Investigating Welfare Dynamics with Repeated Cross Sections: A Copula Approach

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I. Introduction/ Motivation (1)

- Panel data
  - often unavailable for developing countries
  - if available, affected with various issues, incl. representativeness, attrition, measurement error
- Vietnam Household Living Standards Survey (VHLSS) for validation
  - 2006- 2008 rounds
    - ✓ high-quality survey data
    - ✓ rotating panel design, with 50% being refreshed each round
    - ✓ approx. 9,200 households, incl. 4,500 panel households, each round

I. Introduction/ Motivation (2)

- Synthetic panels
  - builds on pseudo-panel literature
  - recent statistical techniques to construct “panel” data from *two* (or more) rounds of repeated cross sections
  - absent panel data, provide estimates for poverty mobility and vulnerability dynamics

I. Introduction/ Background (3)

- Previous literature
  - seminal work by Deaton (1985, JoE) constructs pseudo-panels
  - subsequent work by Bourguignon et al. (2004), Güell and Hu (2006, JoE)
  - Dang et al. (2014, JDE), Dang and Lanjouw (2013), Bourguignon, Moreno, and Dang (2019)
  - Recent validations/ applications
    - Bosnia-Herzegovina, Indonesia, Lao PDR, Peru, the US and Vietnam Indonesia (IFLS) and Vietnam (VHLSS) (Dang and Lanjouw, 2013 & 2018)
    - EAP: Martinez et al (**PS, 2013**), Garbero (**JDef, 2014**), Dang & Lanjouw **(RIW, 2017)**, Urzanqui (2017), Jha et al. (2018)
    - ECA: Bierbaum and Gassmann, (2012); Davalos and Sanchez-Paramo (2014); Cancho et al. (2015)
    - LAC: Ferreira et al. (2013); Cruces et al. (**JoEI, 2015**); Vakis et al. (2015), Perez (2016), Balcazar et al. (2018); Winkelried & Torres (**AE, 2019**)
    - SAS-MENA: Dang & Ianchovichina **(RIW, 2018)**; Dang & Lanjouw **(EDCC, 2018;** UNU-WIDER working paper, 2018; **OUP book chapter, forthcoming**) for India
    - SSA: Dang, Lanjouw & Swinkels **(OUP book chapter, 2017**); Dang & Dabalen **(JDS, 2019**)
    - and other flagship reports, including OECD (2015, 2018), UNDP (2016)
- Recent reviews by Dang, Joliffe and Carletto (**JES, 2019**), Dang (**DPR, 2020**)

Validation examples

II. Synthetic Panels / Technique (1)

Let x_{ij} be a vector of time-invariant household characteristics (e.g, ethnicity, religion, language) observed in both survey round *j*, j= 1, 2; i= 1,…, N.
Assume

$$y_{(i)j} = \beta_j' x_{(i)j} + \varepsilon_{(i)j} \qquad (1)$$

Model assumptions:

1. Underlying populations (ie, x_i's) being sampled in survey rounds 1 and 2 are the same.
2. ε_{i1} and ε_{i2} can be linked together using a specific copula function C.

II. Synthetic Panels / Technique (2)

The synthetic panels are constructed as follows

$$\hat{y}_{ik} = \hat{\beta}_k' x_{ij} + \tilde{\varepsilon}_{ik} \quad (2)$$

where *k*= *1* or 2.

- $\tilde{\varepsilon}_{ik}$ is simulated from the copula function $C(\varepsilon_{(i)1}, \varepsilon_{(i)2}, \theta)$.
- We employ the Gaussian copula, the Clayton copula, the Frank copula, the Farlie-Gumbel-Morgenstern (FGM) copula, and the Gumbel copula.
- We convert the Pearson correlation coefficient (ρ_p) to the Spearman's rank correlation coefficient (ρ_s) (following Kendall and Gibbons, 1990)

$$\rho_s = \frac{6}{\pi(n+1)}\left(sin^{-1}\rho_p\right) + (n-2)sin^{-1}\frac{\rho_p}{2} \quad (3)$$

where *n* represents the sample size.

