

INCOME, PSYCHOLOGICAL WELL-BEING, AND THE DYNAMICS OF POVERTY

Mo Alloush

Hamilton College

malloush@hamilton.edu

Behavioral Economics and Beyond: Insights to Improve Programming for Rural Development

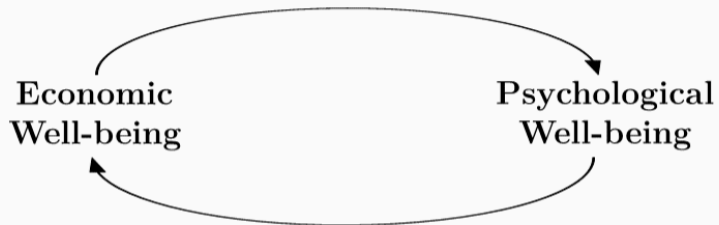
Psychological Poverty Traps

October 2, 2024

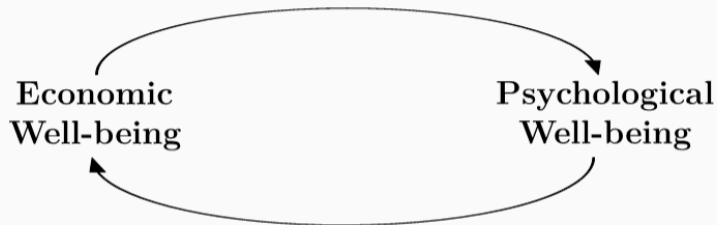
A FEEDBACK LOOP



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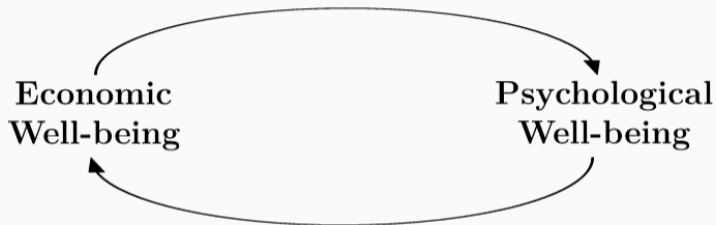


A FEEDBACK LOOP



A strong **feedback loop** could affect poverty dynamics.

A FEEDBACK LOOP



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My works show that there are causal effects that go in **both** directions:

- ↑ long-run effect of shocks;
- ↑ likelihood of long-term poverty.

PSYCHOLOGICAL DISORDERS ARE UBIQUITOUS

Psychological disorders are common worldwide:

- Approximately **1 in 5** adults worldwide (Steel et al., 2014);
- Account for **13% of global disease burden** (Collins et al., 2011).

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Depression is the most common psychological disorder:

- **4.4% cross-sectional** prevalence worldwide; **8-21% lifetime** prevalence (WHO, 2016; Kessler & Bromet, 2013); Global Rates
- Associated with diminished quality of life & increased mortality (Spijker et al., 2004).
- Depression is associated with significant **functional impairment in occupational & social roles**:
 - Improves when depressive symptoms are alleviated;
 - **Chronic** if depressive symptoms persist (Ormel et al., 1993).

Not very well studied in economics; **causal identification is difficult** with representative data:

- **Randomized Controlled Trials** infeasible/unethical;
- **Simultaneity/reverse causality**;
- **Lack of data** – especially individual-level representative panels with information on mental health.

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Relationship between income & psychological well-being may help explain:

- Persistence of poverty;
- Low resilience (ability to quickly bounce back after a shock);
- Large impacts of some programs (especially those with counseling & psychosocial support + income transfer).

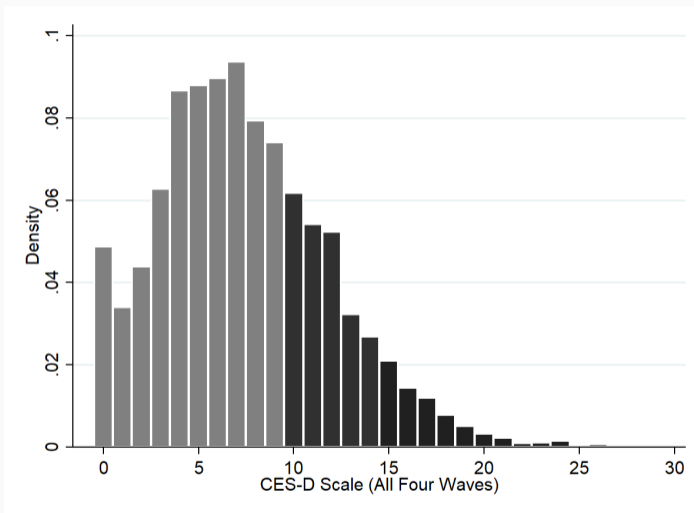
National Income Dynamics Study of South Africa

