

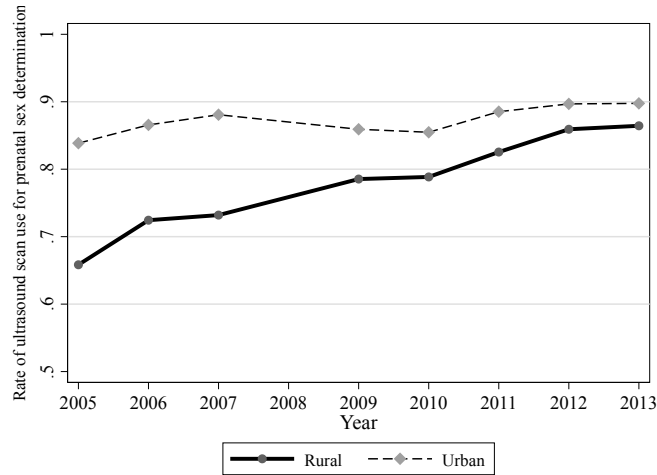
For Online Publication

(A) Appendix Figures

(B) Appendix Tables

A. Appendix Figures

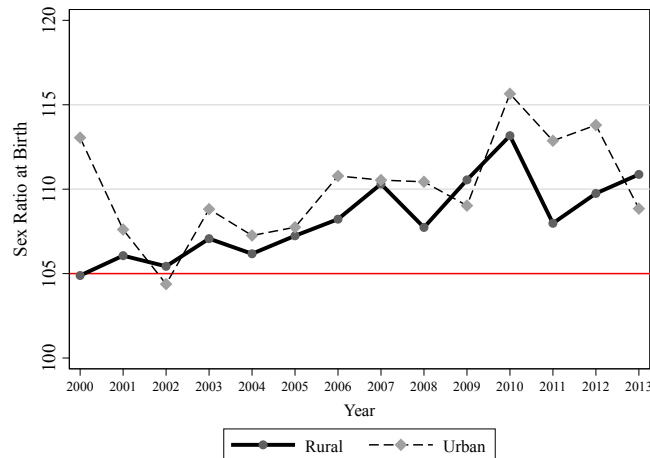
Figure A.1: Rate of Ultrasound Scan Use for Prenatal Sex Determination



Data: PCS 2006, 2007, 2010-2013

Notes: This figure plots the rate of mothers who used ultrasound scans for prenatal sex determination given their childbirth in the survey year. The information about ultrasound scan use is available only in the PCS 2006, 2007, and 2010-2013.

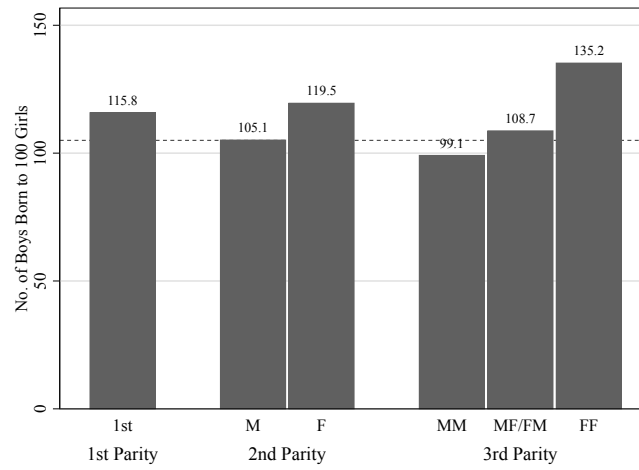
Figure A.2: Sex Ratio at Birth in Vietnam



Data: PCS 2000-2008, 2010-2013, Census 2009

Notes: The figure plots the sex ratio at birth, i.e., the number of infant boys (≤ 1 year old) born to one hundred infant girls in each survey year in rural and urban areas, respectively. The red horizontal line denotes the biologically normal sex ratio at birth, approximately 105 male newborns to 100 female newborns.

Figure A.3: Sex Ratio at Birth by Birth Parity

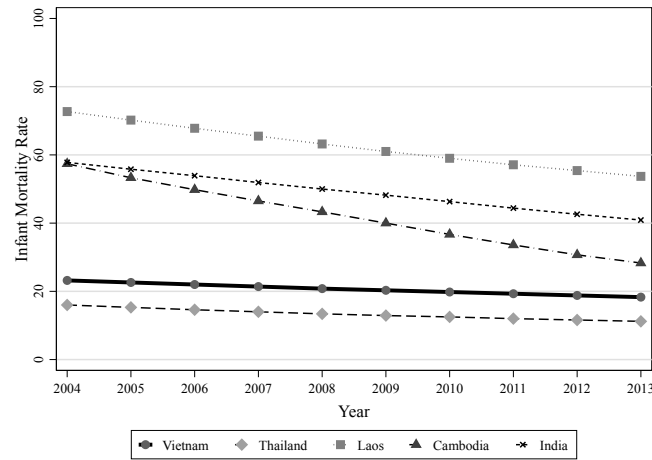


Data: Census 2009

Notes: This figure describes the sex ratio at birth by birth parity depending on the sex of previous births. 'M' of the 2nd parity means the firstborn is son, and 'F' means a daughter. Likewise, for the third parity, 'MM' means the first two births are boys, whereas 'FF' means there is no son in the previous two births.

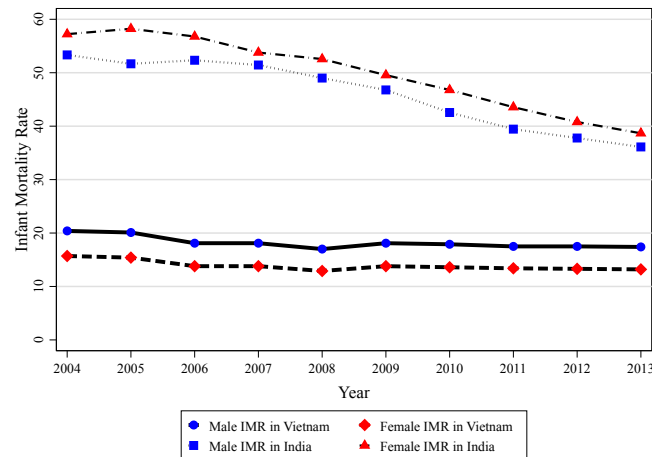
Figure A.4: Infant Mortality Rate

(a) Infant Mortality Rate by Country



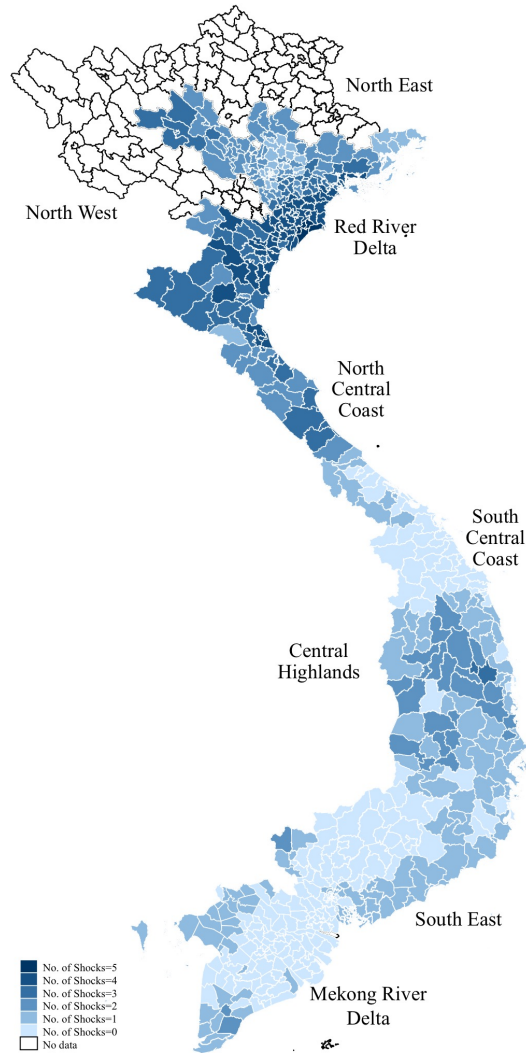
Notes: This figure describes the infant mortality rates of Vietnam and neighboring countries in Southeast Asia using the official statistics from the World Bank.

