

Appendix

Appendix A Validity test of instrumental variable

	Cultivation	Household income	Farm income	Off-farm income	The number of migrant workers
Age	0.009 (0.049)	-0.118 (0.095)	0.050 (0.063)	0.061 (0.060)	0.107 (0.033) ^{***}
Square of age	0.000 (0.000)	0.001 (0.001)	-0.000 (0.001)	-0.001 (0.001) [*]	-0.001 (0.000) ^{***}
Education	0.031 (0.022)	0.110 (0.048) ^{**}	0.060 (0.027) ^{**}	0.047 (0.032)	0.043 (0.013) ^{***}
Household size	0.018 (0.047)	-0.356 (0.099) ^{***}	-0.229 (0.058) ^{***}	0.040 (0.070)	0.279 (0.028) ^{***}
Farm size	0.026 (0.012) ^{**}	0.052 (0.038)	0.168 (0.097) [*]	-0.044 (0.021) ^{**}	-0.018 (0.009) ^{**}
Cooperative membership	1.602 (0.205) ^{***}	0.252 (0.487)	0.764 (0.411) [*]	-0.151 (0.275)	-0.034 (0.102)
Road condition	0.069 (0.161)	1.206 (0.370) ^{***}	0.378 (0.265)	0.545 (0.218) ^{**}	0.123 (0.095)
Sales help	-0.267 (0.214)	0.232 (0.377)	0.201 (0.293)	-0.274 (0.243)	0.012 (0.095)
Migration help	0.682 (0.239) ^{***}	0.479 (0.413)	0.915 (0.307) ^{***}	-0.156 (0.312)	-0.029 (0.102)
Hubei	-1.599 (0.308) ^{***}	1.182 (0.554) ^{**}	-0.511 (0.265) [*]	0.990 (0.421) ^{**}	-0.154 (0.140)
Hunan	2.157 (0.242) ^{***}	0.580 (0.472)	0.552 (0.381)	0.095 (0.317)	-0.018 (0.136)
Chongqing	-0.734 (0.263) ^{***}	1.860 (0.680) ^{***}	0.085 (0.389)	1.266 (0.513) ^{**}	-0.287 (0.160) [*]
Infrastructure investment (log)	0.273 (0.065) ^{***}	0.150 (0.109)	0.089 (0.059)	0.083 (0.083)	0.028 (0.027)
Constant	-2.836 (1.480) [*]	5.178 (2.886) [*]	-0.715 (1.644)	-0.154 (1.849)	-4.560 (0.901) ^{***}
Observations	730	730	730	730	730

Note: Household income, farm income and off-farm income are measured in 1,000 Yuan/capita. The reference region is Guizhou. Standard errors are in parentheses, ^{*} $p < 0.1$,

^{**} $p < 0.05$, ^{***} $p < 0.01$.

Appendix B Determinants of cash crop cultivation and its impact on farm income

	ETR for continuous variable ^a		OLS
	Selection equation	Farm income	Farm income
Cultivation		2.958 (0.558) ^{***}	1.031 (0.493) ^{**}
Age	0.016 (0.049)	0.054 (0.076)	0.051 (0.063)
Square of age	-0.000 (0.000)	-0.001 (0.001)	-0.001 (0.001)
Education	0.027 (0.022)	0.051 (0.039)	0.057 (0.027) ^{**}
Household size	-0.004 (0.047)	-0.215 (0.080) ^{***}	-0.226 (0.058) ^{***}
Farm size	0.067 (0.016) ^{***}	0.151 (0.016) ^{***}	0.163 (0.097) [*]
Cooperative membership	1.502 (0.203) ^{***}	-0.089 (0.378)	0.468 (0.465)
Road condition	0.049 (0.160)	0.302 (0.291)	0.340 (0.265)
Sales help	-0.250 (0.208)	0.354 (0.294)	0.184 (0.274)
Migration help	0.736 (0.235) ^{***}	0.710 (0.334) ^{**}	0.852 (0.309) ^{***}
Hubei	-1.625 (0.310) ^{***}	0.118 (0.452)	-0.373 (0.280)
Hunan	2.033 (0.246) ^{***}	-1.202 (0.548) ^{**}	-0.104 (0.462)
Chongqing	-0.875 (0.264) ^{***}	0.144 (0.511)	0.117 (0.382)
Infrastructure investment (log)	0.282 (0.064) ^{***}		
Constant	-3.005 (1.488) ^{**}	-1.009 (2.183)	-0.520 (1.594)
$Ath(\rho_{\mu\varepsilon})$	-0.391 (0.088) ^{***}		
$\rho_{\mu\varepsilon}$	-0.372 (0.112) ^{***}		
$\ln(\sigma)$	1.203 (0.028) ^{***}		
Log pseudolikelihood	-2,094.728		
Wald test of indep. Eqns. ($\rho_{\mu\varepsilon}=0$): $\chi^2(1) = 8.98$, Prob = 0.003			
Observations	730		730

