**Supplemental Table and Appendix**

**Supplemental Table 1:** Results of adjusted generalized estimating equations of the associations of two measures of household crop diversity with children’s dietary diversity scores (DDS) in Ethiopia and Vietnam, 2006-2010

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Dependent variable: Children’s Dietary Diversity Scores** | | | | | | | |
|  | **Ethiopia** | | | | **Vietnam** | | | |
|  | *Child’s DDS,* 𝛽 | *95% CI* | *Child’s DDS,* 𝛽 | *95% CI* | *Child’s DDS,* 𝛽 | *95% CI* | *Child’s DDS,* 𝛽 | *95% CI* |
| N children | 1012 | 1012 | 1012 | 1012 | 1083 | 1083 | 1083 | 1083 |
| Crop nutritional functional richness | 0.13 \*\*\* | 0.07 – 0.19 | - | - | -0.00 | -0.07 – 0.07 | - | - |
| Crop species richness | - | - | 0.02 | -0.00 – 0.05 | - | - | 0.02 | -0.02 – 0.06 |
| Wealth index: medium2 | 0.12 \* | 0.02 – 0.22 | 0.12 \* | 0.03 – 0.22 | 0.42 \*\*\* | 0.29 – 0.55 | 0.42 \*\*\* | 0.29 – 0.54 |
| Wealth index: high2 | 0.19 \*\*\* | 0.08 – 0.30 | 0.19 \*\*\* | 0.08 – 0.30 | 0.76 \*\*\* | 0.59 – 0.92 | 0.76 \*\*\* | 0.59 – 0.92 |
| Head of household sex: female | -0.08 | -0.23 – 0.08 | -0.09 | -0.24 – 0.07 | -0.11 | -0.28 – 0.07 | -0.11 | -0.28 – 0.06 |
| Head of household age | 0.00 | -0.00 – 0.00 | -0.00 | -0.00 – 0.00 | 0.00 | -0.00 – 0.01 | 0.00 | -0.00 – 0.01 |
| Child sex: female | 0.01 | -0.07 – 0.09 | 0.00 | -0.07 – 0.09 | -0.02 | -0.11 – 0.08 | -0.02 | -0.12 – 0.08 |
| Household size | -0.02 | -0.04 – 0.01 | -0.02 | -0.04 – 0.01 | -0.11 \*\*\* | -0.16 – -0.07 | -0.11 \*\*\* | -0.16 – -0.07 |
| Proportion of household food from own production | -0.16 | -0.32 – 0.00 | -0.12 | -0.28 – 0.04 | -0.94 \*\*\* | -1.23 – -0.66 | -0.95 \*\*\* | -1.24 – -0.67 |
| Ownership of any animal | 0.21 | -0.03 – 0.44 | 0.21 | -0.03 – 0.45 | -0.09 | -0.20 – 0.02 | -0.10 | -0.21 – 0.01 |
| Total agricultural land | 0.00 | -0.00 – 0.00 | -0.00 | -0.00 – 0.00 | - | - | - | - |
| Value of harvest sold | 0.00 | -0.00 – 0.00 | 0.00 | -0.00 – 0.00 | - | - | - | - |
| Household food expenditure | 0.00 \* | 0.00 – 0.00 | 0.00 \*\* | 0.00 – 0.00 | 0.01 \*\*\* | 0.01 – 0.02 | 0.01 \*\*\* | 0.01 – 0.02 |
| Household non-food expenditure | 0.00 \*\*\* | 0.00 – 0.01 | 0.00 \*\*\* | 0.00 – 0.01 | 0.00 | -0.00 – 0.00 | 0.00 | -0.00 – 0.00 |
| *Region1* |  |  |  |  |  |  |  |  |
| SNNP/Red River Delta | -0.35 \*\*\* | -0.48 – -0.23 | -0.33 \*\*\* | -0.45 – -0.21 | -0.14 | -0.32 – 0.04 | -0.12 | -0.30 – 0.06 |
| Amhara/Central Coastal | 0.31 \*\*\* | 0.18 – 0.44 | 0.31 \*\*\* | 0.18 – 0.44 | -0.15 | -0.34 – 0.03 | -0.12 | -0.31 – 0.07 |
| Oromia/Mekong River Delta | 0.06 | -0.06 – 0.18 | 0.07 | -0.05 – 0.19 | 0.26 \*\* | 0.08 – 0.45 | 0.29 \*\* | 0.10 – 0.48 |
| 1 The Tigray region is the reference in Ethiopia and Northern Uplands region is the reference in Vietnam.  2 Wealth index tertile reference is lowest wealth index tertile.  Significance at P<0.05. \* p<0.05   \*\* p<0.01   \*\*\* p<0.001 | | | | | | | | |

