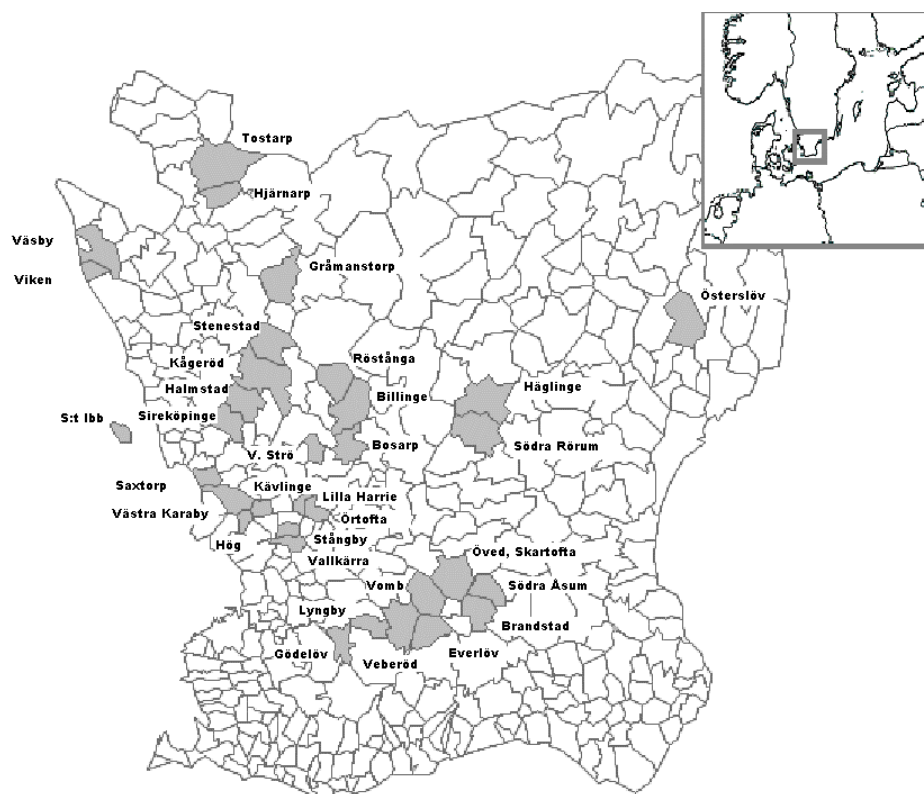


## Online Appendices

“The Causal Effects of Enclosures on Production and Productivity”

By Volha Lazuka, Tommy Bengtsson, and Patrick Svensson

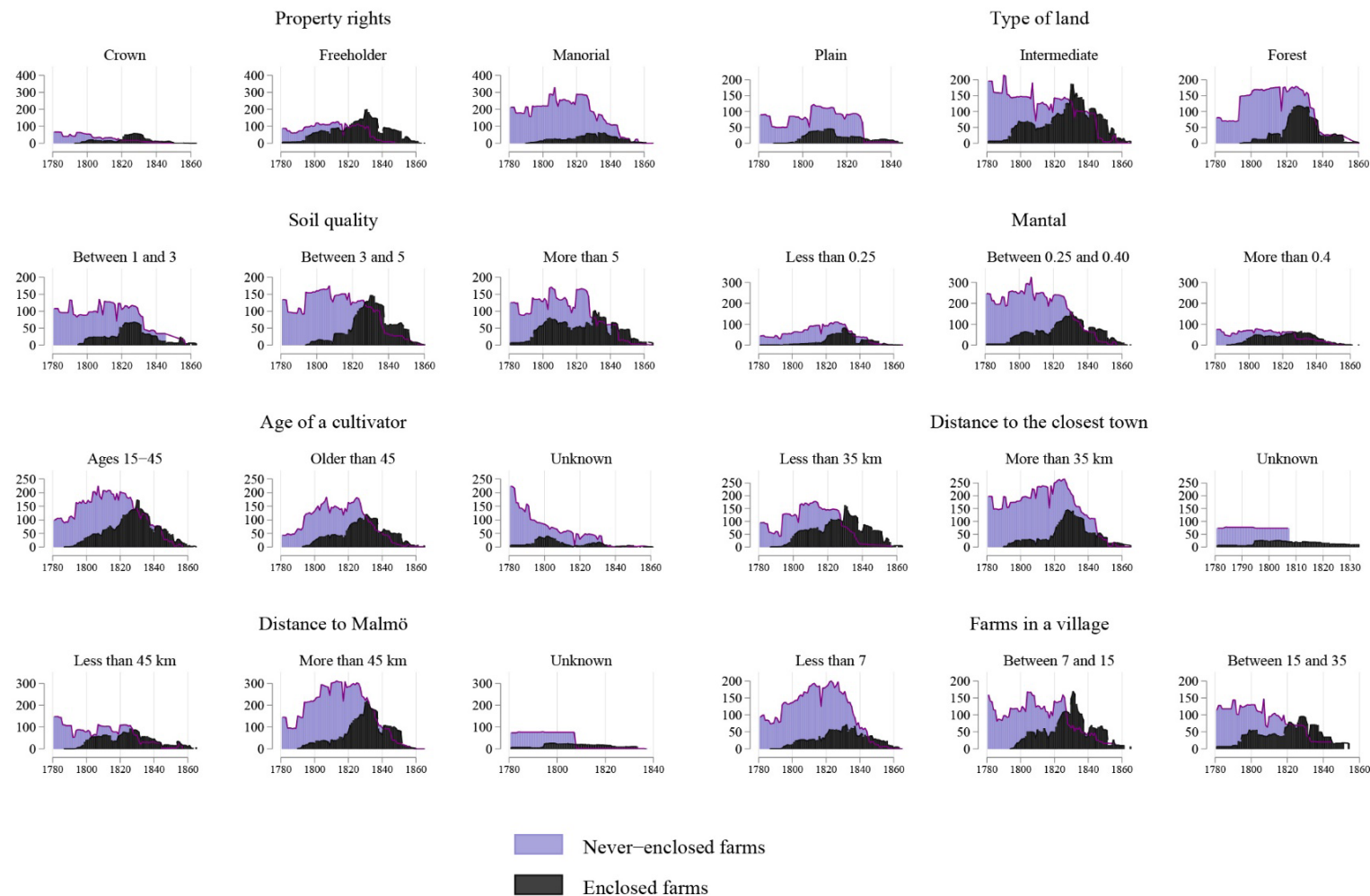
## Appendix A – Parishes in the HDSA



Appendix B – Descriptive statistics for the estimation samples.

