

Recovery from Disasters

May 2, 2022

1. **Vietnam: previous regressions with wind speeds**

Table 1: 2007-2013 (dropping VA and Inputs since they are not reported in 2007-2009)

	(1) Log(Sales)	(2) Log(Labor Cost)	(3) Log(K)	(4) Log(Avg Wage)	(5) Log(L)	(6) Log(Tot Wage)	(7) Log(Sales/L)
MAXS (m/s)	0.00126*** (0.000337)	0.000108 (0.000177)	0.000582 (0.000430)	0.000389*** (0.0000916)	0.0000612 (0.000115)	0.000450** (0.000147)	0.00120*** (0.000303)
maxs_lag1	0.00206*** (0.000296)	0.00127*** (0.000182)	0.000540 (0.000407)	0.0000482 (0.0000824)	0.000433*** (0.000104)	0.000481*** (0.000120)	0.00163*** (0.000275)
maxs_lag2	0.00106** (0.000351)	0.00160*** (0.000248)	0.00185*** (0.000392)	0.0000101 (0.0000976)	0.000620*** (0.000118)	0.000630*** (0.000142)	0.000441 (0.000335)
maxs_lag3	-0.000618 (0.000358)	0.000614*** (0.000180)	0.000433 (0.000367)	-0.000577*** (0.0000850)	0.000201 (0.000108)	-0.000375*** (0.000114)	-0.000819* (0.000324)
maxs_lag4	-0.000256 (0.000284)	0.000954*** (0.000207)	-0.000201 (0.000451)	-0.000546*** (0.0000934)	0.000511*** (0.000106)	-0.0000347 (0.000108)	-0.000767** (0.000265)
maxs_lag5	0.000314 (0.000250)	0.000947*** (0.000166)	-0.00110* (0.000438)	0.00000985 (0.0000793)	0.000150* (0.0000736)	0.000160 (0.000101)	0.000164 (0.000249)
N	1363767	1363767	1363767	1363767	1363767	1363767	1363767
Plant FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.805	0.778	0.741	0.682	0.875	0.863	0.725

Standard errors in parentheses

Plant and year fixed effects are included in each specification. All variables are real values.

Errors are clustered on both plant-level and region-by-year level.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2: 2009-2013: subsample of firms that have all the characteristics

	(1) Log(Sales)	(2) Log(Labor Cost)	(3) Log(K)	(4) Log(Avg Wage)	(5) Log(L)	(6) Log(Tot Wage)	(7) Log(Sales/L)
MAXS(m/s)	0.000421 (0.000273)	-0.000400 (0.000224)	0.00183*** (0.000532)	0.000275* (0.000111)	0.0000298 (0.000119)	0.000305* (0.000151)	0.000391 (0.000231)
maxs_lag1	0.000963*** (0.000263)	0.000610** (0.000197)	0.00184*** (0.000387)	-0.000204* (0.000103)	0.000232* (0.000110)	0.0000278 (0.000127)	0.000731** (0.000229)
maxs_lag2	0.000198 (0.000218)	0.00161*** (0.000330)	0.00436*** (0.000559)	-0.000219* (0.000107)	0.000594*** (0.000108)	0.000375** (0.000127)	-0.000396* (0.000182)
maxs_lag3	-0.000663*** (0.000193)	0.000609** (0.000192)	-0.000806* (0.000407)	-0.000657*** (0.0000838)	0.000327*** (0.0000939)	-0.000330*** (0.0000988)	-0.000990*** (0.000178)
maxs_lag4	-0.000404* (0.000192)	0.00127*** (0.000298)	-0.000707 (0.000525)	-0.000721*** (0.0000996)	0.000560*** (0.000109)	-0.000162 (0.000109)	-0.000963*** (0.000193)
maxs_lag5	-0.0000419 (0.000165)	0.00122*** (0.000209)	-0.00270*** (0.000562)	-0.0000189 (0.0000930)	0.0000593 (0.0000807)	0.0000404 (0.000101)	-0.000101 (0.000150)
N	864287	864287	864287	864287	864287	864287	864287
Plant FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.875	0.812	0.773	0.710	0.905	0.894	0.799

Standard errors in parentheses

Plant and year fixed effects are included in each specification. All variables are real values.

