Insuring Labor Income Shocks: The Role of the Dynasty

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Introduction

- Families can be formidable institutions for providing insurance when formal markets fail or are missing
- Two channels:
  - Pooling risks among members of the same generation
  - Facilitating transfers across generations

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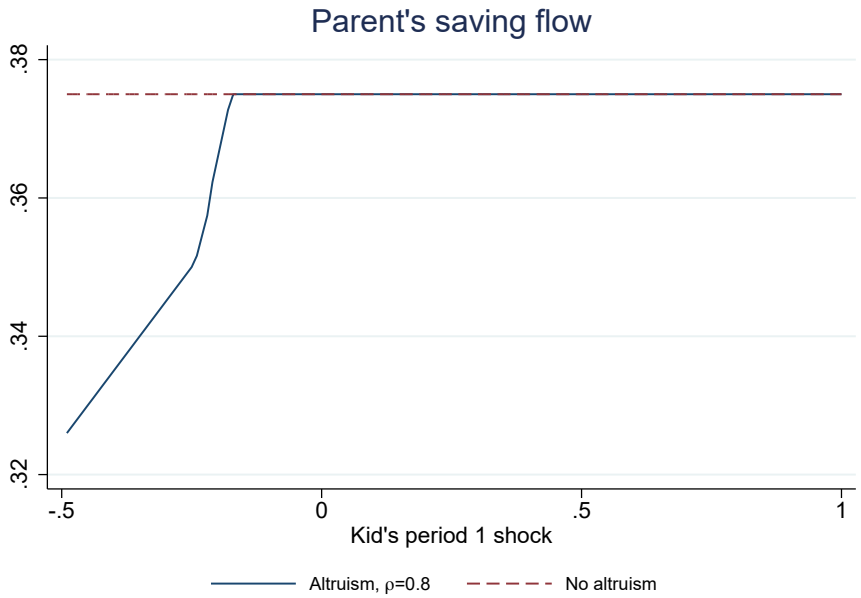
- Families can be formidable institutions for providing insurance when formal markets fail or are missing
- Two channels:
  - Pooling risks among members of the same generation
  - Facilitating transfers across generations
    - ★ Focus on this channel
- Use admin data from Norway to test:
  - Whether parents insure kids against wage shocks
  - Whether insurance depends on the nature of shocks
  - Whether family structure matters

Outline and Findings (I)

- Simple model predicts that altruistic parents insure children against earnings losses; do nothing if kids do well (or if not altruistic)



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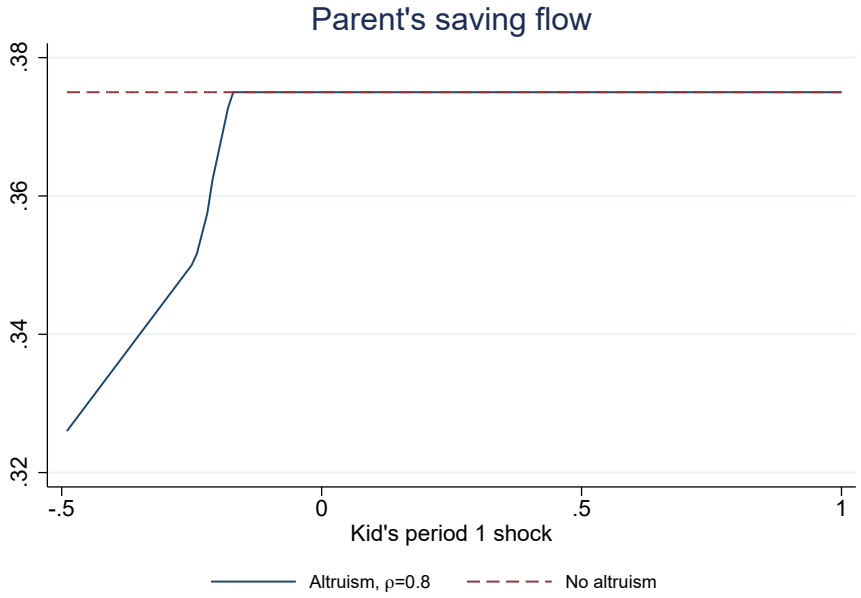

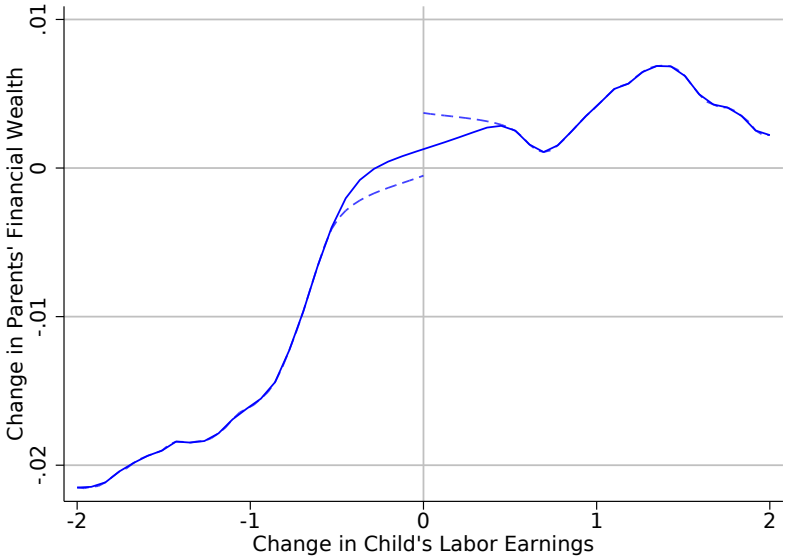

Outline and Findings (II)

