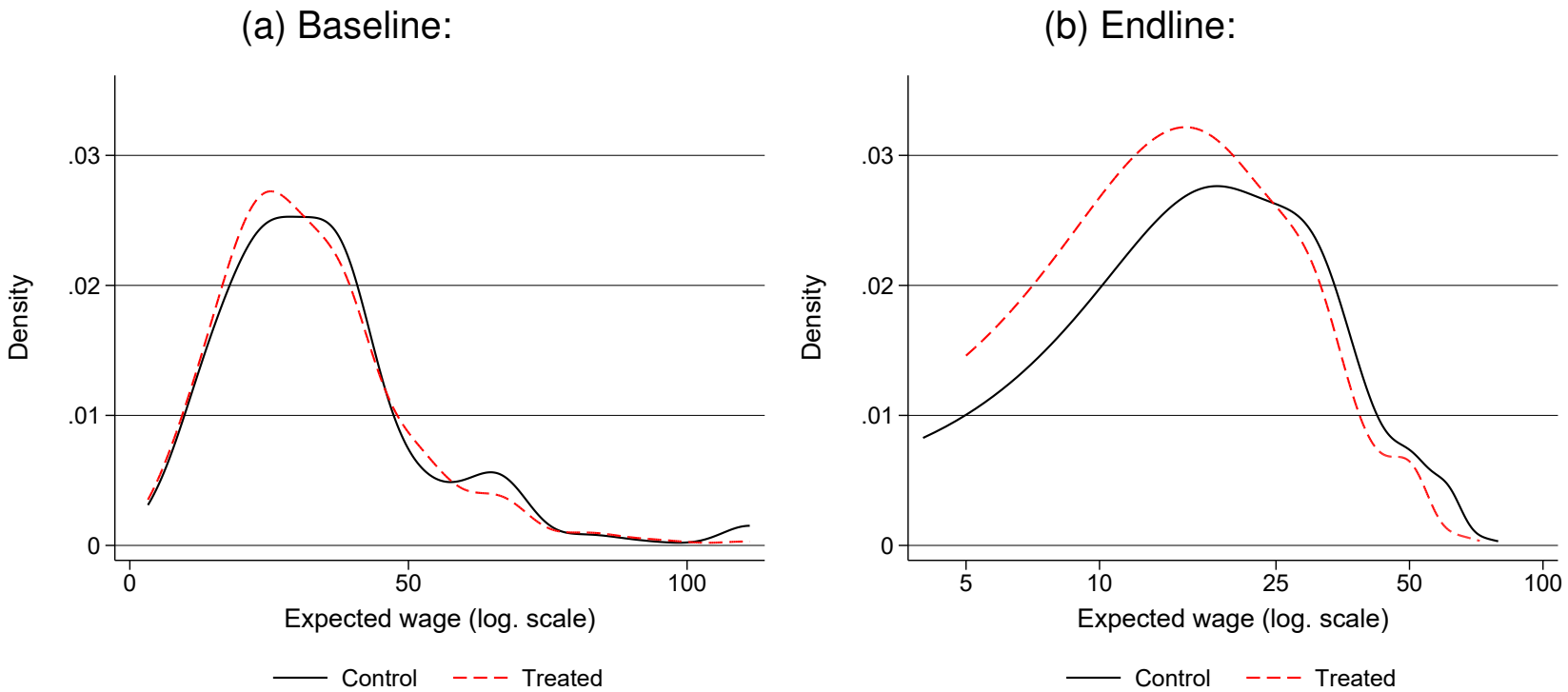
Observations across survey rounds

	Experimental arm					All arms	
Round	Control	General	Univ.	Field	Mixed	Total	% basel.
Baseline	504	397	400	398	401	2,100	1.00
1	486	393	390	390	392	2,051	0.98
2	473	389	379	377	386	2,004	0.95
3	456	381	376	375	383	1,971	0.94
4	439	377	367	366	372	1,921	0.91
5	428	372	361	359	360	1,880	0.90
6	423	366	353	350	357	1,849	0.88

Note: cells report the raw number of observations by experimental arm and round number; final column gives the overall follow-up rate relative to the baseline sample.

Some evidence that **attrition was reduced** on account of receiving the information treatment $\Longrightarrow$ we adjust sample weights to ensure treatment and control arms represent a fixed share of observations within each strata in each round (e.g., Chen et al., 2015).

