Livelihood Diversification and Well-Being: A Resilience Approach

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A RESILIENCE APPROACH

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PRELIMINARY FINDINGS – CONTACT AUTHOR (jdc358@cornell.edu) AFTER 7/29 FOR UPDATED POSTER

Background

Rural areas gain from specialization → significant increases in average incomes (Binswagner 1983)

So why do households choose to diversify? Reasons include:

- conditional self-insurance (Carter 1997),
- gradual shifting into new and better livelihood options (Balihuta and Sen 2001), and
- diminishing returns to factors of production, market failures and incomplete markets (Barrett, Reardon, and Webb 2001).

Literature on diversification and resilience? Thin literature suggests livelihood diversification promotes resilience, particularly in the face of:

- complex social-ecological systems (Goulden et al. 2013) and
- climate change (Seo 2012).

Research Question

What is the relationship between development resilience and diversification in Sub-Saharan Africa, specifically Uganda.

- Is diversification correlated with higher levels of resilience?
- Are there differences between on-farm (crop) diversification and on/off-farm income diversification?

Data

The Living Standards Measurement Study – Integrated Surveys on Agriculture (LSMS-ISA) survey in Uganda is implemented jointly by the World Bank with the Uganda Bureau of Statistics. It includes four rounds of data on approximately 3,200 households, and is representative at the national, urban/rural and main regional levels. In addition to the typical LSMS style household survey questions, the LSMS-ISA surveys collect high quality data on agriculture, including crop production and livestock earnings.

I focus on nearly 2,000 rural households.

Model

Step 1: Estimate household resilience in response to shocks*

$$\hat{\rho}_{it} \equiv P\big(W_{it} \geq \underline{W} | W_{i,t-1}, \boldsymbol{X}_{it}, S_{it}, \boldsymbol{Z_{it}}\big) = g_1^{-1}\big(\boldsymbol{\beta}, W_{it}, \boldsymbol{X}_{it}, \hat{S}_{it}\big)$$

Step 2: Estimate association btw specialization** & resilience

$$E\big[H_{it}^{C,I}\big] = g_2^{-1}\big(\boldsymbol{\gamma}, \hat{\rho}_{it}, W_{it}, \boldsymbol{X}_{it}\big)$$

*See Cissé & Barrett (2016) for details.

Household i has well-being W_{it} and resilience ρ_{it} in time t. Household controls $\boldsymbol{X_{it}}$, self reported shock S_{it}, and exogenous instruments $\boldsymbol{Z_{it}}$. $\underline{W}$ is an arbitrary well-being threshold, such as a poverty line.

The Herfindahl index is used to measure the diversification of farm crop production H_{it}^C and household income H_{it}^I. $H_{it} = 0$ means diversification & $H_{it} = 1$ means complete specialization.

Results – Step 1

Predicted values from (1) and (2) are used to estimate resilience following Cissé & Barrett (2016). There are significant path dynamics in well-being and resilience. The instrumented shock recall variable has no effect on well-being, but it does have a negative impact on resilience.

Table 1: Mean Well-being / Resilience & Shocks Marginal Effects of GLM Estimates

VARIABLES	(1) W_{it}	(2) $V(W_{it})$	(3) $\hat{\rho}_{it}$
Lag well-being $(W_{i,t-1})$	0.477***	0.0547***	0.00904***
	(0.0201)	(0.0195)	(0.00000554)
Livestock * 10	0.0407**	0.00514	0.000830***
	(0.0179)	(0.00393)	(0.00000745)
Male Head	-0.0887***	0.0106	0.00220***
	(0.0232)	(0.0223)	(0.00000563)
Age of Head * 10	0.0106	-0.00113	-0.000237***
	(0.00765)	(0.00814)	(0.00000149)
School of Head	0.0367***	-0.00337	-0.000724***
	(0.00294)	(0.00248)	(0.000000998)
Farm Size (Acres*1,000)	1.04***	-0.459	-0.0919***
	(0.273)	(0.361)	(0.000548)
Shock Dummy	0.128	-0.0525	-0.0102***
	(0.0792)	(0.0571)	(0.0000164)
Elevation *100,000	-9.55**	-6.14*	-1.13***
	(4.14)	(3.59)	(1.30)
Observations	5,815	5,815	5,815