**Supplemental Table 2:** Results of adjusted generalized estimating equations with interaction terms of the associations of crop species richness and plant crop nutritional functional richness with child’s diet diversity in Ethiopia, 2006-2007 and 2009-2010 (n=1012) 1

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Ethiopia** | | | | | | | |
|  | **Independent variable: Crop Species Richness** | | | | **Independent variable: Crop Nutritional Functional Richness** | | | |
|  | **Interaction Term:**  Household Wealth | | **Interaction Term:** Proportion of household food from own production | | **Interaction Term:**  Household Wealth | | **Interaction Term:** Proportion of household food from own production | |
|  | **𝛽** | **95%(CI)** | **𝛽** | **95%(CI)** | **𝛽** | **95%(CI)** | **𝛽** | **95%(CI)** |
| Crop species richness | 0.05 \* | 0.01 – 0.08 | 0.00 | -0.05 – 0.05 | - | - | - | - |
| Crop nutritional functional richness | - | - | - | - | 0.21 \*\*\* | 0.12 – 0.30 | 0.10 | -0.03 – 0.22 |
| Wealth index2: medium | 0.19 | -0.03 – 0.42 | 0.12 \* | 0.03 – 0.22 | 0.25 | -0.00 – 0.50 | 0.12 \* | 0.02 – 0.22 |
| Wealth index2: high | 0.40 \*\* | 0.16 – 0.64 | 0.19 \*\*\* | 0.08 – 0.30 | 0.51 \*\*\* | 0.24 – 0.77 | 0.19 \*\*\* | 0.08 – 0.30 |
| Proportion of food from own production | -0.12 | -0.28 – 0.04 | -0.27 | -0.62 – 0.07 | -0.14 | -0.30 – 0.02 | -0.27 | -0.67 – 0.13 |
| Crop diversity \* wealth index2: medium | -0.02 | -0.07 – 0.03 | - | - | -0.07 | -0.20 – 0.06 | - | - |
| Crop diversity \* wealth index2: high | -0.05 | -0.11 – 0.00 | - | - | -0.18 \*\* | -0.31 – -0.04 | - | - |
| Crop diversity \* proportion of food from own production | - | - | 0.04 | -0.04 – 0.12 | - | - | 0.06 | -0.14 – 0.27 |

1Significance at P<0.05. \* p<0.05   \*\* p<0.01   \*\*\* p<0.00. Models also adjusted for child gender, head of household gender and age, household size, ownership of any animal, total agricultural land, value of harvest sold in the last year, household nonfood and food expenditures in the last 15 days.

**Supplemental Table 3** Results of adjusted generalized estimating equations with interaction terms of the associations of crop species richness and plant crop nutritional functional richness with child’s diet diversity in Vietnam, 2006-2007 and 2009-2010 (n=1083)1

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Vietnam** | | | | | | | |
|  | **Independent Variable: Crop Species Richness** | | | | **Independent variable: Crop Nutritional Functional Richness** | | | |
|  | **Interaction Term:**  Household Wealth | | **Interaction Term:** Proportion of household food from own production | | **Interaction Term:**  Household Wealth | | **Interaction Term:** Proportion of household food from own production | |
|  | **𝛽** | **95%(CI)** | **𝛽** | **95%(CI)** | **𝛽** | **95%(CI)** | **𝛽** | **95%(CI)** |
| Crop species richness | 0.04 | -0.02 – 0.10 | -0.02 | -0.08 – 0.04 | - | - | - | - |
| Crop nutritional functional richness | - | - | - | - | 0.07 | -0.05 – 0.19 | -0.12 \* | -0.22 – -0.02 |
| Wealth index2: medium | 0.42 \*\* | 0.14 – 0.70 | 0.42 \*\*\* | 0.29 – 0.54 | 0.58 \*\*\* | 0.29 – 0.87 | 0.41 \*\*\* | 0.29 – 0.54 |
| Wealth index2: high | 0.87 \*\*\* | 0.59 – 1.15 | 0.75 \*\*\* | 0.59 – 0.92 | 0.90 \*\*\* | 0.61 – 1.19 | 0.75 \*\*\* | 0.58 – 0.92 |
| Proportion of food from own production | -0.96 \*\*\* | -1.25 – -0.68 | -1.31 \*\*\* | -1.83 – -0.79 | -0.94 \*\*\* | -1.23 – -0.66 | -1.51 \*\*\* | -2.00 – -1.03 |
| Crop diversity \* wealth index2: medium | -0.00 | -0.08 – 0.08 | - | - | -0.11 | -0.27 – 0.05 | - |  |
| Crop diversity \* wealth index2: high | -0.05 | -0.13 – 0.04 | - | - | -0.09 | -0.25 – 0.07 | - |  |
| Crop diversity \* proportion of food from own production | - | - | 0.12 | -0.03 – 0.27 | - | - | 0.38 \*\* | 0.12 – 0.64 |