II. Synthetic Panels/ Technique (3)

- Further details on
  - copula functions
  - mobility measures
    - ✓ poverty/ quintile transitions
    - ✓ mobility measures

III. Estimation Results (1)

Table 2.1. Summary Statistics for the Cross Sections, Vietnam 2006-2008

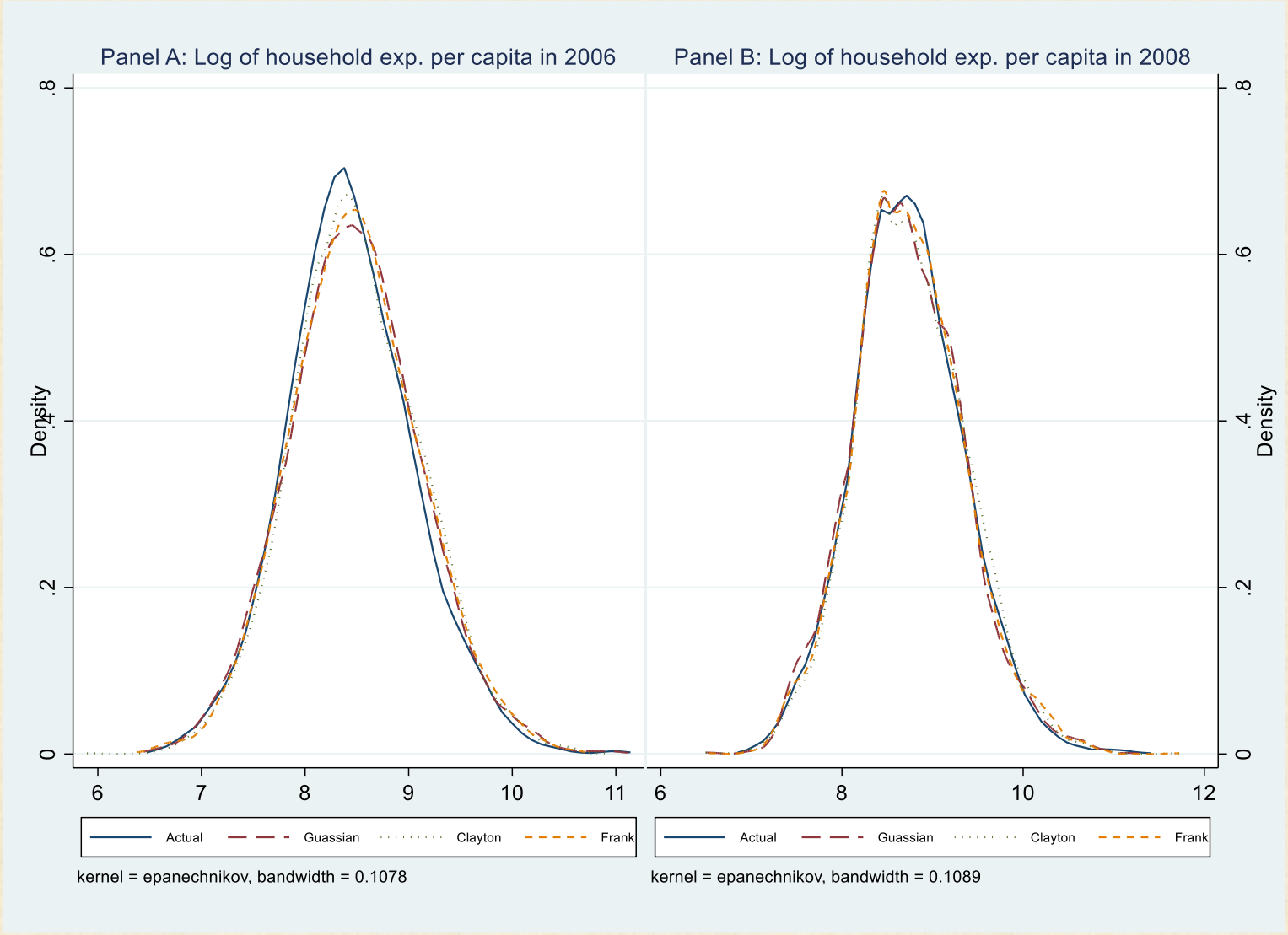
	2006	2008	T-test
Log of expenditure per capita	8.45	8.73	
	(0.64)	(0.62)	
Age	42.93	43.76	
	(7.14)	(7.69)	
Female	0.17	0.17	0.0
	(0.38)	(0.38)	
Years of schooling	7.79	7.86	0.07
	(3.69)	(3.71)	
Ethnic majority group	0.85	0.86	0.01
	(0.36)	(0.35)	
Urban	0.26	0.28	0.01
	(0.44)	(0.45)	
N	3596	3701	

Note: *p<0 .1, **p<0.05, ***p<0.01. Standard errors are in parentheses. Household heads' ages are restricted to between 25 and 55 for the first survey round and adjusted accordingly with the year difference for the second survey round. T-tests are obtained adjusting for complex survey design.