Errors are clustered on both plant-level and region-by-year level.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3: 2009-2013: subsample of firms that have all the characteristics

	(1) Log(Input)	(2) Log(VA)	(3) Log(VA/Labor)
MAXS (m/s)	0.000439 (0.000280)	0.00117* (0.000495)	0.00114* (0.000453)
maxs_lag1	0.00108*** (0.000271)	-0.000553 (0.000378)	-0.000784* (0.000354)
maxs_lag2	0.000535* (0.000236)	-0.00134** (0.000518)	-0.00193*** (0.000531)
maxs_lag3	-0.000668*** (0.000200)	-0.00139*** (0.000344)	-0.00172*** (0.000343)
maxs_lag4	-0.000734*** (0.000204)	0.000271 (0.000566)	-0.000288 (0.000586)
maxs_lag5	-0.000179 (0.000171)	0.0000224 (0.000435)	-0.0000369 (0.000429)
N	864287	864287	864287
Plant FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Adjusted R-squared	0.866	0.801	0.656

Standard errors in parentheses

Plant and year fixed effects are included in each specification. All variables are real values.

Errors are clustered on both plant-level and region-by-year level.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

2. Vietnam: regressions with number of cyclones

The average number of storms (NS) is calculated according to the following process. First, for each gridcell within an administrative boundary we determine the number of tropical cyclones within a year that exceeded a strength of 17 m/s at that location. In the second step we calculate the spatial average of that number. This process can be summarized with the following equation

$$NS_{r,y} = \frac{\sum_{cell \in r} \sum_{t \in y} \{1 \text{ if } MAXS_{cell,t} \geq 17m/s\}}{N_r}, \quad (1)$$

where MAXS is the maximum wind speed at gridcell r in time t within year y

Table 4: ?

	(1) Log(Sales)	(2) Log(Labor Cost)	(3) Log(K)	(4) Log(Avg Wage)	(5) Log(L)	(6) Log(Tot Wage)	(7) Log(Sales/L)
N of Storms ($\geq 17m/s$)	0.00360 (0.00456)	-0.00904** (0.00296)	0.00260 (0.00842)	-0.00149 (0.00149)	0.000434 (0.00166)	-0.00106 (0.00189)	0.00317 (0.00418)
storm_lag1	0.0204*** (0.00490)	0.0417*** (0.00512)	-0.000371 (0.00768)	0.00247 (0.00150)	0.00866*** (0.00197)	0.0111*** (0.00199)	0.0117* (0.00499)
storm_lag2	0.0185*** (0.00561)	0.00482 (0.00276)	-0.0256*** (0.00572)	-0.00275 (0.00149)	0.00220 (0.00187)	-0.000551 (0.00223)	0.0163*** (0.00494)
storm_lag3	-0.00639 (0.00706)	0.00479 (0.00297)	0.0197*** (0.00599)	-0.0111*** (0.00160)	0.00538** (0.00200)	-0.00573** (0.00211)	-0.0118 (0.00650)
storm_lag4	-0.0136* (0.00540)	0.0200*** (0.00392)	-0.00852 (0.00847)	-0.00652*** (0.00156)	0.00758*** (0.00184)	0.00106 (0.00192)	-0.0212*** (0.00506)
storm_lag5	0.00529 (0.00416)	0.0118*** (0.00289)	-0.0595*** (0.00956)	0.00255 (0.00181)	-0.00224 (0.00167)	0.000308 (0.00188)	0.00753 (0.00396)
N	1363767	1363767	1363767	1363767	1363767	1363767	1363767
Plant FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.739	0.702	0.653	0.574	0.832	0.816	0.631

Standard errors in parentheses

Plant and year fixed effects are included in each specification. All variables are real values.

Errors are clustered on both plant-level and region-by-year level.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5: ?

	(1) Log(Sales)	(2) Log(Labor Cost)	(3) Log(K)	(4) Log(Avg Wage)	(5) Log(L)	(6) Log(Tot Wage)	(7) Log(Sales/L)
N of Storms ($\geq 17m/s$)	-0.0106*** (0.00284)	-0.0131*** (0.00350)	0.0125 (0.00793)	-0.00415** (0.00159)	0.000862 (0.00154)	-0.00328 (0.00175)	-0.0115*** (0.00273)
storm_lag1	0.00484 (0.00352)	0.0389*** (0.00615)	-0.00898 (0.00719)	0.00270 (0.00165)	0.000226 (0.00180)	0.00292 (0.00188)	0.00461 (0.00321)
storm_lag2	0.00261 (0.00325)	-0.00107 (0.00334)	-0.00384 (0.00636)	-0.00433* (0.00187)	0.000107 (0.00172)	-0.00422* (0.00194)	0.00251 (0.00311)
storm_lag3	-0.00791* (0.00316)	0.0121** (0.00390)	0.00688 (0.00871)	-0.0122*** (0.00175)	0.00962*** (0.00176)	-0.00258 (0.00196)	-0.0175*** (0.00314)
storm_lag4	-0.00776* (0.00343)	0.0240*** (0.00495)	-0.0176* (0.00873)	-0.00560*** (0.00160)	0.00429* (0.00173)	-0.00132 (0.00174)	-0.0120*** (0.00305)
storm_lag5	-0.00546 (0.00305)	0.0170*** (0.00355)	-0.0692*** (0.0106)	0.00302 (0.00194)	-0.00545** (0.00169)	-0.00243 (0.00176)	-0.00000720 (0.00302)
N	864287	864287	864287	864287	864287	864287	864287
Plant FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.820	0.731	0.673	0.584	0.863	0.847	0.711