(b) Infant Mortality Rate by Sex



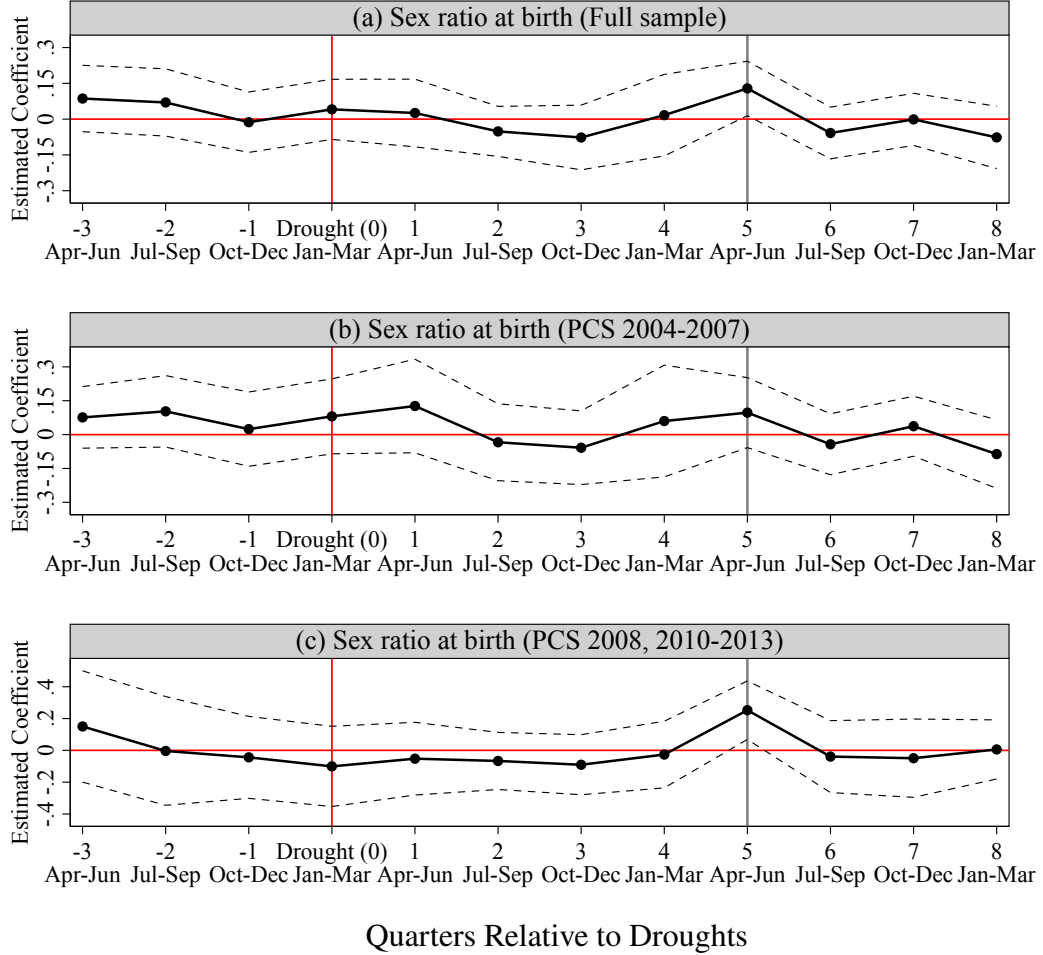
Notes: This figure describes infant mortality rates (IMRs) by sex using the official statistics from the Vietnam GSO. For the IMR in India, I choose nine states in northwestern India showing strong son preference (Anukriti (2017)). They consist of Rajasthan, Himachal Pradesh, Delhi, Gujarat, Uttar Pradesh, Madhya Pradesh, Maharashtra and Haryana.

Figure A.5: Distribution of Droughts across Districts in Vietnam



Notes: This map describes the number of droughts experienced by each district in the sample period from 2004-2013. Droughts are defined as seasonal rainfall occurring below the 20th percentile of the district-specific dry season rainfall distribution in 1984-2013 from Climate Hazards Group InfraRed Precipitation with Station version 2.0. The districts with 'No data' are excluded from the analysis because more than 50 percent of the heads of household are not ethnically Kinh in the 10 provinces. The 10 provinces are Cao Bang, Bac Kan, Ha Giang, Lang Son, Lai Chau, Son La, Dien Bien, Hoa Binh, Lao Cai, and Tuyen Quang.

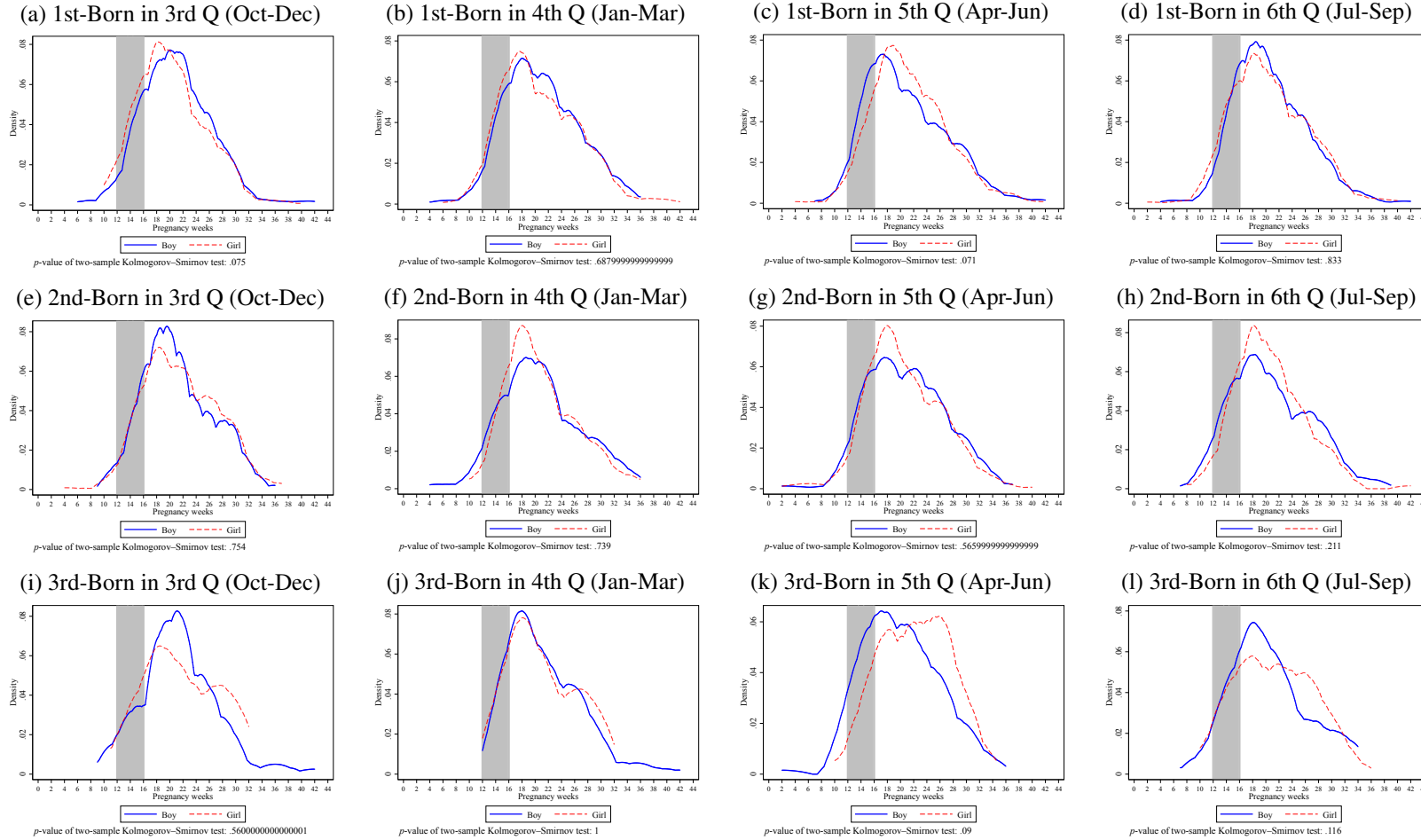
Figure A.6: Effects of Droughts on the Sex Ratio at Birth



Data: PCS 2004-2008, 2010-2013

Notes: Panel (a) plots the coefficients on the indicators for n quarters away from the drought occurring at $n = 0$ in the regression estimating the effect on the log of province-quarter level sex ratio at birth using the full PCS sample. Panel (b) and (c) plot the coefficients by repeating the same regression of Panel (a) using the first four and the latter five rounds of the PCS, respectively. The sex ratio at birth is defined by the number of infant boys (≤ 1 year old) born to one hundred infant girls in each survey year. The dashed black lines refer to the 95 percent confidence intervals. The gray vertical line denotes the quarter when droughts have significant effects on births, as shown in Figure 4 (c).

