[Taking advantage of water scarcity? Concentration of agricultural land and the politics behind water governance in Chile](https://review.frontiersin.org/Document/DownloadPDF?articleId=1143254&siteId=693&userId=1444742&roleId=16" \t "_blank)

**Supplementary material**

Table A1. Standard deviation of the WSD issuing (yes/no), by region-year

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Region | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
| 1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 2 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 3 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.707 | 0.707 | 0.000 | 0.000 | 0.000 |
| 4 | 0.522 | 0.000 | 0.505 | 0.518 | 0.333 | 0.302 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 5 | 0.316 | 0.000 | 0.405 | 0.000 | 0.000 | 0.000 | 0.389 | 0.500 | 0.577 | 0.506 | 0.302 | 0.000 |
| 6 | 0.000 | 0.000 | 0.000 | 0.378 | 0.000 | 0.000 | 0.000 | 0.447 | 0.000 | 0.000 | 0.000 | 0.000 |
| 7 | 0.507 | 0.000 | 0.000 | 0.516 | 0.000 | 0.000 | 0.500 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 8 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.452 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 9 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 10 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 11 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 13 | 0.516 | 0.000 | 0.000 | 0.447 | 0.548 | 0.000 | 0.000 | 0.000 | 0.000 | 0.548 | 0.548 | 0.000 |
| 14 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 15 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Source: own calculations based on CNR data.

Table A2. Standard deviation of the WSD issuing (number of decrees), by region-year

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Region | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
| 1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 2 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 3 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.414 | 0.707 | 0.000 | 0.000 | 0.000 |
| 4 | 0.688 | 0.000 | 0.505 | 0.756 | 0.333 | 0.603 | 0.405 | 0.000 | 0.000 | 0.000 | 0.422 | 0.000 |
| 5 | 0.568 | 0.000 | 0.405 | 0.522 | 0.483 | 0.000 | 0.888 | 0.500 | 0.577 | 0.870 | 0.647 | 0.316 |
| 6 | 0.000 | 0.000 | 0.000 | 0.378 | 0.000 | 0.000 | 0.000 | 0.447 | 0.000 | 0.000 | 0.000 | 0.000 |
| 7 | 0.507 | 0.000 | 0.000 | 0.629 | 0.000 | 0.000 | 0.500 | 0.000 | 0.000 | 0.512 | 0.000 | 0.000 |
| 8 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.452 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 9 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 10 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 11 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 13 | 0.516 | 0.000 | 0.000 | 0.447 | 0.548 | 0.000 | 0.000 | 0.000 | 0.000 | 0.548 | 0.548 | 0.500 |
| 14 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 15 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Source: own calculations based on CNR data.

Table A3. Standard deviation of the WSD issuing (number of days under declaration), by region-year

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Region | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
| 1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 2 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 3 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 231.224 | 155.564 | 0.000 | 0.000 | 0.000 |
| 4 | 96.132 | 0.000 | 18.667 | 134.005 | 95.000 | 91.056 | 40.018 | 0.000 | 0.000 | 0.000 | 77.581 | 0.000 |
| 5 | 66.580 | 0.000 | 14.967 | 113.826 | 85.148 | 47.444 | 126.825 | 130.551 | 106.233 | 146.151 | 100.863 | 71.421 |
| 6 | 0.000 | 0.000 | 0.000 | 69.168 | 0.000 | 0.000 | 0.000 | 81.840 | 0.000 | 0.000 | 0.000 | 0.000 |
| 7 | 92.629 | 0.000 | 0.000 | 97.474 | 0.000 | 0.000 | 90.500 | 0.000 | 0.000 | 13.833 | 80.042 | 0.000 |
| 8 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 81.860 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 9 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 10 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 11 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 13 | 93.984 | 0.000 | 0.000 | 80.946 | 99.686 | 0.000 | 0.000 | 0.000 | 0.000 | 36.697 | 163.221 | 46.693 |
| 14 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 15 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Source: own calculations based on CNR data.

