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## Do Asset Transfers Build Household Development Resilience?

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# Do Asset Transfers Build Household Development Resilience?

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## Research Question

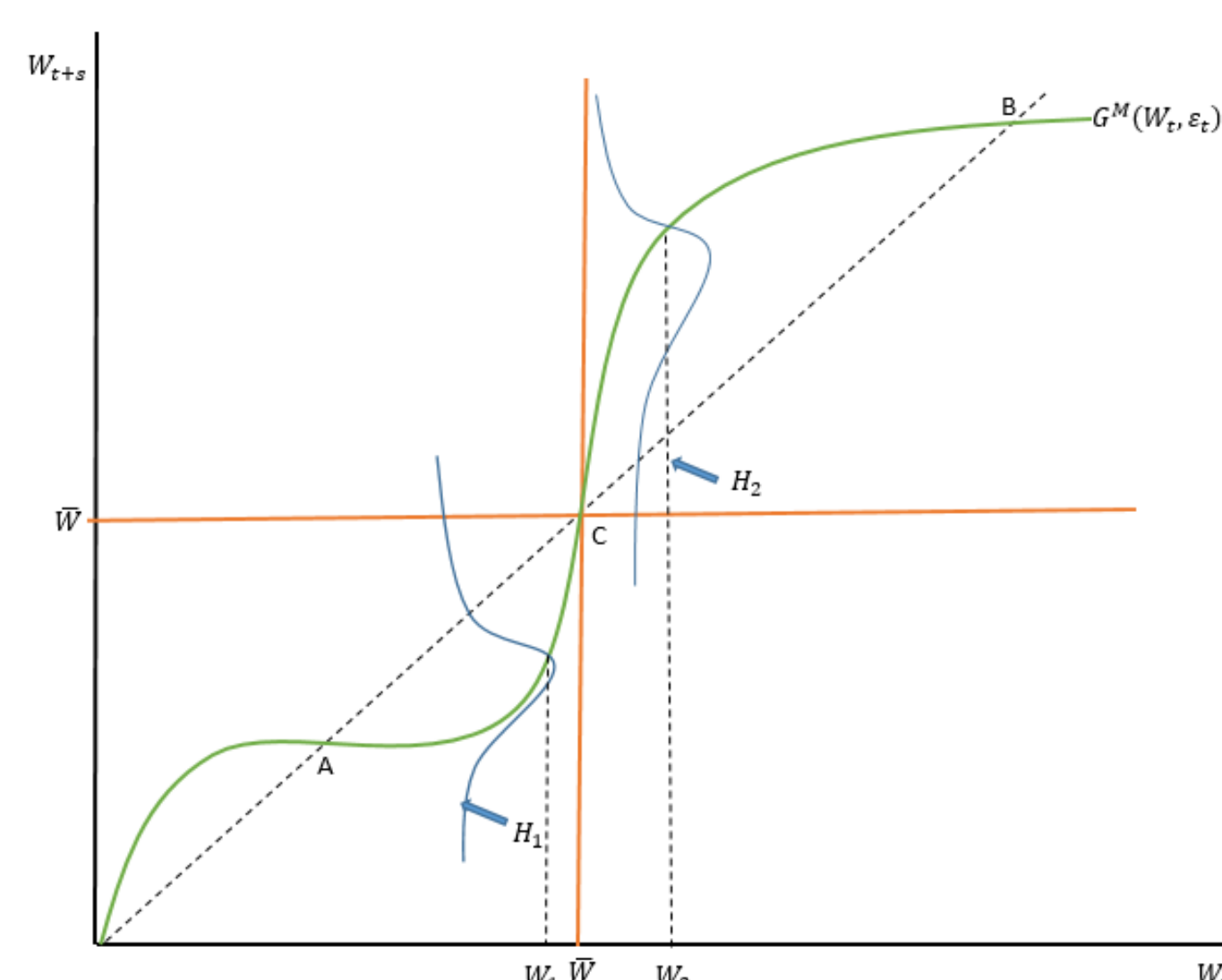
Can one-off asset and skill transfer help poor escape poverty and build resilience against falling into poverty in the future?

## Introduction

The impact evaluation literature assessing the “big-push” interventions is largely focused on estimating the impacts on first moment and ignores the non-linearity and dynamics in welfare growth that the poverty trap theory suggests. Estimation of development resilience, in contrast, incorporates all the theoretical properties of poverty trap. However, the implementation of the concept of resilience into empirical impact evaluation is yet to be demonstrated. We apply moment-based definition of development resilience (Barrett and Conostas, 2014) and the econometric technique proposed by Cissé and Barrett (2016) to construct household-specific resilience scores and use the scores as an outcome in program evaluation. To our knowledge, ours is the first paper to estimate the impact of a development intervention on this measure of resilience.

## Development Resilience

Figure 1: Development Resilience Theory



We define resilience as the households’ probability of accumulating and retaining a minimum level of asset required to remain non-poor over-time in the face of myriad shocks. Assuming risk-averse units, greater resilience will be achieved by increasing the conditional mean, decreasing the variance when mean is above the minimum threshold,  $\bar{W}$ , or both.

