

Appendix Tables for Health Care Expenditure and Farm Income Loss: Evidence from Natural Disasters

Table A1. Sample statistics of analysis variables from the 2010 agricultural census.

| | | Full sample | | Townships w/o disaster payments | | Townships w/ disaster payments | |
|--------------------------|--------------------------------------------------------|-------------|--------|---------------------------------|--------|--------------------------------|--------|
| Variable | Description | Mean | S.D. | Mean | S.D. | Mean | S.D. |
| <i>Outcome variables</i> | | | | | | | |
| Farm income | Total sales value of farm products (NT\$ 100,000). | 2.55 | 14.15 | 2.19 | 13.43 | 2.76 | 14.53 |
| On-farm days | Farm operator's annual on-farm work days. | 92.49 | 76.45 | 81.07 | 68.73 | 99.03 | 79.80 |
| Off-farm | Main occupation is an off-farm job (0/1). | 0.32 | 0.47 | 0.35 | 0.48 | 0.31 | 0.46 |
| House work | Main occupation is household work (0/1). | 0.03 | 0.16 | 0.03 | 0.17 | 0.02 | 0.16 |
| <i>Control variables</i> | | | | | | | |
| Disaster | Disaster payments per farm in 2010 (NT\$ 1,000). | 5.47 | 8.28 | 0.00 | 0.00 | 8.60 | 9.00 |
| IV | Product of vote ratio and the number of voters. | 2.74 | 3.25 | 4.35 | 4.41 | 1.87 | 1.88 |
| Male | Male (0/1). | 0.82 | 0.38 | 0.83 | 0.37 | 0.82 | 0.39 |
| Age18_25 | Age 18-24 (0/1). | 0.00 | 0.03 | 0.00 | 0.03 | 0.00 | 0.03 |
| Age25_34 | Age 25-34 (0/1). | 0.01 | 0.12 | 0.01 | 0.12 | 0.01 | 0.12 |
| Age35_44 | Age 35-44 (0/1). | 0.07 | 0.26 | 0.07 | 0.26 | 0.08 | 0.26 |
| Age45_54 | Age 45-54 (0/1). | 0.24 | 0.42 | 0.24 | 0.42 | 0.24 | 0.42 |
| Age55_64 | Age 55-64 (0/1). | 0.30 | 0.46 | 0.31 | 0.46 | 0.30 | 0.46 |
| Age65_74 | Age 65-74 (0/1). | 0.25 | 0.43 | 0.25 | 0.43 | 0.25 | 0.43 |
| Age75+ | Age >=75 (0/1). | 0.12 | 0.33 | 0.12 | 0.33 | 0.12 | 0.33 |
| Can't read | Operator cannot read (0/1). | 0.08 | 0.07 | 0.08 | 0.07 | 0.07 | 0.06 |
| Elementary | Operator finished elementary school (0/1). | 0.43 | 0.49 | 0.42 | 0.49 | 0.43 | 0.50 |
| Junior high | Operator finished junior high school (0/1). | 0.22 | 0.41 | 0.21 | 0.41 | 0.22 | 0.41 |
| Senior high | Operator finished senior high school (0/1). | 0.21 | 0.41 | 0.21 | 0.41 | 0.21 | 0.41 |
| College | Operator has college degree (0/1). | 0.07 | 0.26 | 0.09 | 0.28 | 0.07 | 0.25 |
| HH size | Number of household members. | 3.89 | 2.15 | 4.18 | 2.24 | 3.72 | 2.07 |
| Land | Farm size (hectares). | 0.74 | 1.43 | 0.61 | 1.31 | 0.82 | 1.49 |
| Hired workers | Number of hired workers. | 0.23 | 1.40 | 0.14 | 0.92 | 0.28 | 1.60 |
| Slope | Average slope of land in township. | 5.38 | 9.01 | 5.11 | 8.77 | 5.52 | 9.14 |
| Height | Average height of land in township. | 125.96 | 258.19 | 98.03 | 169.68 | 141.02 | 293.99 |
| R_priority | Ratio of land in township prioritized for agriculture. | 0.28 | 0.28 | 0.32 | 0.29 | 0.26 | 0.27 |
| R_general | Ratio of land in township for general agriculture. | 0.14 | 0.21 | 0.09 | 0.16 | 0.17 | 0.23 |
| Rice | Rice is the primary crop (0/1). | 0.42 | 0.49 | 0.47 | 0.50 | 0.39 | 0.49 |
| Vegetable | Vegetables are the primary crop (0/1). | 0.18 | 0.38 | 0.23 | 0.42 | 0.15 | 0.36 |
| Fruit | Fruit is the primary crop (0/1). | 0.27 | 0.44 | 0.17 | 0.38 | 0.32 | 0.47 |
| Other crop | Another crop is the primary crop (0/1). | 0.12 | 0.32 | 0.10 | 0.31 | 0.12 | 0.33 |
| Livestock | Livestock is primary output (0/1). | 0.02 | 0.14 | 0.02 | 0.14 | 0.02 | 0.15 |
| N | | 634,076 | | 230,619 | | 403,457 | |

Note: Sales values and disaster payments are measured in 2009 NT\$.