- If the child's earnings losses are temporary, parents dissave to finance current transfer
- If the child's earnings losses are expected to persist, parents "save for a (child's) rainy day" – in anticipation of having to make transfers in the future

Outline and Findings (II)

- If the child's earnings losses are temporary, parents dissave to finance current transfer
- If the child's earnings losses are expected to persist, parents "save for a (child's) rainy day" – in anticipation of having to make transfers in the future

	Temporary earnings losses	Persistent earning losses
Marginal effect	0.19	-0.12
S.E.	(0.05)	(0.04)

Literature

- Kaplan (2012): parents' home as a "parachute"
  - In-kind vs monetary transfers
- Boar (2021): parents' precautionary saving in response to kids' income risk
  - We look at saving response to realized shocks (no need to assume a precautionary motive), exploit differences in wealth between parents and kids due to their positions in the life cycle
- Andersen et al (2020): info on transfers from parents' bank account to kids' bank account correlates with adverse shocks, but low coverage
  - Do not capture direct payments made by parents (e.g., paying for bills)
  - We find a much higher coverage, most likely because changes in wealth capture all monetary transfers

Outline

1. A simple illustrative model: Implications for parents' wealth dynamics
2. Identification
3. Data
4. Results

1. **A simple illustrative model: Implications for parents' wealth dynamics**
2. Identification
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An Illustrative Model

- Three periods, parents and kids interact in the last two
- Kids
  - No access to credit markets
  - Persistent income shocks: $\varepsilon_2 = \rho\varepsilon_1 + \sigma_v v_2$
    - ★ Focus on the $\sigma_v = 0$ case
- Parents
  - Preferences: Concave and separable utility; altruistic
  - Decide saving Δw_1^p, and may make current and future non-negative transfers τ_1 and τ_2 to kids
  - Decisions made after observing shocks to kid's income in first period, ε_1

Optimal saving and transfer decisions

- Parents' wealth accumulation/decumulation decisions:

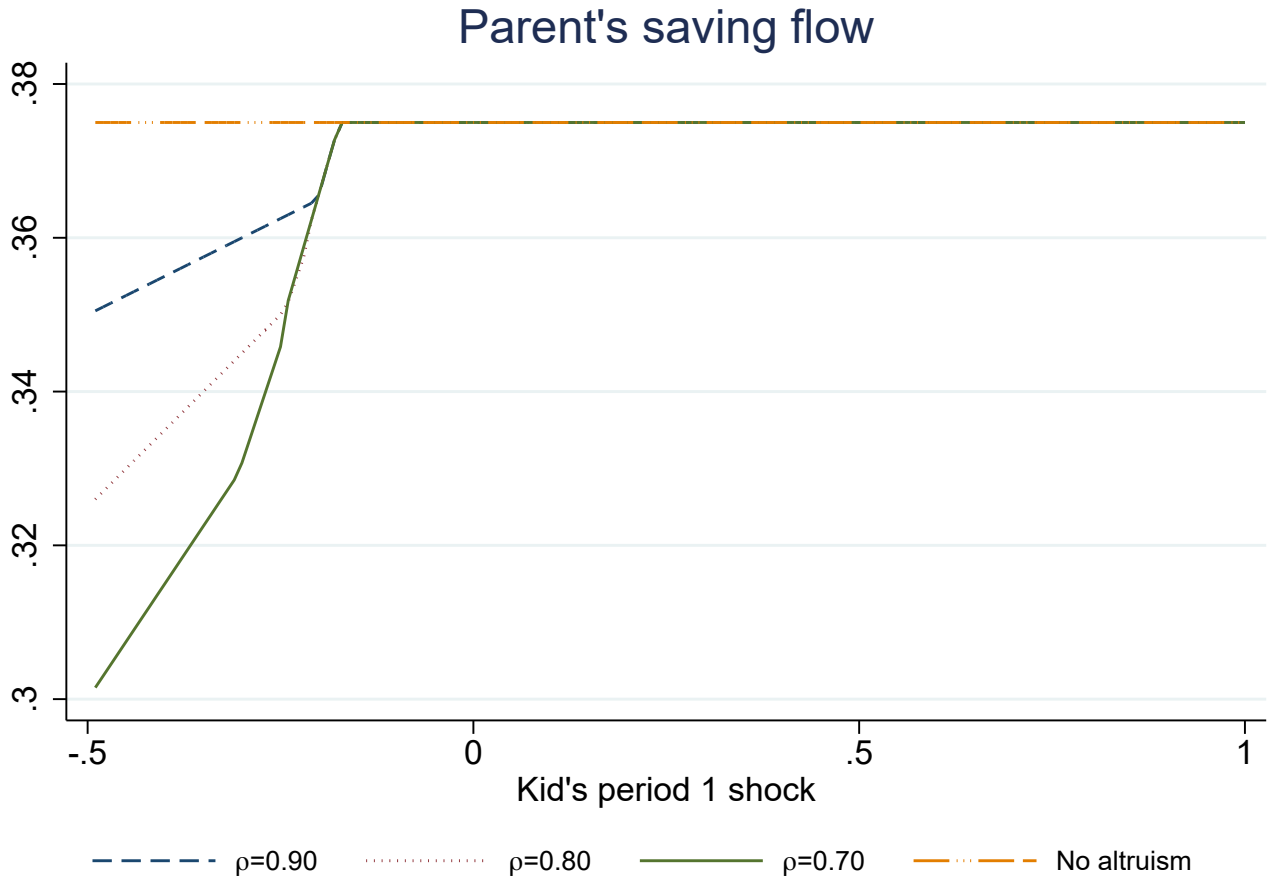
$$\Delta w_1^p = \frac{1}{2}\left(y_0^p - w_0^p + \tau_2^* - \tau_1^*\right)$$

