Natural resource extraction and ethnic inequality in Dak Lak, Vietnam

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ONLINE APPENDIX

Table A1. Overview of surveyed districts and communes

District	Commune	Number of household observations	Per cent
Buôn Ma Thuột	Hòa Thuận	50	2.44
	Hòa Thắng	52	2.53
	Hòa Xuân	58	2.83
Ea Hleo	Ea Hleo	48	2.34
	Cư Mốt	52	2.53
Ea Súp	Ea Lê	45	2.19
Krông Năng	ĐLiê Ya	47	2.29
	Tam Giang	56	2.73
Krông Búk	Cư Né	55	2.68
	Pơng Drang	59	2.87
	Ea Blang	58	2.83
	Bình Thuận	60	2.92
Buôn Đôn	Ea Wer	53	2.58
	Ea Nuôl	58	2.83
Cư Mgar	Cư Dliê Mnông	57	2.78
	Ea Kpam	59	2.87
	Ea DRơng	57	2.78
	Cuor Đăng	46	2.24
Ea Kar	Cư Huê	55	2.68
	Ea Kmút	55	2.68
	Cư Bông / Cu Elang	57	2.78
MĐrắk	Krông Jing	56	2.73
	Ea Trang	52	2.53
Krông Pắc	Ea Kly	54	2.63
	Ea Knuec	55	2.68
	Hòa An	54	2.63
	Hoà Đông	55	2.68
	Hòa Tiến	60	2.92
	Vụ Bổn	45	2.19
Krông A Na	Cư Ê Wi	55	2.68
	Ea Tiêu	55	2.68
	Dray Sáp	53	2.58
	Ea Bông	48	2.34
	Dur KMăl	52	2.53
Krông Bông	Hòa Tân	60	2.92
	Khuê Ngọc Điền	58	2.83
Lắk	Đắk Liêng	58	2.83
	Ea RBin	52	2.53
Total		**2,053**	**100**

Table A2. Overview of ethnic groups in the sample

	Number of household observations	Per cent
Ethnic majority *(n=1,292)*		
Kinh	1,289	62.79
Hoa	3	3.31
Ethnic minorities *(n=761)*		
Indigenous		
Ede	493	24.01
Mnong	43	2.09
Immigrated		
Tay	68	3.31
Thai	8	0.39
Nung	76	3.7
San chay (Cap lan – San chi)	29	1.41
Muong	11	0.54
Ngai	1	0.05
Hmong (Meos)	23	1.12
Dao	6	0.29
Bru – Van kieu	2	0.05
Sedang	1	0.05
Total	**2,053**	**100**

Table A3. Definition of predictor variables

Dependent variables	**Definition**	**Scale**
Environmental income (per capita)	(Per capita) net revenue from extraction, i.e., difference between total revenue from extraction at market price and extraction cost	Metric, in PPP$
Extraction participation	If the household engages in natural resource extraction	Binary, yes=1
Consumption per capita	Annual per capita consumption	Metric, in PPP$
Predictor variables		
Age	Average age of household members	Metric, in years
Education	Average education of household members	Metric, in years
Household size	Number of household members	Metric
Dependency ratio	Household size / independent members (15-64 years)	Metric
Gender	Gender of household head	Binary, female=1
Asset value	Value of household assets	Metric, in PPP$
Farmland size	Size of farmland	Metric, in 1,000m^2
Distance	Average distance from the household's home to the extracting ground	Metric, in km
Off-farm	If the household engages in off-farm employment	Binary, yes=1
Year 2010	If the observation is from 2010	Binary, 2016 as basis
Year 2013	If the observation is from 2013	Binary, 2016 as basis

Table A4. Variance inflation factor (VIF) values

	VIF	1/VIF
Age	1.24	0.81
Education	1.36	0.74
Household size	1.31	0.77
Dependency ratio	1.12	0.89
Gender	1.07	0.93
Asset value	1.49	0.67
Farmland size	1.34	0.75
Distance	1.12	0.89
Off-farm	1.29	0.77
Year 2010	1.68	0.60
Year 2013	1.48	0.68

Table A5. Testing the exclusion restriction of the selection instrument

	Extraction participation	**Per capita consumption** (ln)
Selection instrument		
Distance (ln)	-0.19 (0.029)	-0.0002 (0.014)
Other variables		
Age	-0.004 (0.001)	0.006 (0.001)
Education	-0.026 (0.004)	0.041 (0.004)
Household size	0.029 (0.005)	-0.11 (0.007)
Dependency ratio	0.02 (0.016)	-0.14 (0.021)
Gender (female=1)	0.003 (0.29)	-0.04 (0.03)
Asset value (ln)	-0.078 (0.01)	0.26 (0.012)
Farmland size (ln)	0.048 (0.01)	0.019 (0.013)
Off-farm (yes=1)	-0.12 (0.026)	0.19 (0.023)
Year 2010 (2016 as basis)	0.053 (0.035)	-0.064 (0.026)
Year 2013 (2016 as basis)	0.15 (0.022)	-0.052 (0.031)
Constant	1.4 (0.089)	5.43 (0.11)
Number of observations	2,053	2,053
Prob. > F	0.000	0.000
Adj. R^2	0.305	0.58

Note: Standard errors (in parentheses) bootstrapped with 1,000 replications.

