



# Making smart choices – Behavioral traits and resilience to environmental shocks among farming households in Thailand

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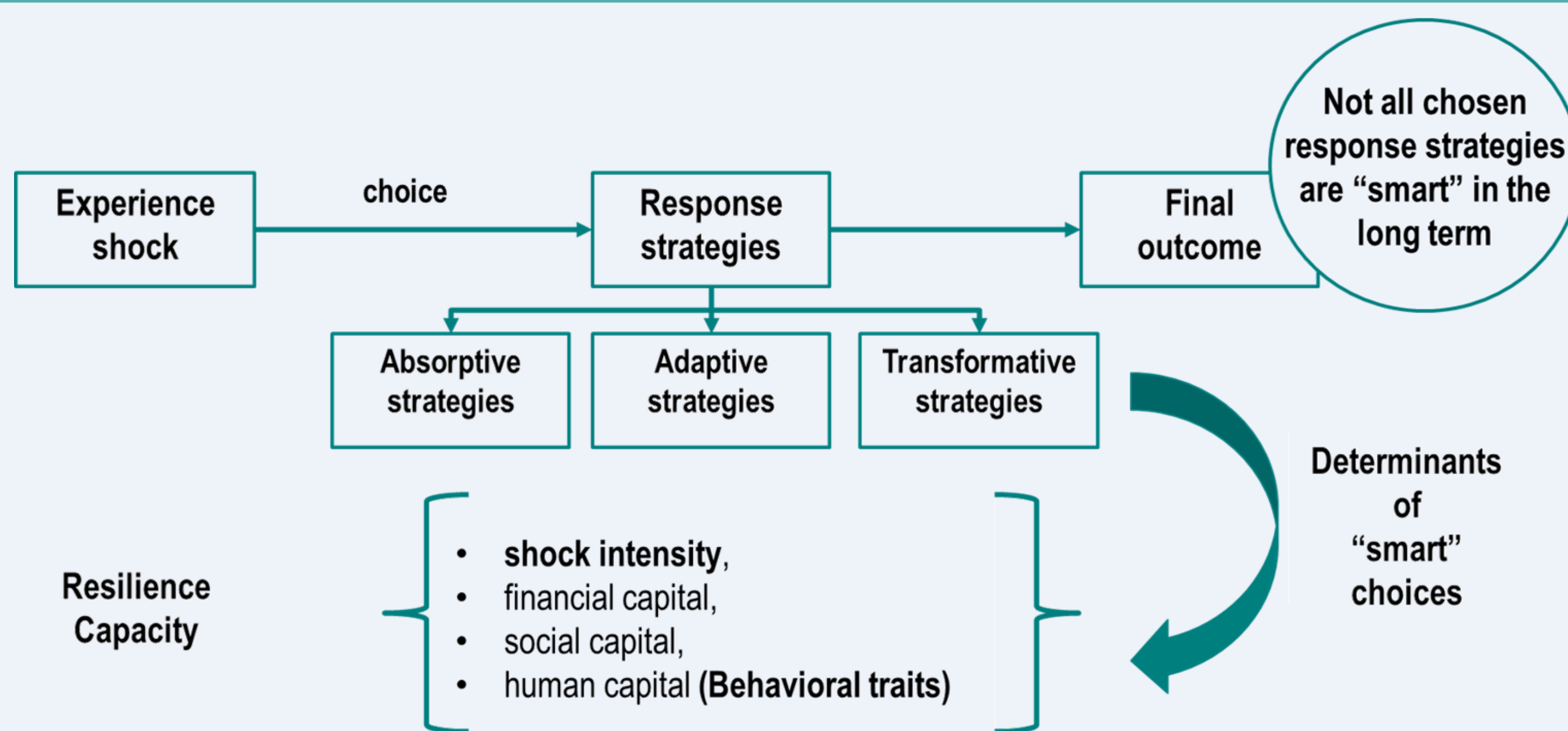
## Motivation & Research Question

- Climate change contributes to intensified environmental shocks adding significantly to the existing challenges of small-scale farming households (HHs) in emerging economies (FAO, 2016; Nguyen et al., 2017; Quinones et al., 2021).
- Choosing different response strategies is based on households' resilience capacity and can mitigate the shock impact on their overall welfare (Béné et al., 2016).
- Resilience conceptualizes the complexity of interactions between multiple actors and the impact of random external shocks (e.g. droughts) or system changes (Tendall et al., 2015).
- HHs' financial capital has been identified as an important determinant of its resilience capacity (Béné, 2020), however, evidence on the role of human capital is scarce.
- Most findings on behavioral traits and resilience are based on data from developed countries and may not hold in the context of emerging economies.