- Optimal transfers depend on the kid's income realization:

Case	τ_1^*	τ_2^*
$\varepsilon_1 \geq \bar{\varepsilon}$	$\tau_1^* = 0$	$\tau_2^* = 0$
$\frac{\bar{\varepsilon}}{\rho} \leq \varepsilon_1 < \bar{\varepsilon}$	$\tau_1^* > 0$	$\tau_2^* = 0$
$\varepsilon_1 < \frac{\bar{\varepsilon}}{\rho}$	$\tau_1^* > 0$	$\tau_2^* > 0$

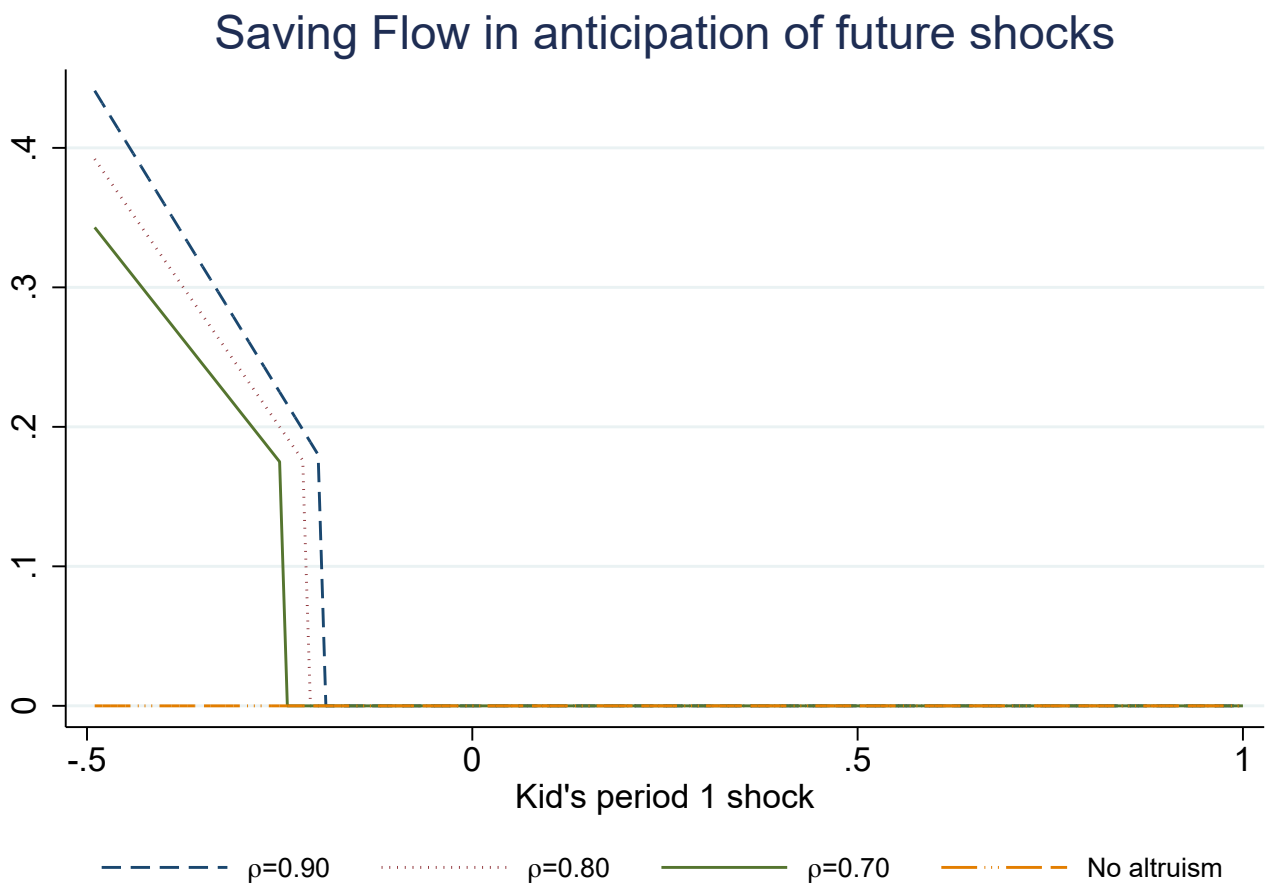
- For realistic parameter values, the threshold value $\bar{\varepsilon} \leq 0$

Main implications: current shocks



- Do nothing if positive or mildly negative shocks (or not altruistic)
- Dissave if negative current shock to finance transfer