- Four wave (2008-2014) nationally-representative panel survey;

National Income Dynamics Study of South Africa

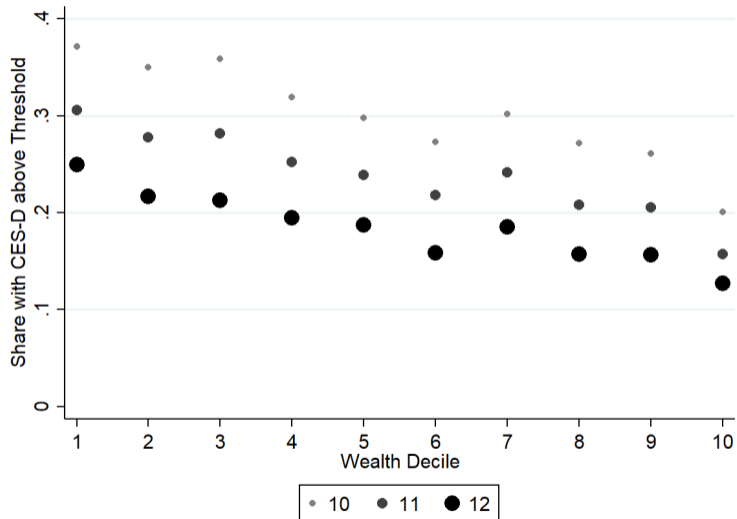
- Four wave (2008-2014) nationally-representative panel survey;
- Psychological well-being module – **Center for Epidemiologic Studies Depression Scale:**
 - **Widely-used:** developed to assess **depressive symptoms** in the general population (Radloff, 1977);
 - **Stable** over short periods of time (Gonzalez et al., 2017; Saylor et al., 1987);
 - **Validated in different contexts** & specifically in South Africa (Johnes & Johnes, 2004; Myer et al., 2008; Baron et al., 2017).

DISTRIBUTION OF CES-D



Histogram of CES-D scores in 2008-2014

SHARE ABOVE DEPRESSION THRESHOLD

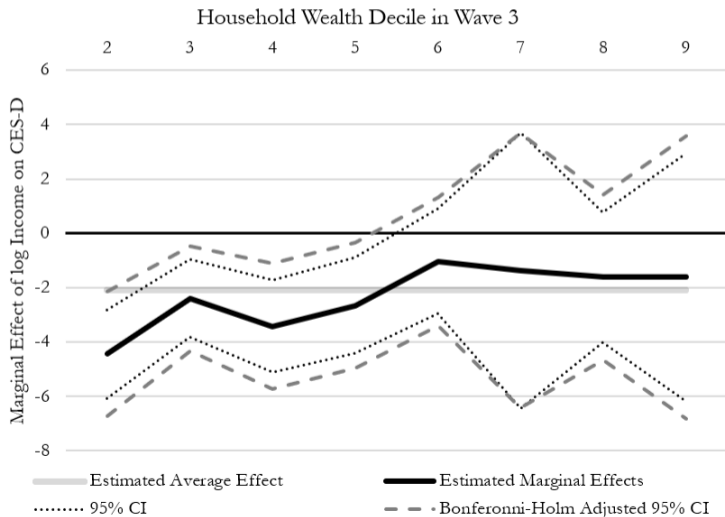


RESULTS

- **Household Income → Psychological Well-being**
 - 20% decrease in household income decreases psychological well-being by 0.1 SD on average
 - 6% increase in likelihood of depression;

MARGINAL EFFECT ACROSS WEALTH

Marginal Effects across Wealth



- **Household Income → Psychological Well-being**
 - 20% decrease in household income decreases psychological well-being by 0.1 SD on average
 - 6% increase in likelihood of depression;
 - Estimated effect larger among the poor;
 - Robust to various measures of economic well-being.