|                                   | Grain production sample |       |       | Animal production sample |       |       |
|-----------------------------------|-------------------------|-------|-------|--------------------------|-------|-------|
|                                   | N                       | Mean  | SD    | N                        | Mean  | SD    |
| IHS grain production              | 29532                   | 4.698 | 0.631 |                          |       |       |
| IHS animal production             |                         |       |       | 15465                    | 1.376 | 0.716 |
| enclosure <sub>ft</sub>           | 29532                   | 0.169 | 0.375 | 15465                    | 0.236 | 0.425 |
| mandatory schooling <sub>ft</sub> | 29532                   | 0.332 | 0.471 | 15465                    | 0.471 | 0.499 |
| Type of property rights           |                         |       |       |                          |       |       |
| crown                             | 29532                   | 0.107 | 0.309 | 15465                    | 0.072 | 0.259 |
| freeholder                        | 29532                   | 0.369 | 0.483 | 15465                    | 0.375 | 0.484 |
| manorial                          | 29532                   | 0.524 | 0.499 | 15465                    | 0.553 | 0.497 |
| Type of land                      |                         |       |       |                          |       |       |
| plains                            | 29532                   | 0.174 | 0.379 | 15465                    | 0.098 | 0.297 |
| intermediate                      | 29532                   | 0.461 | 0.499 | 15465                    | 0.556 | 0.497 |
| forest                            | 29532                   | 0.364 | 0.481 | 15465                    | 0.347 | 0.476 |
| Soil quality                      |                         |       |       |                          |       |       |
| $\geq 1$ -<3                      | 29532                   | 0.263 | 0.440 | 15465                    | 0.200 | 0.400 |
| $\geq 3$ -<5                      | 29532                   | 0.368 | 0.482 | 15465                    | 0.427 | 0.495 |
| $\geq 5$                          | 29532                   | 0.369 | 0.483 | 15465                    | 0.373 | 0.484 |
| Mantal                            |                         |       |       |                          |       |       |
| $\geq 0.01$ -<0.25                | 29532                   | 0.198 | 0.399 | 15465                    | 0.209 | 0.406 |
| $\geq 0.25$ -<0.40                | 29532                   | 0.606 | 0.489 | 15465                    | 0.600 | 0.490 |
| $\geq 0.40$                       | 29532                   | 0.196 | 0.397 | 15465                    | 0.192 | 0.394 |
| Age of a cultivator               |                         |       |       |                          |       |       |
| $\geq 15$ -<45                    | 29532                   | 0.471 | 0.499 | 15465                    | 0.506 | 0.500 |
| $\geq 45$                         | 29532                   | 0.351 | 0.477 | 15465                    | 0.394 | 0.489 |
| Unknown                           | 29532                   | 0.178 | 0.382 | 15465                    | 0.100 | 0.299 |
| Distance to the closest town      |                         |       |       |                          |       |       |
| $\geq 1$ -<35 km                  | 29532                   | 0.375 | 0.484 | 15465                    | 0.467 | 0.499 |
| $\geq 35$ km                      | 29532                   | 0.530 | 0.499 | 15465                    | 0.483 | 0.500 |
| unknown                           | 29532                   | 0.096 | 0.294 | 15465                    | 0.050 | 0.217 |
| Distance to Malmö                 |                         |       |       |                          |       |       |
| $\geq 1$ -<45 km                  | 29532                   | 0.275 | 0.446 | 15465                    | 0.273 | 0.446 |
| $\geq 45$ km                      | 29532                   | 0.627 | 0.484 | 15465                    | 0.672 | 0.470 |
| unknown                           | 29532                   | 0.099 | 0.298 | 15465                    | 0.055 | 0.228 |
| Num. of farms in a village        |                         |       |       |                          |       |       |
| $\geq 1$ -<7                      | 29532                   | 0.366 | 0.482 | 15465                    | 0.377 | 0.485 |
| $\geq 7$ -<15                     | 29532                   | 0.350 | 0.477 | 15465                    | 0.396 | 0.489 |
| $\geq 15$                         | 29532                   | 0.284 | 0.451 | 15465                    | 0.227 | 0.419 |

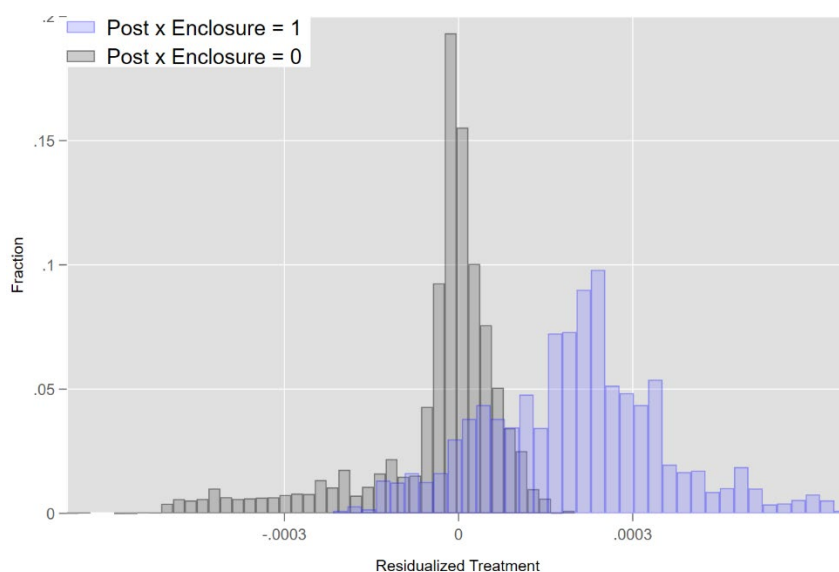
## Appendix C – Number of enclosed and never-enclosed farms across observable characteristics in 1781–1865.



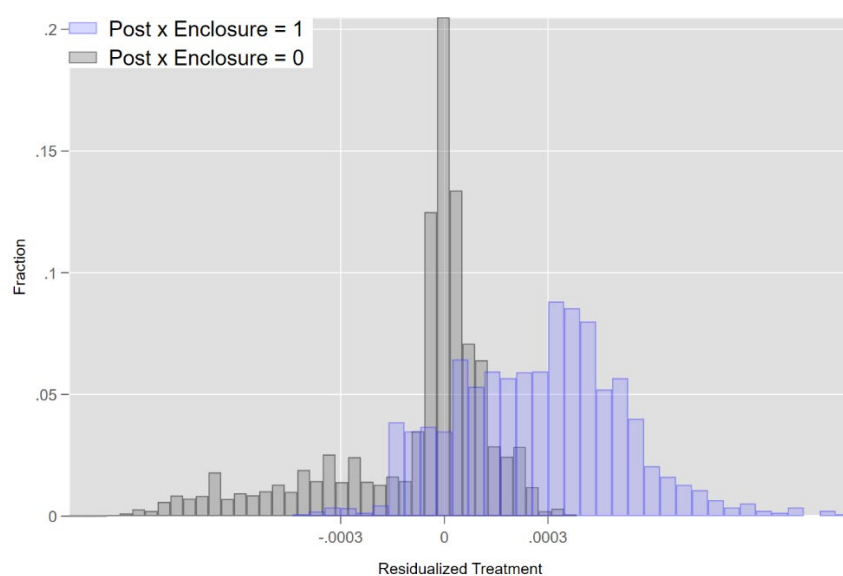
Source: Own calculations from the HDSA based on the estimation sample.

## Appendix D — Two-way fixed-effects weights, by treatment status.

### (A) IHS grain production



### (B) IHS animal production



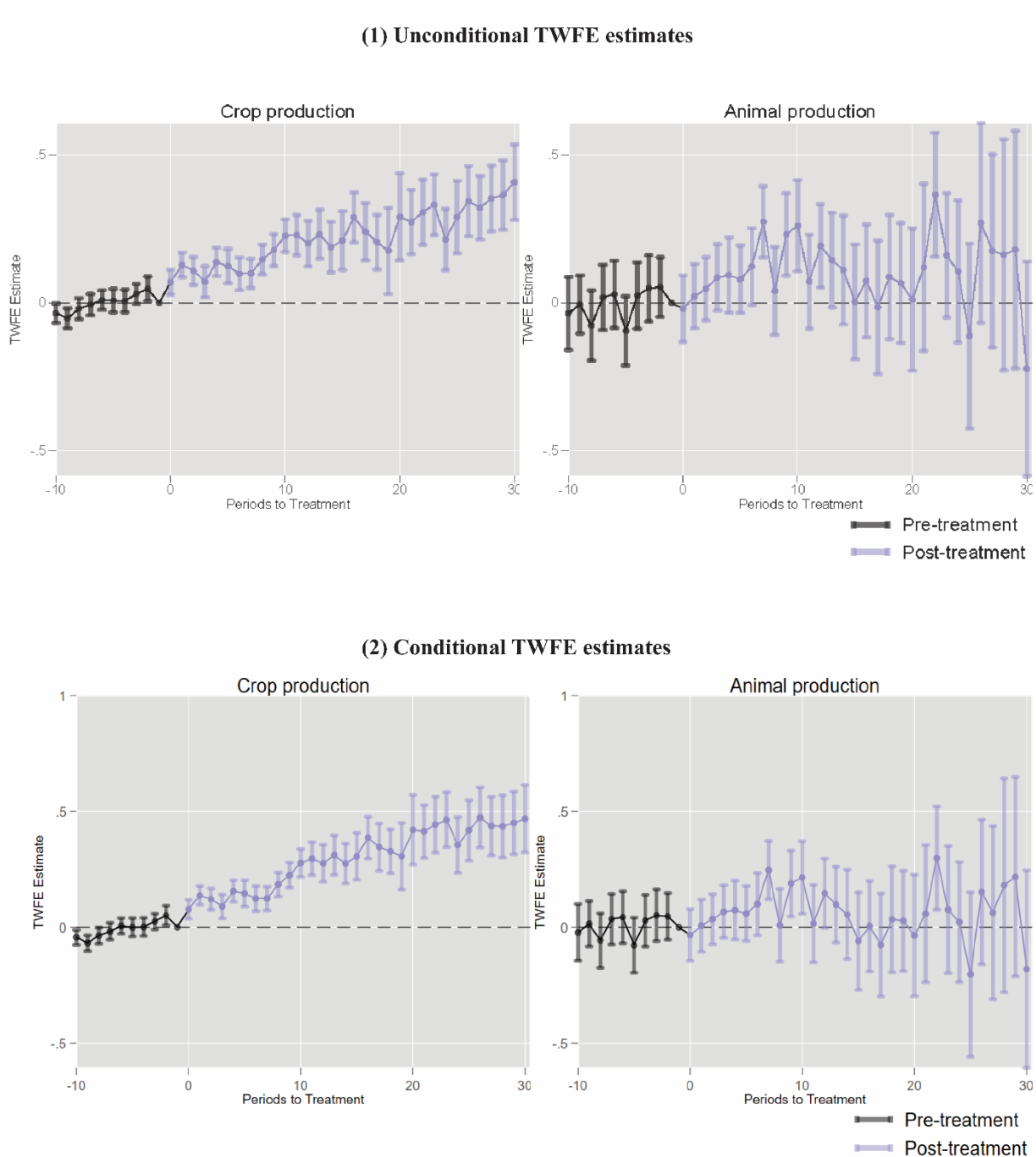
*Note:* The figure presents a histogram of weights used to calculate the two-way fixed-effects estimates of the impact of enclosures on *IHS* grain production (A) and *IHS* animal production (B). The weights are the residuals from a regression of treatment on farm and year fixed effects, scaled by the sum of squared residuals across all observations.