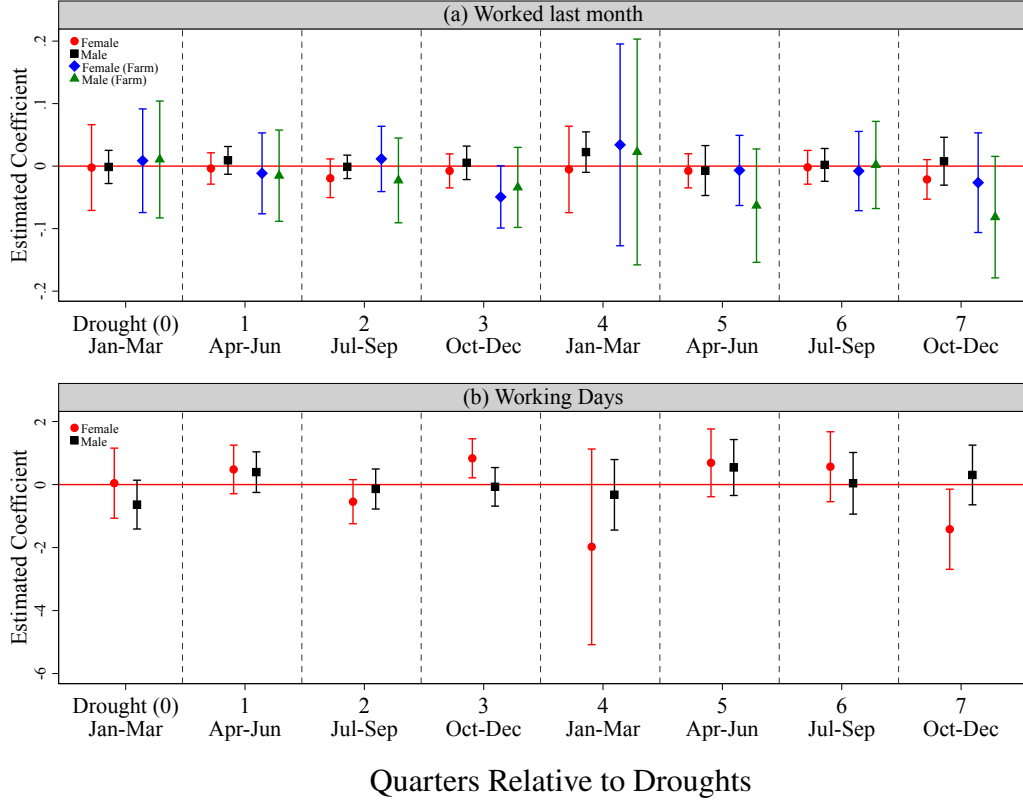
Figure A.7: Distribution of the Weeks of Sex Determination by the Sex of Newborn and by the Birth Order



Data: PCS 2004-2008, 2010-2013

Notes: Figures plot the kernel density estimation on the distributions of the weeks of fetal sex determination of affected mothers using ultrasound, conditional on the childbirth of each parity from the 3rd (Panel (a), (e), (i)) to the 6th quarter (Panel (d), (h), (l)) after droughts. It is from the 3rd to the 6th quarter after droughts when the aborted fetuses in the PCS (t) would have been born otherwise. The gray vertical bands denote the pregnancy weeks when sex-selective abortion can be performed; the 12th week is the earliest possible week when the fetal sex can be determined by ultrasound, and the 16th weeks is the latest possible week when abortion can be performed from the DHS 2002 (Committee for Population, Family and Children [Vietnam] and ORC Macro, 2003). It is the 5th quarter after droughts (April-June) when the effect of droughts on birth is significant, as shown in Figure 4 (c).

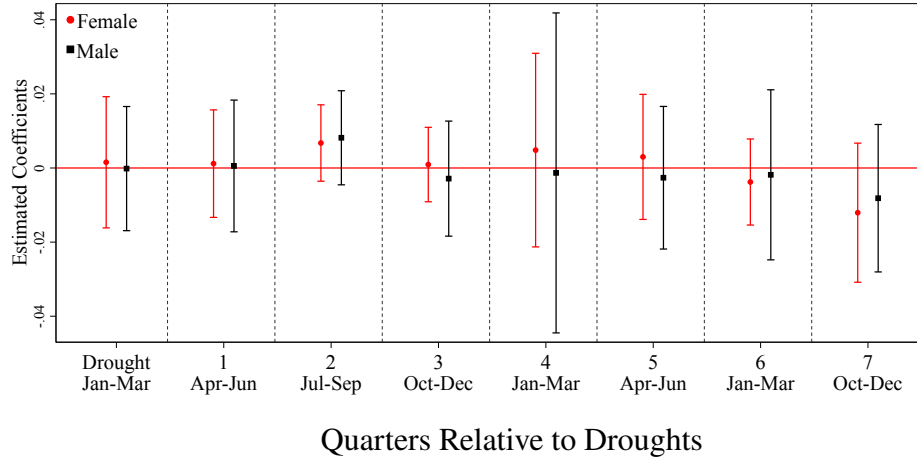
Figure A.8: Effects of Droughts on Labor Market Participation



Data: VHLSS 2010, 2012, 2014

Notes: Figures plot the coefficients on the interaction terms between quarters and droughts in t and $t - 1$ from the regressions estimating the effect on whether a married woman/man worked last month (Panel (a)) and the working days conditional on her/his labor market participation last month (Panel (b)). Colored bars represent the 95% confidence intervals of the estimated coefficients. Each regression includes quarter FEs, province FEs, region $\times$ year FEs, the logs of other season-year rainfalls and household-level controls such as the sex, age, ethnicity (Kinh or not) and years of schooling of the household head, the household size and the dummy for multigenerational household. Robust standard errors are clustered for the province level.

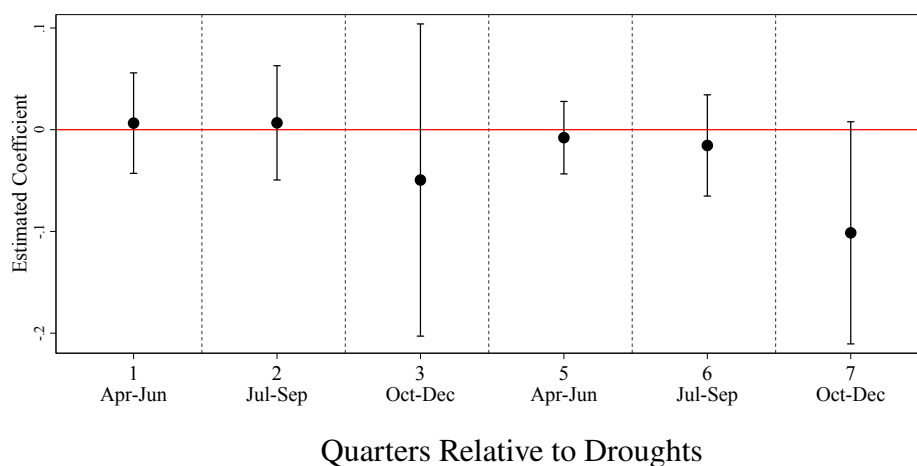
Figure A.9: Effect of Droughts on Recent Migration



Data: VHLSS 2010, 2012, 2014

Notes: This figure plots the coefficients on the interaction terms between quarters and droughts in t and $t - 1$ from the regression estimating the effect on recent migration of a rural household. The indicator for the recent migration becomes one if a married woman or man had been away from home for less than 6 months at the time of the survey. Black bars represent the 95% confidence intervals of the estimated coefficients. The regression includes quarter FEs, province FEs, region $\times$ year FEs, the logs of other season-year rainfalls and household-level controls such as the sex, age, ethnicity (Kinh or not) and years of schooling of the household head, the household size and the dummy for multigenerational household. Robust standard errors are clustered for the province level.