**Table 1. Estimates of the association between the percentage of large exploitations and water scarcity declarations, Chile**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | No Controls | | | Socioeconomic controls | | | Full Model | | |
|  | Yes/No | Declarations | Days | Yes/No | Declarations | Days | Yes/No | Declarations | Days |
| Share of large exploitations (%) | 0.00449\*\*\* | 0.00723\*\*\* | 1.109\*\*\* | 0.00464\*\*\* | 0.00763\*\*\* | 1.162\*\*\* | 0.00414\*\*\* | 0.00694\*\*\* | 1.049\*\*\* |
|  | (0.000916) | (0.00147) | (0.230) | (0.000891) | (0.00141) | (0.224) | (0.000848) | (0.00135) | (0.213) |
| Mean agricultural income (logs) |  |  |  | -0.125 | -0.225 | -21.69 | -0.0728\*\* | -0.126\*\* | -19.18\*\* |
|  |  |  |  | (0.0966) | (0.162) | (24.82) | (0.0362) | (0.0621) | (9.084) |
| Mean non-agricultural income (logs) |  |  |  | -0.0973\*\* | -0.159\*\* | -24.58\*\* | -0.107 | -0.200 | -17.50 |
|  |  |  |  | (0.0394) | (0.0652) | (9.685) | (0.0898) | (0.152) | (23.18) |
| Age (mean) |  |  |  | -0.00128 | 0.00120 | 0.300 | -0.00230 | -6.09e-05 | 0.0896 |
|  |  |  |  | (0.00677) | (0.0103) | (1.593) | (0.00654) | (0.00985) | (1.525) |
| Schooling (mean) |  |  |  | 0.0765\*\*\* | 0.127\*\*\* | 18.03\*\*\* | 0.0592\*\* | 0.103\*\*\* | 14.08\*\* |
|  |  |  |  | (0.0267) | (0.0404) | (6.433) | (0.0249) | (0.0372) | (5.911) |
| Extreme Poverty (%) |  |  |  | 0.0263 | -0.130 | -16.32 | 0.0400 | -0.120 | -14.47 |
|  |  |  |  | (0.371) | (0.559) | (89.86) | (0.363) | (0.546) | (87.40) |
| Poverty (%) |  |  |  | 0.635\*\* | 0.815\* | 163.1\*\* | 0.514\* | 0.647 | 135.5\* |
|  |  |  |  | (0.321) | (0.478) | (80.63) | (0.310) | (0.467) | (78.50) |
| Women (%) |  |  |  | -0.676 | -0.536 | -67.23 | -0.766 | -0.646 | -85.58 |
|  |  |  |  | (0.607) | (1.021) | (164.6) | (0.602) | (1.011) | (162.2) |
| Unemployment (%) |  |  |  | 0.169 | 1.111 | 131.8 | 0.273 | 1.253 | 155.2 |
|  |  |  |  | (1.123) | (1.588) | (257.6) | (1.103) | (1.557) | (252.5) |
| Indigenous (%) |  |  |  | -0.690\*\*\* | -0.951\*\*\* | -150.7\*\*\* | -0.659\*\*\* | -0.911\*\*\* | -144.0\*\*\* |
|  |  |  |  | (0.100) | (0.157) | (23.92) | (0.0922) | (0.147) | (22.39) |
| Working in agriculture (%) |  |  |  | 1.042\*\* | 1.122\* | 212.8\*\* | 0.823\* | 0.823 | 163.5\* |
|  |  |  |  | (0.432) | (0.595) | (99.80) | (0.430) | (0.593) | (98.06) |
| Working in services (%) |  |  |  | 0.127 | -0.297 | -32.01 | -0.124 | -0.655 | -90.81 |
|  |  |  |  | (0.711) | (1.073) | (180.6) | (0.681) | (1.033) | (173.8) |
| Workin in manufacturing (%) |  |  |  | -2.110\* | -4.418\*\*\* | -662.5\*\* | -2.168\*\* | -4.496\*\*\* | -675.4\*\*\* |
|  |  |  |  | (1.081) | (1.526) | (256.7) | (1.069) | (1.491) | (251.5) |
| Employer |  |  |  | -0.0992 | 0.667 | -26.92 | 0.198 | 1.105 | 44.78 |
|  |  |  |  | (1.773) | (2.789) | (435.2) | (1.625) | (2.572) | (397.2) |
| Self-employed |  |  |  | -0.332 | -0.0480 | -38.52 | -0.348 | -0.0717 | -42.42 |
|  |  |  |  | (0.466) | (0.755) | (113.7) | (0.450) | (0.731) | (109.5) |
| Standardized Water flow Index |  |  |  |  |  |  | -0.00618\*\*\* | -0.00914\*\*\* | -1.496\*\*\* |