## Resilience Implementation

### 1 First moment

$$W_{it} = \sum_{j=1}^k \beta_{Mj} W_{i,t-1}^j + \gamma_M X_{it} + \varepsilon_{Mit}$$

$$\hat{\mu}_{1it} = \mathbb{E}[W_{it}] = \sum_{j=1}^k \hat{\beta}_{Mj} W_{i,t-1}^j + \hat{\gamma}_M X_{it}$$

### 2 Second Moment

$$\varepsilon_{Mit}^2 = \sum_{j=1}^k \beta_{Vj} W_{i,t-1}^j + \gamma_V X_{it} + \varepsilon_{Vit}$$

$$\hat{\mu}_{2it} = \sum_{j=1}^k \hat{\beta}_{Vj} W_{i,t-1}^j + \hat{\gamma}_V X_{it}$$

### 3 Resilience ( $\hat{\rho}_{it}$ )

$$P(W_{it} \geq \bar{W}) = \bar{F}(\bar{W}; \hat{\mu}_{1it}(W_{it}, X_{it}), \hat{\mu}_{2it}(W_{it}, X_{it}))$$

### 4 Resilience Headcount

$$\text{Resilient } \theta_{it} \equiv \begin{cases} 1, & \text{if } \hat{\rho}_{it} \geq \bar{R} \\ 0, & \text{otherwise} \end{cases}$$

## Method

### 1 Mean Specification

$$W_{it} = \alpha + \sum_{j=1}^k \beta_j W_{i,t-1}^j + \sum_{l=1}^3 \gamma_{lt}(T_t \times D_l) + \sum_{t=2}^3 \delta_t T_t + \theta Z_{it} + \varepsilon_{it} \quad l \in (OG_i, POG_i)$$

### 2 Resilience Equation

$$\hat{\rho}_{it} = \alpha + \sum_{j=1}^k \beta_j W_{i,t-1}^j + \sum_{l=1}^3 \gamma_{lt}(T_t \times D_l) + \sum_{t=2}^3 \delta_t T_t + \theta Z_{it} + \varepsilon_{it}$$

$$\frac{\partial \hat{\rho}_{it}}{\partial (T_t \times D_l)} = \hat{\gamma}_{lt}$$

### 3 Conditional independence assumption (causal inference)

$$\mathbb{E}[\hat{\rho}_{0it} | W_{i,t=0}^j, Z_{it}, T_t, D_l] = \mathbb{E}[\hat{\rho}_{0it} | W_{i,t=0}^j, Z_{it}, T_t]$$

## Important Result

Eighteen months post-intervention, Original households are 88% less likely than the control households to fall into asset poverty. Decomposing this effect into the first and second moments of the conditional welfare distributions, we find that the program has both increased the mean and decreased the variance, implying an upward shift in households’ conditional asset distribution and decreasing uncertainty in holdings.

## CRLESP Program & Data

Households organized themselves into groups and submitted a bid to Heifer Zambia. Well-off households were screened out. Qualified households’ eligibility was contingent on their commitment to contribution to community insurance fund, building animal shed and participating in the training programs. Original households (full treatment) received training and livestock transfer of either a dairy cow, two draft cattle or one male and seven female meat goats. They were then required to pass on a female offspring for each female animal they received through the program to the members of POG group (partial treatment), which received only training at the baseline. Control households received neither. We sampled 106 Original, 111 POG and 67 Control households at the baseline. The attrition rate for six round is 13%. We use 247 households that are interviewed in all six rounds for our analysis.