Table A2. Coefficient estimates from IV and non-IV two-part model for total health care expenditure.

| Variable | IV two-part model | | | | | | Non-IV two-part model | | | |
|-----------------|-------------------|-------|-------------------------------------------|-------|--------------------------------------------|-------|-----------------------|-------|----------------------|-------|
| | First Stage | | Any use | | Total exp. for users | | Any use | | Total exp. for users | |
| | Coeff. | S.E. | Coeff. | S.E. | Coeff. | S.E. | Coeff. | S.E. | Coeff. | S.E. |
| IV | 0.148 *** | 0.042 | | | | | | | | |
| Disaster | | | -0.042 *** | 0.003 | -0.033 *** | 0.010 | -0.008 *** | 0.001 | -0.016 *** | 0.002 |
| Male | -0.325 ** | 0.172 | -0.280 *** | 0.012 | 0.179 *** | 0.021 | -0.266 *** | 0.007 | 0.194 *** | 0.016 |
| Age25_34 | 1.087 | 2.047 | 0.088 * | 0.053 | -0.537 ** | 0.229 | 0.045 | 0.042 | -0.526 ** | 0.227 |
| Age35_44 | 1.017 | 2.008 | 0.100 ** | 0.053 | -0.419 * | 0.223 | 0.059 | 0.041 | -0.436 ** | 0.222 |
| Age45_54 | 1.046 | 2.001 | 0.287 *** | 0.053 | -0.199 | 0.224 | 0.246 *** | 0.041 | -0.215 | 0.224 |
| Age55_64 | 0.670 | 1.999 | 0.552 *** | 0.048 | 0.033 | 0.222 | 0.526 *** | 0.042 | 0.018 | 0.222 |
| Age65_74 | 1.379 | 1.996 | 0.810 *** | 0.061 | 0.285 | 0.221 | 0.754 *** | 0.042 | 0.248 | 0.219 |
| Age75+ | 0.869 | 1.995 | 0.455 *** | 0.052 | 0.481 ** | 0.221 | 0.421 *** | 0.041 | 0.461 ** | 0.220 |
| Clinics | 0.004 *** | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 ** | 0.000 | 0.000 | 0.000 |
| Doctor | 0.039 ** | 0.014 | 0.002 | 0.005 | 0.008 ** | 0.003 | 0.000 | 0.002 | 0.009 *** | 0.003 |
| SO ₂ | 1.532 *** | 0.082 | 0.063 ** | 0.029 | 0.062 ** | 0.026 | 0.003 | 0.004 | 0.018 ** | 0.007 |
| CO | 5.437 *** | 1.097 | -0.347 ** | 0.176 | 0.066 ** | 0.033 | 0.120 ** | 0.056 | 0.229 ** | 0.080 |
| Year 2010 | -0.310 | 0.242 | -0.027 * | 0.017 | 0.010 | 0.021 | 0.014 *** | 0.002 | 0.021 ** | 0.010 |
| Year 2011 | 3.640 *** | 0.243 | 0.122 | 0.120 | 0.143 | 0.135 | 0.028 *** | 0.003 | 0.039 *** | 0.012 |
| Year 2012 | -0.579 ** | 0.249 | -0.060 * | 0.036 | 0.012 | 0.032 | -0.038 *** | 0.004 | 0.025 | 0.023 |
| February | -0.186 | 0.421 | -0.041 ** | 0.017 | -0.070 *** | 0.016 | -0.032 *** | 0.003 | -0.065 *** | 0.011 |
| March | -0.716 | 0.420 | 0.021 | 0.029 | 0.022 | 0.036 | -0.050 | 0.026 | 0.046 *** | 0.010 |
| April | -0.741 * | 0.422 | -0.011 | 0.022 | 0.040 | 0.033 | -0.020 | 0.033 | 0.063 | 0.042 |
| May | -2.025 *** | 0.439 | -0.079 | 0.054 | 0.025 | 0.079 | -0.004 | 0.007 | 0.087 | 0.148 |
| June | -0.405 | 0.465 | -0.051 | 0.073 | 0.087 | 0.057 | -0.035 | 0.020 | 0.093 | 0.088 |
| July | -3.179 *** | 0.490 | -0.172 ** | 0.087 | 0.017 | 0.120 | -0.040 *** | 0.013 | 0.112 *** | 0.021 |
| August | 0.715 | 0.475 | -0.005 | 0.097 | 0.139 * | 0.079 | 0.035 *** | 0.011 | 0.109 *** | 0.020 |
| September | -0.991 ** | 0.448 | -0.075 ** | 0.038 | 0.046 | 0.043 | -0.034 *** | 0.008 | 0.074 *** | 0.015 |
| October | -1.916 *** | 0.435 | -0.018 | 0.051 | 0.005 | 0.075 | -0.060 | 0.065 | 0.064 *** | 0.014 |
| November | 12.295 *** | 0.420 | 0.507 | 0.384 | 0.429 | 0.452 | 0.005 * | 0.003 | 0.070 *** | 0.011 |
| December | -0.540 | 0.420 | 0.000 | 0.034 | 0.061 * | 0.036 | -0.020 *** | 0.003 | 0.079 *** | 0.011 |
| Constant | 7.937 *** | 2.082 | 0.354 | 0.246 | 8.642 *** | 0.402 | 0.003 | 0.046 | 8.383 *** | 0.222 |
| F-test of IV | F=22.15 | | | | | | | | | |
| Exogeneity test | | | $\chi^2 = 328$ (<i>p</i> -value<0.01) | | $\chi^2 = 18.8$ (<i>p</i> -value<0.01) | | | | | |
| N*T | 3,538,133 | | 3,538,133 | | 2,111,487 | | 3,538,133 | | 2,111,487 | |