|  |  |  |  |  |  |  | (0.00188) | (0.00271) | (0.440) |
| Standardized Precipitation Index |  |  |  |  |  |  | -0.00626\*\*\* | -0.00805\*\* | -1.336\*\*\* |
|  |  |  |  |  |  |  | (0.00214) | (0.00317) | (0.503) |
| Constant | -0.112\* | -0.302\*\*\* | -42.30\*\* | 2.381\*\* | 3.648\*\* | 401.3 | 2.203\*\* | 3.404\*\* | 361.1 |
|  | (0.0678) | (0.106) | (16.82) | (1.002) | (1.704) | (261.9) | (0.937) | (1.613) | (248.5) |
|  |  |  |  |  |  |  |  |  |  |
| Observations | 1,244 | 1,244 | 1,244 | 1,244 | 1,244 | 1,244 | 1,244 | 1,244 | 1,244 |
| R-squared | 0.120 | 0.138 | 0.131 | 0.298 | 0.296 | 0.283 | 0.323 | 0.317 | 0.306 |

Note: all regressions include year dummies. Clustered standard errors at the municipality level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 2. Estimates of the association between the percentage of large exploitations and water scarcity declarations, Coquimbo-Maule area**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | No Controls | | | Socioeconomic controls | | | Full Model | | |
|  | Yes/No | Declarations | Days | Yes/No | Declarations | Days | Yes/No | Declarations | Days |
| Share of large exploitations (%) | 0.00601\*\* | 0.0140\*\*\* | 1.959\*\*\* | 0.00516\* | 0.0104\*\*\* | 1.517\*\* | 0.00553\*\* | 0.0108\*\*\* | 1.573\*\* |
|  | (0.00243) | (0.00352) | (0.576) | (0.00261) | (0.00378) | (0.635) | (0.00264) | (0.00381) | (0.642) |
| Mean agricultural income (logs) |  |  |  | -0.312 | -0.449 | -46.44 | -0.0724 | -0.320 | -38.85 |
|  |  |  |  | (0.248) | (0.410) | (68.61) | (0.130) | (0.222) | (31.78) |
| Mean non-agricultural income (logs) |  |  |  | -0.107 | -0.354 | -44.69 | -0.337 | -0.481 | -49.78 |
|  |  |  |  | (0.131) | (0.216) | (31.50) | (0.243) | (0.411) | (68.25) |
| Age (mean) |  |  |  | -0.00349 | -0.00516 | 0.320 | -0.00641 | -0.00825 | -0.154 |
|  |  |  |  | (0.0153) | (0.0220) | (3.493) | (0.0154) | (0.0217) | (3.467) |
| Schooling (mean) |  |  |  | 0.0669 | 0.0810 | 15.71 | 0.0675 | 0.0852 | 15.34 |
|  |  |  |  | (0.0713) | (0.104) | (17.43) | (0.0742) | (0.107) | (17.58) |
| Extreme Poverty (%) |  |  |  | -1.470 | -3.207\*\* | -481.9\*\* | -1.470 | -3.192\*\* | -484.0\*\* |
|  |  |  |  | (0.889) | (1.277) | (213.7) | (0.905) | (1.304) | (212.4) |
| Poverty (%) |  |  |  | 0.814 | 0.482 | 189.6 | 0.779 | 0.443 | 184.1 |
|  |  |  |  | (0.544) | (0.822) | (135.8) | (0.533) | (0.803) | (134.5) |
| Women (%) |  |  |  | -2.429\*\* | -2.175 | -308.0 | -2.815\*\* | -2.595 | -369.0 |
|  |  |  |  | (1.162) | (2.050) | (347.3) | (1.136) | (2.022) | (332.1) |
| Unemployment (%) |  |  |  | 0.125 | 1.441 | 85.05 | 0.0909 | 1.449 | 73.77 |
|  |  |  |  | (1.998) | (2.804) | (474.8) | (1.992) | (2.803) | (475.0) |
| Indigenous (%) |  |  |  | 0.608 | 2.081 | 262.3 | 0.864 | 2.390 | 298.8 |
|  |  |  |  | (1.382) | (2.046) | (365.6) | (1.425) | (2.067) | (374.3) |
| Working in agriculture (%) |  |  |  | -0.697 | -1.628 | -151.2 | -0.873 | -1.786 | -183.3 |
|  |  |  |  | (0.759) | (1.113) | (192.2) | (0.783) | (1.125) | (194.5) |
| Working in services (%) |  |  |  | -1.180 | -2.150 | -359.4 | -1.496 | -2.431 | -417.9 |