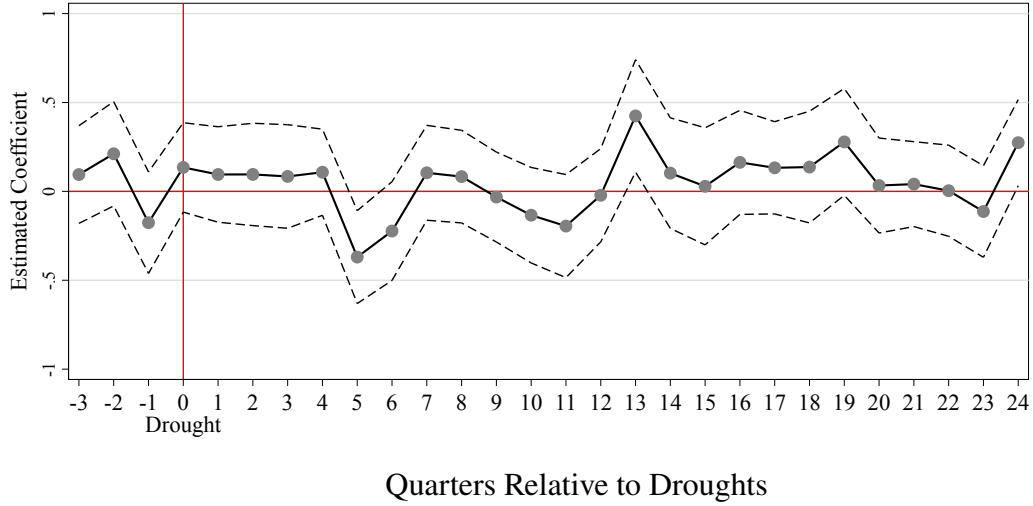
Figure A.10: Effect of Droughts on Recent Illness



Data: VHLSS 2004, 2006, 2008

Notes: This figure plots the coefficients on the interaction terms between quarters and droughts in t and $t - 1$ from the regression estimating the effect on recent illness of any rural household member. The indicator for the recent illness becomes one if any household members suffered from any illness or injuries for the past 4 weeks from the date of the survey. The regression includes quarter FEs, province FEs, region $\times$ year FEs, the logs of other season-year rainfalls and household-level controls such as the sex, age, ethnicity (Kinh or not) and years of schooling of the household head, the household size and the dummy for multigenerational household. Robust standard errors are clustered for the province level. There are no point estimates in the quarter with droughts, nor are there in the 4th quarter after droughts due to no observations of households having been surveyed in that quarter.

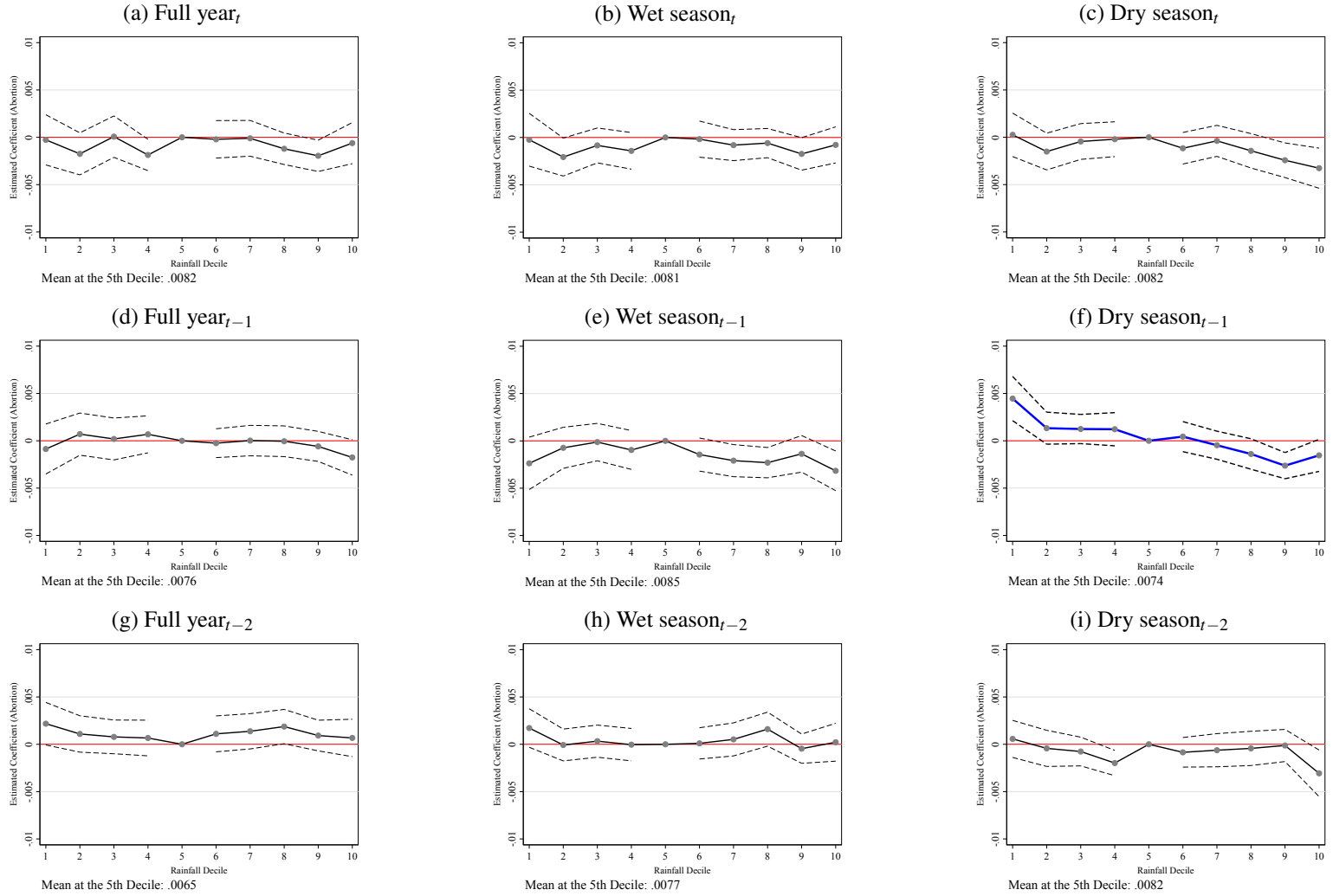
Figure A.11: Effect of Droughts on Births in the Medium Term



Data: PCS 2004-2008, 2010-2013

Notes: This figure plots the coefficients on the interaction terms between quarters and droughts from t to $t - 6$ from the regression estimating the effect on the number of quarter-district-level births. Each point estimate refers to the effect on births in n quarters away from the drought occurring at $n = 0$. The dashed lines refer to the 95 percent confidence intervals. The regression includes the same controls in Equation (3), district FEs, province $\times$ quarter FEs, quarter $\times$ year FEs, and district-level linear time trends. Robust standard errors are clustered for the district level.

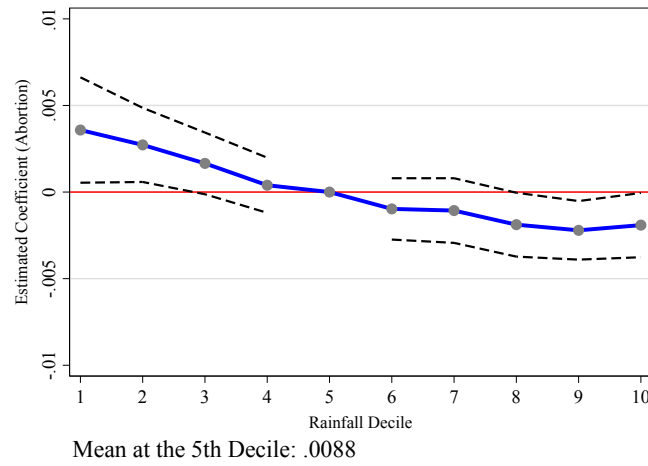
Figure A.12: Effects of Other Season-Year Rainfalls on Abortion



Data: PCS 2004-2008, 2010-2013

Notes: The figures plot coefficients and 95% confidence intervals from regressions of abortion on the dummies for each 10th percentile interval (decile) of the district-specific rainfalls of the full year (Dec-Nov), dry season (Dec-Mar) and wet season (Apr-Nov) in 1984-2013. The omitted category is the 5th decile. Panel (f) plots the coefficients on each dummy (connected with blue solid lines) that is constructed using the dry season rainfall in $t-1$, the drought shocks used in the main analyses.