Main implications: persistent shocks



- Saving against transfers to be made in the future due to shocks being persistent

The empirical model

- A specification capturing the implications of the model:

$$\Delta w^{par} = \alpha_T \Delta y_{Trans}^{-,kid} + \alpha_P \Delta y_{Pers}^{-,kid} + \gamma \Delta y^{+,kid} + x'\theta + \eta^{par}$$

- where:
  - $\Delta y_{Trans}^{-,kid}$ is a negative transitory shock to the child's earnings
  - $\Delta y_{Pers}^{-,kid}$ the persistent equivalent
  - $\Delta y^{+,kid}$ a positive shock

- Model predicts:
  - $\gamma = 0$ (parental insurance kicks in only against negative shocks)
  - $\alpha_T > 0$ (parents decumulate assets to insure negative, temporary shocks)
  - $\alpha_P < 0$ ("saving for a (child's) rainy day")
  - $\alpha_T = \alpha_P = 0$ if no altruism

Identification challenges

- We observe income losses and income gains – but don't know if transitory or persistent shocks are behind observed income losses

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- We observe income losses and income gains – but don't know if transitory or persistent shocks are behind observed income losses
- An OLS regression identifies a mixture of the two responses
  - Bias against finding evidence of altruistic behavior
- To isolate parents' saving response to the kid's persistent shocks, we use shocks to the kid's employer's productivity as an IV
  - Pass-through literature
  - Firm value added shocks load onto persistent component of wages (Guiso, Pistaferri, and Schivardi, 2005, and others)
  - Variation in wages outside the worker's control and hard to avoid (at least in the short term)

Identification strategy (I)

- Run OLS regression:

$$\Delta w^{par} = \alpha \Delta y^{-,kid} + \gamma \Delta y^{+,kid} + x'\theta + \eta^{par}$$

- Can show that $\hat{\alpha}^{OLS} \rightarrow$ weighted average of response to transitory and persistent shocks:

$$\text{plim } \hat{\alpha}^{OLS} = \omega_T \alpha_T + (1 - \omega_T)\alpha_P$$

- where $\omega_T = \frac{2\sigma_T^2}{2\sigma_T^2 + \sigma_P^2}$ is the share of the total variance of wage growth attributable to transitory shocks

Identification strategy (II)

- Use firm's VA negative shocks as IV in the regression:

$$\Delta w^{par} = \alpha \Delta y^{-,kid} + \gamma \Delta y^{+,kid} + x'\theta + \eta^{par}$$

- Can show that:

$$\text{plim } \hat{\alpha}^{IV} = \alpha_P$$

- Under the following assumptions:
  1. Shocks to the firm's value added (VA) load onto the persistent component of wages
  2. Shocks to parental wealth are orthogonal to the kid's firm value added shock

▸ Details

Identification strategy (III)

- Since

$$\begin{aligned} \text{plim } \hat{\alpha}^{IV} &= \alpha_P \\ \text{plim } \hat{\alpha}^{OLS} &= \omega_T \alpha_T + (1 - \omega_T)\alpha_P \end{aligned}$$

- It follows that we can back-up response to transitory shocks using:

$$\hat{\alpha}_T = \frac{1}{\hat{\omega}_T}\hat{\alpha}^{OLS} - \frac{(1 - \hat{\omega}_T)}{\hat{\omega}_T}\hat{\alpha}^{IV}$$

▸ Asymmetric case

Data

- Need data that link families intergenerationally
- Contain info on parents' and kids' income and assets
- Contain info on plausibly exogenous sources of persistent income fluctuations $\rightarrow$ employer's value added shocks

Data

- Need data that link families intergenerationally
  - Norwegian admin data (1997-2014) matching parents and kids
- Contain info on parents' and kids' income and assets
  - Exhaustive information on virtually all income and assets sources from income and wealth tax records + third-party reports
- Contain info on plausibly exogenous sources of persistent income fluctuations $\rightarrow$ employer's value added shocks
  - Employer-employee dataset w/ balance sheet info

Sample selection

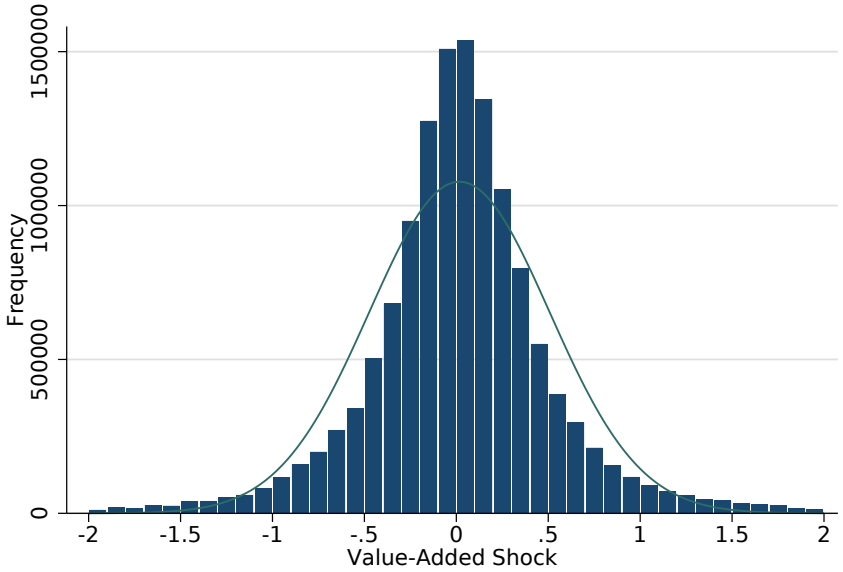
- Focus on "kids":
  - Aged 25-55
  - Employed in the private sector $\rightarrow$ to match with their firm's balance sheets and obtain an instrument for wage fluctuations
- Drop observations where parents and children work in the same industry + children with earnings below "basic income"
- Sample: 3 million child-parents pairs, observed between 1997 and 2014