Table A6. Descriptive statistics of sampled households by year and ethnic status

	2010				2013				2016			
	Whole sample (n=714)	**Majority** (n=449)	**Minority** (n=265)	**Test statistics**	**Whole sample** (n=702)	**Majority** (n=439)	**Minority** (n=263)	**Test statistics**	**Whole sample** (n=637)	**Majority** (n=404)	**Minority** (n=233)	**Test statistics**
Age (in years)	28.47 (9.4)	29.48 (8.95)	26.75 (9.91)	4.8[a]	30.89 (9.3)	32.02 (8.77)	28.99 (9.85)	5.25[a]	34.32 (11.86)	36.16 (12.31)	31.15 (10.33)	5.67[a]
Education (in years)	7.8 (2.74)	8.51 (2.65)	6.54 (2.46)	9.26[a]	7.95 (2.89)	8.64 (2.79)	6.8 (2.69)	8.21[a]	8.38 (3.04)	9.09 (2.98)	7.16 (2.75)	7.4[a]
Household size	5.5 (1.98)	5.2 (1.64)	6 (2.38)	-3.79[a]	4.87 (1.76)	4.58 (1.51)	5.35 (2.03)	-4.74[a]	4.69 (1.67)	4.41 (1.5)	5.18 (1.85)	-5.18[a]
Dependency ratio	1.6 (0.58)	1.54 (0.56)	1.69 (0.59)	-3.97[a]	1.54 (0.58)	1.48 (0.55)	1.64 (0.6)	-3.86[a]	1.45 (0.53)	1.41 (0.52)	1.51 (0.56)	-3.29[a]
Gender (female=1)	0.15 (0.36)	0.15 (0.35)	0.15 (0.36)	0.14[b]	0.18 (0.38)	0.17 (0.38)	0.18 (0.39)	0.1[b]	0.18 (0.39)	0.17 (0.37)	0.21 (0.41)	1.67[b]
Asset value (in PPP$)	2,786 (3,282)	3,428 (3,746)	1,699 (1,841)	9.26[a]	4,203 (6,632)	5,282 (7,802)	2,402 (3,272)	8.37[a]	4,391 (6,516)	5,469 (7,682)	2,531 (2,919)	7.68[a]
Farmland size (in 1,000m^2)	10.73 (10.76)	10.18 (10.57)	11.65 (11.02)	-1.62[a]	11.35 (15.01)	9.26 (10.57)	14.84 (19.91)	-4.58[a]	11.3 (16.94)	9.94 (17.64)	13.66 (15.42)	-4.53[a]
Off-farm (yes=1)	0.49 (0.5)	0.66 (0.47)	0.21 (0.41)	136.91[b]	0.51 (0.5)	0.63 (0.48)	0.33 (0.47)	59.03[b]	0.61 (0.49)	0.74 (0.44)	0.38 (0.49)	79.26[b]
Distance (in km)	3.29 (5.78)	3.12 (6.44)	3.57 (4.42)	-1.81[a]	2.92 (6.04)	2.59 (6.77)	3.48 (4.53)	-6.17[a]	3.47 (3.14)	2.99 (2.29)	4.3 (4.11)	-4.01[a]

Notes: Standard deviations in parentheses. [a] Wilcoxon rank-sum test. [b] χ^2-test.

Table A7. Indicators on natural resource extraction by year and ethnic status

	2010				2013				2016			
	Whole sample (n=714)	**Majority** (n=449)	**Minority** (n=265)	**Test statistics**	**Whole sample** (n=702)	**Majority** (n=439)	**Minority** (n=263)	**Test statistics**	**Whole Sample** (n=637)	**Majority** (n=404)	**Minority** (n=233)	**Test statistics**
Environmental income (in PPP$)	136.4 (322.63)	95.34 (339.3)	205.99 (279.34)	-11.29[a]	116.57 (269.41)	85.88 (222.96)	167.79 (326.92)	-7.39[a]	85.99 (408.85)	28.89 (148.52)	184.56 (635.16)	-13.8[a]
Environmental income per capita (in PPP$)	26.14 (63.57)	19.75 (68.75)	36.97 (52)	-10.61[a]	25.24 (59.41)	19.84 (53.1)	34.24 (67.82)	-6.92[a]	17.51 (71.49)	6.16 (30.17)	37.11 (108.58)	-13.63[a]
Extraction participation (yes=1)	0.61 (0.49)	0.47 (0.5)	0.85 (0.36)	97.13[b]	0.64 (0.48)	0.54 (0.5)	0.83 (0.38)	60.23[b]	0.38 (0.49)	0.19 (0.39)	0.72 (0.45)	174.21[b]

Notes: Standard deviations in parentheses. [a] Wilcoxon rank-sum test. [b] χ^2-test.