|  |  |  |  | (1.628) | (2.523) | (414.6) | (1.571) | (2.380) | (390.6) |
| Workin in manufacturing (%) |  |  |  | -2.286 | -6.667\*\* | -931.3 | -1.676 | -6.058\* | -827.2 |
|  |  |  |  | (2.241) | (3.308) | (558.2) | (2.292) | (3.388) | (571.4) |
| Employer |  |  |  | 2.138 | 7.078 | 530.0 | 2.470 | 7.424 | 584.6 |
|  |  |  |  | (4.474) | (7.298) | (1,155) | (4.454) | (7.184) | (1,146) |
| Self-employed |  |  |  | 0.0841 | 1.832 | 252.0 | 0.140 | 1.895 | 260.5 |
|  |  |  |  | (1.207) | (2.059) | (307.5) | (1.197) | (2.023) | (301.6) |
| Standardized Water flow Index |  |  |  |  |  |  | 0.00173 | 0.00349 | 0.0658 |
|  |  |  |  |  |  |  | (0.00494) | (0.00729) | (1.132) |
| Standardized Precipitation Index |  |  |  |  |  |  | -0.0104\* | -0.0106 | -1.731 |
|  |  |  |  |  |  |  | (0.00607) | (0.0102) | (1.677) |
| Constant | -0.0361 | -0.644\*\* | -77.46 | 6.214\*\* | 10.63\* | 1,147 | 6.445\*\* | 10.92\*\* | 1,177 |
|  | (0.208) | (0.290) | (48.55) | (2.999) | (5.472) | (958.3) | (2.793) | (5.332) | (927.5) |
|  |  |  |  |  |  |  |  |  |  |
| Observations | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 443 |
| R-squared | 0.302 | 0.353 | 0.347 | 0.346 | 0.415 | 0.392 | 0.356 | 0.420 | 0.397 |

Note: all regressions include year dummies. Clustered standard errors at the municipality level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 3. Estimates of the association between the percentage of large exploitations and water scarcity declarations by region, Coquimbo-Maule area**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | No Controls | | | Socioeconomic controls | | | Full Model | | |
|  | Yes/No | Declarations | Days | Yes/No | Declarations | Days | Yes/No | Declarations | Days |
| Share \* Coquimbo | 0.00397\*\*\* | 0.00934\*\*\* | 1.349\*\*\* | 0.00299\* | 0.00736\*\*\* | 1.004\*\* | 0.00338\*\* | 0.00779\*\*\* | 1.063\*\*\* |
|  | (0.00123) | (0.00180) | (0.296) | (0.00149) | (0.00234) | (0.394) | (0.00144) | (0.00232) | (0.394) |
| Share \* Valparaiso | 0.00671\*\*\* | 0.0108\*\*\* | 1.772\*\*\* | 0.00633\*\*\* | 0.00993\*\*\* | 1.608\*\*\* | 0.00675\*\*\* | 0.0104\*\*\* | 1.669\*\*\* |
|  | (0.00118) | (0.00190) | (0.340) | (0.00136) | (0.00218) | (0.382) | (0.00136) | (0.00218) | (0.385) |
| Share \* O'Higgins | -0.00134 | -0.00101 | -0.167 | -0.00187 | -0.00205 | -0.391 | -0.00146 | -0.00159 | -0.330 |
|  | (0.00129) | (0.00179) | (0.311) | (0.00169) | (0.00247) | (0.424) | (0.00157) | (0.00239) | (0.412) |
| Share \* Maule | 0.00404\*\*\* | 0.00510\*\*\* | 1.022\*\*\* | 0.00380\*\* | 0.00493\*\* | 0.940\*\* | 0.00421\*\*\* | 0.00539\*\* | 1.003\*\* |
|  | (0.00136) | (0.00185) | (0.331) | (0.00150) | (0.00216) | (0.376) | (0.00150) | (0.00222) | (0.386) |
| Mean agricultural income (logs) |  |  |  | 0.00694 | 0.0618 | 33.81 | -0.0931 | -0.268 | -38.26 |
|  |  |  |  | (0.175) | (0.248) | (42.22) | (0.140) | (0.244) | (35.26) |
| Mean non-agricultural income (logs) |  |  |  | -0.127 | -0.302 | -44.09 | -0.0205 | 0.0287 | 30.02 |
|  |  |  |  | (0.137) | (0.233) | (33.86) | (0.178) | (0.255) | (42.94) |