[Appendix E](#) – Enclosures’ treatment effects estimates for the relocated and non-relocated farms.

**Table** – Enclosures’ aggregated treatment effects estimates for relocated and non-relocated farms.

|                                                              | <b>Non-relocated</b>   |            |                          |            | <b>Relocated</b>       |            |                          |            |
|--------------------------------------------------------------|------------------------|------------|--------------------------|------------|------------------------|------------|--------------------------|------------|
|                                                              | <i>Crop production</i> |            | <i>Animal production</i> |            | <i>Crop production</i> |            | <i>Animal production</i> |            |
|                                                              | TWFE                   | Group-time | TWFE                     | Group-time | TWFE                   | Group-time | TWFE                     | Group-time |
| <b>(a)</b><br><b>Unconditional</b><br><b>parallel trends</b> | 0.136***               | 0.197***   | 0.086*                   | 0.120***   | 0.100***               | 0.213***   | 0.185***                 | 0.149*     |
|                                                              | (0.021)                | (0.030)    | (0.041)                  | (0.057)    | (0.021)                | (0.032)    | (0.044)                  | (0.077)    |
| <b>(b)</b><br><b>Conditional</b><br><b>parallel trends</b>   | 0.152***               | 0.250***   | 0.060                    | 0.199      | 0.127***               | 0.244***   | 0.169***                 | 0.286***   |
|                                                              | (0.018)                | (0.041)    | (0.040)                  | (0.115)    | (0.021)                | (0.041)    | (0.047)                  | (0.131)    |

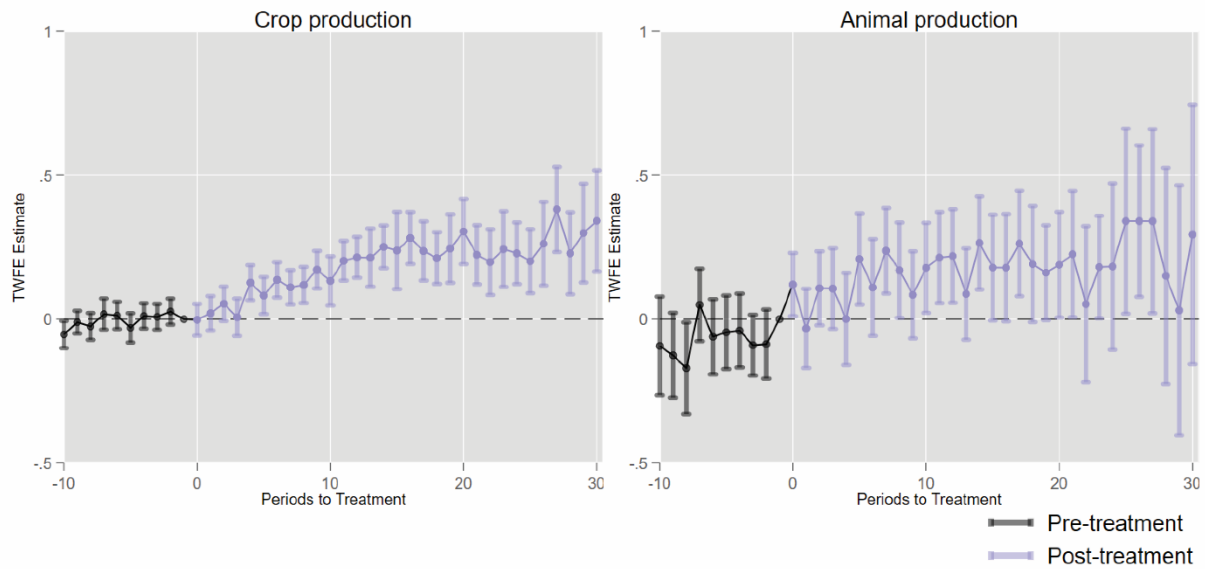
*Note:* The table reports aggregated treatment effect parameters under the conditional and unconditional common trends assumptions for farms relocated and non-relocated because of enclosures, with clustering at the farm level. The column “TWFE” reports the coefficient on  $enclosure_{ft}$  from Eq1. without (unconditional) and with controls (conditional), where controls include a dummy for a schooling reform and interactions between linear time trends and observable farm characteristics. The column “Group-time” reports the weighted average (by group size) of all available group-time average treatment effects (unconditional); conditional group-time estimates report the estimates from the outcome regression estimator with a dummy for a schooling reform and observable farm characteristics as controls. For the group-time estimates, inference procedures used bootstrapped standard errors.



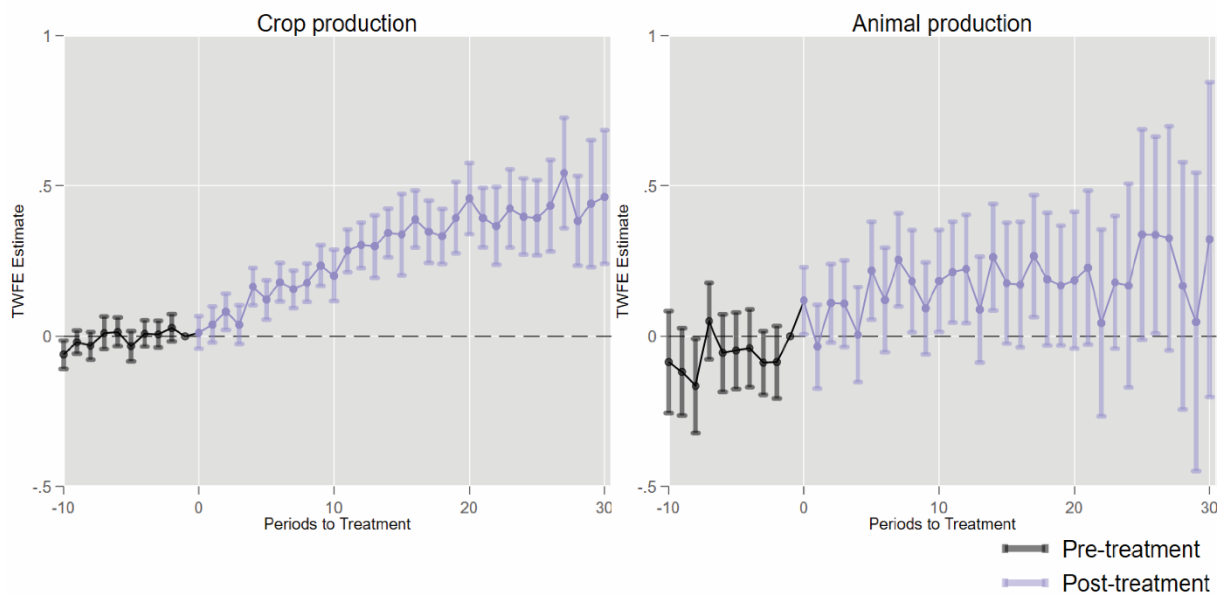
**Figure E1** – TWFE estimates for non-relocated farms.