1Significance at P<0.05. \* p<0.05   \*\* p<0.01   \*\*\* p<0.00. Models also adjusted for child gender, head of household gender and age, household size, ownership of any animal, household nonfood and food expenditures in the last 15 days.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Supplemental Table 4.** Results of cross-sectional path analysis of mediation from relative market orientation on the association of crop diversity and CDD, 2006-20071 | | | | |
|  | CNFR | | CSR | |
|  | DDS | DDS | DDS | DDS |
|  | Ethiopia | Vietnam | Ethiopia | Vietnam |
| *Mediating variable* |  |  |  |  |
| **Proportion of household food from own production** | | | | |
| Direct effect | 0.13\*\* ± 0.05 | 0.01 ± 0.05 | 0.02 ± 0.02 | 0.01 ± 0.02 |
| Indirect effect | -0.01 ± 0.01 | -0.03 ± 0.01\* | -0.01 ± 0.01 | -0.01\* ± 0.01 |
| Total effect | 0.12 \*\* ± 0.05 | -0.02 ± 0.05 | 0.01 ± 0.02 | 0.00 ± 0.02 |
| **Household agricultural earnings in the last year (log transformed)** | | | | |
| Direct effect | 0.13\*\*\* ± 0.04 | 0.01 ± 0.05 | 0.02 ± 0.02 | 0.01 ± 0.02 |
| Indirect effect | 0.02 \*\*± 0.01 | 0.03 \*\* ± 0.01 | 0.01 \*\* ± 0.01 | 0.02\* ± 0.01 |
| Total effect | 0.15 \*\*\* ± 0.04 | 0.04 ± 0.05 | 0.03\*± 0.02 | 0.03 ± 0.02 |

*1Models adjusted for all covariates from Table 2. Sample size in Vietnam is 1081 excluding 2 observations with missing agricultural land area information. Effects shown are standardized path coefficients and standard errors calculated using Huber-White’s heteroskedasticity-consistent estimator. Significance codes: \* p<0.05   \*\* p<0.01   \*\*\* p<0.00*

Appendix A

1. Supplementary information on measurement of child diet diversity indicator

The scoring of the child diet diversity indicator was adapted from the Minimum Dietary Diversity Score for Women (MDD-W) using the food groups available in the YL data. This section explains the methodology used to score the diet diversity indicator by outlining the MDD-W food groups and the data available in each round.

The MDD-W uses the following 10 mutually exclusive food groups: 1) grains, white roots and tubers, and plantains 2) pulses (beans, peas and lentils) 3) nuts and seeds 4) dairy 5) meat, poultry and fish 6) eggs 7) dark green leafy vegetables 8) other vitamin A-rich fruits and vegetables 9) other vegetables and 10) other fruits.1

At age five, the YL team asked about the child’s consumption of the following eleven groups: 1) cereals, 2) roots and tubers 3) legumes and nuts 4) milk and milk products 5) eggs, 6) meat and offal 7) fish and seafood 8) oils and fats 9) sugar and honey 10) fruits and 11) vegetables.

At age eight, YL researchers asked about the following fifteen groups: 1) cereals 2) vitamin A rich vegetables 3) other roots and tubers 4) dark leafy greens 5) other vegetables 6) vitamin A rich fruits 7) other fruit 8) organ meats 9) other meats 10) eggs 11) fish and seafood 12) legumes and nuts 13) dairy and dairy products 14) oils and fats 15) sugar and honey. In Ethiopia, at age 8, YL researchers also asked about the child’s consumption of cactus and kocho.

Because we did not have data from the age five for the child’s consumption vitamin A-rich fruit, vitamin A-rich vegetables or dark leafy greens, we could not include them in the measurement of dietary diversity for this study. Additionally, MDD-W groups “pulses” separately from “nuts and seeds” but we were unable to do so because the YL questions did not distinguish nuts and from pulses and did not ask explicitly about seeds.1Accordingly, we categorized legumes and nuts as a single food group. The seven final food groups used to measure dietary diversity in this analysis were as follows: 1) starchy staples (cereals, roots, and tubers, including kocho) 2) legumes, nuts and seeds 3) vegetables (including cactus) 4) fruit 5) eggs 6) milk and milk products and 7) meat, poultry, and fish.

1. Kennedy G, Ballard T, Dop MC, European Union. *Guidelines for Measuring Household and Individual Dietary Diversity*. Food and Agriculture Organization of the United Nations; 2011.