**Appendix**

Appendix Table A.1: Variable description and data sources

|  |  |  |  |
| --- | --- | --- | --- |
| Variables | Units | Groups | Source |
| Farms with agritourism | % | Dependent variables | Census of Agriculture |
| Farms with direct sales to consumers | % | Dependent variables | Census of Agriculture |
| Log(average operated area per farm) | log(100 acres) | Farm characteristics | Census of Agriculture |
| Average farm proprietor income, excluding subsidies | $1,000 | Farm characteristics | BEA |
| Log (total sale), deflated to 2012 | Log ($1) | Farm characteristics | Census of Agriculture |
| Farms with land <= 50 acres | % | Farm characteristics | Census of Agriculture |
| Farms with sales <= $10,000 | % | Farm characteristics | Census of Agriculture |
| Farms with acres > 2,000 acres | % | Farm characteristics | Census of Agriculture |
| Farms with sales > $500,000 | % | Farm characteristics | Census of Agriculture |
| Farm related incomes, deflated to 2012 | $1,000 | Farm characteristics | Census of Agriculture |
| Log (value of prime farmland) | Log ($/acre) | Farm characteristics | Census of Agriculture |
| farms with female principal operators | % | Farmer characteristic | Census of Agriculture |
| Female labor participation rate | % | Farmer characteristic | Census of Agriculture |
| Female with at least Bachelor's degree | % | Farmer characteristic | Census of Agriculture |
| Average age of principal operators | Years | Farmer characteristic | Census of Agriculture |
| Principal operators on present farms for 10+ years | – | Farmer characteristic | Census of Agriculture |
| Average years when principal operators worked on the present farms | Years | Farmer characteristic | Census of Agriculture |
| Log (population density) | – | Local context | Census Bureau |
| Log(personal income per capita, deflated to 2012) | log($1) | Local context | BEA |
| Social capital, standardized | Index | Local context | NERCRD |
| Percentage of Democrat candidates won in presidential elections | % | Local context | MIT Datalab |
| Poverty rate | % | Local context | ACS |
| Daycare per 10,000 persons | Number | Local context | CBP |
| Average nonfarm wage | $1,000 | Local context | BEA |
| Log(average nonfarm wage, deflated to 2012) | log($1,000) | Local context | BEA |
| Farms specialized in poultry and eggs | % | Type of farming | Census of Agriculture |
| Farms specialized in sheep and goat | % | Type of farming | Census of Agriculture |
| Farms specialized in oilseed and grain | % | Type of farming | Census of Agriculture |
| Farms specialized in vegetable and melon | % | Type of farming | Census of Agriculture |
| Farms specialized in aquaculture and other animal production | % | Type of farming | Census of Agriculture |