| Age (mean) |  |  |  | 0.00578 | 0.00771 | 2.638 | 0.00275 | 0.00451 | 2.150 |
|  |  |  |  | (0.0104) | (0.0148) | (2.217) | (0.0107) | (0.0149) | (2.231) |
| Schooling (mean) |  |  |  | 0.0628 | 0.0618 | 14.21 | 0.0646 | 0.0668 | 14.06 |
|  |  |  |  | (0.0458) | (0.0724) | (11.52) | (0.0481) | (0.0761) | (11.81) |
| Extreme Poverty (%) |  |  |  | -0.219 | -1.119 | -172.8 | -0.210 | -1.091 | -174.2 |
|  |  |  |  | (0.716) | (1.109) | (189.2) | (0.734) | (1.120) | (187.5) |
| Poverty (%) |  |  |  | 0.377 | 0.0468 | 92.80 | 0.339 | 0.00770 | 86.72 |
|  |  |  |  | (0.510) | (0.784) | (132.2) | (0.496) | (0.764) | (130.3) |
| Women (%) |  |  |  | -1.860\* | -1.518 | -182.8 | -2.261\*\* | -1.947 | -246.5 |
|  |  |  |  | (0.930) | (1.555) | (254.8) | (0.920) | (1.599) | (253.5) |
| Unemployment (%) |  |  |  | -0.338 | 0.817 | -11.23 | -0.362 | 0.826 | -20.31 |
|  |  |  |  | (1.701) | (2.580) | (433.6) | (1.635) | (2.552) | (428.7) |
| Indigenous (%) |  |  |  | 0.547 | 1.143 | 174.6 | 0.833 | 1.480 | 215.5 |
|  |  |  |  | (1.243) | (1.924) | (322.3) | (1.291) | (1.949) | (332.5) |
| Working in agriculture (%) |  |  |  | -0.459 | -0.856 | -69.01 | -0.632 | -1.010 | -101.1 |
|  |  |  |  | (0.630) | (1.023) | (170.4) | (0.653) | (1.024) | (170.5) |
| Working in services (%) |  |  |  | -2.469\* | -3.602\* | -640.8\* | -2.782\*\* | -3.884\* | -698.7\*\* |
|  |  |  |  | (1.231) | (2.028) | (321.9) | (1.227) | (1.995) | (314.2) |
| Workin in manufacturing (%) |  |  |  | -1.875 | -3.524 | -650.5\* | -1.272 | -2.927 | -547.3 |
|  |  |  |  | (1.657) | (2.345) | (363.9) | (1.664) | (2.393) | (364.5) |
| Employer |  |  |  | 4.268 | 8.344 | 898.9 | 4.629 | 8.725 | 957.1 |
|  |  |  |  | (3.846) | (6.824) | (1,039) | (3.768) | (6.608) | (1,007) |
| Self-employed |  |  |  | 0.237 | 1.057 | 199.9 | 0.308 | 1.141 | 209.9 |
|  |  |  |  | (1.177) | (1.982) | (314.3) | (1.124) | (1.943) | (305.4) |
| Standardized Water flow Index |  |  |  |  |  |  | 0.00237 | 0.00391 | 0.168 |
|  |  |  |  |  |  |  | (0.00384) | (0.00524) | (0.830) |
| Standardized Precipitation Index |  |  |  |  |  |  | -0.0106\*\* | -0.0107 | -1.772 |
|  |  |  |  |  |  |  | (0.00397) | (0.00661) | (1.096) |
| Constant | 0.138 | -0.0463 | -8.186 | 2.118 | 3.345 | 64.23 | 2.374 | 3.652 | 99.89 |
|  | (0.126) | (0.159) | (28.09) | (1.883) | (3.359) | (633.2) | (1.838) | (3.299) | (616.7) |
|  |  |  |  |  |  |  |  |  |  |
| Observations | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 443 |
| R-squared | 0.468 | 0.506 | 0.488 | 0.501 | 0.534 | 0.519 | 0.512 | 0.539 | 0.524 |

Note: all regressions include year dummies. Clustered standard errors at the municipality level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 4. Estimates of the association between the percentage of large exploitations and water scarcity declarations, Coquimbo-Maule area. Different definitions of ‘large exploitations’**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | > 100 ha | | | > 500 ha | | | > 2000 ha | | |
|  | Yes/No | Declarations | Days | Yes/No | Declarations | Days | Yes/No | Declarations | Days |