## Research Question:

- Investigate the role of behavioral traits in the household's choice of response strategies to environmental shocks in rural Thailand.

## Theory



Source : Own adaptation based on Béné et al., 2016; Béné, 2020

## Data and Study Regions

### Thailand Vietnam Socio Economic Panel (TVSEP)

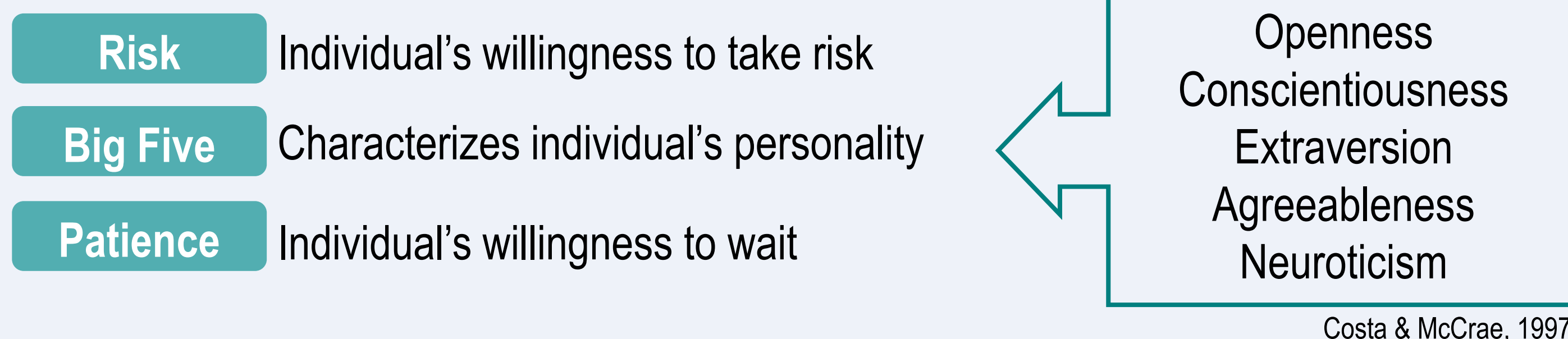
- 3 rural provinces in Thailand
- Panel Data from 2017 & 2019
- 1613 observations (HHs in both waves, answered question on non-cognitive skills)

### Precipitation Data:

- Matsuura & Willmott (2018), University of Delaware
- Monthly precipitation data from 1900 - 2017
- 0.5° x 0.5° resolution