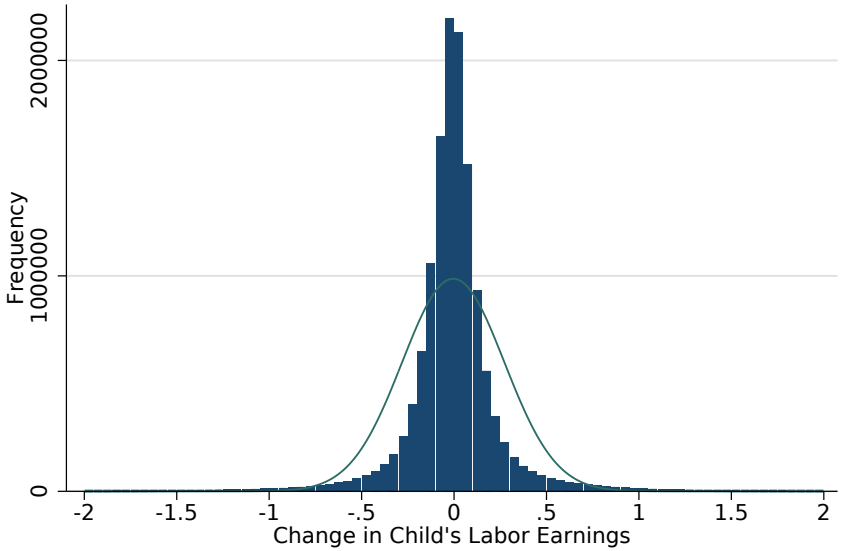
Sample descriptive statistics

	Parents			*Children*		
	Mean	*P50*	*SD*	*Mean*	*P50*	*SD*
	(1)	(2)	(3)	(4)	(5)	(6)
Financial Wealth	465	184	2061	249	88	1674
Labor Earnings	227	22	374	428	376	291
Age	66	65	10	39	38	8
Married				0.72	1.00	0.45
Spouse Works				0.93	1.00	0.26
Two sets of parents				0.90	1.00	0.30
No future divorce				0.87	1.00	0.34

Note: Monetary variables expressed in 1,000 NKr.

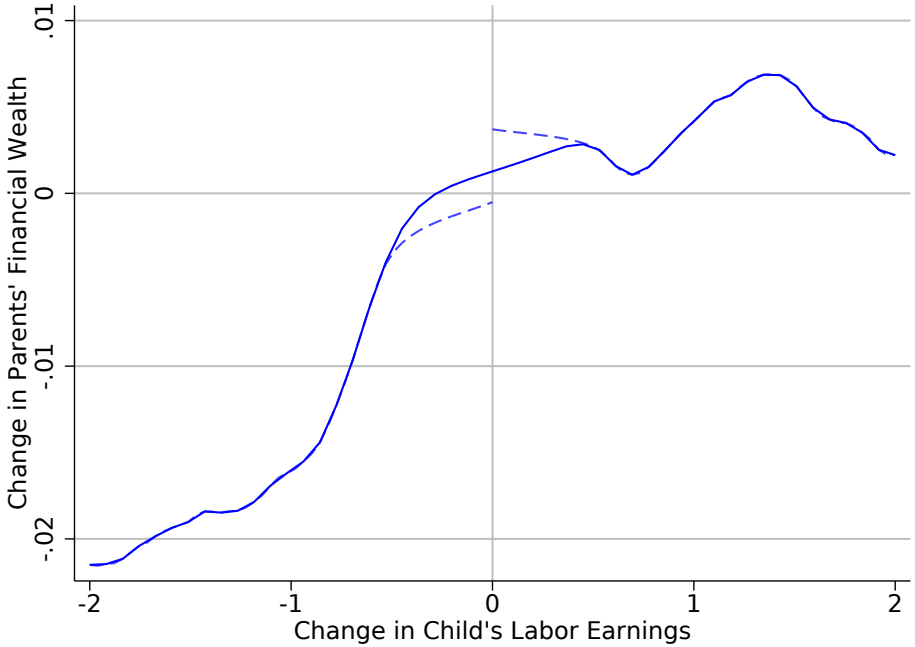
Firm Value Added and Kids' income shocks

