

ONLINE APPENDIX

Does non-farm income affect food security? Evidence from India

Table O1.: Instruments used in the literature

Papers	Country	Endogenous Variable	Instruments
Pfeiffer et al. (2009)	Mexico	Off-farm income	Municipio distance to the US border
			Parents of HH head or the spouse were migrants
			Parents of HH head or the spouse were migrants
Oseni and Winters (2009)	Nigeria	Non-farm participation;	English literacy
			Household migration network
Kilic et al. (2009)	Albania	Non-farm participation	Knowledge of any foreign language;
			Share of district non-farm employment
Babatunde and Qaim (2010)	Nigeria	Off-farm income	Household assets; access to electricity
			tapped water; tarred road;
			distance to market
Imai et al. (2015)	Vietnam	Non-farm participation	average female wage
	India		
Mishra et al. (2015)	Bangladesh	Income	District level agricultural wage;
			District level non-agricultural wage;
			Rainfall; Share of hh with electricity;
			Distance from Dhaka

Table O2. Non-farm Income & Food Security (IV: Share of non-agri workers)

	Food Expenditure	Share Food Expenditure	Cereal Expenditure	Non-Cereal to Cereal Expenditure	Egg-Fish- Meat Expenditure	Dietary Diversity
Log Non-Farm Income	0.316*** (0.033)	-0.014* (0.006)	0.188*** (0.028)	0.029*** (0.008)	0.456*** (0.072)	0.015*** (0.003)
Highest edu	-0.005 (0.005)	-0.000 (0.001)	-0.002 (0.004)	-0.001 (0.001)	-0.018 (0.011)	-0.000 (0.000)
MPCE	0.000*** (0.000)	-0.000*** (0.000)	0.000*** (0.000)	0.000 (0.000)	0.000* (0.000)	-0.000** (0.000)
Kids	0.051*** (0.005)	-0.001 (0.001)	0.088*** (0.004)	-0.011*** (0.001)	0.039*** (0.012)	-0.003*** (0.000)
PDS	0.004 (0.036)	-0.021** (0.006)	-0.220*** (0.031)	0.065*** (0.010)	0.102 (0.091)	0.031*** (0.005)
Primary Income Source						
Ag-labour	0.141*** (0.042)	0.000 (0.008)	0.136*** (0.034)	-0.002 (0.009)	0.162* (0.076)	0.003 (0.005)
Non-ag labour	-0.472*** (0.063)	0.019 (0.011)	-0.274*** (0.053)	-0.047*** (0.014)	-0.647*** (0.134)	-0.014* (0.007)
Salaried	-0.619*** (0.078)	0.005 (0.013)	-0.406*** (0.065)	-0.044** (0.016)	-0.893*** (0.171)	-0.022** (0.008)
Other	-0.630*** (0.074)	0.022 (0.012)	-0.422*** (0.062)	-0.045** (0.016)	-0.905*** (0.161)	-0.026*** (0.008)
Ration Card						
BPL	0.051 (0.033)	0.010 (0.006)	0.185*** (0.033)	-0.039*** (0.008)	-0.041 (0.074)	-0.005 (0.005)
APL	0.108** (0.036)	0.016* (0.007)	0.254*** (0.036)	-0.043*** (0.009)	0.007 (0.089)	0.002 (0.006)
Toilet						
Traditional	0.049 (0.045)	0.015* (0.006)	0.018 (0.033)	0.001 (0.011)	-0.021 (0.102)	-0.004 (0.004)
Flush	0.067* (0.033)	0.004 (0.005)	0.066* (0.026)	-0.007 (0.007)	0.098 (0.065)	0.004 (0.004)
Electricity	0.031 (0.042)	-0.018* (0.007)	-0.003 (0.034)	0.011 (0.011)	0.052 (0.095)	0.013** (0.005)
Land Class						
0.01-0.4	0.080** (0.029)	-0.015** (0.006)	0.076** (0.025)	-0.002 (0.006)	0.036 (0.063)	-0.001 (0.004)
0.4-1.0	0.147*** (0.035)	-0.014* (0.006)	0.134*** (0.026)	-0.001 (0.006)	0.111 (0.073)	0.000 (0.003)
1.0-2.0	0.155*** (0.044)	-0.020** (0.007)	0.117** (0.036)	0.009 (0.008)	-0.017 (0.083)	-0.001 (0.004)
2.0-4.0	0.126* (0.059)	-0.020* (0.008)	0.038 (0.044)	0.026** (0.010)	-0.095 (0.134)	0.004 (0.005)
4.0-10.0	0.231** (0.078)	-0.018 (0.011)	0.103 (0.063)	0.037* (0.015)	0.271 (0.264)	0.013 (0.009)
10+	0.134 (0.153)	-0.061** (0.020)	-0.102 (0.108)	0.070** (0.024)	0.237 (0.543)	0.028 (0.018)
N	37456	37456	37304	37300	17022	37456

Standard errors clustered at the district-level in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.Omitted groups: *Primary Income Source*: Cultivator. *Ration Card Type*: AAY. *Toilet*: No Toilet. *Land Class*: 0-0.01 hectares.