Consumption model

III. Estimation Results (2)

Figure 1. Density Graphs for Actual Panels vs. Synthetic Panels, Vietnam 2006-2008



III. Estimation Results (3)

Table 1. Testing Copulas against the Original Cross Sections, Vietnam 2006-2008

Vintile	2006			2008		
	Gaussian	Clayton	Frank	Gaussian	Clayton	Frank
1	N	N	N	N	N	N
2	N	S	N	N	N	N
3	S	S	S	N	N	N
4	S	S	S	N	N	N
5	S	S	S	N	N	N
6	S	S	S	N	N	N
7	S	S	S	N	N	N
8	S	S	S	N	N	N
9	S	S	S	N	S	N
10	S	S	S	N	S	S
11	S	S	S	N	S	S
12	S	S	S	N	S	S
13	S	S	S	N	S	N
14	S	S	S	N	N	N
15	S	S	S	N	N	N
16	S	S	S	N	N	N
17	S	S	S	N	N	N
18	N	N	N	S	N	N
19	N	N	N	S	N	N
20	N	N	N	N	N	N
Summary						
Not significant	5	4	5	18	15	17
Significant	15	16	15	2	5	3
Total	20	20	20	20	20	20

III. Estimation Results (4)

Table 2. Unconditional Poverty Transitions Based on Synthetic Data for Two Periods, Vietnam 2006-2008 (Percentage)

Poverty Status		
First Period & Second Period	**Actual Panel**	**Synthetic Panel**
Poor, Poor	9.9	**8.4**
	(0.8)	(0.5)
Poor, Nonpoor	5.9	**6.1***
	(0.5)	(0.4)
Nonpoor, Poor	4.9	6.3
	(0.5)	(0.5)
Nonpoor, Nonpoor	79.3	**79.1***
	(1.0)	(0.7)
N	2723	3701

Other couplas

III. Estimation Results (5)

Table 3. Conditional Poverty Transitions Based on Synthetic Data for Two Periods, Vietnam 2006-2008 (Percentage)

Poverty Status		
First Period & Second Period	**Actual Panel**	**Synthetic Panel**
Poor--> Poor	62.8	**57.9**
	(2.8)	(2.3)
Poor--> Nonpoor	37.2	**42.1**
	(2.8)	(2.3)
Nonpoor--> Poor	5.9	7.4
	(0.6)	(0.5)
Nonpoor--> Nonpoor	94.1	92.6
	(0.6)	(0.5)
N	2723	3701