**Supplemental Material**

Table S1: Estimated coefficients in SDM models

| **Variable** | **Model 1** | | **Model 2** | | **Model 3** | | **Model 4** | | **Model 5** | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **AG** | **DS** | **AG** | **DS** | **AG** | **DS** | **AG** | **DS** | **AG** | **DS** |
| Lag of farms with agritourism | -0.214\*\*\* | 0.122\*\*\* | -0.244\*\*\* | 0.131\*\*\* | -0.281\*\*\* | 0.091\*\*\* | -0.271\*\*\* | 0.118\*\*\* | -0.224\*\*\* | 0.117\*\*\* |
|  | (0.010) | (0.018) | (0.010) | (0.018) | (0.010) | (0.017) | (0.010) | (0.017) | (0.011) | (0.018) |
| Lag of farms with direct sales to consumers | 0.023\*\*\* | -0.191\*\*\* | 0.023\*\*\* | -0.207\*\*\* | 0.083\*\*\* | -0.253\*\*\* | 0.086\*\*\* | -0.227\*\*\* | 0.014\* | -0.225\*\*\* |
|  | (0.007) | (0.012) | (0.007) | (0.012) | (0.006) | (0.011) | (0.007) | (0.011) | (0.007) | (0.013) |
| Lag of log(average operated area per farm) | -0.235\* | -0.135 |  |  |  |  |  |  | -0.171 | 0.038 |
|  | (0.141) | (0.238) |  |  |  |  |  |  | (0.143) | (0.242) |
| Lag of average farm proprietor income, excluding subsidies | 0.001\*\*\* | 0.002\*\*\* |  |  |  |  |  |  | 0.001\*\* | 0.001\* |
|  | (0.000) | (0.001) |  |  |  |  |  |  | (0.000) | (0.001) |
| Lag of log (total sale), deflated to 2012 | -0.345\*\*\* | -0.888\*\*\* |  |  |  |  |  |  | -0.362\*\*\* | -0.914\*\*\* |
|  | (0.068) | (0.115) |  |  |  |  |  |  | (0.068) | (0.115) |
| Lag of farms with land <= 50 acres | 0.002 | 0.005 |  |  |  |  |  |  | -0.006 | -0.009 |
|  | (0.004) | (0.007) |  |  |  |  |  |  | (0.004) | (0.007) |
| Lag of farms with sales <= $10,000 | -0.003 | -0.010 |  |  |  |  |  |  | -0.005 | -0.019\*\*\* |
|  | (0.004) | (0.006) |  |  |  |  |  |  | (0.004) | (0.007) |
| Lag of farms with acres > 2,000 acres | -0.014 | 0.005 |  |  |  |  |  |  | -0.008 | 0.014 |
|  | (0.011) | (0.018) |  |  |  |  |  |  | (0.011) | (0.018) |
| Lag of farms with sales > $500,000 | -0.011\* | 0.001 |  |  |  |  |  |  | -0.009 | 0.004 |
|  | (0.006) | (0.010) |  |  |  |  |  |  | (0.006) | (0.010) |
| Lag of log (value of prime farmland) | -0.507\*\*\* | -0.608\*\*\* |  |  |  |  |  |  | -0.441\*\*\* | -0.429\*\*\* |
|  | (0.076) | (0.129) |  |  |  |  |  |  | (0.081) | (0.136) |
| Lag of farms with female principal operators |  |  | 0.018\*\*\* | -0.006 |  |  |  |  | 0.014\*\*\* | -0.028\*\*\* |
|  |  |  | (0.005) | (0.008) |  |  |  |  | (0.005) | (0.008) |
| Lag of female labor participation rate |  |  | -0.014\* | -0.017 |  |  |  |  | 0.015\*\* | -0.012 |
|  |  |  | (0.008) | (0.013) |  |  |  |  | (0.007) | (0.011) |
| Lag of female with at least bachelor's degree |  |  | 0.064\*\*\* | 0.067\*\*\* |  |  |  |  | 0.039\*\*\* | 0.034\*\* |
|  |  |  | (0.010) | (0.017) |  |  |  |  | (0.009) | (0.015) |
| Lag of average age of principal operators |  |  | 0.031\*\* | 0.021 |  |  |  |  | -0.002 | 0.016 |
|  |  |  | (0.014) | (0.025) |  |  |  |  | (0.014) | (0.024) |
| Lag of principal operators on present farms for 10+ years |  |  | -0.001 | -0.009 |  |  |  |  | -0.007\* | -0.037\*\*\* |
|  |  |  | (0.004) | (0.007) |  |  |  |  | (0.004) | (0.006) |
| Lag of log (population density) |  |  |  |  | 0.720\*\* | 1.265\*\* |  |  | 0.434\* | 0.979\*\* |
|  |  |  |  |  | (0.307) | (0.517) |  |  | (0.263) | (0.441) |
| Lag of log(personal income per capita, deflated to 2012) |  |  |  |  | -0.488\*\* | -0.868\*\* |  |  | 0.376\* | -0.186 |
|  |  |  |  |  | (0.233) | (0.398) |  |  | (0.202) | (0.340) |
| Lag of social capital, standardized |  |  |  |  | 0.048 | 0.102 |  |  | 0.024 | 0.112 |
|  |  |  |  |  | (0.052) | (0.090) |  |  | (0.045) | (0.076) |
| Lag of percentage of Democrat candidates votes in presidential elections |  |  |  |  | -0.000 | 0.034\*\*\* |  |  | 0.003 | 0.036\*\*\* |
|  |  |  |  |  | (0.004) | (0.006) |  |  | (0.003) | (0.005) |