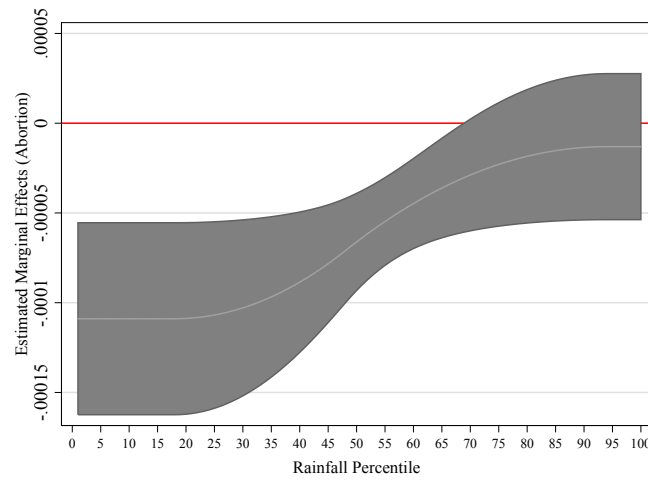
Figure A.13: Effects of Rainfall Decile on Abortion



Data: PCS 2004-2008, 2010-2013

Notes: The figure plots coefficients and 95% confidence intervals from a regression of abortion on the dummies for each 10th percentile (decile) of the gamma distribution fitted by the district-specific dry season rainfalls in 1984-2013. The omitted category is the 5th decile.

Figure A.14: Marginal Effects of Rainfall Percentiles on Abortion



Data: PCS 2004-2008, 2010-2013

Notes: The figure plots marginal effects of rainfall percentile on the indicator for abortion along with its 95% confidence intervals. The marginal effects are estimated using a restricted cubic spline with the knots at 18, 48 and 98, which are chosen by Harrell's procedure.

B. Appendix Tables

Table B.1: Effect of Droughts on Monthly Household Expenditure

	Dependent variables								
	ln(Exp. in '000VND)			1(Expenditure>0)				ln(Quantity in Kg)	
	Total	Excl. gift	Excl. gift & self	Rice	Pork	Gas	Child	Rice	Pork
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Q1 (Jan-Mar)×Drought(t)	-0.017 (0.029)	-0.017 (0.030)	-0.035 (0.036)	0.000 (0.005)	-0.006 (0.011)	-0.047 (0.029)	0.019 (0.018)	0.074 (0.026)	-0.062 (0.037)
Q2 (Apr-Jun)×Drought(t)	0.021 (0.020)	0.023 (0.020)	0.022 (0.024)	0.005 (0.004)	0.009 (0.008)	-0.006 (0.021)	0.017 (0.017)	-0.001 (0.017)	-0.017 (0.036)
Q3 (Jul-Sep)× Drought(t)	0.031 (0.021)	0.033 (0.020)	0.028 (0.025)	0.006 (0.004)	0.017 (0.011)	-0.028 (0.021)	-0.013 (0.018)	0.013 (0.022)	-0.046 (0.039)
Q4 (Oct-Dec)× Drought(t)	0.014 (0.022)	0.020 (0.022)	0.015 (0.027)	0.002 (0.006)	-0.014 (0.011)	-0.036 (0.019)	0.021 (0.017)	0.029 (0.022)	-0.054 (0.037)
Q1 (Jan-Mar)× Drought($t-1$)	0.017 (0.036)	0.020 (0.035)	0.071 (0.054)	0.002 (0.017)	0.002 (0.017)	-0.028 (0.054)	0.001 (0.055)	0.053 (0.046)	0.012 (0.077)
Q2 (Apr-Jun)× Drought($t-1$)	-0.029 (0.041)	-0.028 (0.042)	-0.057 (0.051)	0.011 (0.006)	0.003 (0.010)	-0.054 (0.028)	-0.013 (0.026)	0.017 (0.019)	0.007 (0.042)
Q3 (Jul-Sep)× Drought($t-1$)	-0.011 (0.033)	-0.008 (0.033)	-0.016 (0.044)	0.009 (0.008)	0.024 (0.011)	-0.009 (0.030)	-0.028 (0.025)	-0.009 (0.021)	-0.007 (0.027)
Q4 (Oct-Dec)× Drought($t-1$)	0.023 (0.030)	0.030 (0.029)	0.017 (0.049)	0.011 (0.007)	-0.000 (0.011)	-0.004 (0.031)	-0.064 (0.022)	-0.003 (0.021)	-0.056 (0.050)
Observations	17,448	17,433	17,432	17,448	17,448	17,448	17,448	17,297	16,665
R-squared	0.536	0.531	0.499	0.016	0.063	0.287	0.217	0.591	0.350
Mean of Dep. Var.	7.860	7.834	7.654	0.991	0.948	0.590	0.367	3.545	1.058
Controls									
Province and year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region × Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Rainfall in other season-year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Household characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ln(Total Expenditure)				Yes	Yes	Yes	Yes	Yes	Yes

Data: VHLSS 2010, 2012, 2014

Notes: This table presents the coefficients on the interaction terms between quarters and droughts in t and $t-1$ from the regressions estimating the effect on the log of total expenditure (column (1)-(3)), the indicator for the consumption of each good (columns (4)-(7)), and the log of consumed quantity (columns (8)-(9)). Column (2) excludes the consumption of gifts from total expenditure, and column (3) further excludes the consumption of self-generated goods. Robust standard errors are shown in parentheses clustered at the province level.

Table B.2: Effect of Droughts on Monthly Household Expenditure on Food Items

	Dependent vars. (ln(Expenditure in '000 VND))											
	FAFH	Rice	Pork	Veget., Fruit	Other Meat	Seafood	Dairy	Alcohol Tea	Other Starch	Tobacco	Staple	ETC
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Q1 (Jan-Mar) $\times$ Drought(t)	0.027 (0.065)	0.036 (0.027)	-0.091 (0.036)	-0.056 (0.037)	0.014 (0.054)	-0.114 (0.048)	-0.101 (0.057)	0.047 (0.063)	0.087 (0.054)	0.100 (0.053)	0.056 (0.065)	-0.065 (0.031)
Q2 (Apr-Jun) $\times$ Drought(t)	-0.054 (0.060)	-0.023 (0.022)	-0.039 (0.036)	0.056 (0.044)	0.011 (0.042)	0.002 (0.047)	0.073 (0.050)	0.048 (0.051)	0.061 (0.044)	-0.016 (0.064)	0.032 (0.056)	0.078 (0.032)
Q3 (Jul-Sep) $\times$ Drought(t)	0.068 (0.068)	0.007 (0.022)	-0.046 (0.038)	-0.019 (0.039)	0.066 (0.045)	-0.049 (0.049)	0.065 (0.056)	-0.045 (0.051)	0.058 (0.046)	-0.002 (0.055)	0.046 (0.058)	0.031 (0.035)
Q4 (Oct-Dec) $\times$ Drought(t)	-0.008 (0.065)	-0.005 (0.027)	-0.035 (0.041)	-0.012 (0.042)	0.012 (0.039)	-0.028 (0.046)	0.057 (0.063)	-0.100 (0.043)	0.078 (0.047)	0.052 (0.065)	0.099 (0.057)	0.000 (0.036)
Q1 (Jan-Mar) $\times$ Drought($t - 1$)	-0.116 (0.103)	0.035 (0.048)	0.002 (0.083)	0.123 (0.047)	-0.077 (0.079)	-0.103 (0.059)	-0.200 (0.155)	0.052 (0.059)	-0.152 (0.096)	0.080 (0.086)	0.355 (0.211)	0.062 (0.050)
Q2 (Apr-Jun) $\times$ Drought($t - 1$)	-0.110 (0.078)	-0.024 (0.023)	-0.025 (0.045)	-0.013 (0.056)	0.017 (0.077)	-0.066 (0.043)	-0.022 (0.063)	-0.047 (0.058)	0.118 (0.080)	-0.149 (0.082)	0.005 (0.099)	-0.068 (0.056)
Q3 (Jul-Sep) $\times$ Drought($t - 1$)	-0.070 (0.052)	-0.024 (0.021)	-0.038 (0.028)	-0.032 (0.043)	-0.106 (0.046)	-0.035 (0.060)	0.042 (0.068)	-0.030 (0.063)	0.054 (0.066)	0.019 (0.074)	-0.087 (0.064)	0.024 (0.045)
Q4 (Oct-Dec) $\times$ Drought($t - 1$)	0.106 (0.074)	0.017 (0.030)	0.005 (0.056)	-0.018 (0.046)	-0.007 (0.067)	0.009 (0.063)	0.080 (0.072)	-0.107 (0.073)	0.026 (0.038)	-0.005 (0.099)	-0.051 (0.062)	0.008 (0.048)
Observations	12,643	17,297	16,665	17,384	13,437	16,827	15,547	14,239	15,373	8,987	6,526	17,422
R-squared	0.317	0.570	0.392	0.378	0.311	0.434	0.274	0.212	0.214	0.380	0.176	0.419
Mean of Dep. Var.	5.721	5.867	5.303	5.205	5.265	5.209	4.242	4.182	4.062	4.407	3.140	5.194
Controls												
Province and year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region $\times$ Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Rainfall in other season-year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Household characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ln(Total Expenditure)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Data: VHLSS 2010, 2012, 2014