III. Estimation Results (6)

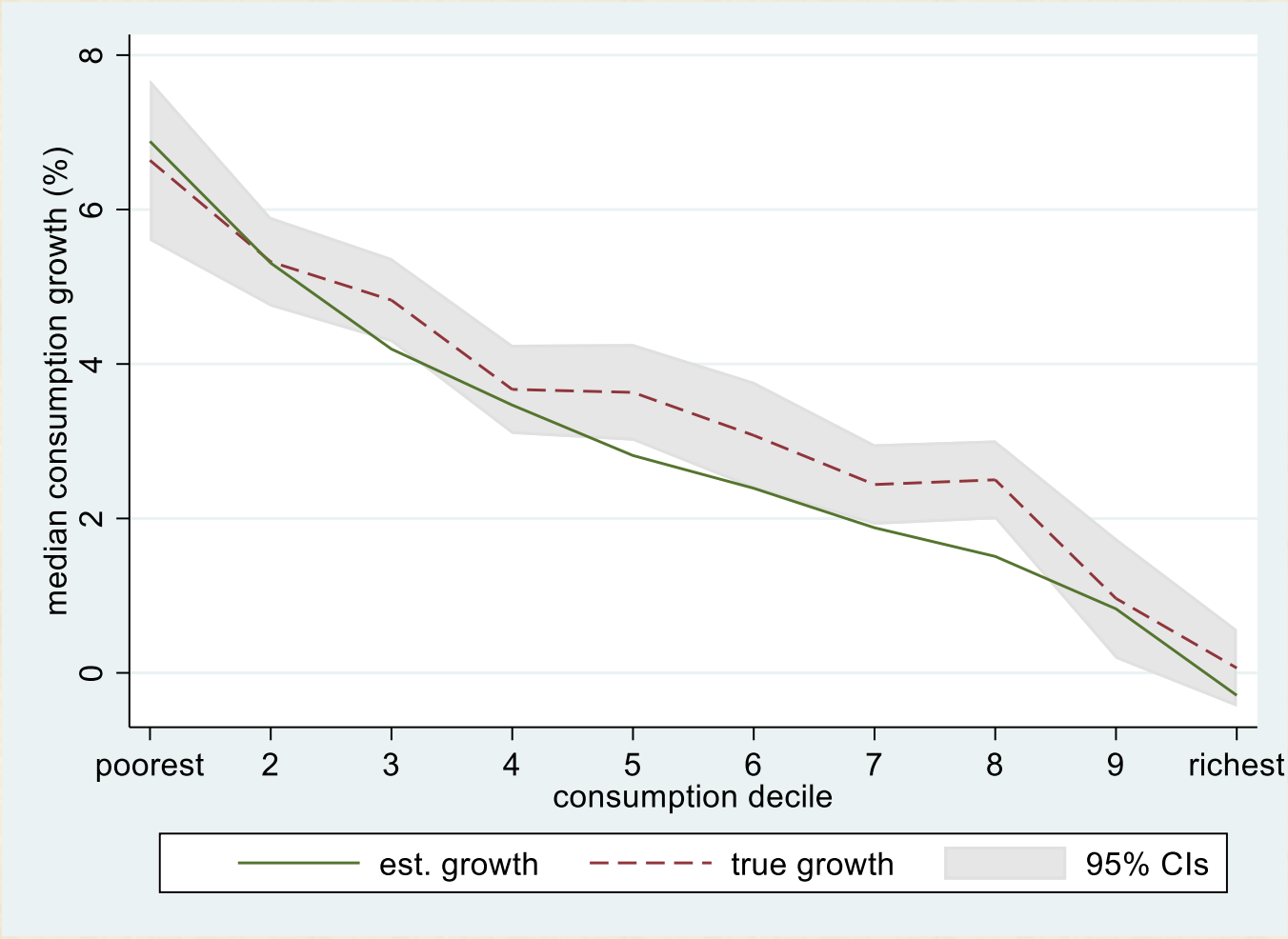
Table 4: Consumption Dynamics for Two Periods, Using Gaussian Copula, Vietnam 2006-2008 (Percentage)

			2008					
			Poorest	**Quintile 2**	**Quintile 3**	**Quintile 4**	**Richest**	**Total**
Panel A: True Panels	**2006**	**Poorest**	12.7	4.7	1.7	0.6	0.2	20
			(0.8)	(0.4)	(0.3)	(0.2)	(0.1)	(0.9)
		Quintile 2	4.8	7.5	4.6	2.0	0.6	20
			(0.4)	(0.6)	(0.5)	(0.3)	(0.1)	(0.9)
		Quintile 3	1.8	5.2	6.9	4.6	1.5	20
			(0.3)	(0.5)	(0.5)	(0.5)	(0.2)	(0.9)
		Quintile 4	0.6	2.0	5.0	7.8	4.8	20
			(0.2)	(0.3)	(0.5)	(0.6)	(0.5)	(0.9)
		Richest	0.1	0.6	1.8	4.9	12.9	20
			(0.1)	(0.2)	(0.3)	(0.5)	(0.7)	(0.8)
		Total	20	20	20	20	20	100
			(1.0)	(0.9)	(0.9)	(0.9)	(0.9)	
			2008					
			Poorest	**Quintile 2**	**Quintile 3**	**Quintile 4**	**Richest**	**Total**
Panel B: Synthetic Panels	**2006**	**Poorest**	**12.3***	**4.9***	**2.1**	**0.6***	**0.1***	20
			(0.3)	(0.3)	(0.3)	(0.2)	(0.0)	(0.0)
		Quintile 2	**5.0***	**6.8**	**5.1***	2.6	**0.6***	20
			(0.3)	(0.3)	(0.3)	(0.3)	(0.1)	(0.0)
		Quintile 3	**2.0***	**5.1***	**6.0**	**5.0***	**1.8**	20
			(0.2)	(0.3)	(0.3)	(0.3)	(0.2)	(0.0)
		Quintile 4	**0.6***	2.7	**4.9***	**6.9**	**4.9***	20
			(0.1)	(0.3)	(0.3)	(0.3)	(0.3)	(0.0)
		Richest	**0.1***	**0.6***	**1.8***	**4.9***	**12.6***	20
			(0.0)	(0.1)	(0.2)	(0.3)	(0.3)	(0.0)
		Total	20	20	20	20	20	100
			(0.0)	(0.1)	(0.1)	(0.1)	(0.0)	