Note: Standard errors are cluster-corrected at the township level. All models include township fixed-effects. ***, **, * indicate statistical significance at the 1%, 5% and 10% level.

Table A3. Marginal effects of disaster payments on health care expenditure and utilization.

| Panel A. Health care expenditure | | | | |
|----------------------------------|-------------|--------|---------------|-------|
| | Conditional | | Unconditional | |
| | M.E. | S.E. | M.E. | S.E. |
| Total expenditure | -222.50 ** | 79.64 | -242.48 ** | 94.95 |
| Outpatient exp. | -136.29 *** | 41.45 | -137.64 ** | 49.55 |
| Outpatient OTP | -14.07 ** | 4.37 | -14.98 ** | 5.72 |
| Inpatient exp. | -95.00 | 64.38 | -89.57 | 68.66 |
| Inpatient OTP | 112.62 | 408.91 | -1.11 | 1.52 |
| Drug exp. | -22.46 | 20.82 | -23.10 *** | 6.49 |

| Panel B. Number of visits/prescriptions | | | | |
|-----------------------------------------|-----------|------|----------|------|
| | M.E. | S.E. | M.E. | S.E. |
| Outpatient visits | -0.15 *** | 0.04 | -0.14 ** | 0.05 |
| Inpatient visits | 0.01 | 0.02 | 0.00 | 0.00 |
| Drug prescriptions | -0.13 *** | 0.04 | -0.07 ** | 0.05 |

Note: N*T = 3,538,133. Standard errors are cluster-corrected at the township level. All models include year, month and township fixed-effects and the set of control variables reported in table 2. ***, **, * indicate statistical significance at the 1%, 5% and 10% level.

Table A4. Coefficient estimates from IV models for farm income and labor supply.