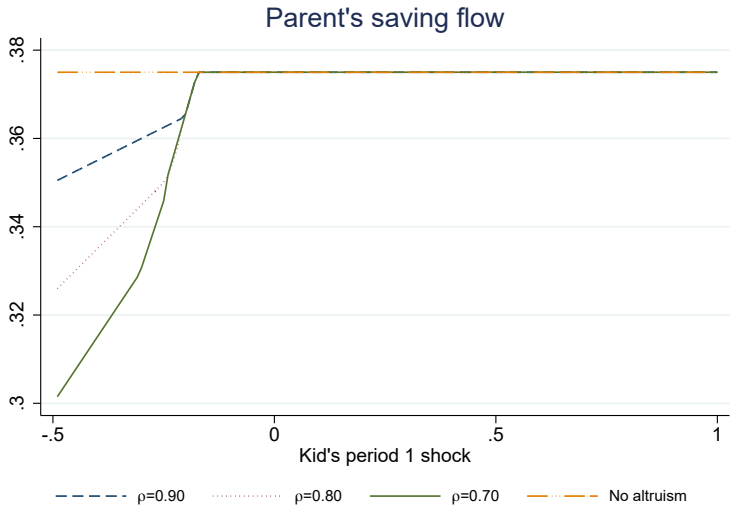




- Shocks obtained as regression residuals; rich controls to isolate idiosyncratic variation
- Value added shocks much more volatile than earnings shocks

Testing main implications: Current shocks



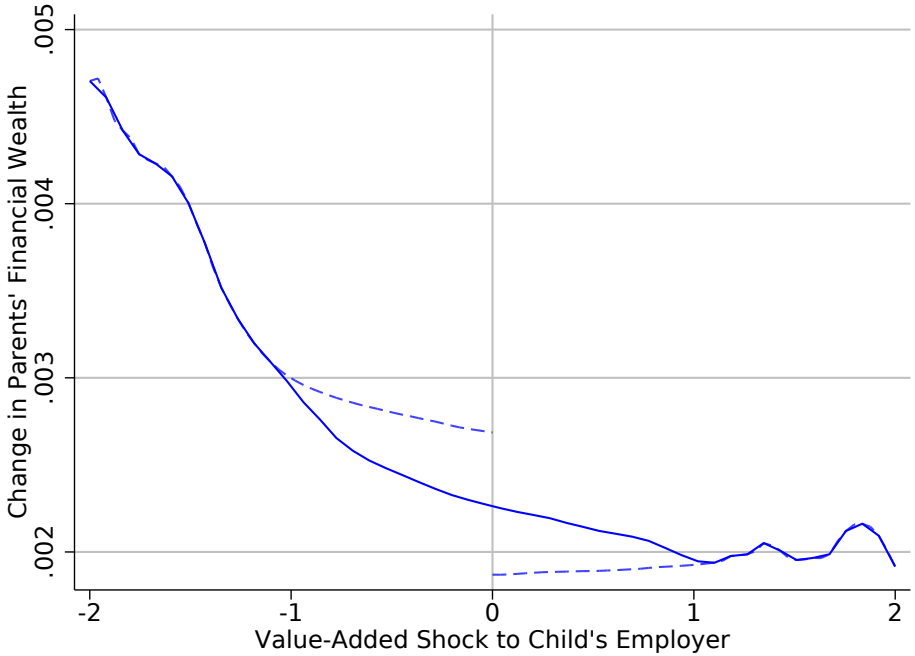


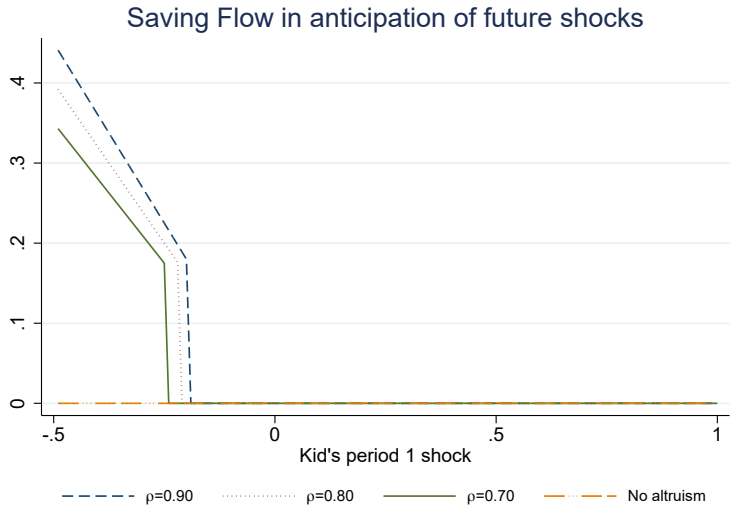
Testing main implications: Regression

Table: Parental saving responses to child's total shocks

	(1)	(2)
$\Delta y_t^{-,kid}$	0.0252***	0.0252***
	(0.0013)	(0.0013)
$\Delta y_t^{+,kid}$	-0.0001	
	(0.0011)	
$\log(w_{t-2}^{par})$	-0.0440***	-0.0440***
	(0.0002)	(0.0002)
$\log(y_{t-1}^{par})$	0.0254***	0.0253***
	(0.0003)	(0.0003)
$\log(w_{t-1}^{kid})$	0.0291***	0.0291***
	(0.0003)	(0.0003)
Demographics	Yes	Yes
N	13,550,903	13,550,903