Notes: This table presents the coefficients on the interaction terms between quarters and droughts in t and $t - 1$ from the regressions estimating the effect on the log of monthly household expenditure on each food category. The regression columns are sorted by the share of expenditure on the item to the total expenditure from the largest to the smallest. FAFH denotes the food away from home. Robust standard errors are shown in parentheses clustered at the province level.

Table B.3: Effect of Droughts on Monthly Household Expenditure on Non-food Items

	Dependent vars. (ln(Expenditure in '000 VND))								
	Petro	Hygiene	Gas	Biomass	Child	Detergent	Female	Coal	ETC
	(1)	(2)	(LPG) (3)	Fuel (4)	(5)	(6)	Goods (7)	Kerosene (8)	(9)
Q1 (Jan-Mar) $\times$ Drought(t)	0.015 (0.043)	-0.038 (0.041)	0.043 (0.044)	0.104 (0.062)	-0.079 (0.091)	-0.040 (0.033)	-0.035 (0.094)	0.118 (0.151)	0.137 (0.077)
Q2 (Apr-Jun) $\times$ Drought(t)	0.079 (0.035)	0.045 (0.030)	-0.008 (0.037)	-0.006 (0.056)	-0.065 (0.068)	0.040 (0.027)	0.079 (0.095)	-0.103 (0.154)	0.047 (0.078)
Q3 (Jul-Sep) $\times$ Drought(t)	0.024 (0.030)	-0.005 (0.031)	-0.023 (0.027)	0.060 (0.042)	-0.040 (0.060)	-0.006 (0.033)	-0.036 (0.097)	0.063 (0.134)	0.073 (0.068)
Q4 (Oct-Dec) $\times$ Drought(t)	0.002 (0.038)	-0.000 (0.031)	-0.066 (0.039)	0.038 (0.052)	-0.103 (0.055)	0.010 (0.038)	-0.014 (0.084)	-0.010 (0.110)	0.040 (0.078)
Q1 (Jan-Mar) $\times$ Drought($t - 1$)	0.109 (0.045)	0.103 (0.068)	-0.068 (0.051)	0.124 (0.107)	0.065 (0.087)	-0.015 (0.068)	-0.024 (0.159)	0.069 (0.231)	-0.030 (0.084)
Q2 (Apr-Jun) $\times$ Drought($t - 1$)	-0.006 (0.058)	-0.047 (0.037)	0.001 (0.049)	-0.044 (0.076)	0.054 (0.148)	-0.040 (0.038)	0.085 (0.137)	0.045 (0.142)	0.013 (0.073)
Q3 (Jul-Sep) $\times$ Drought($t - 1$)	0.051 (0.047)	0.010 (0.037)	-0.023 (0.049)	-0.074 (0.076)	0.101 (0.152)	-0.029 (0.033)	0.263 (0.096)	-0.081 (0.131)	0.092 (0.099)
Q4 (Oct-Dec) $\times$ Drought($t - 1$)	0.068 (0.041)	0.066 (0.042)	-0.032 (0.052)	-0.027 (0.046)	-0.085 (0.114)	0.022 (0.037)	0.129 (0.122)	0.081 (0.104)	0.060 (0.107)
Observations	12,831	17,322	10,117	11,051	5,831	17,399	4,405	2,752	17,068
R-squared	0.253	0.526	0.235	0.216	0.337	0.430	0.226	0.389	0.285
Mean of Dep. Var.	5.340	4.379	4.708	4.200	4.585	3.748	3.612	2.995	4.155
Controls									
Province and year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region $\times$ Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Rainfall in other season-year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Household characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ln(Total Expenditure)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Data: VHLSS 2010, 2012, 2014

Notes: This table presents the coefficients on the interaction terms between quarters and droughts in t and $t - 1$ from the regressions estimating the effect on the log of monthly household expenditure on each non-food category. The regression columns are sorted by the share of expenditure on the item to the total expenditure from the largest to the smallest. 'Child' denotes the expenditure on allowance and books for children. Robust standard errors are shown in parentheses clustered at the province level.

Table B.4: Test for Balance in Characteristics of Affected and Unaffected Mothers

Dependent Vars.	Full Sample		By Parity							
	Mean/(SD)	Diff.	1st		2nd		3rd		4th	
			Mean/(SD)	Diff.	Mean/(SD)	Diff.	Mean/(SD)	Diff.	Mean/(SD)	Diff.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A. Mother's characteristics										
Age (Year)	26.181 (5.632)	-0.104	22.689 (3.803)	-0.335	26.722 (4.249)	-0.611	31.716 (4.914)	0.268	34.347 (5.110)	0.428
Being the household head	0.039 (0.193)	-0.008	0.018 (0.133)	-0.009	0.056 (0.229)	-0.009	0.052 (0.222)	-0.008	0.055 (0.228)	0.003
Educ. Attain.: Primary or none	0.284 (0.451)	-0.199	0.210 (0.408)	-0.197	0.303 (0.460)	-0.201	0.376 (0.484)	-0.217	0.487 (0.500)	-0.211
Educ. Attain.: Lower secondary	0.493 (0.500)	0.166	0.480 (0.500)	0.143	0.506 (0.500)	0.182	0.513 (0.500)	0.184	0.455 (0.498)	0.195
Educ. Attain.: Higher secondary or above	0.223 (0.416)	0.033	0.310 (0.463)	0.053	0.191 (0.393)	0.019	0.111 (0.314)	0.032	0.058 (0.233)	0.016
Age at the first birth (Year)	22.035 (3.190)	-0.289	-	-	22.243 (3.320)	-0.365	21.719 (2.932)	-0.147	21.626 (2.955)	0.116
Number of children ever born	0.887 (0.902)	0.016	-	-	-	-	-	-	-	-
Having the first child	0.434 (0.496)	-0.012	-	-	-	-	-	-	-	-
Have at least one son	0.576 (0.494)	0.006	-	-	0.530 (0.499)	0.016	0.649 (0.477)	-0.013	0.657 (0.475)	-0.081
Panel B. Spouse's characteristics										
Age (Year)	31.843 (6.018)	0.196	27.589 (5.761)	0.020	30.537 (4.859)	-0.456	35.013 (5.342)	0.420	37.186 (5.188)	0.656
Educ. Attain.: Primary or none	0.311 (0.463)	-0.154	0.237 (0.426)	-0.151	0.296 (0.457)	-0.155	0.348 (0.477)	-0.166	0.432 (0.496)	-0.193
Educ. Attain.: Lower secondary	0.493 (0.500)	0.150	0.470 (0.499)	0.126	0.491 (0.500)	0.152	0.515 (0.500)	0.151	0.484 (0.500)	0.178
Educ. Attain.: Higher secondary or above	0.196 (0.397)	0.004	0.292 (0.455)	0.025	0.213 (0.410)	0.002	0.137 (0.344)	0.016	0.084 (0.278)	0.015
Observations	14,373	94,995	6,241	42,239	5,024	34,227	2,396	14,298	712	4,231

Data: PCS 2004-2008, 2010-2013

Notes: This table is to test for balance between affected and unaffected mothers who had an abortion, gave birth or were pregnant at the time of the survey. The statistics of affected mothers are presented in columns (1), (3), (5), (7) and (9). The number of observations in every first column for the full sample and for each parity refers to the number of affected mothers, whereas the number of unaffected mothers is presented in every second column. After regressing each dependent variable on the indicator of drought, the statistical significance of the coefficient is marked on the difference in the means between the two samples of mothers.