*Notes:* The figure reports event-study treatment effect parameters estimated with a group-time estimator under the conditional (1) and unconditional (2) common trends assumptions for farms non-relocated because of enclosures. Standard errors are clustered at the farm level. The estimates report the weighted average (by group size) of all available group-time average treatment effects by the length of exposure to enclosure (unconditional); conditional estimates report the estimates from the outcome regression estimator with a dummy for a schooling reform and observable farm characteristics as controls. Inference procedures used bootstrapped standard errors.

### (1) Unconditional TWFE estimates



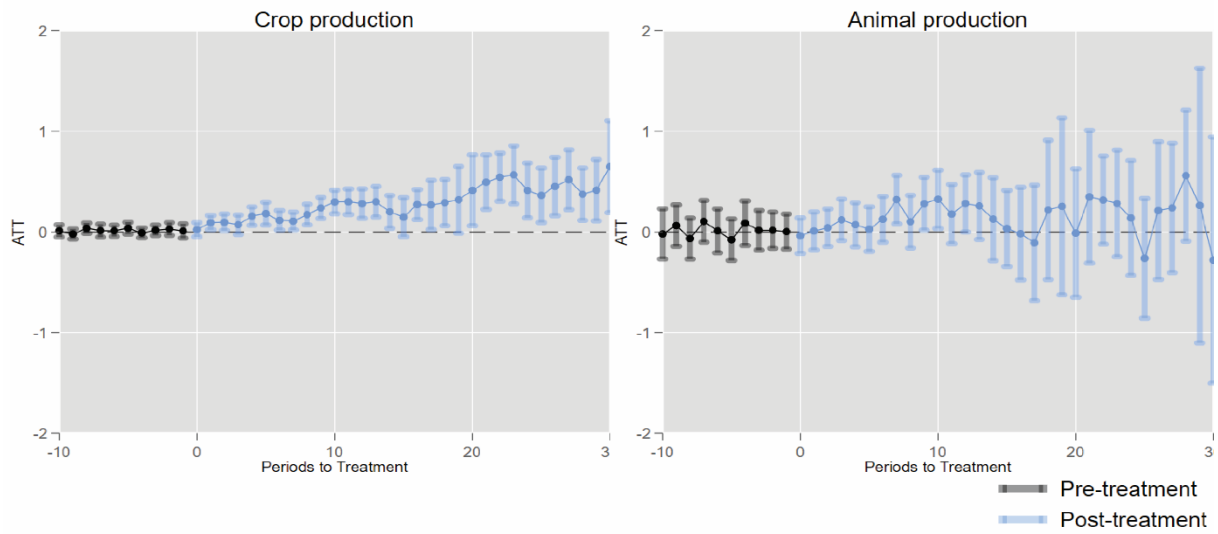
### (2) Conditional TWFE estimates



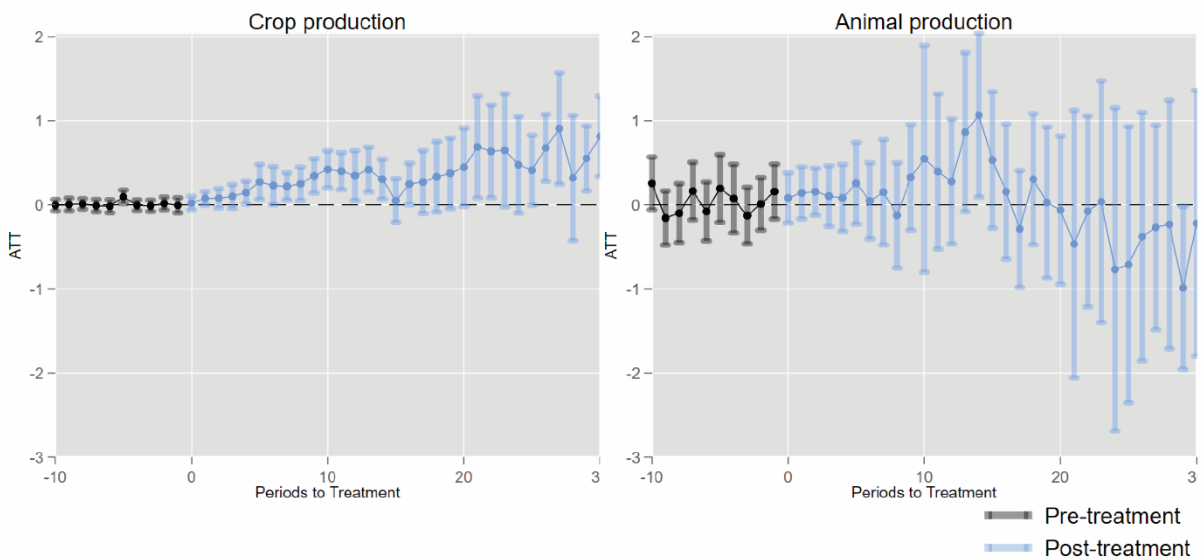
**Figure E2** – TWFE estimates for relocated farms.

*Notes:* The figure reports event-study treatment effect parameters estimated with a group-time estimator under the conditional (1) and unconditional (2) common trends assumptions for farms relocated because of enclosures. Standard errors are clustered at the farm level. The estimates report the weighted average (by group size) of all available group-time average treatment effects by the length of exposure to enclosure (unconditional); conditional estimates report the estimates from the outcome regression estimator with a dummy for a schooling reform and observable farm characteristics as controls. Inference procedures used bootstrapped standard errors.