Note: Farm income is measured in 1,000 Yuan/capita. The reference region is Guizhou. Standard errors are in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

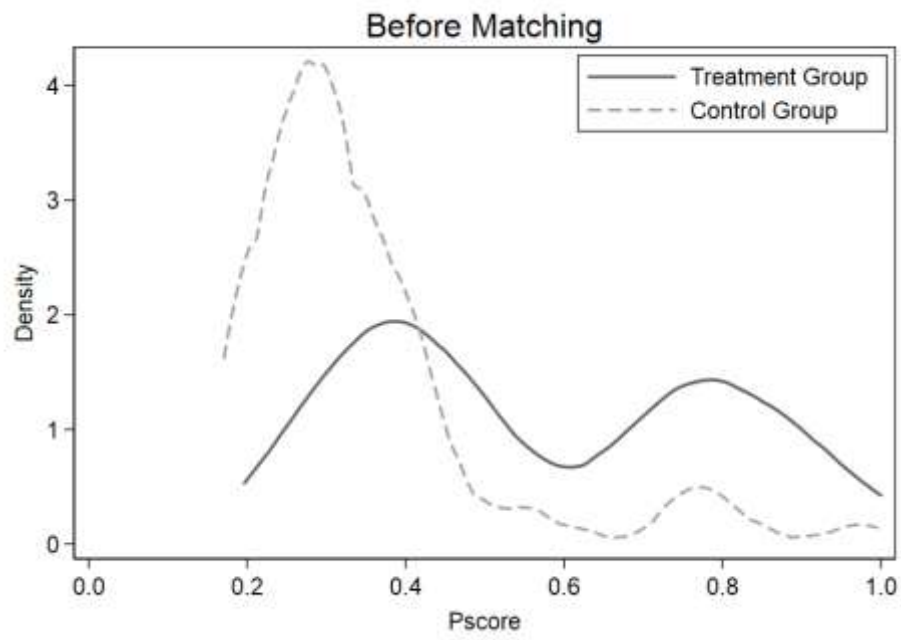
^a STATA commands *etregress* is used to estimate the results of the ETR model for continuous variable (StataCorp 2017).

Appendix C Determinants of cash crop cultivation and its impact on off-farm income