| Lag of poverty rate |  |  |  |  | 0.016\* | 0.015 |  |  | 0.020\*\* | 0.026\*\* |
|  |  |  |  |  | (0.009) | (0.016) |  |  | (0.008) | (0.013) |
| Lag of daycare per 10,000 persons |  |  |  |  | -0.018 | -0.003 |  |  | -0.016 | 0.022 |
|  |  |  |  |  | (0.015) | (0.026) |  |  | (0.012) | (0.021) |
| Lag of log(average nonfarm wage, deflated to 2012) |  |  |  |  | -0.721\*\* | -1.189\*\* |  |  | -1.278\*\*\* | -0.807\* |
|  |  |  |  |  | (0.342) | (0.585) |  |  | (0.279) | (0.472) |
| Lag of farms specialized in poultry and eggs |  |  |  |  |  |  | 0.031\*\*\* | 0.039\*\* | 0.013 | 0.014 |
|  |  |  |  |  |  |  | (0.010) | (0.018) | (0.010) | (0.017) |
| Lag of farms specialized in sheep and goat |  |  |  |  |  |  | 0.001 | 0.009 | 0.009 | 0.049\*\*\* |
|  |  |  |  |  |  |  | (0.010) | (0.018) | (0.010) | (0.016) |
| Lag of farms specialized in oilseed and grain |  |  |  |  |  |  | -0.009\* | -0.034\*\*\* | -0.001 | -0.024\*\*\* |
|  |  |  |  |  |  |  | (0.005) | (0.009) | (0.004) | (0.007) |
| Lag of farms specialized in vegetable and melon |  |  |  |  |  |  | -0.013 | -0.086\*\*\* | 0.021\* | 0.070\*\*\* |
|  |  |  |  |  |  |  | (0.010) | (0.017) | (0.012) | (0.020) |
| Lag of farms specialized in aquaculture and other animal production |  |  |  |  |  |  | 0.007 | 0.013 | 0.021\*\*\* | 0.019\*\* |
|  |  |  |  |  |  |  | (0.005) | (0.008) | (0.005) | (0.008) |
| W \* lag of farms with agritourism | -0.149\*\*\* | 0.030 | -0.185\*\*\* | -0.006 | -0.203\*\*\* | -0.005 | -0.210\*\*\* | -0.004 | -0.146\*\*\* | 0.007 |
|  | (0.014) | (0.038) | (0.015) | (0.041) | (0.016) | (0.039) | (0.015) | (0.041) | (0.016) | (0.039) |
| W \* lag of farms with direct sales to consumers | -0.007 | -0.090\*\*\* | -0.012 | -0.101\*\*\* | -0.027\*\* | 0.041\* | -0.020 | 0.037\* | -0.006 | -0.091\*\*\* |
|  | (0.012) | (0.024) | (0.013) | (0.024) | (0.012) | (0.021) | (0.012) | (0.021) | (0.014) | (0.026) |
| W \* lag of log(average operated area per farm) | 0.259 | 0.016 |  |  |  |  |  |  | 0.192 | 0.023 |
|  | (0.207) | (0.550) |  |  |  |  |  |  | (0.227) | (0.559) |
| W \* lag of average farm proprietor income, excluding subsidies | -0.001 | -0.000 |  |  |  |  |  |  | -0.001\*\* | -0.001 |
|  | (0.001) | (0.001) |  |  |  |  |  |  | (0.001) | (0.001) |
| W \* lag of log (total sale), deflated to 2012 | 0.129 | -0.202 |  |  |  |  |  |  | 0.152 | -0.163 |
|  | (0.103) | (0.258) |  |  |  |  |  |  | (0.107) | (0.263) |
| W \* lag of farms with land <= 50 acres | -0.002 | -0.014 |  |  |  |  |  |  | 0.003 | -0.019 |
|  | (0.007) | (0.011) |  |  |  |  |  |  | (0.007) | (0.013) |
| W \* lag of farms with sales <= $10,000 | 0.003 | 0.005 |  |  |  |  |  |  | 0.003 | -0.005 |
|  | (0.005) | (0.012) |  |  |  |  |  |  | (0.005) | (0.014) |
| W \* lag of farms with acres > 2,000 acres | -0.025 | 0.069\*\* |  |  |  |  |  |  | -0.028 | 0.023 |
|  | (0.016) | (0.035) |  |  |  |  |  |  | (0.017) | (0.038) |
| W \* lag of farms with sales > $500,000 | 0.003 | 0.028 |  |  |  |  |  |  | 0.002 | 0.026 |
|  | (0.008) | (0.024) |  |  |  |  |  |  | (0.008) | (0.025) |
| W \* lag of log (value of prime farmland) | 0.205\*\* | 0.646\*\*\* |  |  |  |  |  |  | 0.126 | 0.682\*\*\* |
|  | (0.094) | (0.175) |  |  |  |  |  |  | (0.119) | (0.192) |
| W \* lag of farms with female principal operators |  |  | -0.014\* | -0.019 |  |  |  |  | -0.012 | 0.023\* |
|  |  |  | (0.008) | (0.014) |  |  |  |  | (0.008) | (0.014) |
| W \* lag of female labor participation rate |  |  | 0.010 | 0.022 |  |  |  |  | 0.017 | 0.010 |
|  |  |  | (0.014) | (0.034) |  |  |  |  | (0.015) | (0.028) |
| W \* lag of female with at least bachelor's degree |  |  | -0.026 | -0.099\*\* |  |  |  |  | -0.034\* | -0.078\*\* |
|  |  |  | (0.020) | (0.041) |  |  |  |  | (0.019) | (0.035) |