Clustered standard errors (household level) in parenthesis.
*** p<0.01, ** p<0.05, * p<0.10

Results – Step 2

Table 2: Specialization & Resilience Marginal Effects of GLM Estimates

VARIABLES	(4) H_{it}^C	(5) H_{it}^I
Resilience (estimated)	3.120***	2.227***
	(0.827)	(0.699)
Well-being	0.0519***	-0.00110
	(0.00964)	(0.00738)
# Labor Aged Members	-0.0203***	-0.0182***
	(0.00422)	(0.00300)
Distance to Urban Area	-0.00387	-0.0153
	(0.0143)	(0.0124)
Livestock	-0.000602	-0.00151**
	(0.000949)	(0.000613)
Male Head	-0.00846	0.0296***
	(0.0152)	(0.0104)
Age of Head	-0.00218***	-0.00121***
	(0.000552)	(0.000396)
School of Head	-0.00160	-0.00163
	(0.00199)	(0.00139)
Farm Size (Acres)	0.000402	-0.000266*
	(0.000266)	(0.000144)
Elevation *100,000	-3.01	-7.34***
	(3.12)	(2.04)
Observations	5,815	5,815

Clustered standard errors (household level) in parenthesis.
*** p<0.01, ** p<0.05, * p<0.10

Figures: Specialization & Resilience
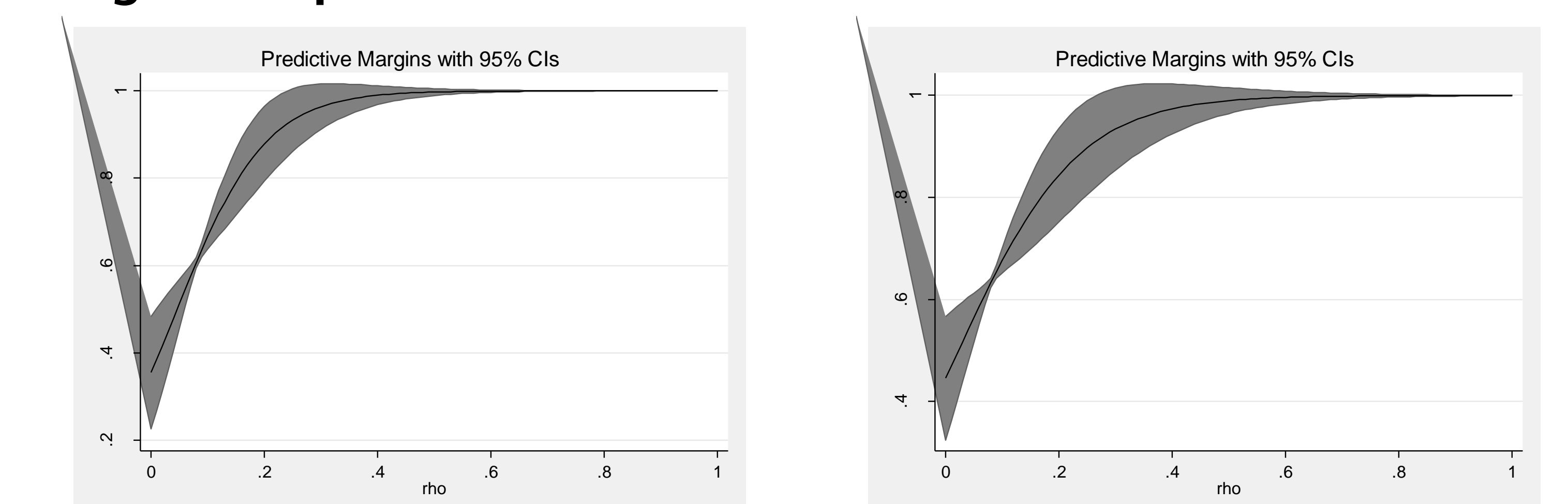
Resilience is strongly, positively associated with *specialization* both on farm and in sources of income. However, concurrent well-being is only correlated with specialization on farm; there is no significant association in terms of income sources. Increased availability of household labor is associated with diversification, both on and off farm.