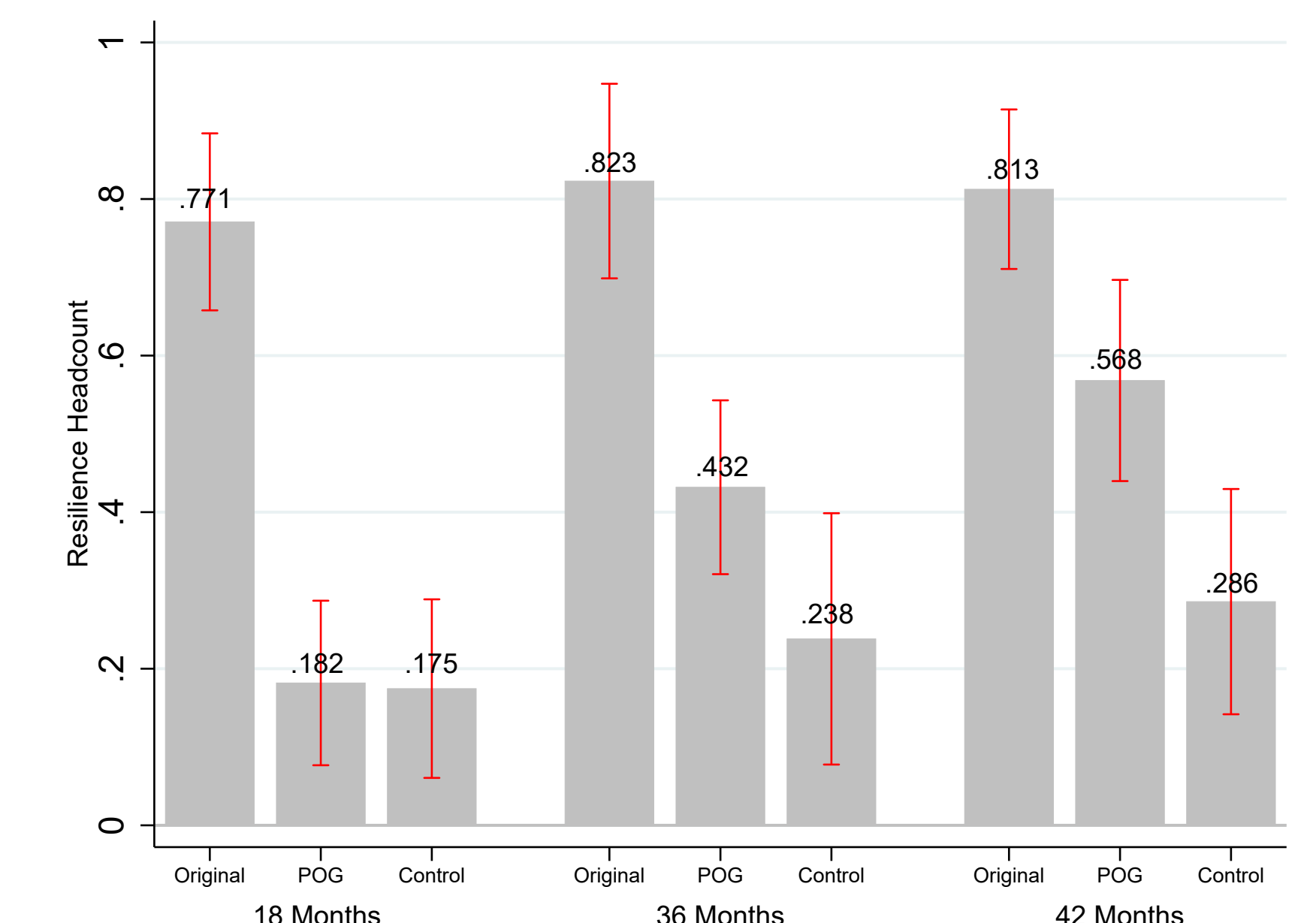
## Results

Table 1: Treatment Effects on Asset Resilience

	Originals (OG)			Pass on the Gift (POG)			N
	18 Months	36 Months	42 Months	18 Months	36 Months	42 Months	
<b>Panel A:</b>							
Development resilience	0.228*** (0.0563)	0.145*** (0.0512)	0.167*** (0.0627)	0.192*** (0.0536)	0.111** (0.0470)	0.110* (0.0564)	741
Control mean	0.26	0.351	0.379				
Impact: % change	87.7	41.3	44.1	73.8	31.6	29.0	
Round impact = round 4 impact [p-value]	-	0.365	0.517	-	0.381	0.384	
<b>Panel B:</b>							
First Moment (Mean)	0.591*** (0.142)	0.350*** (0.131)	0.341*** (0.128)	0.490*** (0.166)	0.330** (0.141)	0.289** (0.140)	741
<b>Panel C:</b>							
Second Moment (Variance)	-0.365** (0.161)	-0.0929 (0.159)	-0.404** (0.179)	0.258 (0.198)	0.228 (0.160)	-0.175 (0.192)	741

Notes: \*\*\* (\*\*) (\*) indicates significance at the 1% (5%) (10%) level.

Figure 2: Headcount Resilience ( $\Gamma$ ,  $\bar{W} = 308$ ,  $\bar{R} = 0.5$  &  $k = 3$ )



## Discussion and Conclusion

Results from the CRLESP program suggests that the project helped remove the barriers the poor face in entering higher-return activities and help decrease poverty, increase consumption, livestock production, asset holdings and earnings from self-employment. These results are in consistent with other such programs (see Banerjee et al., 2015; Bandiera et al., 2016). Additionally, we find that the program has increased recipients’ development resilience and the results are persistent at least until three and half years post transfer. These results suggest that the “livelihoods” approach can have lasting impacts on households’ ability to accumulate and retain productive assets and to withstand covariate and idiosyncratic shocks, setting the poor on a sustainable path out of poverty.

## References

- Bandiera, O., Burgess, R., Das, N., Gulesci, S., Rasul, I., and Sulaiman, M. (2016). Labor markets and poverty in village economies. *The Quarterly Journal of Economics*.
- Banerjee, A., Duflo, E., Goldberg, N., Karlan, D., Osei, R., Parienté, W., Shapiro, J., Thuysbaert, B., and Udry, C. (2015). A multifaceted program causes lasting progress for the very poor: Evidence from six countries. *Science*, 348(6236):1260799.
- Barrett, C. B. and Conostas, M. A. (2014). Toward a theory of resilience for international development applications. *Proceedings of the National Academy of Sciences*, 111(40):14625–14630.
- Cissé, J. D. and Barrett, C. B. (2016). Estimating development resilience: A conditional moments-based approach.