## Methodology

### Behavioral Traits:



Costa & McCrae, 1997

### Drought-Indicator:

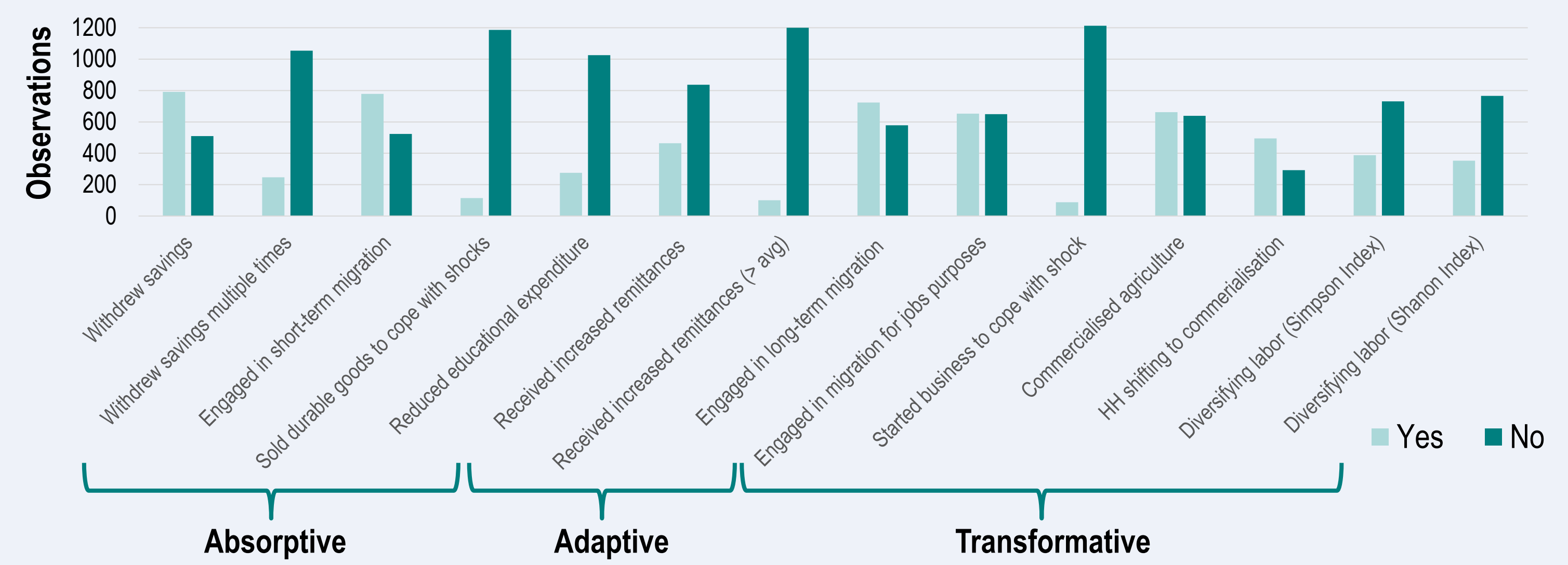
- Month considered as droughted if precipitation is 1 SD below historic mean
- Gives annual number of months with droughts per village
- Binary generated based on "if a village experienced at least one drought in that year"

## Probit Model Estimation

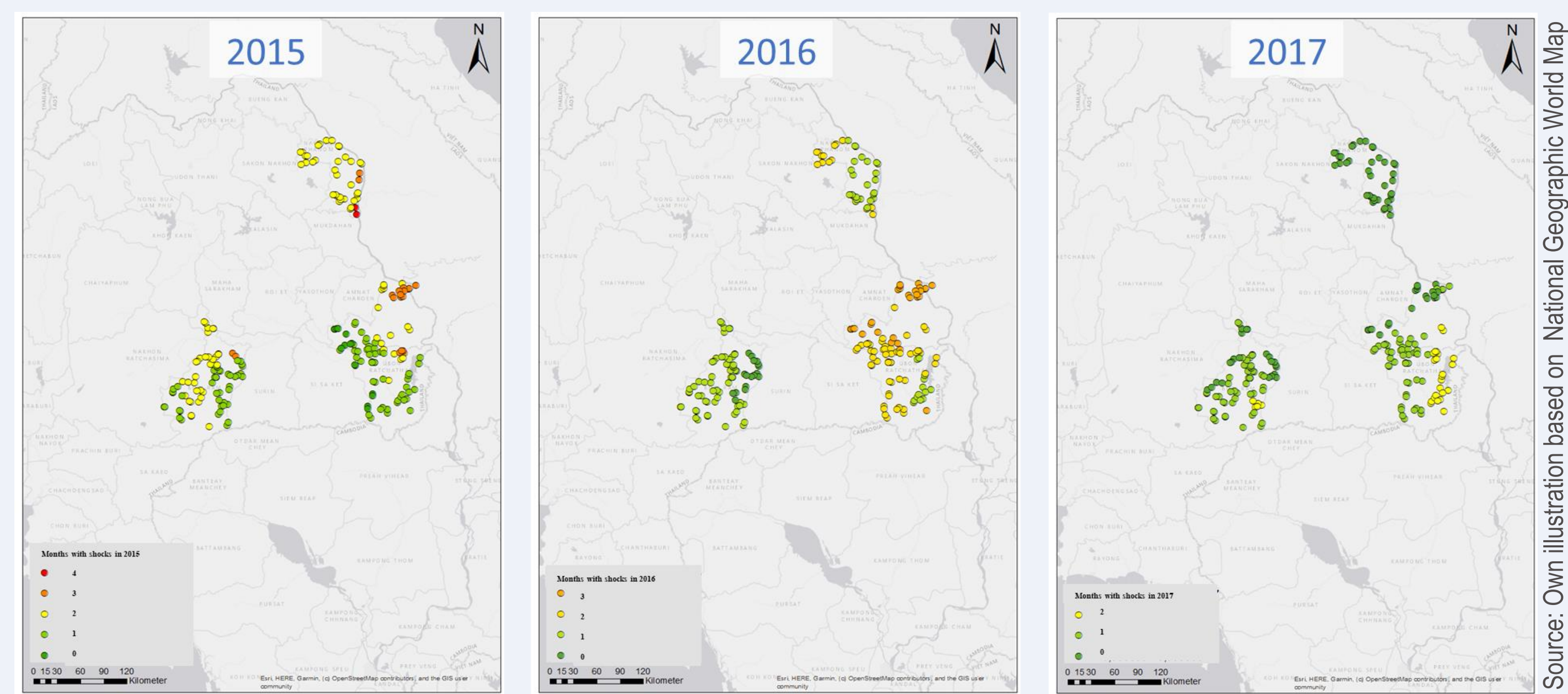
$$Prob(R_{ij} = 1) = \alpha_0 + \alpha_1 B_{ij,2017} + \alpha_2 S_{ij,2016} + \alpha_3 S_{ij,2017} + \alpha_4 S_{ij,2016}^* + S_{ij,2017} + \alpha_5 HC_{ij,2017} + \alpha_6 P_{ij,2017} + \epsilon_{ij}$$