Results: Persistent shocks, Reduced Form





IV regr.: Isolating response to persistent shocks

Table: IV Estimates

	(1)	(2)
$\widehat{\Delta y_t}^{-,kid}$	-0.2375**	-0.2585***
	(0.1012)	(0.0968)
$\widehat{\Delta y_t}^{+,kid}$	0.0440	
	(0.0583)	
$\log(w_{t-2}^{par})$	-0.0431***	-0.0429***
	(0.0004)	(0.0003)
$\log(y_{t-1}^{par})$	0.0214***	0.0217***
	(0.0012)	(0.0012)
$\log(w_{t-1}^{kid})$	0.0355***	0.0326***
	(0.0040)	(0.0012)
Demographics	Yes	Yes
First-stage F-statistic	68.58	96.14
N	12,993,332	12,993,332

Backing up response to transitory shocks

Income Variance Decomposition		Regression estimates	
$\hat{\sigma}_P^2$	0.1049	$\hat{\alpha}^{OLS}$	0.0252^{***}
			(0.0013)
$\hat{\sigma}_T^2$	0.0386		
		$\hat{\alpha}^{IV}$	-0.2585^{***}
$\hat{\omega}_T$	0.4241		(0.0821)
		Implied Elasticities to Shocks	
		$\hat{\alpha}_P$	-0.2585^{***}
			(0.0821)
		$\hat{\alpha}_T$	0.4104^{***}
			(0.1124)

Coverage rates

- Derive marginal effects from elasticities, evaluate at median values

	Temporary earnings losses	Persistent earning losses
Marginal effect	0.19	-0.12
S.E.	(0.05)	(0.04)

Robustness

- Results robust to:
  1. Limiting sample to children aged 25-45 (instead of 25-55)
  2. Children working with same employer after shock is realized (to avoid selection into firms)
  3. Including government transfers in definition of income (e.g. unemployment benefits)
  4. Parents and children living in same town: smaller effects $\rightarrow$ some money transfers are substituted with in-kind transfers

▸ Table

Insuring the kid or the kid's household?

- The vast majority of kids live with a spouse
- If there is income pooling, parents should be indifferent between a shock to their own child vs a shock faced by their child-in-law
- But pooling and caring may fail
- Does "blood matter"?

Results

	Elasticity to *persistent* losses	Elasticity to *transitory* losses
	Whole sample	Whole sample
Shock to own kid	-0.36**	0.59**
	(0.18)	(0.26)
Shock to kid's spouse	-0.20	0.34
	(0.19)	(0.28)

- "Blood matters"
  - Parents care about their own child
  - "Shame to beg"?

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- "Blood matters"
  - Parents care about their own child
  - "Shame to beg"?
  - Stability of marriage?

Results

	Elasticity to *persistent* losses		Elasticity to *transitory* losses	
	Whole sample	No divorce ahead	Whole sample	No divorce ahead
Shock to own kid	-0.36**	-0.33*	0.59**	0.55*
	(0.18)	(0.20)	(0.26)	(0.29)
Shock to kid's spouse	-0.20	-0.35*	0.34	0.58*
	(0.19)	(0.19)	(0.28)	(0.28)

- "Blood matters"
  - Parents care about their own child
  - "Shame to beg"?
  - Stability of marriage?

Other Results

- Parental insurance could be crowded out by kid's access to alternative sources of insurance ▸ Details
  - Marriage, Added worker, Spouse's parents
- No evidence for reverse insurance ▸ Details

Conclusions

- Strong evidence that transfers from parents to kids are a key source of insurance *vis-à-vis* labor income shocks
- Non-negligible coverage
- Heterogeneity:
  - "Blood matters": Parents more likely to insure when their own son/daughter – rather that their daughter/son-in-law – suffers an income loss
  - Parents less likely to insure when kids have alternative sources of insurance
    - ⋆ One exception: Insurance increases when there's another set of parents (competition for "attention"?)
  - No reverse insurance

Next steps

- Use registry of transfers (*in vivo* gifts as well as inheritances, typically reported when >100k NOK)
- Investigate extra sources of heterogeneity
  - Do parents tend to "play favorites"?
  - Discriminate on the basis of the presence of grand-children?
  - Treat girls vs boys differently?
  - Does insurance depend on having one vs multiple kids?
- Econometrics: Indirect Inference for asymmetric case

Robustness

	Baseline	Kids aged <45	Stayers	Include transfers	Child and parent in same county
	(1)	(2)	(3)	(4)	(5)
$\hat{\alpha}^{OLS}$	0.025	0.023	0.024	0.030	0.027
	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)
$\hat{\alpha}^{IV}$	-0.259	-0.196	-0.215	-0.362	-0.142
	(0.082)	(0.094)	(0.090)	(0.141)	(0.103)

Back

Mechanics of Identification (I)

- Suppose that

$$\Delta y^{kid} = \Delta y^{kid}_{Trans} + \underbrace{\theta v^f + \Delta \tilde{y}^{kid}_{Pers}}_{\Delta y^{kid}_{Pers}}$$

- where v^f is the shock to the firm's value added and θ is the pass-through coefficient
- Consider a simpler (no asymmetric effects; no controls) specification for the parental savings regression:

$$\Delta w^{par} = \alpha_T \Delta y^{kid}_{Trans} + \alpha_P \Delta y^{kid}_{Pers} + \eta^{par}$$

- We don't observe $(\Delta y^{kid}_{Trans}, \Delta y^{kid}_{Pers})$ separately, only their sum Δy^{kid}

Mechanics of Identification (II)

