Does intelligence shield children from the effects of parental unemployment?

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Research question

Parental job loss reduces children's
- education
- labour-market outcomes
- well-being, beliefs

New evidence

How does intelligence change these effects?

Analysis

Difference-in-differences framework

Understanding Society (UK) data
- wave 3 (2011-13)
- parent unemp at age 14 (UP)
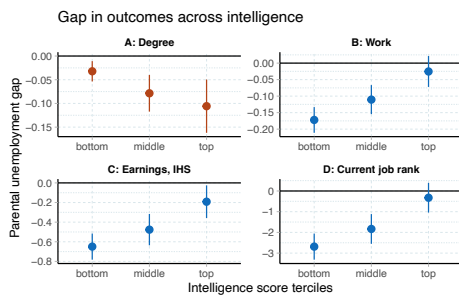- intelligence score (IQ)

Results

- Parent unemp is more harmful for education at high IQ
- Children start at lower-paying jobs
- Switch to stable and better-paying jobs later
- Wages continue to suffer from foregone education

Y - outcome, UP - parental unemployment indicator; IQ - intelligence score

Descriptive evidence

$\text{Gap} = \mathbb{E}(Y|UP = 1) - \mathbb{E}(Y|UP = 0)$

Gap in outcomes across intelligence

Difference-in-differences

$Y = \beta_0 + \beta_1 UP + \beta_2 IQ + \beta_3 UP \times IQ + \beta_4 \mathbf{X} + \varepsilon$

Parallel trends assumption

Selection bias constant across intelligence
Y^0 potential outcome when parents stay employed
Y^1 potential outcome when parents are unemployed

$$\frac{Cov(Y^0, IQ|UP = 1)}{Var(IQ|UP = 1)} = \frac{Cov(Y^0, IQ|UP = 0)}{Var(IQ|UP = 0)}$$

Causal interpretation

Change in causal effect of UP as IQ increases

$$\beta_3 = \frac{\partial \mathbb{E}(Y^1 - Y^0|IQ, UP = 1)}{\partial IQ}$$

Validity

- Support parallel trends using observed Y^0
- Causal interpretation with IQ as outcome

$$\beta_3 = \frac{\partial \mathbb{E}(Y^1 - Y^0|IQ^1, UP = 1)}{\partial IQ^1}$$

- Attenuation bias due to measurement error in IQ
- Robustness checks:
  - cohorts born before 1981 (less recall bias)
  - only white British
  - separate by UK country
  - replication in the BCS70

Results

- Parent unemp is more harmful for education of children with higher IQ

	Dependent variables		
	Post-16 school	Degree	Uni degree
Parent unemp	-0.085***	-0.039***	-0.028**
	(0.013)	(0.012)	(0.012)
IQ	0.137***	0.131***	0.095***
	(0.004)	(0.003)	(0.006)
Parent unemp $\times$ IQ	**-0.041**[†††]	**-0.036**[†††]	**-0.033**[†††]
	(0.011)	(0.010)	(0.010)
Obs.	20,202	20,202	20,202

[†]q < 0.1; [††]q < 0.05; [†††]q < 0.01 based on FDR q-values
*p < 0.1; **p < 0.05; ***p < 0.01 based on conventional p-values

Dynamic complementarity of human capital investments (Cunha and Heckman 2007)

- Higher IQ mitigates the effect of parent unemp on labour supply and earnings
- Start at lower-paying jobs and switch to better-paying over time
- Wages continue to suffer from foregone earnings

Employer-learning theory (Farber and Gibbons 1996) Productivity-enhancing role of education (Aryal, Bhuller, and Lange 2022)

	Dependent variables					
	Work	%Δ earnings	%Δ hourly wage	Hours	First job rank	Current job rank
Parent unemp	-0.063***	-24.978***	-12.333***	-2.787***	-0.041***	-1.049***
	(0.012)	(3.890)	(1.010)	(0.489)	(0.012)	(0.204)
IQ	0.053***	30.032***	18.392***	1.896***	0.030***	0.888***
	(0.004)	(1.302)	(0.357)	(0.143)	(0.003)	(0.060)
Parent unemp $\times$ IQ	**0.047**[†††]	**13.258**[†††]	**-5.371**[†††]	**1.560**[†††]	**0.004**	**0.881**[†††]
	(0.012)	(4.085)	(1.061)	(0.439)	(0.011)	(0.196)
Obs.	20,202	20,202	15,589	20,202	16,374	20,201

[†]q < 0.1; [††]q < 0.05; [†††]q < 0.01 based on FDR q-values
*p < 0.1; **p < 0.05; ***p < 0.01 based on conventional p-values

Conclusions

- Higher IQ mitigates the effects of parental unemployment on labour supply and earnings
- Higher IQ exacerbates the losses in education and wages due to parental unemployment
- The initial loss in education and sustained penalty on wages suggests room for policy

References

Aryal, Gaurab, Manudeep Bhuller, and Fabian Lange. 2022. "Signaling and Employer Learning with Instruments." *American Economic Review* 112 (5): 1669–1702. https://doi.org/10.1257/aer.20200146.

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