| Variable | First Stage | | Farm income | | On-farm work days | | Main occupation is off-farm | | Main occupation in housework | |
|---------------|-------------|-------|-------------|-------|-------------------|--------|-----------------------------|-------|------------------------------|-------|
| | Coeff. | S.E. | Coeff. | S.E. | Coeff. | S.E. | Coeff. | S.E. | Coeff. | S.E. |
| IV | 0.022 ** | 0.011 | | | | | | | | |
| Disaster | | | -0.119 ** | 0.041 | -5.457 ** | 1.802 | 0.002 ** | 0.001 | 0.001 ** | 0.000 |
| Male | 0.010 | 0.008 | 0.560 *** | 0.030 | 15.215 *** | 0.786 | 0.106 *** | 0.004 | -0.141 *** | 0.006 |
| Age25_34 | 0.043 | 0.032 | 0.044 | 0.131 | 6.282 * | 3.514 | -0.015 | 0.020 | 0.016 *** | 0.003 |
| Age35_44 | 0.054 | 0.034 | 0.076 | 0.131 | 8.931 ** | 3.902 | -0.035 * | 0.021 | 0.017 *** | 0.003 |
| Age45_54 | 0.055 | 0.041 | 0.002 | 0.135 | 9.939 ** | 4.184 | -0.080 *** | 0.021 | 0.022 *** | 0.003 |
| Age55_64 | 0.068 | 0.051 | 0.122 | 0.144 | 16.878 *** | 4.700 | -0.251 *** | 0.022 | 0.029 *** | 0.004 |
| Age65_74 | 0.086 | 0.063 | 0.440 *** | 0.159 | 25.517 *** | 5.508 | -0.453 *** | 0.023 | 0.025 *** | 0.004 |
| Age75+ | 0.113 | 0.087 | 0.270 | 0.176 | 13.430 ** | 6.794 | -0.519 *** | 0.024 | 0.023 *** | 0.005 |
| Elementary | 0.042 * | 0.026 | 0.055 | 0.050 | 0.531 | 2.018 | 0.010 ** | 0.004 | 0.010 *** | 0.002 |
| Junior high | 0.065 * | 0.037 | -0.119 * | 0.072 | -7.287 ** | 2.954 | 0.080 *** | 0.007 | 0.011 *** | 0.003 |
| Senior high | 0.077 * | 0.048 | -0.206 ** | 0.090 | -13.242 *** | 3.647 | 0.139 *** | 0.007 | 0.010 *** | 0.003 |
| College | 0.039 | 0.048 | -0.565 *** | 0.068 | -24.251 *** | 3.180 | 0.218 *** | 0.007 | 0.006 ** | 0.002 |
| HH size | -0.004 * | 0.002 | 0.100 *** | 0.008 | 2.072 *** | 0.231 | -0.014 *** | 0.001 | 0.002 *** | 0.000 |
| Land | 0.003 | 0.003 | 0.354 *** | 0.083 | 7.220 *** | 1.764 | -0.026 *** | 0.006 | -0.001 *** | 0.000 |
| Hired workers | 0.015 ** | 0.007 | 0.118 *** | 0.032 | 3.817 *** | 0.921 | -0.016 *** | 0.003 | 0.000 | 0.000 |
| Slope | -0.001 | 0.006 | -0.015 * | 0.008 | -0.205 | 0.376 | 0.001 | 0.001 | 0.000 | 0.000 |
| Height | 0.001 *** | 0.000 | 0.001 | 0.001 | -0.009 | 0.023 | 0.000 ** | 0.000 | 0.000 | 0.000 |
| R_priority | -0.258 * | 0.144 | 0.571 | 0.360 | 11.259 | 10.747 | -0.091 *** | 0.023 | -0.022 *** | 0.008 |
| R_general | 0.242 | 0.160 | -1.308 ** | 0.622 | -32.464 * | 17.845 | 0.041 | 0.050 | 0.003 | 0.011 |
| Rice | -0.015 | 0.032 | -3.853 *** | 0.166 | -95.471 *** | 3.256 | 0.317 *** | 0.012 | 0.015 *** | 0.002 |
| Vegetable | 0.034 | 0.024 | -2.789 *** | 0.129 | -58.087 *** | 3.019 | 0.210 *** | 0.012 | 0.005 *** | 0.001 |
| Fruit | 0.170 *** | 0.044 | -2.124 *** | 0.179 | -61.675 *** | 6.121 | 0.218 *** | 0.016 | 0.010 ** | 0.004 |
| Other crop | -0.021 | 0.028 | -3.972 *** | 0.219 | -78.100 *** | 4.288 | 0.267 *** | 0.016 | 0.006 *** | 0.002 |
| Constant | 0.577 *** | 0.137 | -0.465 | 0.528 | 96.511 *** | 19.987 | 0.324 *** | 0.044 | 0.119 *** | 0.015 |
| F-test of IV | F = 20.42 | | | | | | | | | |