- Run an IV regression of Δw^{par} onto Δy^{kid} using v^f as an instrument

$$
\begin{aligned}
\text{plim } \hat{\alpha}^{IV} &= \text{plim} \frac{cov\left(v^f, \Delta w^{par}\right)}{cov\left(v^f, \Delta y^{kid}\right)} \\
&= \text{plim} \frac{cov\left(v^f, \alpha_T \Delta y^{kid}_{Trans} + \alpha_P \Delta y^{kid}_{Pers} + \eta^{par}\right)}{cov\left(v^f, \Delta y^{kid}_{Trans} + \Delta y^{kid}_{Pers}\right)} \\
&= \frac{\alpha_T \text{ plim } cov\left(v^f, \Delta y^{kid}_{Trans}\right) + \alpha_P \text{ plim } cov\left(v^f, \Delta y^{kid}_{Pers}\right) + \text{plim } cov\left(v^f, \eta^{par}\right)}{\text{plim } cov\left(v^f, \Delta y^{kid}_{Trans}\right) + \text{plim } cov\left(v^f, \Delta y^{kid}_{Pers}\right)} \\
&= \alpha_P
\end{aligned}
$$

- If:
  - plim $cov\left(v^f, \Delta y^{kid}_{Trans}\right) = 0$ (GPS, 2005)
  - plim $cov\left(v^f, \eta^{par}\right) = 0$ (shock to parent $\perp$ shock to kid's firm VA)

Back

Heterogeneity in responses

- Parental insurance should be less relevant when children have access to alternative sources of insurance
- Compare:
  1. Single vs Married
  2. Married: one vs two parents sets
  3. Married: working vs non-working spouse

Results

	Single	Married (1 set of parents)	Married (2 sets of parents)	Married (non-work. spouse)	Married (working spouse)
	(1)	(2)	(3)	(4)	(5)
$\hat{\alpha}_P$	-0.19	-0.13	-0.25**	-0.88*	-0.20*
	(0.19)	(0.28)	(0.11)	(0.48)	(0.11)
$\hat{\alpha}_T$	0.34	0.22	0.38***	1.24***	0.32**
	(0.25)	(0.37)	(0.15)	(0.65)	(0.14)

- To isolate effect of marriage alone, compare (2) vs (1) (1 set of parents in both cases)
  - Marriage reduces parental insurance, but noisy
- Expanding parent set raises insurance: (3) vs (2)
  - No free riding - more "competition for attention"
- Presence of working spouse reduces insurance coverage: (4) vs (5)

Back

Do kids insure parents?

- In principle kids can transfer money to smooth parents' consumption when the latter face a drop in income
- The logic of dynastic insurance – parents are "cash-rich", kids are less so – suggest this is unlikely
- We can test it by "inverting" the regression

Reverse insurance

	$\hat{\alpha}_T$	$\hat{\alpha}_P$
Estimate	-0.173	0.129
S.E.	(0.384)	(0.292)

- No evidence of reverse insurance of labor income shocks
- Evidence complements Boar (2020) – kids do not accumulate precautionary savings in response to parents' uncertainty
- Kids can offer insurance against other risks – e.g., late age health shocks

Back

Asymmetric case

- In the symmetric case, the OLS and IV expressions:

$$\frac{cov\left(\Delta w^{par}, \Delta y^{kid}\right)}{var\left(\left(\Delta y^{kid}\right)^2\right)} \qquad \frac{cov\left(\Delta w^{par}, v^{f}\right)}{cov\left(\Delta y^{kid}, v^{f}\right)}$$

- (together with knowledge of ω) identify the effect of the kid's persistent and transitory income shocks on parental saving

- The question is whether the analog expressions in the asymmetric case (assuming $\gamma = 0$, or insurance only against income losses):

$$\frac{cov\left(\Delta w^{par}, \Delta y^{-,kid}\right)}{var\left(\left(\Delta y^{-,kid}\right)^2\right)} \qquad \frac{cov\left(\Delta w^{par}, v^{-,f}\right)}{cov\left(\Delta y^{-,kid}, v^{-,f}\right)}$$

- identify the effect of *negative* persistent and transitory income shocks, i.e., α_P and α_T

Some Monte Carlo evidence

- Run a simple Monte Carlo. Generate:

$$\Delta w^{par} = \alpha_T \Delta y^{-,kid}_{Trans} + \alpha_P \Delta y^{-,kid}_{Pers} + \eta^{par}$$

- using the estimated α_T and α_P (as well as θ and draws from the distribution of $\eta^{par}, \Delta y^{-,kid}_{Trans}, \Delta \tilde{y}^{kid}_{Pers}, v^f$)
- Then run the OLS and IV regressions:

$$\hat{\alpha}_{OLS} = \frac{cov\left(\Delta w^{par}, \Delta y^{-,kid}\right)}{var\left(\left(\Delta y^{-,kid}\right)^2\right)} \qquad \hat{\alpha}_{IV} = \frac{cov\left(\Delta w^{par}, v^{-,f}\right)}{cov\left(\Delta y^{-,kid}, v^{-,f}\right)}$$

- and use them to obtain the estimated $\hat{\alpha}_T$ and $\hat{\alpha}_P$ as in the symmetric case
- Is there a bias?

Monte Carlo: Results

	True value	Average estimate from simulations		
α_T	0.41	0.40	0.40	0.39
α_P	-0.26	-0.26	-0.27	-0.25
N		100,000	1,000	100,000
S		500	500	100

Back