Other variants

III. Estimation Results (7)

Figure 2. Non-anonymous Growth Incidence Curve, Vietnam 2006-2008



III. Estimation Results (8)

Table 5. Median Consumption Growth for Two Periods, Vietnam 2006-2008 (Percentage)

Poverty Status		
First Period & Second Period	**Actual Panel**	**Synthetic Panel**
Poor, Poor	3.6	**3.6***
	(0.3)	(0.3)
Poor, Nonpoor	9.1	**9.7**
	(0.4)	(0.3)
Nonpoor, Poor	-1.5	-2.5
	(0.3)	(0.3)
Nonpoor, Nonpoor	3.1	2.8
	(0.1)	(0.1)
N	2723	3701

III. Estimation Results (9)

Table 6. Mobility Indexes for Two Periods, Vietnam 2006-2008

First Period & Second Period	Actual Panel	Synthetic Panel
Fields-Ok index	1629.9	**1689.53***
	(72.7)	(44.1)
Fields-Ok index (log)	0.27	0.24
	(0.01)	(0.01)
Absolute Fields-Ok index (log)	0.32	**0.33***
	(0.01)	(0.01)
Share movement index	0.03	**0.03***
	(0.00)	(0.00)

IV. Conclusion & Next Steps

- Copula-based synthetic panels allow us to study various measures of consumption mobility and other mobility indexes that are not available with current techniques.

- Validation results using both actual panels and repeated cross sections from Vietnam suggest that synthetic panels may not provide the perfect substitute for actual panels.

- But in contexts where actual panel data are not available, synthetic panels can offer a promising alternative.

- We plan to add more recent data for validation.

Thank you

1. Copula Functions

The copula $C(u_1, u_2)$ associated with the distribution function $F(y_1, y_2)$ is often written as follows

$$F(y_1, y_2) = C(F_1(y_1), F_2(y_2); \theta) \qquad (1.2)$$

which emphasizes the role of θ as the dependence parameter that measures the dependence between the two marginals. If the marginals $F_1(y_1), F_2(y_2)$ are continuous, the copula function is unique.

Table 1.1: Commonly Used Copulas

Copula	Functional form	Domain for θ	Main Properties
Clayton	$\left({u_1}^{-\theta} + {u_2}^{-\theta} - 1\right)^{-1/\theta}$	(0,∞)	Strong left tail dependence and weak right tail dependence
Frank	$-\frac{1}{\theta} log\left(1 + \frac{(e^{-\theta u_1} - 1)(e^{-\theta u_2} - 1)}{e^{-\theta} - 1}\right)$	(-∞,∞)	Symmetric dependence, but with weak tail dependence
FGM	$u_1 u_2(1 + \theta(1 - u_1)(1 - u_2))$	[-1,1]	Symmetric dependence, but with weak magnitude of dependence
Gaussian	$\Phi_G(\Phi^{-1}(u_1), \Phi^{-1}(u_2); \theta)$	(-1,1)	Symmetric dependence
Gumbel	$e^{-\left((-logu_1)^\theta + (-logu_2)^\theta\right)^{1/\theta}}$	[1,∞)	Weak left tail dependence and strong right tail dependence

Note: Φ is the cdf of the standard normal distribution, and Φ_G is the standard bivariate normal distribution with the dependence parameter θ.