MPCE refers to Monthly per capita expenditure.

Table O3. Panel Regression: Non-farm income & food security indicators

	Food Expenditure	Share Food Expenditure	Cereal Expenditure	Non-Cereal to Cereal Expenditure	Egg-Fish- Meat Expenditure	Dietary Diversity
Log Non-farm Income	0.047*** (0.004)	-0.002*** (0.001)	0.029*** (0.001)	0.004*** (0.001)	0.059*** (0.006)	0.003*** (0.000)
Highest edu	0.028*** (0.001)	-0.002*** (0.000)	0.017*** (0.001)	0.002*** (0.000)	0.037*** (0.004)	0.001*** (0.000)
MPCE	0.000*** (0.000)	-0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000 (0.000)
Kids	0.058*** (0.003)	-0.001 (0.001)	0.092*** (0.002)	-0.011*** (0.001)	0.036*** (0.007)	-0.003*** (0.000)
PDS	0.177*** (0.019)	-0.028*** (0.005)	-0.117*** (0.011)	0.082*** (0.008)	0.378*** (0.044)	0.040*** (0.004)
Primary Income Source						
Ag labour	-0.057** (0.022)	0.009 (0.006)	0.018 (0.015)	-0.021*** (0.006)	-0.088* (0.037)	-0.007 (0.004)
Non-ag labour	-0.019 (0.020)	-0.002 (0.005)	-0.007 (0.015)	-0.004 (0.006)	0.007 (0.041)	0.007* (0.003)
Salaried	-0.072*** (0.020)	-0.020*** (0.005)	-0.084*** (0.019)	0.008 (0.006)	-0.104* (0.052)	0.003 (0.004)
Other	-0.092*** (0.020)	-0.002 (0.005)	-0.104*** (0.016)	0.007 (0.005)	-0.109* (0.045)	-0.001 (0.003)
Ration Card						
BPL	-0.099*** (0.024)	0.017** (0.006)	0.096*** (0.018)	-0.053*** (0.007)	-0.174** (0.054)	-0.012** (0.004)
APL	-0.006 (0.025)	0.022** (0.007)	0.188*** (0.020)	-0.053*** (0.009)	-0.086 (0.063)	-0.003 (0.005)
Toilet Facility						
Traditional	0.192*** (0.030)	0.008 (0.006)	0.102*** (0.014)	0.015 (0.010)	0.068 (0.075)	0.003 (0.003)
Flush	0.222*** (0.024)	-0.003 (0.004)	0.159*** (0.013)	0.008 (0.005)	0.261*** (0.050)	0.011*** (0.003)
Electricity	0.277*** (0.020)	-0.029*** (0.005)	0.142*** (0.012)	0.035*** (0.007)	0.433*** (0.040)	0.024*** (0.003)
Land Class						
0.01-0.4	0.092*** (0.023)	-0.015** (0.005)	0.082*** (0.016)	-0.001 (0.006)	0.041 (0.042)	-0.000 (0.003)
0.4-1.0	0.072*** (0.021)	-0.011 (0.006)	0.088*** (0.016)	-0.008 (0.005)	0.051 (0.047)	-0.003 (0.003)
1.0-2.0	0.024 (0.024)	-0.014* (0.006)	0.038 (0.019)	-0.004 (0.007)	-0.031 (0.055)	-0.007 (0.004)
2.0-4.0	-0.036 (0.032)	-0.013 (0.007)	-0.059* (0.025)	0.010 (0.007)	-0.065 (0.088)	-0.003 (0.004)
4.0-10.0	-0.009 (0.041)	-0.007 (0.009)	-0.042 (0.033)	0.013 (0.012)	0.125 (0.118)	0.002 (0.007)
10+	-0.109 (0.089)	-0.050* (0.021)	-0.249*** (0.060)	0.046** (0.018)	0.287 (0.262)	0.017 (0.013)
N	42327	42327	42245	42241	24026	42327
R ²	0.421	0.202	0.229	0.164	0.305	0.109

Note:

Household-level controls include highest education level in the household, MPCE, number of kids, access to PDS, primary income ration card type, access to toilet, access to electricity, land-class.