Psychological Well-being \longrightarrow Individual Income

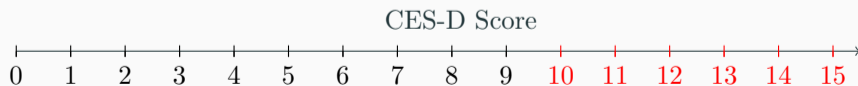
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Psychological Well-being \longrightarrow Individual Income

- On average, increase in depressive symptoms decrease income;
- Effects not necessarily linear;
- Does the depression threshold hold any economic significance?

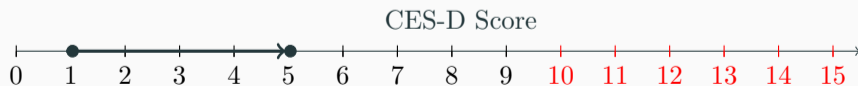
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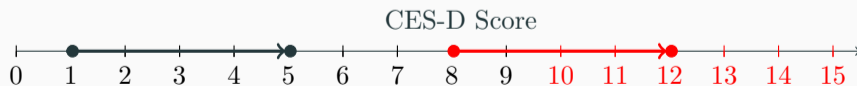
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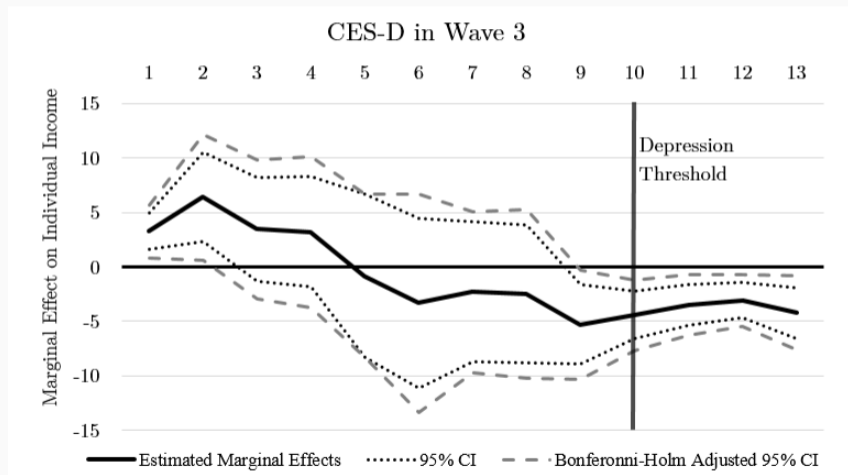
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RESULTS: CES-D \rightarrow INCOME

Marginal Effects across CES-D

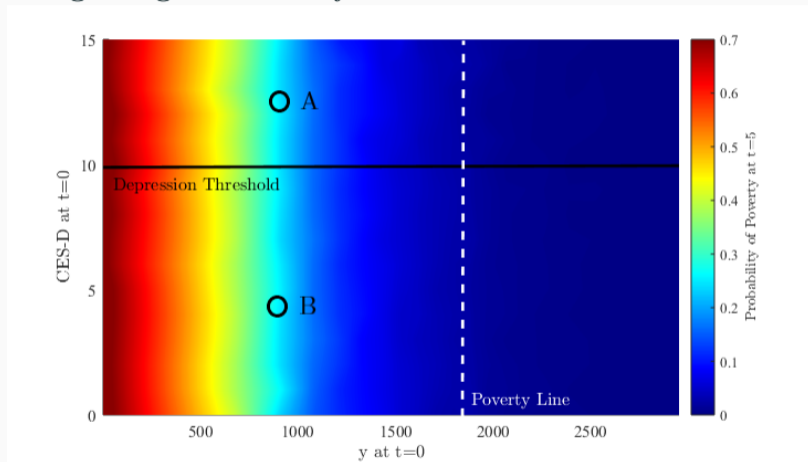


- One SD decrease in psychological well-being decreases individual income of average person by 17%;
- Main effects near or past the clinical depression threshold;
- Mechanisms: labor market participation, hours worked.