### (1) Unconditional group-time estimates

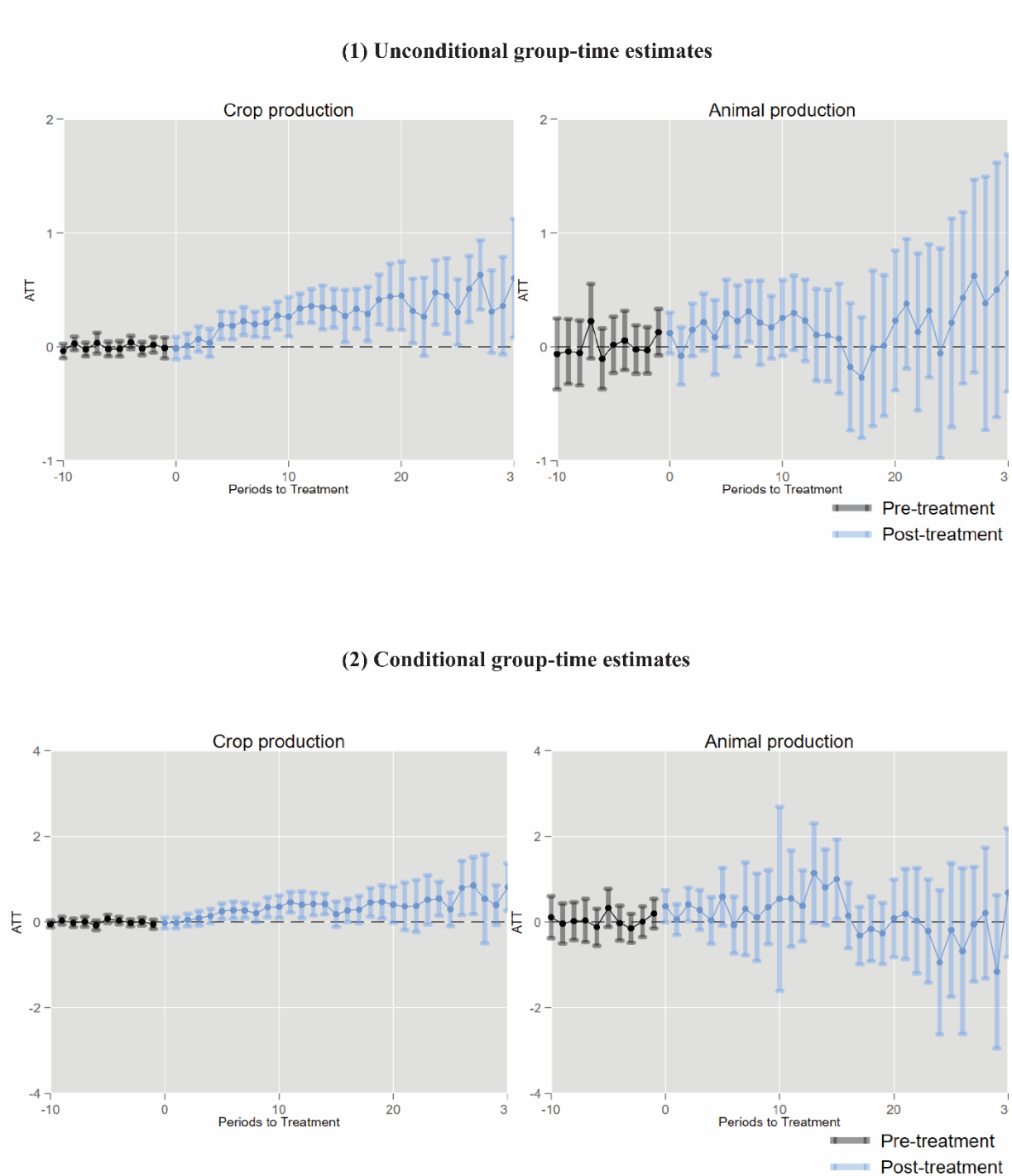


### (2) Conditional group-time estimates



**Figure E3** – Group-time estimates for non-relocated farms.

*Notes:* The figure reports event-study treatment effect parameters estimated with a group-time estimator under the conditional (1) and unconditional (2) common trends assumptions for farms non-relocated because of enclosures. Standard errors are clustered at the farm level. The estimates report the weighted average (by group size) of all available group-time average treatment effects by the length of exposure to enclosure (unconditional); conditional estimates report the estimates from the outcome regression estimator with a dummy for a schooling reform and observable farm characteristics as controls. Inference procedures used bootstrapped standard errors.



**Figure E4** – Group-time estimates for relocated farms.

*Notes:* The figure reports event-study treatment effect parameters estimated with a group-time estimator under the conditional (1) and unconditional (2) common trends assumptions for farms relocated because of enclosures. Standard errors are clustered at the farm level. The estimates report the weighted average (by group size) of all available group-time average treatment effects by the length of exposure to enclosure (unconditional); conditional estimates report the estimates from the outcome regression estimator with a dummy for a schooling reform and observable farm characteristics as controls. Inference procedures used bootstrapped standard errors.

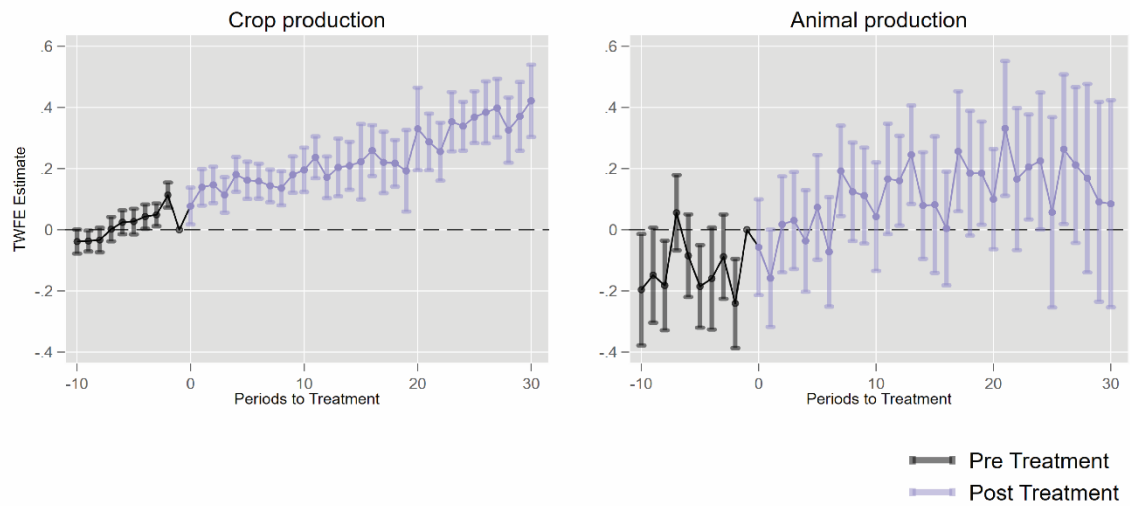
**Appendix F** – Enclosures’ treatment effects estimates for the farms enclosed according to different enclosure acts.

**Table** – Enclosures’ aggregated treatment effects estimates by the enclosure wave.

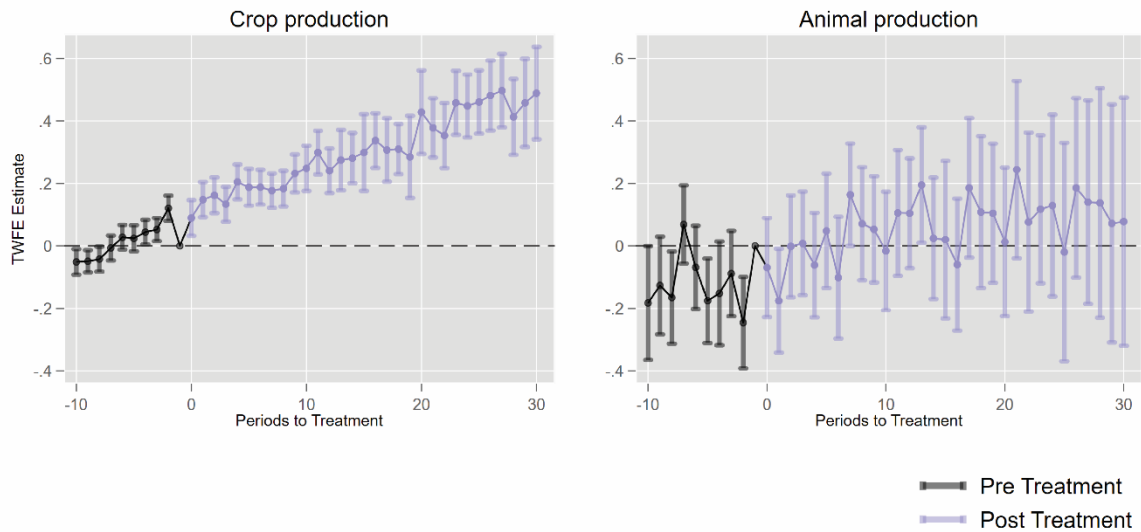
|                                          | Enclosure Act 1783 and 1803 |            |                          |            | Enclosure Act 1827     |            |                          |            |
|------------------------------------------|-----------------------------|------------|--------------------------|------------|------------------------|------------|--------------------------|------------|
|                                          | <i>Crop production</i>      |            | <i>Animal production</i> |            | <i>Crop production</i> |            | <i>Animal production</i> |            |
|                                          | TWFE                        | Group-time | TWFE                     | Group-time | TWFE                   | Group-time | TWFE                     | Group-time |
| <b>(a) Unconditional parallel trends</b> | 0.161***                    | 0.244***   | 0.178**                  | 0.189***   | 0.054**                | 0.154***   | 0.067*                   | 0.089      |
|                                          | (0.023)                     | (0.035)    | (0.052)                  | (0.083)    | (0.016)                | (0.026)    | (0.033)                  | (0.061)    |
| <b>(b) Conditional parallel trends</b>   | 0.172***                    | 0.277***   | 0.095                    | 0.059      | 0.067***               | 0.215***   | 0.074*                   | 0.385***   |
|                                          | (0.021)                     | (0.045)    | (0.060)                  | (0.157)    | (0.017)                | (0.037)    | (0.033)                  | (0.122)    |

*Note:* The table reports aggregated treatment effect parameters under the conditional and unconditional common trends assumptions for farms enclosed according to different acts, with clustering at the farm level. The column “TWFE” reports the coefficient on  $enclosure_{ft}$  from Eq1. without (unconditional) and with controls (conditional), where controls include a dummy for a schooling reform and interactions between linear time trends and observable farm characteristics. The column “Group-time” reports the weighted average (by group size) of all available group-time average treatment effects (unconditional); conditional group-time estimates report the estimates from the outcome regression estimator with a dummy for a schooling reform and observable farm characteristics as controls. For the group-time estimates, inference procedures used bootstrapped standard errors.