| Share of large exploitations (%) | 0.00553\*\* | 0.0108\*\*\* | 1.573\*\* | 0.00405\*\* | 0.00752\*\*\* | 1.100\*\*\* | 0.00233 | 0.00470\*\* | 0.669\* |
|  | (0.00264) | (0.00381) | (0.642) | (0.00163) | (0.00243) | (0.409) | (0.00144) | (0.00216) | (0.358) |
| Mean agricultural income (logs) | -0.0724 | -0.320 | -38.85 | -0.0610 | -0.301 | -36.03 | -0.0684 | -0.311 | -37.63 |
|  | (0.130) | (0.222) | (31.78) | (0.128) | (0.219) | (31.29) | (0.128) | (0.219) | (31.39) |
| Mean non-agricultural income (logs) | -0.337 | -0.481 | -49.78 | -0.371 | -0.538 | -58.11 | -0.368 | -0.550 | -59.07 |
|  | (0.243) | (0.411) | (68.25) | (0.232) | (0.396) | (66.38) | (0.234) | (0.400) | (67.25) |
| Age (mean) | -0.00641 | -0.00825 | -0.154 | -0.00386 | -0.00330 | 0.568 | -0.00206 | 0.000358 | 1.087 |
|  | (0.0154) | (0.0217) | (3.467) | (0.0155) | (0.0212) | (3.387) | (0.0157) | (0.0218) | (3.449) |
| Schooling (mean) | 0.0675 | 0.0852 | 15.34 | 0.0620 | 0.0734 | 13.63 | 0.0641 | 0.0796 | 14.42 |
|  | (0.0742) | (0.107) | (17.58) | (0.0738) | (0.106) | (17.41) | (0.0756) | (0.109) | (17.89) |
| Extreme Poverty (%) | -1.470 | -3.192\*\* | -484.0\*\* | -1.695\* | -3.624\*\*\* | -546.9\*\*\* | -1.696\* | -3.638\*\*\* | -548.4\*\*\* |
|  | (0.905) | (1.304) | (212.4) | (0.853) | (1.198) | (196.0) | (0.870) | (1.204) | (197.6) |
| Poverty (%) | 0.779 | 0.443 | 184.1 | 0.876 | 0.626 | 210.7 | 0.885 | 0.654 | 214.3 |
|  | (0.533) | (0.803) | (134.5) | (0.555) | (0.837) | (139.2) | (0.576) | (0.873) | (144.1) |
| Women (%) | -2.815\*\* | -2.595 | -369.0 | -2.677\*\* | -2.323 | -329.3 | -2.589\*\* | -2.152 | -304.8 |
|  | (1.136) | (2.022) | (332.1) | (1.111) | (1.951) | (321.4) | (1.113) | (1.946) | (321.5) |
| Unemployment (%) | 0.0909 | 1.449 | 73.77 | 0.196 | 1.624 | 99.54 | 0.0586 | 1.399 | 65.09 |
|  | (1.992) | (2.803) | (475.0) | (2.019) | (2.867) | (487.5) | (2.032) | (2.889) | (488.4) |
| Indigenous (%) | 0.864 | 2.390 | 298.8 | 0.692 | 2.105 | 256.8 | 0.824 | 2.287 | 286.5 |
|  | (1.425) | (2.067) | (374.3) | (1.423) | (2.058) | (377.0) | (1.433) | (2.098) | (380.7) |
| Working in agriculture (%) | -0.873 | -1.786 | -183.3 | -0.895 | -1.869 | -195.0 | -1.078 | -2.171\* | -241.0 |
|  | (0.783) | (1.125) | (194.5) | (0.792) | (1.142) | (194.1) | (0.788) | (1.138) | (192.9) |
| Working in services (%) | -1.496 | -2.431 | -417.9 | -1.364 | -2.202 | -384.3 | -1.451 | -2.328 | -404.4 |
|  | (1.571) | (2.380) | (390.6) | (1.496) | (2.241) | (372.5) | (1.494) | (2.246) | (371.2) |
| Workin in manufacturing (%) | -1.676 | -6.058\* | -827.2 | -1.174 | -5.300 | -714.4 | -1.957 | -6.509\* | -903.3 |
|  | (2.292) | (3.388) | (571.4) | (2.315) | (3.432) | (579.0) | (2.558) | (3.753) | (632.3) |
| Employer | 2.470 | 7.424 | 584.6 | 2.081 | 6.832 | 496.7 | 2.697 | 7.792 | 646.0 |
|  | (4.454) | (7.184) | (1,146) | (4.403) | (7.114) | (1,128) | (4.373) | (7.135) | (1,134) |
| Self-employed | 0.140 | 1.895 | 260.5 | -0.0356 | 1.594 | 216.3 | 0.0752 | 1.747 | 241.2 |
|  | (1.197) | (2.023) | (301.6) | (1.172) | (2.006) | (300.1) | (1.199) | (2.063) | (307.5) |