Result I: Expected wages, baseline vs endline



Baseline wage expectations were revealed to be **highly optimistic**. See Jones et al., (2020): 'Misinformed, mismatched or misled: Explaining the gap between expected and realized graduate earnings in Mozambique'.

Result II: Difference-in-differences (ATT)

	(Ia)	(Ib)	(Va)	(Vb)
Treated	-0.14***		-0.15***	
	(0.04)		(0.04)	
Gen. treatment		-0.11**		-0.10*
		(0.05)		(0.05)
Uni. treatment		-0.10**		-0.17***
		(0.05)		(0.05)
Field treatment		-0.17***		-0.17***
		(0.04)		(0.05)
Working			-0.13*	-0.14*
			(0.08)	(0.08)
Experience			0.09**	0.09**
			(0.04)	(0.04)
Full-time expect.			0.14**	0.14**
			(0.06)	(0.06)
Spillover			0.05	0.06
			(0.04)	(0.04)
Elapsed time			0.02	0.02
			(0.05)	(0.05)
SMS employ. rate			-0.00	-0.00
			(0.00)	(0.00)
5th survey round	-0.15***	-0.15***	-0.33***	-0.33***
	(0.03)	(0.03)	(0.07)	(0.07)
Obs.	3,591	3,591	3,324	3,324
R2 (adj.)	0.06	0.06	0.46	0.46
RMSE	0.56	0.56	0.42	0.42
Controls & indiv. FEs	No	No	Yes	Yes

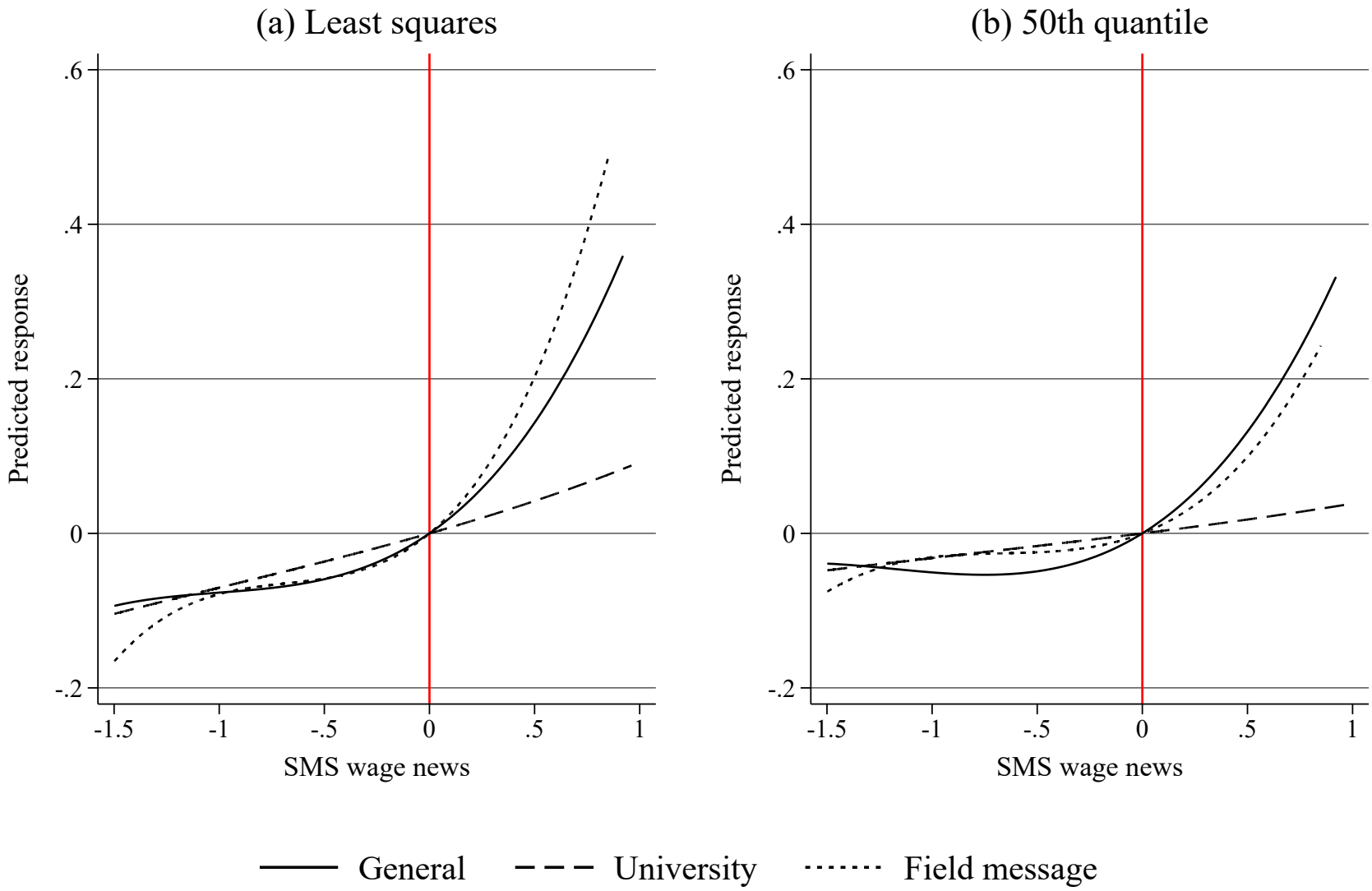
Result III: Dynamic analysis (all rounds)