IMPLICATIONS FOR INCOME & POVERTY DYNAMICS

IMPLICATIONS

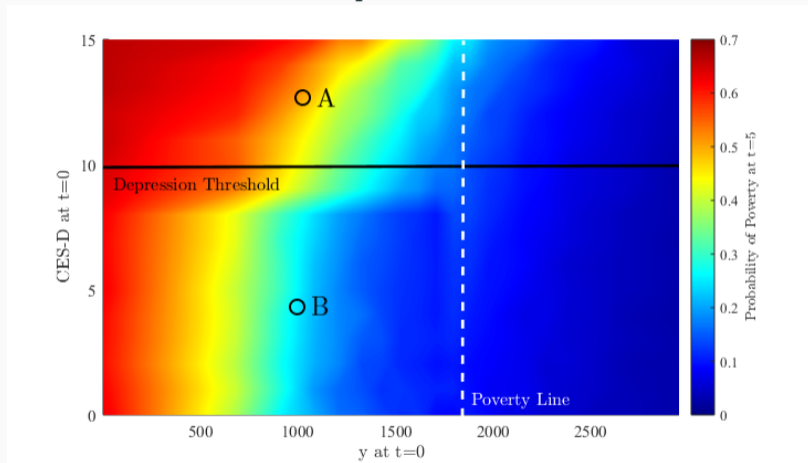
Simulations: Ignoring Simultaneity



Dynamic equations ignoring simultaneity: Poverty status after 5 time periods independent of CES-D score.

IMPLICATIONS

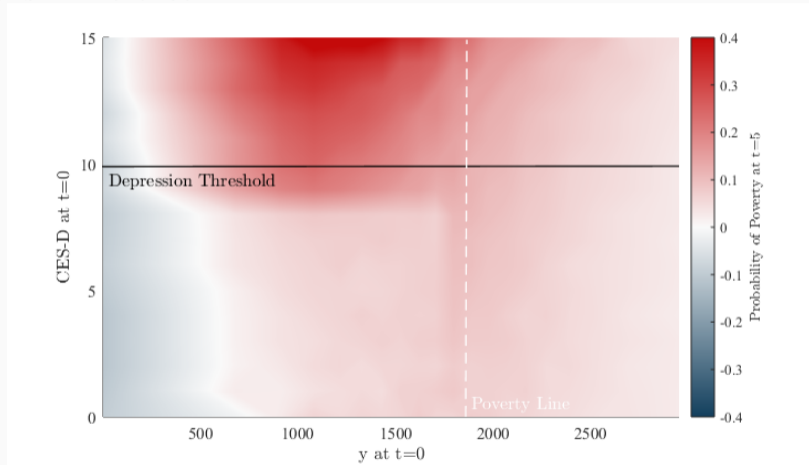
Simulations: Estimated Relationship



Dynamic simultaneous equations: Poverty higher after 5 time periods among those who start with low levels of psychological well-being.

IMPLICATIONS

Simulations: Difference



The difference in likelihood of poverty between simulations using the estimated relationship and those using ignoring simultaneity.

CONCLUSION

SUMMARY OF THE RESULTS

- **Psychological Well-being** → **Individual Income**
 - **One SD decrease** in psychological well-being
 - Main effects near or past the **clinical depression threshold**;
 - **Mechanisms:** labor market participation, hours worked.
- **Household Income** → **Psychological Well-being**
 - Estimated effect **larger among the poor**;
 - Robust to various measures of economic well-being.
- **Implications for Poverty Dynamics**
 - Long-run overall impact of shocks is nearly doubled;
 - Identifies **doubly vulnerable group:** **Poor** with low levels of psychological well-being.
- **Policy Implications**
 - Consider psychological well-being an important outcome but also as an instrumental one;
 - Integrate psychological interventions into poverty-alleviation programs.

The opposite of depression is not happiness, but vitality...

Andrew Solomon, *The Noonday Demon: An Atlas of Depression*

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Thank you!

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RELATED LITERATURE

Mental Health → **Income**

- Mental health disorders predict unemployment & inactivity (Chatterji et al., 2011; Frijters et al., 2014; Pend et al., 2015);
- Experimental evidence: therapy & antidepressants increase economic participation (Bolton et al., 2003; Ran et al., 2003).

Income → **Mental Health**

- Differentiate studies on happiness & life satisfaction (Easterlin, 1974, 2001; Deaton & Kahneman, 2010; Stevenson & Wolfers, 2012);
- Shocks to wealth & employment affect likelihood of depression (McInerney et al., 2013; Fasani et al., 2015; Marcus, 2013);
- RCT evidence on cash transfer programs show improved mental health (Banerjee et al., 2015; Haushofer & Shapiro, 2016; Macours et al., 2012).

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Psychology of poverty

- Poverty affects psychological variables which in turn affect decision-making and economic outcomes (Mani, Mullainathan, Shafir, & Zhao, 2013; Schofield et al., 2017).