### (1) Unconditional TWFE estimates



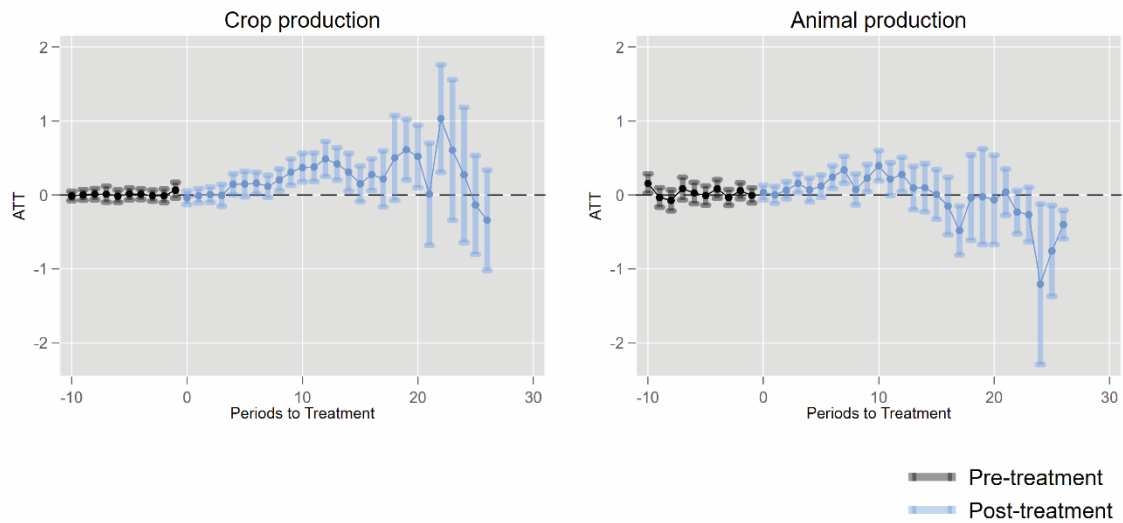
### (2) Conditional TWFE estimates



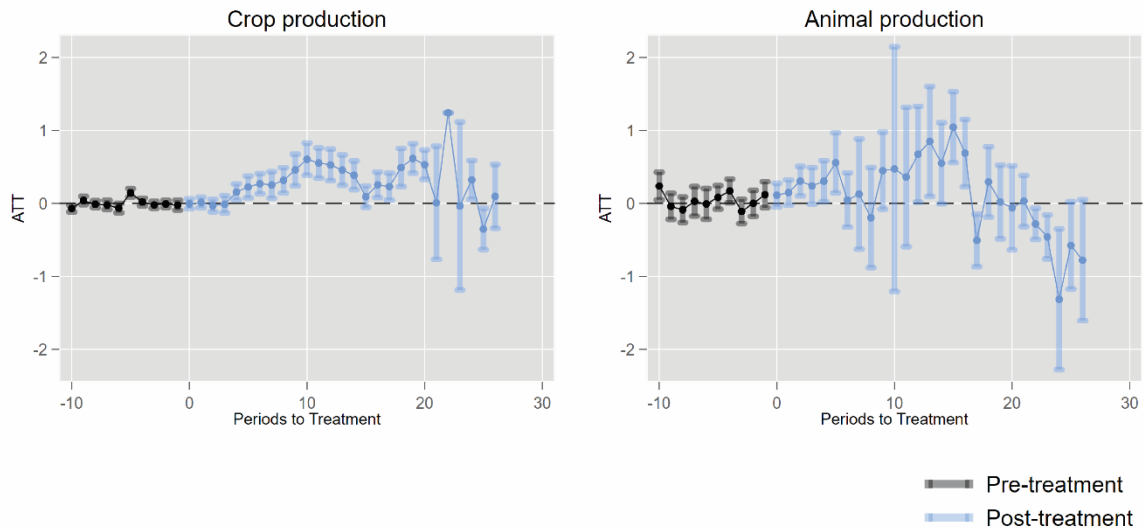
**Figure F1** – TWFE estimates: farms enclosed according to the acts 1783 and 1803.

*Notes:* The figure reports event-study treatment effect parameters estimated with a TWFE estimator under the conditional and unconditional common trends assumptions where enclosure year does not exceed 1826 or not available (for never-treated farms), with clustering at the farm level. (1) reports unconditional estimates obtained from Eq.2, and (2) reports conditional estimates obtained from Eq.2 with additional controls, such as a dummy for a schooling reform and interactions between linear time trends and observable farm characteristics. Event-years -11 and -1 are reference years.