	Levels			First differences		
	(Ia)	(Ib)	(Ic)	(IIa)	(IIb)	(IIc)
Prior belief	0.56***	0.61***	0.61***			
	(0.01)	(0.02)	(0.02)			
Treated	-0.07**			-0.05**		
	(0.03)			(0.02)		
SMS wage news		0.06***			0.06***	
		(0.02)			(0.02)	
Gen. SMS wage news			0.06**			0.05***
			(0.02)			(0.02)
Uni. SMS wage news			0.06**			0.04**
			(0.02)			(0.02)
Field SMS wage news			0.08***			0.08***
			(0.03)			(0.02)
Private news (estd.)				0.42***	0.38***	0.38***
				(0.01)	(0.02)	(0.02)
Trend (round)	-0.06***	-0.07***	-0.07***	-0.04***	-0.04***	-0.04***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Constant	4.20***	3.71***	3.71***	0.02	0.02	0.02
	(0.17)	(0.24)	(0.24)	(0.03)	(0.03)	(0.03)
Obs.	9,053	9,053	9,053	9,053	9,053	9,053
AIC	9,771	9,763	9,766	9,765	9,753	9,754
R2 (adj.)	0.435	0.436	0.436	0.269	0.270	0.270
RMSE	0.414	0.414	0.414	0.414	0.414	0.414
Gen. = Field = Uni.			0.782			0.279
Jointly zero			0.023			0.004

Result IV: Non-linear responses to wage news

Interaction term (Y) $\rightarrow$	(1) –	(2) Earning	(4) Round	(5) Reliability	(10) Prior w
SMS wage news	0.04**	0.08***	0.07***	0.08**	0.09***
	(0.02)	(0.01)	(0.01)	(0.03)	(0.02)
SMS wage news [+]	0.04	0.03	0.03	0.05*	0.02
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
SMS wage news $\times Y$		-0.02	-0.02**	0.03**	-0.03
		(0.02)	(0.01)	(0.01)	(0.02)
Salary info. $\times Y$		-0.03	0.04	-0.00	0.11*
		(0.06)	(0.04)	(0.03)	(0.06)
Private news	0.38***	0.35***	0.36***	0.36***	0.36***
	(0.02)	(0.03)	(0.02)	(0.04)	(0.03)
Private news $\times$ earns		-0.12***	-0.13***	-0.15***	-0.13***
		(0.03)	(0.03)	(0.03)	(0.03)
Actual wage news		0.20***	0.19***	0.21***	0.19***
		(0.02)	(0.01)	(0.02)	(0.01)
Actual wage news [+]		0.60***	0.57***	0.58***	0.60***
		(0.14)	(0.13)	(0.14)	(0.17)
Some hetero.		0.36	0.04	0.06	0.05
Processing hetero.		0.61	0.34	0.99	0.08
Weighting hetero.		0.31	0.02	0.02	0.27

Result IV: Non-linear responses to wage news



Conclusions

- Systematically incorrect (optimistic) wage expectations found in many settings, including Mozambique
- Our results show receiving SMS information about peer earnings led to moderate revisions in beliefs:
  - overall decline in the expected wage $\sim$15% ($2\times$ control)
  - long-term response elasticity $\sim$16%
  - field-specific message largest and most robust responses
- Evidence of complex updating heuristics, including asymmetric responses (more in the paper)
- Implications?
  - Detailed public wage information, by occupation and education, likely to be valuable
  - ... BUT information not a general panacea for persistent unrealistic optimism