Mechanisms

- Robustness Check: observed effect through earned income (vs unearned)

▶ Additional Results

- A decrease in psychological well-being led to:

↓ Labor market participation

↓ Hours worked (conditional on employment)

▶ Mechanisms Results

Table 1: Impact of CES-D on Earned Vs Unearned Income

	$Z_{i,t}^A$		$Z_{i,t}^B$	
	Earned (1)	Unearned (2)	Earned (3)	Unearned (4)
<i>CES-D_t</i>	-206.61* (116.71)	-50.46 (35.42)	-360.26** (184.14)	-38.34 (50.69)
<i>Controls</i>	Yes	Yes	Yes	Yes
Observations	4,930	4,930	4,930	4,930

Cluster robust standard errors in parentheses: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Notes: Income numbers are in 100 South African Rands. Controls include lagged income, household size, number of children in the household, and marital status.

Table 2: Labor Market Effects

	Economically Active	Hours Worked[‡]
	(1)	(2)
<i>CES-D_t</i>	-.0749** (0.032)	-2.61 (2.33)
<i>Lagged Dependent</i>	Yes	Yes
<i>Controls</i>	Yes	Yes
Observations	4,930	2,659
J test p-value [†]	0.51	0.92

Cluster robust standard errors in parentheses: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

[‡]Conditional on being employed

[†]Hansen J Statistic (Overidentification test of all instruments)

Notes: Controls include household size, number of children per household, and marital status.

ECONOMETRIC APPROACH - ASSUMPTIONS

Assumption A:

$$E[e_{i,t} \mid y_{i,t-2}, y_{i,t-3}, \dots; D_{i,t-1}, D_{i,t-2}, \dots; \mathbf{x}_{i,t}, \mathbf{x}_{i,t-1}, \dots] = 0$$

$$E[u_{i,t} \mid y_{i,t-1}, y_{i,t-2}, \dots; D_{i,t-2}, D_{i,t-3}, \dots; \mathbf{x}_{i,t}, \mathbf{x}_{i,t-1}, \dots] = 0$$

⇒ No serial correlation in the error terms

If Assumption A holds, the matrix:

$$Z_{i,t}^A = \begin{pmatrix} D_{i,t-2} & D_{i,t-3} & y_{i,t-3} & 0 & 0 & 0 \\ 0 & 0 & 0 & D_{i,t-3} & y_{i,t-2} & y_{i,t-3} \end{pmatrix}$$

provides the following moment conditions¹

$$E(Z_{i,t}^{A'} \Delta U_{i,t}) = \mathbf{0}$$

¹ $\Delta U_{i,t}$: is the vector of lagged unobserved errors in equations 1 and 2

ECONOMETRIC APPROACH - SUMMARY

Assumption B:

$$E[e_{i,t} \mid y_{i,t-2}, y_{i,t-3}, \dots; D_{i,t-2}, D_{i,t-3}, \dots; \mathbf{x}_{i,t}, \mathbf{x}_{i,t-1}, \dots] = 0$$

$$E[u_{i,t} \mid y_{i,t-2}, y_{i,t-3}, \dots; D_{i,t-2}, D_{i,t-3}, \dots; \mathbf{x}_{i,t}, \mathbf{x}_{i,t-1}, \dots] = 0$$

⇒ Allows first-order serial correlation in the error terms

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⇒ Allows first-order serial correlation in the error terms

Robustness check with $Z_{i,t}^B = \begin{pmatrix} D_{i,t-3} & y_{i,t-3} & 0 & 0 \\ 0 & 0 & D_{i,t-3} & y_{i,t-3} \end{pmatrix}$

RESULTS: INCOME \rightarrow CES-D

Table 3: Alternative Instrument

	CES-D (1)	CES-D (2)	CES-D (3)
<i>hh income per capita_t</i>	-0.373** (0.183)		
<i>food expenditure per capita_t</i>		-2.49 (2.41)	
<i>wealth index_t</i>			-3.04** (1.42)
<i>Controls</i>	Yes	Yes	Yes
Observations	34,349	34,344	34,413
J test p-value [†]	0.58	0.25	0.77

Cluster robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

[†]Hansen J Statistic (Overidentification test of all instruments)

Notes: Income numbers are in 100 South African Rands. Controls include household size, number of children per household, marital status, education, gender, race, age (up to cubic), and wave fixed effect.