Table B.5: Effect of Droughts on Abortion using Distributed Lagged Model

	Dependent variable: Abortion=1						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Low rainfall in the dry season (t)	0.0008 (0.0008)	0.0008 (0.0008)	0.0006 (0.0008)	0.0006 (0.0008)	0.0006 (0.0008)	0.0006 (0.0008)	0.0006 (0.0012)
Low rainfall in the dry season ($t - 1$)	0.0022 (0.0007)	0.0023 (0.0007)	0.0021 (0.0008)	0.0021 (0.0008)	0.0021 (0.0008)	0.0021 (0.0008)	0.0030 (0.0012)
Low rainfall in the dry season ($t - 2$)	0.0013 (0.0006)	0.0013 (0.0006)	0.0013 (0.0007)	0.0013 (0.0007)	0.0013 (0.0007)	0.0013 (0.0007)	0.0016 (0.0011)
Low rainfall in the wet season (t)	-0.0006 (0.0007)	-0.0006 (0.0007)	-0.0008 (0.0008)	-0.0008 (0.0008)	-0.0008 (0.0008)	-0.0007 (0.0008)	0.0007 (0.0013)
Low rainfall in the wet season ($t - 1$)	-0.0007 (0.0008)	-0.0006 (0.0008)	-0.0009 (0.0008)	-0.0009 (0.0008)	-0.0009 (0.0008)	-0.0009 (0.0008)	-0.0007 (0.0014)
Low rainfall in the wet season ($t - 2$)	-0.0004 (0.0006)	-0.0004 (0.0006)	-0.0002 (0.0006)	-0.0002 (0.0006)	-0.0002 (0.0006)	-0.0002 (0.0006)	-0.0000 (0.0011)
Observations	811,092	810,144	810,144	810,144	810,144	802,589	441,789
R-squared	0.008	0.009	0.012	0.012	0.012	0.012	0.013
Mean of Dep. Var.				0.0066			
Controls							
District and year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mother characteristics		Yes	Yes	Yes	Yes	Yes	Yes
District-specific linear time trend			Yes	Yes	Yes	Yes	Yes
Birth parity FE				Yes	Yes	Yes	Yes
Gender composition FE					Yes	Yes	Yes
Fertility characteristics						Yes	Yes
Spouse characteristics							Yes

Data: PCS 2004-2008, 2010-2013

Notes: Low rainfall shocks refer to the realization of rainfall in the wet season (April-November) or in the dry season (December-March) below the 20th percentile of the historical distribution of district-specific seasonal rainfall in 1984-2013. The dependent variable is the indicator for the experience of abortion during the survey year. Fertility characteristics control consists of her age at the first birth and the birth spacing referred to as the months between the most recent childbirth and the starting month of the survey period. Spouse characteristics include her spouse age, age squared and his educational attainment. The mean of the dependent variable is the mean abortion rate of mothers living in the districts that were not inflicted with droughts. Robust standard errors are shown in parentheses clustered at the district level.

Table B.6: Effects of Droughts on Infant Mortality

	Dependent variable					ln(IMR)
	Newborn is dead=1					
	Born in Apr-Mar	Born in Apr-Jun	Born in Jul-Sep	Born in Oct-Nov	Born in Dec-Mar	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Drought in the dry season (<i>t</i>)						
Drought	-0.0010 (0.0014)	0.0032 (0.0030)	0.0005 (0.0029)	-0.0047 (0.0032)	-0.0026 (0.0029)	-0.0057 (0.0144)
Observations	85,691	20,683	22,791	23,212	19,005	477
R-squared	0.008	0.014	0.013	0.014	0.017	0.789
Mean of Dep. Var.	0.0081	0.0083	0.0081	0.0084	0.0077	2.7273
Panel B. Drought in the dry season (<i>t</i> − 1)						
Drought	-0.0001 (0.0014)	-0.0043 (0.0026)	0.0018 (0.0029)	0.0044 (0.0028)	-0.0047 (0.0024)	-0.0045 (0.0201)
Observations	85,691	20,683	22,791	23,212	19,005	477
R-squared	0.008	0.014	0.013	0.014	0.017	0.789
Mean of Dep. Var.	0.0082	0.0082	0.0090	0.0079	0.0081	2.7245
Panel C. Drought in the dry season (<i>t</i> − 2)						
Drought	-0.0006 (0.0013)	-0.0024 (0.0023)	-0.0025 (0.0026)	0.0002 (0.0032)	0.0026 (0.0023)	-0.0066 (0.0161)
Observations	85,691	20,683	22,791	23,212	19,005	477
R-squared	0.008	0.014	0.013	0.014	0.017	0.788
Mean of Dep. Var.	0.0082	0.0082	0.0084	0.0082	0.0086	2.7309
Controls						
Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Region×Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Rainfall in other season-year	Yes	Yes	Yes	Yes	Yes	Yes
Mother characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Province-specific linear time trend	Yes	Yes	Yes	Yes	Yes	Yes
Birth parity FE	Yes	Yes	Yes	Yes	Yes	Yes
Gender composition FE	Yes	Yes	Yes	Yes	Yes	Yes

Data: PCS 2004-2008, 2010-2013; Province-level IMR from the GSO

Notes: This table presents the results from regressions estimating the effect of droughts on infant mortality. Columns (1)-(5) report the effect on the likelihood that a newborn is dead in the survey year (column (1)) and in a given quarter in the survey year (columns (2)-(5)) from the PCS. Column (6) presents the effect on the log of province-level infant mortality rates from the GSO. Robust standard errors are shown in parentheses clustered at the province level.

Table B.7: Effect of Droughts on Abortion for Women in Urban and 10 Northern Provinces

	Dependent variable: Abortion=1							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Urban Sample								
Drought	0.0016 (0.0009)	0.0014 (0.0009)	0.0014 (0.0009)	0.0013 (0.0009)	0.0013 (0.0009)	0.0013 (0.0009)	0.0012 (0.0009)	0.0008 (0.0010)
Observations	840,836	840,836	839,551	839,551	839,551	839,551	834,191	490,732
R-squared	0.008	0.008	0.009	0.012	0.012	0.012	0.013	0.014
Mean of Dep. Var.	0.0069	0.0069	0.0069	0.0069	0.0069	0.0069	0.0069	0.0069
Panel B. 10 Northern Provinces								
Drought	-0.0008 (0.0017)	-0.0012 (0.0018)	-0.0012 (0.0018)	-0.0009 (0.0019)	-0.0009 (0.0019)	-0.0009 (0.0019)	-0.0009 (0.0019)	0.0007 (0.0021)
Observations	169,410	169,410	169,196	169,196	169,196	169,196	167,805	93,159
R-squared	0.014	0.015	0.016	0.020	0.021	0.021	0.021	0.019
Mean of Dep. Var.	0.0129	0.0129	0.0129	0.0129	0.0129	0.0129	0.0129	0.0129
Controls								
District and year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Rainfall in other season-year		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mother characteristics			Yes	Yes	Yes	Yes	Yes	Yes
District-specific linear time trend				Yes	Yes	Yes	Yes	Yes
Birth parity FE					Yes	Yes	Yes	Yes
Gender composition FE						Yes	Yes	Yes
Fertility characteristics							Yes	Yes
Spouse characteristics								Yes

Data: PCS 2004-2008, 2010-2013

Notes: This table reports the results of regressions for the urban and 10 northern-province samples. In the 10 provinces, more than 50 percent of the heads of household are not ethnically Kinh. The 10 provinces are Cao Bang, Bac Kan, Ha Giang, Lang Son, Lai Chau, Son La, Dien Bien, Hoa Binh, Lao Cai, Tuyen Quang, and the locations are mapped in Figure A.5. The dependent variable is the indicator for the experience of abortion in the survey year. Fertility characteristic controls consists of her age at her first birth and the birth spacing, referred to as the months between the most recent childbirth and the starting month of the survey period. Spouse characteristics include her spouse age, age squared and his educational attainment. The mean of the dependent variable is the mean abortion rate of mothers living in the districts that were not inflicted with droughts. Robust standard errors are shown in parentheses and clustered at the district level.