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1a. Validation for other countries

Table 5: Poverty Dynamics Based on Synthetic Panel Data for Two Periods, Conditional Probabilities (Percentage)

Poverty Status	Bosnia- Herzegovina		Lao PDR		Peru		United States		Vietnam	
First Period--> Second Period	2001- 2004		2002/03- 2007/08		2005-06		2007-09		2006-08	
	Actual panel	Synthetic panel	Actual panel	Synthetic panel	Actual panel	Synthetic panel	Actual panel	Synthetic panel	Actual panel	Synthetic panel
Poor--> Poor	45.0	39.4	49.0	50.0	72.0	71.5	61.2	65.5	62.8	66.0
	(4.6)	(1.2)	(3.0)	(1.6)	(1.9)	(1.0)	(2.2)	(2.0)	(2.8)	(1.5)
Poor--> Nonpoor	55.0	60.6	51.0	50.0	28.0	28.5	38.8	34.5	37.2	34.0
	(4.6)	(1.7)	(3.0)	(1.1)	(1.9)	(0.3)	(2.2)	(0.9)	(2.8)	(0.6)
Nonpoor--> Poor	13.6	15.3	15.2	15.5	15.1	17.6	5.0	4.4	5.9	5.9
	(1.8)	(0.2)	(1.3)	(0.3)	(1.3)	(0.2)	(0.4)	(0.1)	(0.6)	(0.1)
Nonpoor--> Nonpoor	86.4	84.7	84.8	84.5	84.9	82.4	95.0	95.6	94.1	94.1
	(1.8)	(0.7)	(1.3)	(0.8)	(1.3)	(0.7)	(0.4)	(0.3)	(0.6)	(0.3)
Goodness-of-fit Tests										
Within 95% CI	4/4		4/4		4/4		2/4		4/4	
Within 1 standard error	2/4		4/4		2/4		0/4		2/4	
Mean coverage (percent)	100		100		79.5		66.6		96.8	
Coverage of 100%	4/4		4/4		2/4		2/4		3/4	
N	1342	1342	1989	3215	2250	9084	3368	3368	2723	3701

Source: Dang and Lanjouw (2013)

1b. Validation using India Human Development Survey

Panel A: Vulnerability line equals twice poverty line, IHDS actual panels		**2011**			
		Poor	**Vulnerable**	**Secure**	**Total**
2004	**Poor**	12.7	18.6	6.1	37.4
		(0.5)	(0.5)	(0.3)	(0.8)
	Vulnerable	6.9	21.0	15.1	43.0
		(0.4)	(0.5)	(0.5)	(0.7)
	Secure	1.2	6.2	12.1	19.6
		(0.1)	(0.3)	(0.4)	(0.6)
	Total	20.8	45.8	33.4	100
		(0.7)	(0.7)	(0.7)	

Panel B: Vulnerability line equals twice poverty line, IHDS synthetic panels		**2011**			
		Poor	**Vulnerable**	**Secure**	**Total**
2004	**Poor**	15.1	16.7	**5.9***	**37.7***
		(0.2)	(0.2)	(0.1)	(0.4)
	Vulnerable	**7.1***	19.3	**15.9**	**42.3**
		(0.0)	(0.1)	(0.1)	(0.2)
	Secure	**1.1**	**6.1***	**12.9**	**20.0***
		(0.0)	(0.1)	(0.2)	(0.3)
	Total	23.3	42.1	**34.6**	100
		(0.2)	(0.1)	(0.3)	

Note: Bold font indicates the estimate falls within the 95% CI of the actual estimate; a start ("*") indicates the estimate falls within one standard error of the actual estimate. Standard errors in parentheses are estimated with 500 bootstraps for the synthetic panels, and with adjustment for the complex survey design for both the actual and synthetic panels.

Source: Dang and Lanjouw (2018)

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2. Poverty/ Quintile Transitions

The unconditional poverty transitions are defined as

$$P(y_1 \sim z_1 \quad and \; y_2 \sim z_2) \tag{1.3}$$

and the conditional poverty transitions are defined as

$$P(y_1 \sim z_1 \quad | y_2 \sim z_2) \tag{1.4}$$

where y_j and z_j are respectively household consumption and the poverty line in period j, j= 1, 2. The relation sign (~) indicates either the larger sign (>) or smaller or equal sign (≤). For example, $P(y_{i2} > z_2 | y_{i1} \leq z_1)$ correspond to the percentage of the poor population in the first period that escape poverty in the second period.