Standard errors clustered at the district-level in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Omitted groups: *Primary Income Source*: Cultivator. *Ration Card Type*: AAY. *Toilet*: No Toilet. *Land Class*: 0-0.01 hectares.

MPCE refers to Monthly per capita expenditure.

Table O4. Panel Regression: Remittances and food security indicators

	Food Expenditure	Share Food Expenditure	Cereal Expenditure	Non-Cereal to Cereal Expenditure	Egg-Fish- Meat Expenditure	Dietary Diversity
Log Remittance Income	0.025*** (0.003)	-0.002* (0.001)	0.009** (0.003)	0.004*** (0.001)	0.028*** (0.005)	0.002*** (0.000)
Highest Edu	0.035*** (0.002)	-0.002*** (0.000)	0.021*** (0.002)	0.003*** (0.000)	0.046*** (0.004)	0.002*** (0.000)
MPCE	0.000*** (0.000)	-0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000 (0.000)
Kids	0.061*** (0.003)	-0.001 (0.001)	0.093*** (0.003)	-0.010*** (0.001)	0.038*** (0.007)	-0.003*** (0.000)
PDS	0.195*** (0.020)	-0.029*** (0.005)	-0.102*** (0.024)	0.082*** (0.008)	0.406*** (0.044)	0.040*** (0.004)
Primary Income Source						
Ag labour	-0.087*** (0.024)	0.010 (0.006)	-0.001 (0.023)	-0.023*** (0.006)	-0.120** (0.039)	-0.008* (0.004)
Non-ag labour	0.064** (0.022)	-0.006 (0.005)	0.043 (0.023)	0.003 (0.006)	0.109* (0.042)	0.012** (0.004)
Salaried	0.019 (0.023)	-0.024*** (0.005)	-0.027 (0.023)	0.015* (0.006)	0.007 (0.052)	0.008* (0.004)
Other	-0.011 (0.022)	-0.006 (0.005)	-0.050* (0.021)	0.012* (0.005)	-0.004 (0.045)	0.003 (0.003)
Ration Card						
BPL	-0.120*** (0.025)	0.017** (0.006)	0.082** (0.031)	-0.054*** (0.007)	-0.191*** (0.056)	-0.013** (0.004)
APL	-0.026 (0.027)	0.022*** (0.007)	0.176*** (0.034)	-0.055*** (0.009)	-0.103 (0.065)	-0.004 (0.005)
Toilet Facility						
Traditional	0.206*** (0.030)	0.008 (0.006)	0.114*** (0.026)	0.015 (0.010)	0.074 (0.076)	0.003 (0.003)
Flush	0.242*** (0.025)	-0.004 (0.004)	0.173*** (0.023)	0.009 (0.005)	0.275*** (0.052)	0.012*** (0.003)
Electricity	0.309*** (0.021)	-0.030*** (0.005)	0.165*** (0.021)	0.036*** (0.007)	0.476*** (0.041)	0.026*** (0.003)
Land Class						
0.04-0.1	0.092*** (0.024)	-0.015** (0.005)	0.083*** (0.023)	-0.002 (0.006)	0.042 (0.044)	-0.000 (0.003)
0.1-0.4	0.060** (0.022)	-0.010 (0.006)	0.080*** (0.020)	-0.009 (0.005)	0.043 (0.049)	-0.004 (0.003)
0.4-1.0	0.001 (0.026)	-0.013* (0.006)	0.024 (0.025)	-0.005 (0.007)	-0.036 (0.060)	-0.008* (0.004)
1.0-2.0	-0.062 (0.033)	-0.012 (0.007)	-0.076* (0.031)	0.008 (0.007)	-0.065 (0.091)	-0.005 (0.004)
2.0-4.0	-0.051 (0.044)	-0.005 (0.009)	-0.068 (0.047)	0.010 (0.012)	0.091 (0.113)	-0.000 (0.007)
4.0-10.0	-0.149 (0.092)	-0.049* (0.021)	-0.275** (0.100)	0.044* (0.017)	0.264 (0.246)	0.015 (0.012)
N	42327	42327	42245	42241	24026	42327
R ²	0.386	0.201	0.213	0.163	0.280	0.105

Note:

Household-level controls include highest education level in the household, MPCE, number of kids, access to PDS, primary income ration card type, access to toilet, access to electricity, land-class.

Standard errors clustered at the district-level in parentheses.

⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Omitted groups: *Primary Income Source*: Cultivator. *Ration Card Type*: AAY. *Toilet*: No Toilet. *Land Class*: 0-0.01 hectares.

MPCE refers to Monthly per capita expenditure.

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