SEPTEMBER 2017 UPDATE:

Micro-level Economic Impact of AWD: A Randomized Control Trial (RCT) Approach

This document serves as an update to the micro-level economic impact analysis of AWD submitted to SPIA in July 2017. In that submission, only 257 observations were included in the analysis since data for the remaining farmers in the sample were not yet encoded at that time. The analysis in this document essentially replicates the approaches used to produce the results in Table 3.7 of that July 2017 report. However, instead of only utilizing 257 farmer observations (for 2 years), we now use the full 810 observations (i.e., 10 of the original 820 farmers in 2016, did not plant rice in 2017 and thus was dropped from the sample). In addition, we utilize clustered standard errors at the TSA level in this analysis as well.

Results are presented in Table 1 below. Overall, the various DID regression runs indicate that AWD does not have a statistically significant impact on all the outcome variables of interest: irrigation frequency, days the main rice parcel are without water,[1] rice yields, self-reported gross income, and size of the main rice parcel. This is somewhat similar to the previous report where the only statistically significant differences observed were for self-reported reported gross income and size of the main parcel (i.e., where both outcome variables were higher for those who adopted AWD (or was part of the treated group)).

Nonetheless, the updated AWD impact results in Table 1 still suggest that there was no substantial economic impact of AWD for the study area in RIIS. Taking the pre-existing differences in the outcomes of treated and control farmers into account (through the DID approach) may have played a major role in this outcome. In addition, this limited impact may also be due to the observation that some of the control farmers already practice some form of intermittent irrigation (i.e., a limited form of AWD) where the field is NOT continuously flooded throughout the season. Hence, with control farmers already

[1] We note here that the impact of AWD on the "number of days the main rice parcel are without water" is marginally significant with p-values at around 0.13 to 0.14. When non-clustered standard errors at the TSA level are used, the effect of AWD was statistically significant at the 1% level.

practicing some form of intermittent flooding, the impact of AWD may not be as pronounced as when control farmers practice continuous flooding throughout the season.

One caveat to keep in mind at this point is that the 2017 data still needs to be thoroughly examined to make sure the important outcome variables of interest pass the “sniff” test. For example, there are some outcome variables where there are extreme outliers (i.e., yield variables in the 20 ton range), which still needs to be double checked. Moreover, once the data has been thoroughly vetted, we will still conduct further estimation using various techniques (i.e., PSM matching, entropy balancing, and non-linear DID) to determine whether the results we have found so far is robust.

Table 1. Results from the Alternative Difference-in-Differences (DID) Regressions: Impact of AWD on Selected Outcome Variables ((Total no. of farmers = 810 farmers; 406 treated and 404 control)

Outcome Variables	Standard DID Impact Estimate: [Indep. Var.: Random AWD Treatment at TSA level][1]	IV-DID Impact Estimate [Indep. Var.: Non-Random Indiv. AWD Practice Adoption][1]	IV-DID Impact Estimate [Indep. Var.: Non-Random Indiv. PVC pipe Adoption][1]
Irrigation Frequency (#)	1.55 (0.328)	3.91 (0.313)	5.27 (0.309)
Days main parcel w/o water (#)	2.66 (0.140)	6.69 (0.130)	9.06 (0.140)
Rice yield for 2017 (kg/ha)	140.07 (0.680)	355.97 (0.670)	481.78 (0.678)
Self-rep. gross rice income (PhP/ha)[3]	1,919.71 (0.882)	4,889.81 (0.015)	6,645.13 (0.473)
Size of main rice parcel (ha)	-0.009 (0.425)	-0.024 (0.404)	-0.032 (0.402)

Notes: [1] Figures in parentheses are p-values. *, **, *** significant difference at the 10%, 5%, 1% level. All regressions were run with clustered standard errors at the TSA level.