### (1) Unconditional group-time estimates

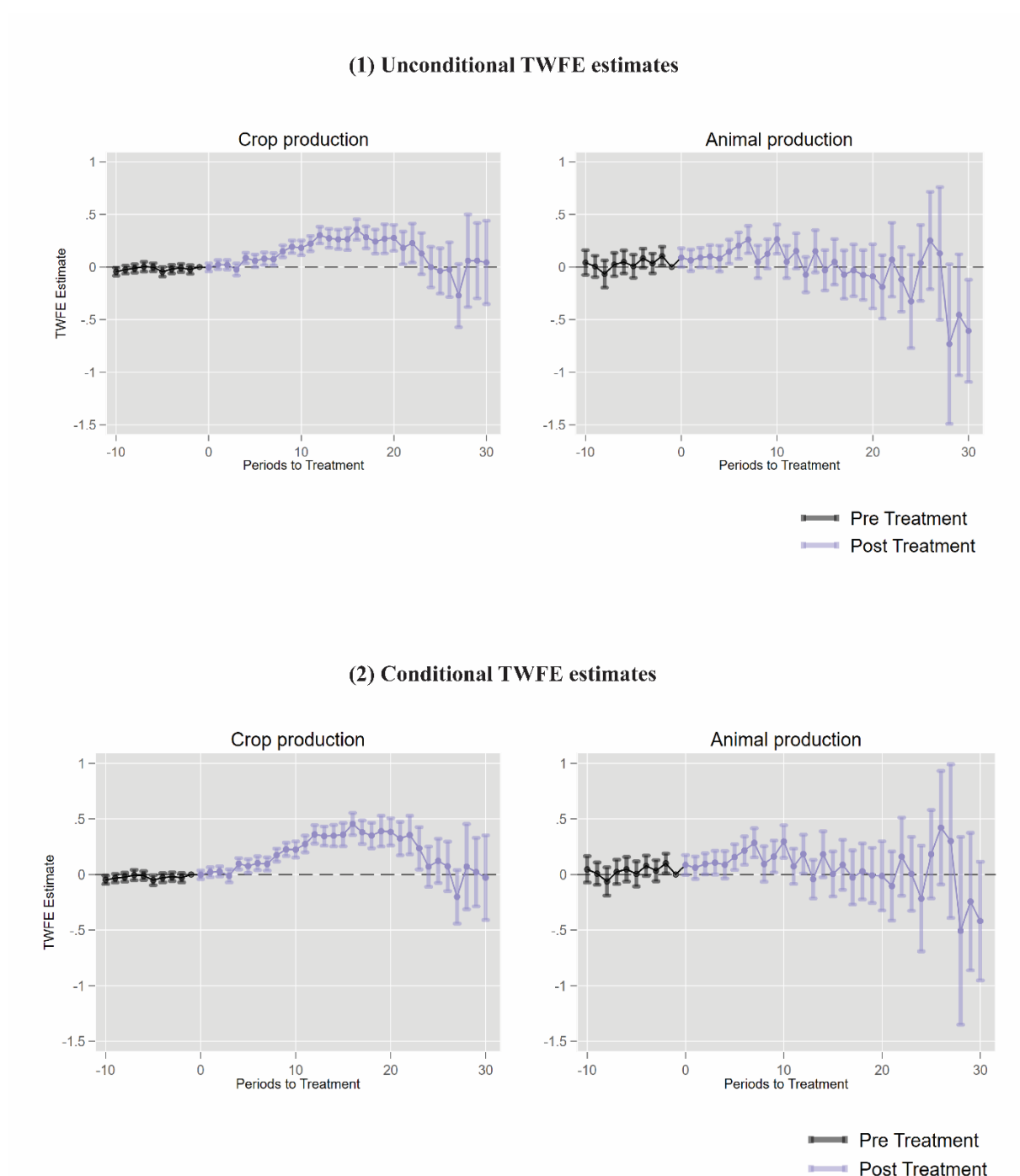


### (2) Conditional group-time estimates



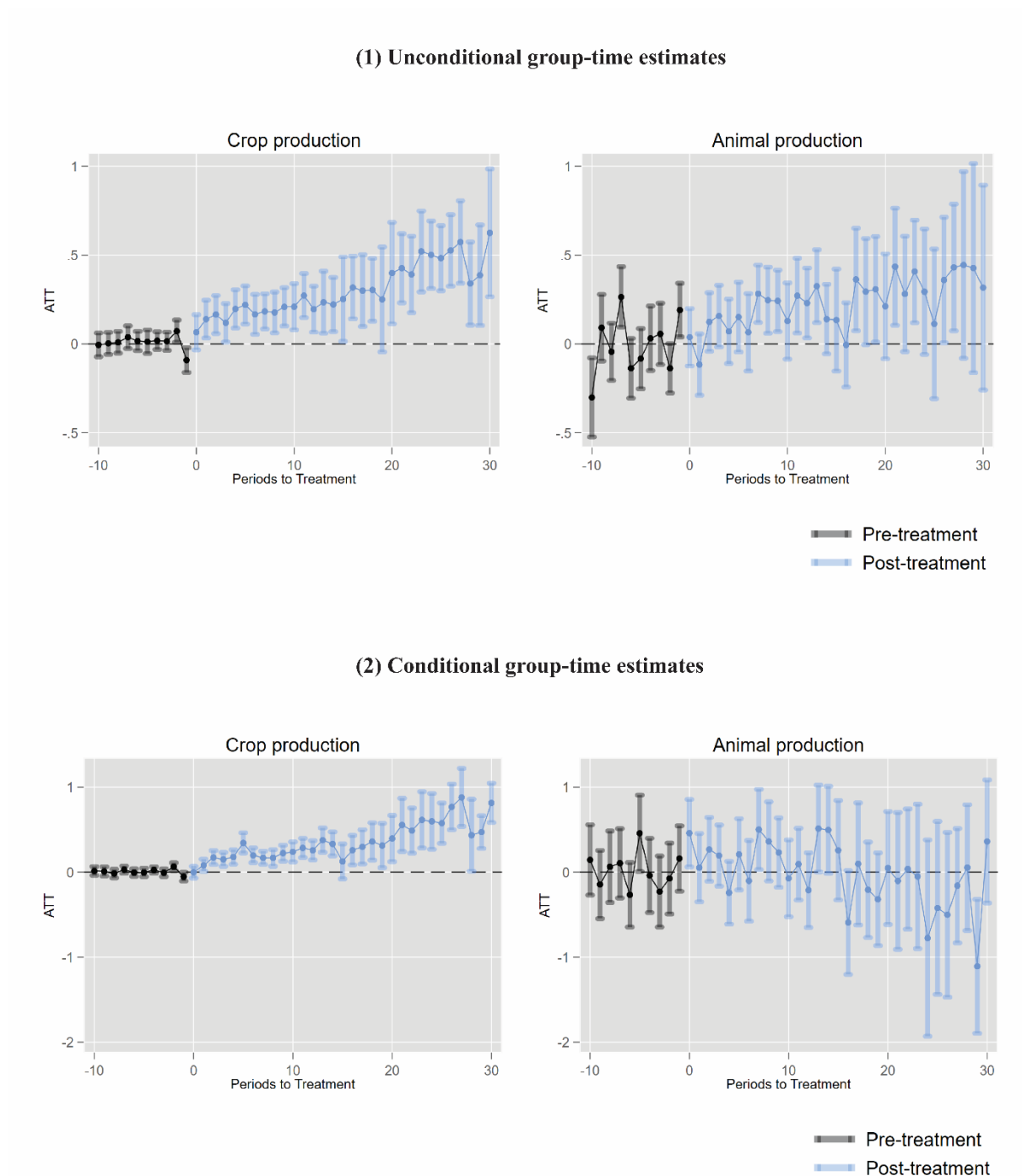
**Figure F2** – Group-time estimates: farms enclosed according to the acts 1783 and 1803.

*Notes:* The figure reports event-study treatment effect parameters estimated with a group-time estimator under the conditional (1) and unconditional (2) common trends assumptions where enclosure year does not exceed 1826 or not available (for never-treated farms), with clustering at the farm level. The estimates report the weighted average (by group size) of all available group-time average treatment effects by the length of exposure to enclosure (unconditional); conditional estimates report the estimates from the outcome regression estimator with a dummy for a schooling reform and observable farm characteristics as controls. Inference procedures used bootstrapped standard errors.



**Figure F3** – TWFE estimates: farms enclosed according to the 1827 act.

*Notes:* The figure reports event-study treatment effect parameters estimated with a group-time estimator under the conditional (1) and unconditional (2) common trends assumptions where enclosure year exceeds 1826 or not available (for never-treated farms), with clustering at the farm level. The estimates report the weighted average (by group size) of all available group-time average treatment effects by the length of exposure to enclosure (unconditional); conditional estimates report the estimates from the outcome regression estimator with a dummy for a schooling reform and observable farm characteristics as controls. Inference procedures used bootstrapped standard errors.



**Figure F4** – Group-time estimates: farms enclosed according to the 1827 act.

*Notes:* The figure reports event-study treatment effect parameters estimated with a group-time estimator under the conditional (1) and unconditional (2) common trends assumptions where enclosure year exceeds 1826 or not available (for never-treated farms), with clustering at the farm level. The estimates report the weighted average (by group size) of all available group-time average treatment effects by the length of exposure to enclosure (unconditional); conditional estimates report the estimates from the outcome regression estimator with observable farm characteristics as controls. The dummy for a schooling reform is not included because of no variation in the schooling dummy after 1842 (i.e., from this year every parish had a school). Inference procedures used bootstrapped standard errors.

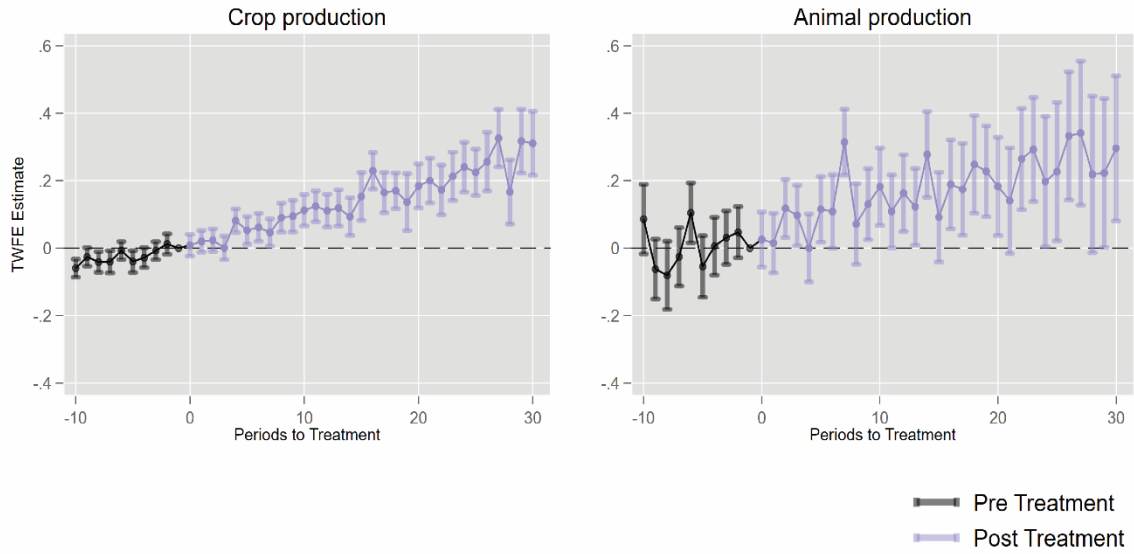
Appendix G – Enclosures’ treatment effects estimates with anticipation.

Table – Enclosures’ aggregated treatment effects estimates with anticipation.