| Standardized Water flow Index | 0.00173 | 0.00349 | 0.0658 | 0.00219 | 0.00423 | 0.176 | 0.00231 | 0.00473 | 0.236 |
|  | (0.00494) | (0.00729) | (1.132) | (0.00501) | (0.00743) | (1.134) | (0.00498) | (0.00736) | (1.126) |
| Standardized Precipitation Index | -0.0104\* | -0.0106 | -1.731 | -0.0112\* | -0.0121 | -1.948 | -0.0110\* | -0.0119 | -1.907 |
|  | (0.00607) | (0.0102) | (1.677) | (0.00594) | (0.0101) | (1.657) | (0.00616) | (0.0103) | (1.693) |
| Constant | 6.445\*\* | 10.92\*\* | 1,177 | 6.788\*\* | 11.55\*\* | 1,269 | 6.915\*\* | 11.87\*\* | 1,312 |
|  | (2.793) | (5.332) | (927.5) | (2.665) | (5.144) | (894.9) | (2.687) | (5.181) | (900.0) |
|  |  |  |  |  |  |  |  |  |  |
| Observations | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 443 |
| R-squared | 0.356 | 0.420 | 0.397 | 0.364 | 0.426 | 0.402 | 0.350 | 0.412 | 0.390 |

Note: all regressions include year dummies. Clustered standard errors at the municipality level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 5. Estimates of the association between the percentage of large exploitations and water scarcity declarations by region, Coquimbo-Maule area. Different definitions for ‘large exploitations’**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | > 100 ha | | | > 500 ha | | | > 2000 ha | | |
|  | Yes/No | Declarations | Days | Yes/No | Declarations | Days | Yes/No | Declarations | Days |
| Share \* Coquimbo | 0.00338\*\* | 0.00779\*\*\* | 1.063\*\*\* | 0.00266\*\* | 0.00663\*\*\* | 0.851\*\*\* | 0.00146 | 0.00514\*\* | 0.596\* |
|  | (0.00144) | (0.00232) | (0.394) | (0.00112) | (0.00186) | (0.312) | (0.00128) | (0.00203) | (0.338) |
| Share \* Valparaiso | 0.00675\*\*\* | 0.0104\*\*\* | 1.669\*\*\* | 0.00688\*\*\* | 0.0105\*\*\* | 1.650\*\*\* | 0.00594\*\*\* | 0.00930\*\*\* | 1.443\*\*\* |
|  | (0.00136) | (0.00218) | (0.385) | (0.00109) | (0.00175) | (0.317) | (0.00149) | (0.00229) | (0.396) |
| Share \* O'Higgins | -0.00146 | -0.00159 | -0.330 | -0.00260\*\* | -0.00336\* | -0.657\* | -0.00422\*\* | -0.00557\*\* | -1.011\*\* |
|  | (0.00157) | (0.00239) | (0.412) | (0.00124) | (0.00193) | (0.337) | (0.00166) | (0.00240) | (0.409) |
| Share \* Maule | 0.00421\*\*\* | 0.00539\*\* | 1.003\*\* | 0.00394\*\*\* | 0.00459\*\* | 0.882\*\*\* | 0.00284\*\* | 0.00299 | 0.639\* |
|  | (0.00150) | (0.00222) | (0.386) | (0.00121) | (0.00181) | (0.315) | (0.00127) | (0.00186) | (0.325) |
| Mean agricultural income (logs) | -0.0931 | -0.268 | -38.26 | -0.0538 | -0.213 | -29.05 | -0.0317 | -0.183 | -23.72 |
|  | (0.140) | (0.244) | (35.26) | (0.134) | (0.238) | (34.56) | (0.130) | (0.232) | (33.89) |
| Mean non-agricultural income (logs) | -0.0205 | 0.0287 | 30.02 | -0.0825 | -0.0604 | 15.78 | -0.173 | -0.204 | -7.420 |
|  | (0.178) | (0.255) | (42.94) | (0.163) | (0.232) | (40.06) | (0.158) | (0.237) | (41.20) |
| Age (mean) | 0.00275 | 0.00451 | 2.150 | 0.00450 | 0.00675 | 2.565 | 0.00653 | 0.00993 | 3.022 |
|  | (0.0107) | (0.0149) | (2.231) | (0.0109) | (0.0152) | (2.301) | (0.0115) | (0.0165) | (2.547) |
| Schooling (mean) | 0.0646 | 0.0668 | 14.06 | 0.0739 | 0.0798 | 16.30 | 0.0977\* | 0.119 | 22.32\* |