- $R_{ij}$  = Probability of household i in region j to engage in a specific response strategy
- $B_{ij}$  = Behavioral traits
- $S_{ij}$  = Droughts
- $HC_{ij}$  = Household characteristics (female ratio, dependency ratio, income)
- $P_{ij}$  = Provincial controls

## Results - Response Strategies



## Results – Annual Droughts



Source: Own illustration based on National Geographic World Map

## Results – Probit Model Estimation

VARIABLES	Absorptive		Adaptive		Transformative	
	Withdrew savings	Reduced educational expenditure	Received increased remittances	Received increased remittances (> Ø)	HH increased commercialization	Diversified labor (Shanon Index)
Openness	0.0666** (0.0304)	0.0403 (0.0339)	0.0599* (0.0309)	0.0424 (0.0436)	0.00380 (0.0444)	0.0696** (0.0349)
Conscientiousness	0.0193 (0.0384)	0.0899** (0.0434)	-0.0206 (0.0390)	-0.105* (0.0561)	-0.0632 (0.0560)	-0.00350 (0.0445)
Extraversion	-0.0337 (0.0332)	-0.0618* (0.0371)	0.00370 (0.0338)	0.0167 (0.0488)	-0.103** (0.0466)	0.00205 (0.0374)
Agreeableness	0.0328 (0.0381)	-0.0688 (0.0428)	-0.00164 (0.0389)	0.161*** (0.0606)	-0.0205 (0.0558)	0.00112 (0.0432)
Neuroticism	-0.0235 (0.0317)	0.0264 (0.0353)	-0.00779 (0.0322)	-0.0971** (0.0466)	-0.0125 (0.0453)	0.0636* (0.0361)
Patience	0.0147 (0.0107)	-0.0102 (0.0119)	0.0370*** (0.0110)	0.0160 (0.0157)	-0.00580 (0.0152)	0.0116 (0.0122)
Willingness to take risk	-0.0206* (0.0108)	-0.0109 (0.0120)	-0.0195* (0.0110)	-0.0112 (0.0158)	-0.00473 (0.0159)	-0.0251** (0.0125)
Drought 2017	0.457* (0.240)	0.306 (0.244)	-0.0246 (0.227)	0.0478 (0.297)	-0.265 (0.313)	-0.471* (0.269)
Drought 2016	-0.246 (0.199)	-0.212 (0.192)	-0.0616 (0.183)	-0.199 (0.238)	0.325 (0.252)	0.569** (0.225)
Drought 2017 * Drought 2016	0.441* (0.258)	0.314 (0.266)	0.0113 (0.247)	0.0549 (0.328)	0.00104 (0.338)	-0.578** (0.290)
Observations	1.512	1.512	1.512	1.512	772	1.252

## Conclusions

- Behavioral traits are important → Openness & Risk are most predictive
- Bigger role for absorptive and adaptive strategies
- Income of the HH is not always a significant predictor
- Droughts do not always positively predict response strategies

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