| W \* lag of average age of principal operators |  |  | 0.010 | -0.101\* |  |  |  |  | 0.008 | -0.071 |
|  |  |  | (0.025) | (0.057) |  |  |  |  | (0.025) | (0.054) |
| W \* lag of principal operators on present farms for 10+ years |  |  | -0.001 | 0.024 |  |  |  |  | -0.002 | 0.017 |
|  |  |  | (0.007) | (0.015) |  |  |  |  | (0.007) | (0.014) |
| W \* lag of log (population density) |  |  |  |  | -0.256 | -2.657\* |  |  | 0.014 | -0.631 |
|  |  |  |  |  | (0.309) | (1.539) |  |  | (0.295) | (1.500) |
| W \* lag of log(personal income per capita, deflated to 2012) |  |  |  |  | -0.194 | 0.141 |  |  | -0.069 | 0.155 |
|  |  |  |  |  | (0.408) | (0.917) |  |  | (0.360) | (0.764) |
| W \* lag of social capital, standardized |  |  |  |  | -0.009 | 0.041 |  |  | 0.040 | 0.121 |
|  |  |  |  |  | (0.058) | (0.191) |  |  | (0.057) | (0.161) |
| W \* lag of percentage of democrat candidates won in presidential elections |  |  |  |  | 0.003 | 0.006 |  |  | 0.001 | -0.002 |
|  |  |  |  |  | (0.003) | (0.011) |  |  | (0.003) | (0.009) |
| W \* lag of poverty rate |  |  |  |  | -0.024 | -0.086\*\* |  |  | -0.007 | -0.069\*\* |
|  |  |  |  |  | (0.017) | (0.038) |  |  | (0.016) | (0.031) |
| W \* lag of daycare per 10,000 persons |  |  |  |  | -0.030 | -0.100\* |  |  | -0.031 | -0.062 |
|  |  |  |  |  | (0.031) | (0.056) |  |  | (0.025) | (0.045) |
| W \* lag of log(average nonfarm wage, deflated to 2012) |  |  |  |  | -0.079 | 3.703\*\*\* |  |  | 0.159 | 1.564 |
|  |  |  |  |  | (0.540) | (1.396) |  |  | (0.462) | (1.164) |
| W \* lag of farms specialized in poultry and eggs |  |  |  |  |  |  | -0.021 | 0.126\*\*\* | -0.007 | 0.075\*\* |
|  |  |  |  |  |  |  | (0.017) | (0.037) | (0.015) | (0.035) |
| W \* lag of farms specialized in sheep and goat |  |  |  |  |  |  | -0.010 | 0.044 | -0.030\*\* | 0.005 |
|  |  |  |  |  |  |  | (0.015) | (0.037) | (0.015) | (0.029) |
| W \* lag of farms specialized in oilseed and grain |  |  |  |  |  |  | 0.000 | -0.012 | 0.002 | -0.023\* |
|  |  |  |  |  |  |  | (0.006) | (0.014) | (0.006) | (0.014) |
| W \* lag of farms specialized in vegetable and melon |  |  |  |  |  |  | -0.002 | -0.217\*\*\* | 0.004 | -0.049 |
|  |  |  |  |  |  |  | (0.019) | (0.033) | (0.019) | (0.041) |
| W \* lag of farms specialized in aquaculture and other animal production |  |  |  |  |  |  | 0.001 | -0.019 | -0.005 | -0.022 |
|  |  |  |  |  |  |  | (0.007) | (0.014) | (0.007) | (0.015) |
| Year 2012 | 0.499\*\*\* | 1.016\*\*\* | 0.164\*\*\* | 0.653\*\*\* | 0.425\*\*\* | 0.823\*\*\* | 0.312\*\*\* | 0.680\*\*\* | 0.419\*\*\* | 1.008\*\*\* |
|  | (0.038) | (0.064) | (0.045) | (0.080) | (0.047) | (0.080) | (0.038) | (0.065) | (0.055) | (0.092) |
| Year 2017 | 0.561\*\*\* | 0.944\*\*\* | -0.058 | 0.345\*\*\* | 0.324\*\*\* | 0.866\*\*\* | 0.205\*\*\* | 0.602\*\*\* | 0.443\*\*\* | 1.109\*\*\* |
|  | (0.048) | (0.081) | (0.062) | (0.109) | (0.065) | (0.111) | (0.039) | (0.066) | (0.083) | (0.141) |
| Intercept | -0.349\*\*\* | -0.518\*\*\* | -0.012 | -0.351\*\*\* | -0.356\*\*\* | -0.496\*\*\* | -0.208\*\*\* | -0.352\*\*\* | -0.382\*\*\* | -0.756\*\*\* |
|  | (0.046) | (0.061) | (0.091) | (0.118) | (0.078) | (0.090) | (0.032) | (0.053) | (0.122) | (0.135) |
| Rho | 0.239\*\*\* | 0.315\*\*\* | 0.204\*\*\* | 0.331\*\*\* | 0.122\*\*\* | 0.354\*\*\* | 0.128\*\*\* | 0.343\*\*\* | 0.227\*\*\* | 0.288\*\*\* |
|  | (0.016) | (0.015) | (0.017) | (0.015) | (0.017) | (0.015) | (0.017) | (0.015) | (0.016) | (0.015) |
| N | 2892 | 2892 | 3029 | 3029 | 3037 | 3037 | 3037 | 3037 | 2892 | 2892 |
| T | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| LogLik | -28584 | -28584 | -33881 | -33881 | -34691 | -34691 | -34684 | -34684 | -28410 | -28410 |
| AIC | 57271 | 57271 | 67839 | 67839 | 69476 | 69476 | 69447 | 69447 | 57058 | 57058 |
| Resid.Corr | 0.135 | 0.135 | 0.103 | 0.103 | 0.067 | 0.067 | 0.068 | 0.068 | 0.128 | 0.128 |