Table B.8: Heterogeneous Effects of Droughts on Abortion

	Dependent variable: Abortion=1		
	(1)	(2)	(3)
Drought	0.0030 (0.0010)	0.0030 (0.0010)	0.0030 (0.0015)
Drought $\times$ Triple cropping	-0.0026 (0.0013)		
Drought $\times$ Irrigation (2nd)		-0.0032 (0.0016)	
Drought $\times$ Irrigation (3rd)		0.0008 (0.0018)	
Drought $\times$ Wealth (2nd)			-0.0010 (0.0019)
Drought $\times$ Wealth (3rd)			-0.0016 (0.0020)
Observations	811,089	811,089	811,089
R-squared	0.012	0.012	0.012
Mean of Dep. Var.	0.0066	0.0066	0.0066
Controls			
District and year FE	Yes	Yes	Yes
Rainfall in other season-year	Yes	Yes	Yes
Mother characteristics	Yes	Yes	Yes
District-specific linear time trend	Yes	Yes	Yes
Birth parity FE	Yes	Yes	Yes
Gender composition FE	Yes	Yes	Yes

Data: PCS 2004-2008, 2010-2013

Notes: This table presents results from regressions of the dummy for abortion on the interaction terms between the drought in the dry season and the indicator for mothers residing in triple-cropping provinces (column (1)), and the tercile indicators for district-level irrigation coverage (column (2)), and for district-level wealth index (column (3)). Triple-cropping provinces are defined as if a province produces all three rice crops: spring, autumn and winter rice. Irrigation coverage is the area-weighted irrigation coverage found in the VHLSS 2004. The district-level wealth index is created by aggregating the household-level wealth index from the principal component analysis of 16 asset and residence characteristics found in the 2009 census. Robust standard errors, which are reported in parentheses, are clustered for the district level.

Table B.9: Effects of Alternative Rainfall Shocks on Yearly Rice Yields and Expenditure

	Dependent variables					
	Spring Rice (1)	All Rice (2)	Total Expenditure (3)	Expenditure on Food (4)	Expenditure on Non-food (5)	Ratio (Food/Total) (6)
Panel A. Low rainfall shocks in the wet season						
Low rainfall	0.005 (0.007)	0.001 (0.006)	-0.018 (0.016)	-0.018 (0.015)	0.024 (0.021)	-0.000 (0.003)
Observations	1,045	1,055	18,128	18,128	18,128	18,128
R-squared	0.8010	.900	0.531	0.610	0.530	0.119
Mean of Dep. Var.	3.922	3.788	9.861	9.060	7.505	0.471
Panel B. Low rainfall shocks in the calendar year						
Low rainfall	0.005 (0.006)	0.003 (0.006)	-0.018 (0.015)	-0.013 (0.014)	0.016 (0.021)	0.002 (0.003)
Observations	1,045	1,055	18,128	18,128	18,128	18,128
R-squared	0.800	0.898	0.530	0.609	0.529	0.119
Mean of Dep. Var.	3.921	3.787	9.874	9.070	7.516	0.469
Controls						
Province and year FE	Yes	Yes	Yes	Yes	Yes	Yes
Rainfall in other season-year	Yes	Yes	Yes	Yes	Yes	Yes
Province-specific linear time trend	Yes	Yes				
Household Characteristics			Yes	Yes	Yes	Yes
Survey Quarter FE			Yes	Yes	Yes	Yes

Data: Agricultural statistics from the Vietnam GSO and the VHLSS 2004, 2006, 2008

Notes: This table presents results from regressions of the log of annual crop yields (Quintal/Ha) and the log of expenditure (in '000 VND) on low rainfall shocks in the wet season (Panel A) and in the calendar year (Panel B), respectively. Low rainfall shocks refer to the realization of rainfall in the wet season (April-November) or in the calendar year (January-December) below the 20th percentile of historical distribution of district-specific rainfall in 1984-2013. The sample excludes the 10 poorest provinces to be consistent with the analyses using the PCS. Household characteristics controls include the sex, age, ethnicity (Kinh or not) and years of schooling of the household head, the household size and the dummy for multigenerational households. Robust standard errors, which are reported in parentheses, are clustered for the province level.

Table B.10: Effects of Multiple Rainfall Shocks on Abortion

	Dependent variable: Abortion=1			
	(1)	(2)	(3)	(4)
Drought _(t-1)	0.0021 (0.0009)	0.0022 (0.0008)	0.0015 (0.0008)	0.0022 (0.0008)
Drought _(t-1) × Low rainfall in the wet season ($t - 1$)	-0.0001 (0.0012)			
Drought _(t-1) × High rainfall in the wet season ($t - 1$)		-0.0008 (0.0015)		
Drought _(t-1) × Low rainfall in the wet season (t)			0.0031 (0.0022)	
Drought _(t-1) × High rainfall in the wet season (t)				-0.0009 (0.0018)
Mean of Dep. Var.	0.0066	0.0066	0.0066	0.0066
Controls				
District and year FE	Yes	Yes	Yes	Yes
Rainfall in other season-year	Yes	Yes	Yes	Yes
Mother characteristics	Yes	Yes	Yes	Yes
District-specific linear time trend	Yes	Yes	Yes	Yes
Birth parity FE	Yes	Yes	Yes	Yes
Gender composition FE	Yes	Yes	Yes	Yes

Data: PCS 2004-2008, 2010-2013

Notes: This table presents results from regressions of the indicator for abortion on various interaction terms between the drought in the dry season and a high or low level of wet-season rainfall. Levels of 'low' and 'high' level rainfall in the wet season refer to the realization of rainfall in the wet season (April-November) below the 20th percentile or in the 8th or 9th decile of historical distribution of district-season-level rainfall in 1984-2013. Robust standard errors, which are reported in parentheses, are clustered for the district level.

Table B.11: Robustness for Alternative Clustering of Standard Errors

	Dependent variable: Abortion=1							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Drought (coefficient)	0.0020	0.0021	0.0022	0.0020	0.0021	0.0020	0.0021	0.0023
<i>p</i> -value (clustered by district)	0.003	0.001	0.001	0.004	0.004	0.004	0.003	0.024
No. of Clusters (district)				502				
<i>p</i> -value (clustered by province)	0.018	0.007	0.006	0.017	0.017	0.017	0.015	0.056
No. of Clusters (province)				51				
<i>p</i> -value (two-way by district & year)	0.041	0.015	0.014	0.042	0.042	0.042	0.037	0.101
Controls								
District and year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Rainfall in other season-year		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mother characteristics			Yes	Yes	Yes	Yes	Yes	Yes
District-specific linear time trend				Yes	Yes	Yes	Yes	Yes
Birth parity FE					Yes	Yes	Yes	Yes
Gender composition FE						Yes	Yes	Yes
Fertility characteristics							Yes	Yes
Spouse characteristics								Yes

Data: PCS 2004-2008, 2010-2013

Notes: This table shows *p*-values from alternative clustering for the regressions reported in Table 4. The first *p*-values in the 2nd row are derived from the standard errors clustered by district. The second series of *p*-values in the 3rd row are derived from the standard errors clustered by province. The last series of *p*-values in the 4th row are derived from the two-way clustering of district and year.