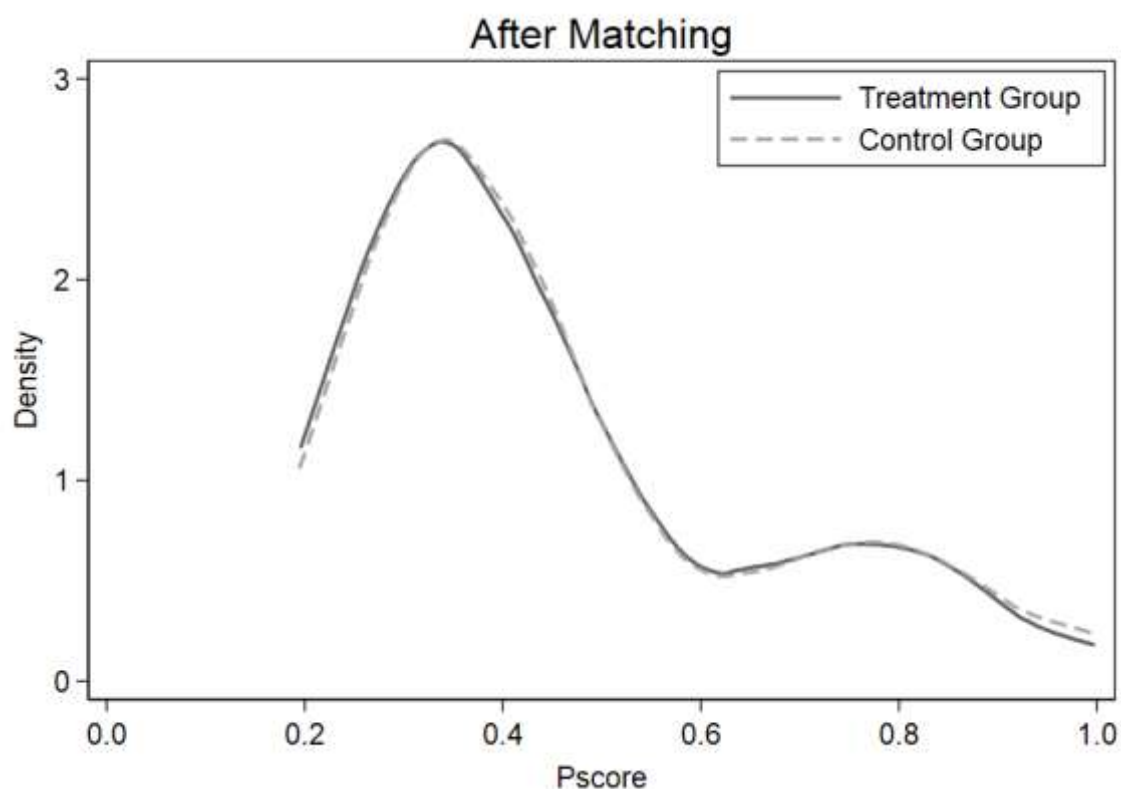
	ETR for continuous variable ^a		OLS
	Selection equation	Off-farm income	Off-farm income
Cultivation		-1.274 (0.638)**	-0.402 (0.285)
Age	0.005 (0.048)	0.058 (0.071)	0.060 (0.059)
Square of age	0.000 (0.000)	-0.001 (0.001)	-0.001 (0.001)*
Education	0.031 (0.022)	0.051 (0.036)	0.049 (0.032)
Household size	0.022 (0.047)	0.032 (0.075)	0.036 (0.070)
Farm size	0.029 (0.014)**	-0.035 (0.015)**	-0.040 (0.021)*
Cooperative membership	1.603 (0.205)***	0.219 (0.370)	-0.033 (0.252)
Road condition	0.068 (0.162)	0.553 (0.273)**	0.536 (0.214)**
Sales help	-0.265 (0.218)	-0.487 (0.278)*	-0.410 (0.229)*
Migration help	0.678 (0.240)***	-0.050 (0.314)	-0.114 (0.314)
Hubei	-1.662 (0.319)***	0.549 (0.435)	0.771 (0.355)**
Hunan	2.143 (0.244)***	0.758 (0.554)	0.261 (0.374)
Chongqing	-0.741 (0.261)***	1.263 (0.480)***	1.276 (0.511)**
Infrastructure investment (log)	0.275 (0.066)***		
Constant	-2.774 (1.472)*	0.595 (2.051)	0.374 (1.701)
$Ath(\rho_{\mu\varepsilon})$	0.177 (0.106)*		
$\rho_{\mu\varepsilon}$	0.175 (0.103)*		
$\ln(\sigma)$	1.140 (0.027)***		
Log pseudolikelihood	-2,062.997		
Wald test of indep. Eqns. ($\rho_{\mu\varepsilon}=0$): $\chi^2(1)=1.72$, Prob = 0.189			
Observations	730		730

Note: Off-farm income is measured in 1,000 Yuan/capita. The reference region is Guizhou. Standard errors are in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

^a STATA commands *etregress* is used to estimate the results of the ETR model for continuous variable (StataCorp 2017).



Appendix D Distribution of propensity scores between treated group and control group before matching



Appendix E Distribution of propensity scores between treated group and control group after matching

Appendix F Average treatment effects on the treated (ATT) of cash crop cultivation using PSM method

Group	Household income		The number of migrant workers	
	ATT^{PSM}	S.E.	ATT^{PSM}	S.E.
Full sample	0.919**	0.480	-0.087	0.154

Note: Household income is measured in 1,000 Yuan/capita. Nearest neighbor matching method is employed. ** $p < 0.05$.