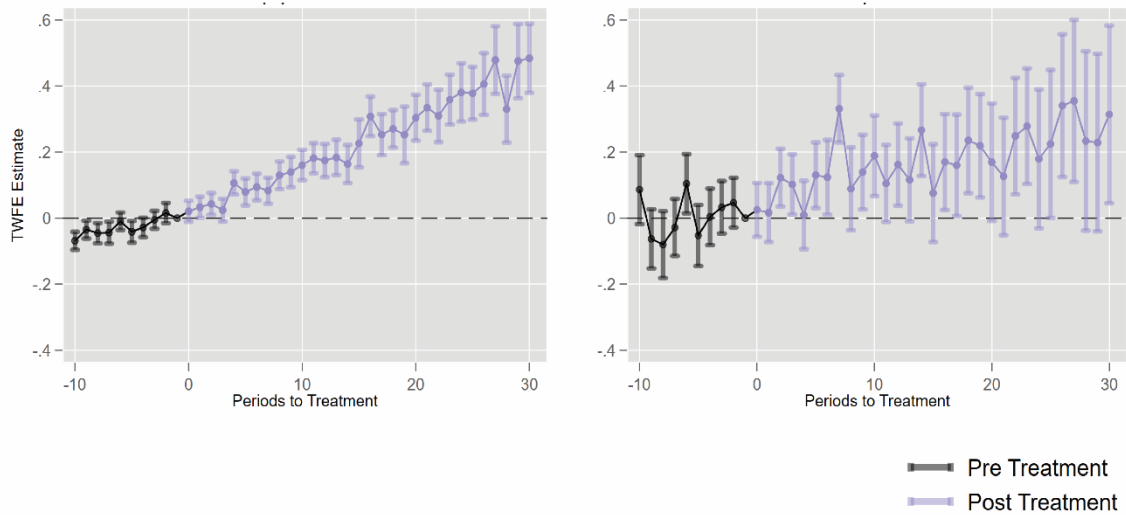
|                                          | Crop production |            | Animal production |            |
|------------------------------------------|-----------------|------------|-------------------|------------|
|                                          | TWFE            | Group-time | TWFE              | Group-time |
| <b>(a) Unconditional parallel trends</b> | 0.085***        | 0.155***   | 0.104**           | 0.142***   |
|                                          | (0.013)         | (0.021)    | (0.032)           | (0.049)    |
| <b>(b) Conditional parallel trends</b>   | 0.101***        | 0.176***   | 0.083*            | 0.303***   |
|                                          | (0.012)         | (0.027)    | (0.035)           | (0.118)    |

*Note:* The table reports aggregated treatment effect parameters under the conditional and unconditional common trends assumptions with anticipation (where  $enclosure_{ft}$  has been assigned across the treated farms to the year when the first farm in the village was enclosed). The column “TWFE” reports the coefficient on  $enclosure_{ft}$  from Eq1. without (unconditional) and with controls (conditional), where controls include a dummy for a schooling reform and interactions between linear time trends and observable farm characteristics. The column “Group-time” reports the weighted average (by group size) of all available group-time average treatment effects (unconditional); conditional group-time estimates report the estimates from the outcome regression estimator with a dummy for a schooling reform and observable farm characteristics as controls. For the group-time estimates, inference procedures used bootstrapped standard errors.

### (1) Unconditional TWFE estimates



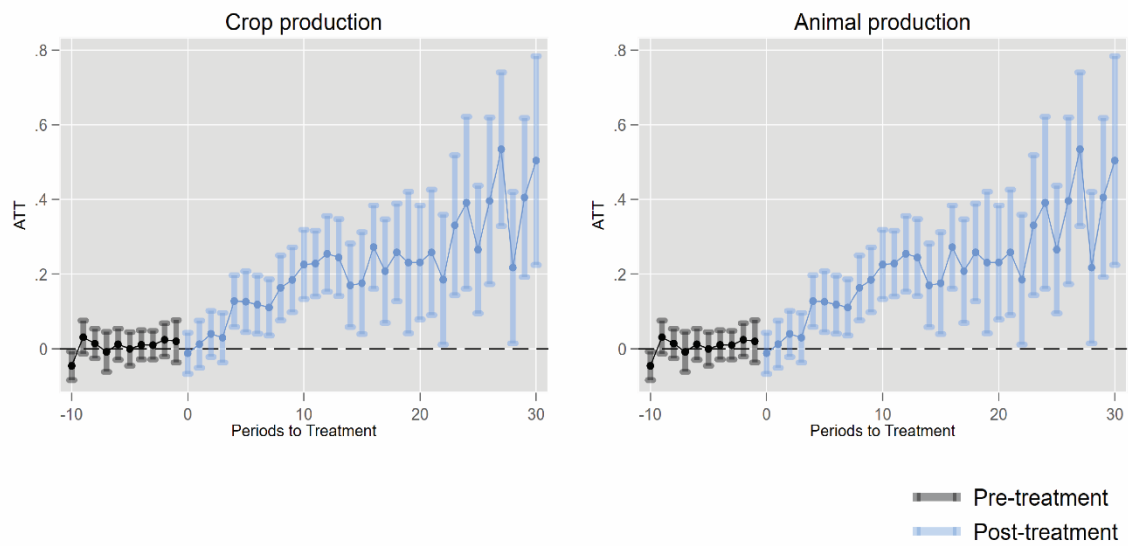
### (2) Conditional TWFE estimates



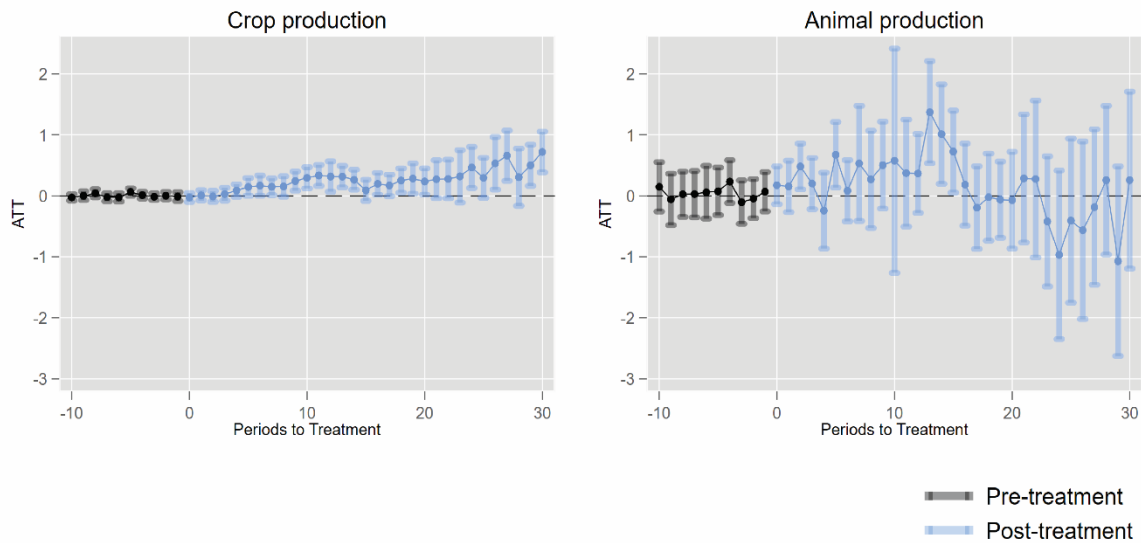
**Figure G1** – TWFE estimates with anticipation.

*Notes:* The figure reports event-study treatment effect parameters estimated with a group-time estimator under the conditional (1) and unconditional (2) common trends assumptions and with anticipation (where  $enclosure_{ft}$  has been assigned across the treated farms to the year when the first farm in the village was enclosed). Standard errors are clustered at the farm level. The estimates report the weighted average (by group size) of all available group-time average treatment effects by the length of exposure to enclosure (unconditional); conditional estimates report the estimates from the outcome regression estimator with a dummy for a schooling reform and observable farm characteristics as controls. Inference procedures used bootstrapped standard errors.

### (1) Unconditional group-time estimates



### (2) Conditional group-time estimates



**Figure G2** – Group-time estimates with anticipation.

*Notes:* The figure reports event-study treatment effect parameters estimated with a group-time estimator under the conditional (1) and unconditional (2) common trends assumptions and with anticipation (where  $enclosure_{ft}$  has been assigned across the treated farms to the year when the first farm in the village was enclosed). Standard errors are clustered at the farm level. The estimates report the weighted average (by group size) of all available group-time average treatment effects by the length of exposure to enclosure (unconditional); conditional estimates report the estimates from the outcome regression estimator with a dummy for a schooling reform and observable farm characteristics as controls. Inference procedures used bootstrapped standard errors.