The quintile transitions are defined more generally but in a similar way. The percentage of the population that move from consumption group l in period 1 to consumption group m in period 2 is defined as

$$P^{lm} = P(z_1^{l-1} < y_1 \leq z_1^{l} \; and \; z_2^{m-1} < y_2 \leq z_2^{m}) \tag{1.5}$$

where l, m= 1,..., 5, and the z_j are the thresholds that separate the different consumption groups, with $z_j^0 = -\infty$ and $z_j^5 = \infty$, for period j, j= 1, 2.

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3. Mobility Measures

The Fields-Ok index is defined as

$$M^F = |y_2 - y_1| \quad (1.6)$$

the log Fields-Ok index is defined as

$$M^F_{log} = lny_2 - lny_1 \quad (1.7)$$

and the absolute log Fields-Ok index is defined as

$$M^F_{log} = |lny_2 - lny_1| \quad (1.8)$$

The share movement index is defined as

$$M^S = \left|\frac{lny_2}{\bar{y}_2} - \frac{lny_1}{\bar{y}_1}\right| \quad (1.9)$$

where $\bar{y}_j$ is the mean consumption in period *j*.

The non-anonymous growth incidence curve is defined as

$$g(p_1) = \frac{y_2(p_1) - y_1(p_1)}{y_1(p_1)} \quad (1.10)$$

which provides the consumption growth rate between period 1 and 2 of the population initially in position p_1 of the consumption distribution in period 1.

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4. Household Consumption Model

Table 2.3. Estimated Parameters of Household Consumption Using Cross Sections, Vietnam 2006-2008

	2006	2008
Age	0.011***	0.009***
	(0.001)	(0.001)
Female	0.084***	0.113***
	(0.022)	(0.022)
Years of schooling	0.053***	0.056***
	(0.003)	(0.003)
Ethnic majority group	0.361***	0.383***
	(0.026)	(0.026)
Urban	0.433***	0.310***
	(0.024)	(0.023)
Constant	7.166***	7.492***
	(0.051)	(0.050)
σ_v	0.485	0.489
Adjusted R^2	0.407	0.370
N	3596	3701

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5. Results with Other Copulas

Table 2.4. Unconditional Poverty Transitions Based on Synthetic Data for Two Periods, Vietnam 2006-2008 (Percentage)

First Period & Second Period	Gaussian	Clayton	Frank	FGM	Gumbel
Poor, Poor	**8.4**	10.3	8.1	6.4	8.0
	(0.5)	(0.3)	(0.3)	(0.3)	(0.3)
Poor, Nonpoor	**6.1***	4.4	**6.3***	7.8	**6.5**
	(0.4)	(0.3)	(0.4)	(0.4)	(0.4)
Nonpoor, Poor	6.3	**4.8***	7.0	8.7	7.2
	(0.5)	(0.3)	(0.3)	(0.3)	(0.3)
Nonpoor, Nonpoor	**79.1***	**80.5**	**78.6***	77.1	**78.4***
	(0.7)	(0.3)	(0.4)	(0.4)	(0.4)
N	3701	3701	3701	3701	3701

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6. Fixing Quintile Thresholds in 2nd Period

Table 2.5. Consumption Dynamics for Two Periods, with Quintile Thresholds Fixed in 2nd Year, Vietnam 2006-2008 (I

			2008					
			Poorest	**Quintile 2**	**Quintile 3**	**Quintile 4**	**Richest**	**Total**
Panel A: True Panels	**2006**	**Poorest**	17.4	12.1	6.0	2.6	0.8	38.8
			(0.9)	(0.7)	(0.5)	(0.3)	(0.2)	(1.1)
		Quintile 2	1.9	5.4	7.2	4.7	1.5	20.6
			(0.3)	(0.5)	(0.6)	(0.5)	(0.2)	(0.9)
		Quintile 3	0.5	1.8	4.4	6.4	3.5	16.5
			(0.1)	(0.3)	(0.4)	(0.5)	(0.4)	(0.8)
		Quintile 4	0.2	0.7	2.0	5.0	5.7	13.6
			(0.1)	(0.2)	(0.3)	(0.5)	(0.5)	(0.8)
		Richest	0.0	0.2	0.4	1.4	8.6	10.5
			(0.0)	(0.1)	(0.1)	(0.3)	(0.6)	(0.7)
		Total	20.0	20.0	20.0	20.0	20.0	100
			(1.0)	(0.9)	(0.9)	(0.9)	(0.9)	