|  | (0.0481) | (0.0761) | (11.81) | (0.0469) | (0.0752) | (11.66) | (0.0519) | (0.0823) | (12.83) |
| Extreme Poverty (%) | -0.210 | -1.091 | -174.2 | -0.128 | -0.973 | -156.6 | -0.112 | -0.953 | -154.7 |
|  | (0.734) | (1.120) | (187.5) | (0.727) | (1.110) | (187.0) | (0.754) | (1.122) | (189.7) |
| Poverty (%) | 0.339 | 0.00770 | 86.72 | 0.547 | 0.288 | 136.0 | 0.637 | 0.387 | 158.1 |
|  | (0.496) | (0.764) | (130.3) | (0.511) | (0.781) | (131.4) | (0.551) | (0.810) | (134.4) |
| Women (%) | -2.261\*\* | -1.947 | -246.5 | -2.429\*\* | -2.164 | -287.2 | -2.717\*\*\* | -2.548 | -356.2 |
|  | (0.920) | (1.599) | (253.5) | (0.929) | (1.630) | (266.2) | (0.967) | (1.685) | (286.9) |
| Unemployment (%) | -0.362 | 0.826 | -20.31 | -0.328 | 0.866 | -14.59 | -0.262 | 0.982 | 2.402 |
|  | (1.635) | (2.552) | (428.7) | (1.703) | (2.673) | (447.5) | (1.770) | (2.749) | (457.9) |
| Indigenous (%) | 0.833 | 1.480 | 215.5 | 0.788 | 1.520 | 210.4 | 0.838 | 1.662 | 224.5 |
|  | (1.291) | (1.949) | (332.5) | (1.174) | (1.779) | (311.8) | (1.096) | (1.721) | (308.4) |
| Working in agriculture (%) | -0.632 | -1.010 | -101.1 | -0.542 | -0.898 | -84.17 | -0.639 | -1.030 | -106.0 |
|  | (0.653) | (1.024) | (170.5) | (0.664) | (1.024) | (169.1) | (0.677) | (1.024) | (169.8) |
| Working in services (%) | -2.782\*\* | -3.884\* | -698.7\*\* | -2.526\*\* | -3.443\* | -634.2\*\* | -2.384\*\* | -3.191\* | -595.6\*\* |
|  | (1.227) | (1.995) | (314.2) | (1.095) | (1.787) | (283.6) | (1.095) | (1.758) | (282.6) |
| Workin in manufacturing (%) | -1.272 | -2.927 | -547.3 | -1.367 | -3.112 | -593.9 | -2.072 | -4.229 | -765.3 |
|  | (1.664) | (2.393) | (364.5) | (1.767) | (2.547) | (386.1) | (2.034) | (2.977) | (472.3) |
| Employer | 4.629 | 8.725 | 957.1 | 3.886 | 7.816 | 793.2 | 3.520 | 7.326 | 698.0 |
|  | (3.768) | (6.608) | (1,007) | (3.586) | (6.448) | (984.2) | (3.690) | (6.506) | (1,017) |
| Self-employed | 0.308 | 1.141 | 209.9 | 0.621 | 1.606 | 287.8 | 0.858 | 2.005 | 350.6 |
|  | (1.124) | (1.943) | (305.4) | (1.076) | (1.893) | (295.6) | (1.067) | (1.878) | (291.0) |
| Standardized Water flow Index | 0.00237 | 0.00391 | 0.168 | 0.00325 | 0.00529 | 0.372 | 0.00407 | 0.00681 | 0.595 |
|  | (0.00384) | (0.00524) | (0.830) | (0.00401) | (0.00548) | (0.874) | (0.00407) | (0.00565) | (0.911) |
| Standardized Precipitation Index | -0.0106\*\* | -0.0107 | -1.772 | -0.00997\*\* | -0.00990 | -1.596 | -0.00876\*\* | -0.00824 | -1.319 |
|  | (0.00397) | (0.00661) | (1.096) | (0.00394) | (0.00661) | (1.085) | (0.00417) | (0.00676) | (1.113) |
| Constant | 2.374 | 3.652 | 99.89 | 2.594 | 3.999 | 152.1 | 3.412\* | 5.284 | 362.5 |
|  | (1.838) | (3.299) | (616.7) | (1.802) | (3.178) | (593.3) | (1.813) | (3.261) | (606.8) |
|  |  |  |  |  |  |  |  |  |  |
| Observations | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 443 |
| R-squared | 0.512 | 0.539 | 0.524 | 0.516 | 0.540 | 0.524 | 0.483 | 0.514 | 0.496 |

Note: all regressions include year dummies. Clustered standard errors at the municipality level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1