Table S2: LM tests for alternative spatial SUR models

| **Tests** | **Statistics** | **P-values** |
| --- | --- | --- |
| LM-SUR-SLM | 1289.20 | 0.000 |
| LM-SUR-SEM | 1334.96 | 0.000 |
| LM\*-SUR-SLM | 6.05 | 0.049 |
| LM\*-SUR-SEM | 51.82 | 0.000 |
| LM-SUR-SARAR | 1341.01 | 0.000 |

Table S3: LR tests for SLM versus SDM models

| **Models** | **Log Likelihood** | **DF** | **AIC** | **BIC** | **LR statistic** | **P-value** |
| --- | --- | --- | --- | --- | --- | --- |
| SLM | -28,621 | 65 | 57,372 | 57,287 |  | NA |
| SDM | -28,410 | 119 | 57,058 | 56,902 | 421.839 | 0.000 |

Table S4: VIF of group-demeaned regressors

| **Variable** | **VIF** |
| --- | --- |
| Lag of farms with agritourism | 1.17 |
| Lag of farms with direct sales to consumers | 1.34 |
| Lag of log(average operated area per farm) | 1.85 |
| Lag of average farm proprietor income, excluding subsidies | 1.56 |
| Lag of log (total sale), deflated to 2012 | 2.40 |
| Lag of farms with land <= 50 acres | 1.75 |
| Lag of farms with sales <= $10,000 | 1.65 |
| Lag of farms with acres > 2,000 acres | 1.39 |
| Lag of farms with sales > $500,000 | 3.05 |
| Lag of log (value of prime farmland) | 2.79 |
| Lag of farms with female principal operators | 1.27 |
| Lag of female labor participation rate | 1.13 |
| Lag of female with at least bachelor's degree | 1.82 |
| Lag of average age of principal operators | 2.81 |
| Lag of principal operators on present farms for 10+ years | 1.84 |
| Lag of log (population density) | 1.30 |
| Lag of log(personal income per capita, deflated to 2012) | 3.33 |
| Lag of social capital, standardized | 1.10 |
| Lag of percentage of democrat candidates won in presidential elections | 1.15 |
| Lag of poverty rate | 1.34 |
| Lag of daycare per 10,000 persons | 1.01 |
| Lag of log(average nonfarm wage, deflated to 2012) | 2.53 |
| Lag of farms specialized in poultry and eggs | 1.14 |
| Lag of farms specialized in sheep and goat | 1.25 |
| Lag of farms specialized in oilseed and grain | 1.27 |
| Lag of farms specialized in vegetable and melon | 1.19 |
| Lag of farms specialized in aquaculture and other animal production | 1.18 |