			2008					
			Poorest	**Quintile 2**	**Quintile 3**	**Quintile 4**	**Richest**	**Total**
Panel B: Synthetic Panels	**2006**	**Poorest**	**16.7***	10.6	**6.3***	**2.6***	**0.5**	**36.7**
			(0.3)	(0.5)	(0.5)	(0.3)	(0.1)	(1.0)
		Quintile 2	**2.3**	**5.2***	5.6	**4.2**	**1.4***	18.7
			(0.3)	(0.5)	(0.4)	(0.4)	(0.2)	(1.0)
		Quintile 3	0.8	3.0	**4.8***	**5.6**	**3.2***	**17.3***
			(0.2)	(0.3)	(0.4)	(0.4)	(0.3)	(0.9)
		Quintile 4	**0.2***	1.1	2.7	**5.3***	**6.1***	15.5
			(0.1)	(0.2)	(0.3)	(0.4)	(0.5)	(0.9)
		Richest	0.0	**0.1***	0.6	2.2	**8.8***	11.8
			(0.0)	(0.1)	(0.2)	(0.3)	(0.5)	(0.6)
		Total	20.0	20.0	20.0	20.0	20.0	100
			(0.0)	(0.1)	(0.1)	(0.1)	(0.0)	

7. Fixing Quintile Thresholds in 1st Period

Table 2.6. Consumption Dynamics for Two Periods, with Quintile Thresholds Fixed in 1st Year, Vietnam 2006-2008 (P

			2008					
			Poorest	**Quintile 2**	**Quintile 3**	**Quintile 4**	**Richest**	**Total**
Panel A: True Panels	**2006**	**Poorest**	7.6	5.3	4.4	1.9	0.5	19.7
			(0.7)	(0.5)	(0.4)	(0.3)	(0.2)	(0.9)
		Quintile 2	1.1	3.9	7.3	5.4	1.9	19.6
			(0.2)	(0.4)	(0.6)	(0.5)	(0.3)	(0.9)
		Quintile 3	0.2	1.6	5.2	8.5	4.5	20.0
			(0.1)	(0.3)	(0.5)	(0.6)	(0.4)	(0.9)
		Quintile 4	0.0	0.8	1.8	7.2	10.4	20.2
			(0.0)	(0.2)	(0.3)	(0.6)	(0.6)	(0.9)
		Richest	0.0	0.1	0.6	2.5	17.2	20.5
			(0.0)	(0.1)	(0.2)	(0.3)	(0.8)	(0.8)
		Total	9.1	11.7	19.2	25.5	34.5	100
			(0.7)	(0.7)	(0.9)	(1.0)	(1.0)	
			2008					
			Poorest	**Quintile 2**	**Quintile 3**	**Quintile 4**	**Richest**	**Total**
Panel B: Synthetic Panels	**2006**	**Poorest**	**7.8***	**5.8**	**4.4***	**1.7***	**0.3**	20.0
			(0.4)	(0.5)	(0.5)	(0.3)	(0.1)	(0.0)
		Quintile 2	1.9	**4.6**	**6.9***	**4.8**	**1.7***	20.0
			(0.3)	(0.5)	(0.6)	(0.4)	(0.3)	(0.0)
		Quintile 3	0.6	2.4	**5.9**	6.8	**4.4***	20.0
			(0.2)	(0.4)	(0.5)	(0.5)	(0.4)	(0.0)
		Quintile 4	0.1	**0.9***	3.4	**6.6**	9.0	20.0
			(0.1)	(0.2)	(0.4)	(0.5)	(0.5)	(0.0)
		Richest	**0.0***	**0.1***	**0.8**	**3.0**	**16.1**	20.0
			(0.0)	(0.1)	(0.2)	(0.3)	(0.3)	(0.0)
		Total	**10.4**	13.8	21.3	22.9	31.6	100
			(0.5)	(1.3)	(1.3)	(1.1)	(0.8)	

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