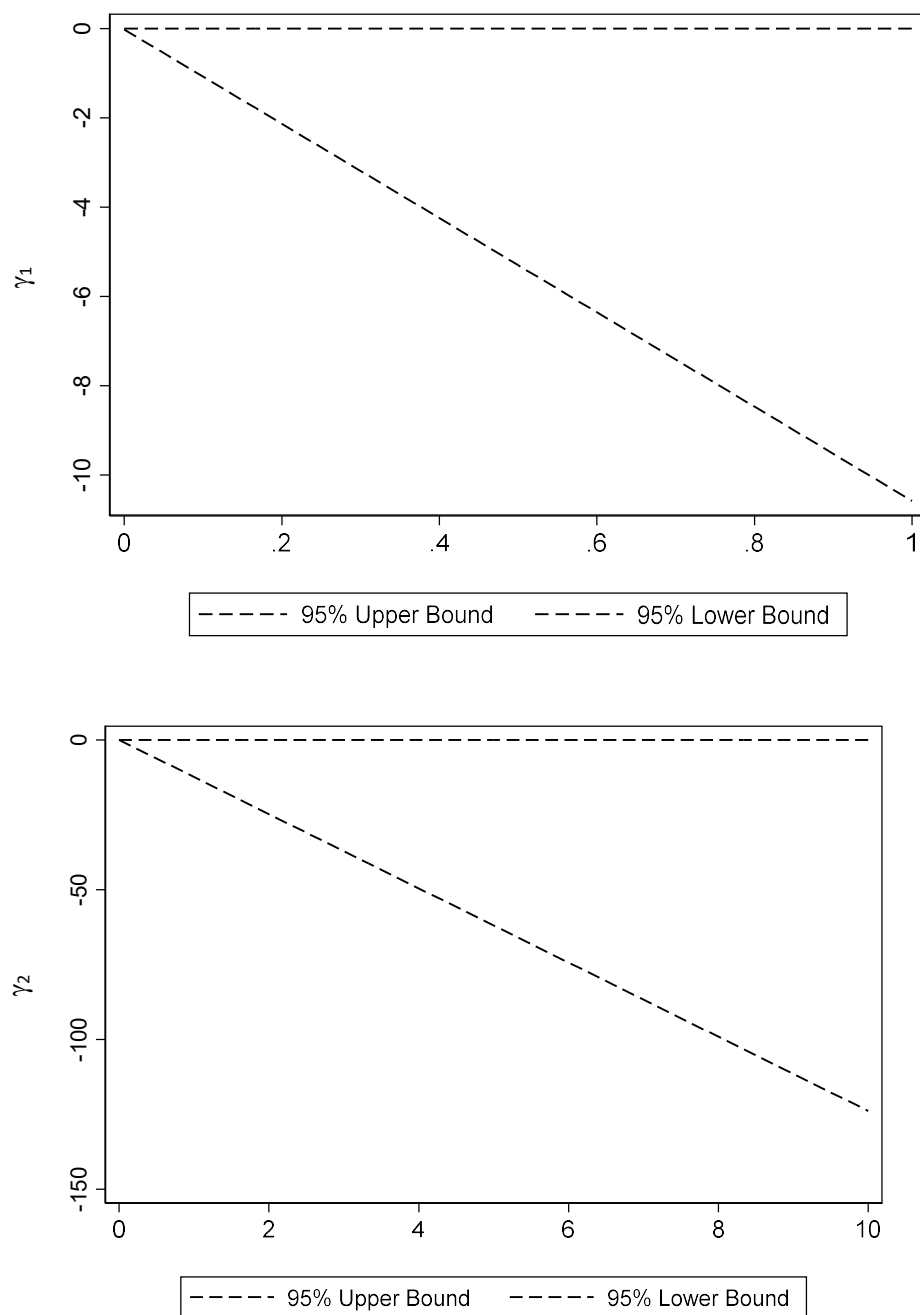
Note: N = 634,076. Standard errors are cluster-corrected at the township level. All models include county fixed effects and the set of control variables reported in appendix table A1. ***, **, * indicate statistical significance at the 1%, 5% and 10% level.

Table A5. Falsification test of the IV using the set of townships without any natural disasters.

| | Disaster payment elasticity | |
|-------------------------------------------|-----------------------------|-------|
| | IV Coefficient | S.E. |
| Any health care expenditure | -0.006 | 0.007 |
| Total health care expenditure among users | -0.005 | 0.004 |
| Log of farm income | 0.026 | 0.026 |

Note: Standard errors are cluster-corrected at the township level. Models of health care expenditure include year, month and township fixed-effects the control variables reported in table 2, and the model of farm income includes county fixed effects and the set of control variables reported in appendix table A1. ***, **, * indicate statistical significance at the 1%, 5% and 10% level.

Figure A1. Confidence intervals for disaster payment coefficient under violations of the IV exclusion restriction.



Note: Based on the sensitivity analysis proposed by Conley, Hansen and Rossi (2012).