Standard errors in parentheses

Plant and year fixed effects are included in each specification. All variables are real values.

Errors are clustered on both plant-level and region-by-year level.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6: ?

	(1) Log(Input)	(2) Log(VA)	(3) Log(VA/Labor)
N of Storms ($\geq 17m/s$)	-0.00990*** (0.00296)	0.00397 (0.00558)	0.00311 (0.00547)
storm_lag1	0.00396 (0.00378)	-0.0249* (0.0104)	-0.0251* (0.0108)
storm_lag2	0.00502 (0.00346)	-0.00304 (0.00661)	-0.00314 (0.00658)
storm_lag3	-0.00801* (0.00337)	-0.0153 (0.00782)	-0.0249** (0.00792)
storm_lag4	-0.0119** (0.00363)	-0.0120 (0.00951)	-0.0163 (0.00973)
storm_lag5	-0.00724* (0.00321)	-0.0166* (0.00731)	-0.0112 (0.00728)
N	864287	864287	864287
Plant FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Adjusted R-squared	0.807	0.713	0.505

Standard errors in parentheses

Plant and year fixed effects are included in each specification. All variables are real values.

Errors are clustered on both plant-level and region-by-year level.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

3. Vietnam: dropping winds under 17m/s and unpopulated areas

Table 7: ?

	(1) Log(Sales)	(2) Log(Labor Cost)	(3) Log(K)	(4) Log(Avg Wage)	(5) Log(L)	(6) Log(Tot Wage)	(7) Log(Sales/L)
MAXS (populated)	0.000339 (0.000259)	-0.000196 (0.000144)	-0.00110** (0.000401)	0.0000439 (0.0000758)	-0.000127 (0.0000872)	-0.0000833 (0.000106)	0.000467 (0.000245)
maxs_pop_only_lag1	0.00113*** (0.000205)	0.00117*** (0.000162)	0.000485 (0.000301)	0.0000773 (0.0000591)	0.000464*** (0.0000798)	0.000541*** (0.0000890)	0.000671*** (0.000189)
maxs_pop_only_lag2	0.00131*** (0.000298)	0.00100*** (0.000175)	0.000239 (0.000294)	-0.0000869 (0.0000783)	0.000421*** (0.0000969)	0.000334** (0.000122)	0.000889** (0.000276)
maxs_pop_only_lag3	-0.000484 (0.000300)	0.000480** (0.000147)	0.000513 (0.000274)	-0.000538*** (0.0000675)	0.000227** (0.0000842)	-0.000311*** (0.0000887)	-0.000711* (0.000277)
maxs_pop_only_lag4	-0.000572* (0.000241)	0.000835*** (0.000182)	0.000368 (0.000344)	-0.000363*** (0.0000732)	0.000443*** (0.0000878)	0.0000802 (0.0000851)	-0.00101*** (0.000226)
maxs_pop_only_lag5	0.000382 (0.000202)	0.000842*** (0.000147)	-0.00216*** (0.000489)	0.0000434 (0.0000813)	0.0000968 (0.0000680)	0.000140 (0.0000947)	0.000286 (0.000194)
N	1363767	1363767	1363767	1363767	1363767	1363767	1363767
Plant FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.739	0.702	0.652	0.574	0.832	0.816	0.631

Standard errors in parentheses

Plant and year fixed effects are included in each specification. All variables are real values.

Errors are clustered on both plant-level and region-by-year level.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 8: ?

	(1) Log(Sales)	(2) Log(Labor Cost)	(3) Log(K)	(4) Log(Avg Wage)	(5) Log(L)	(6) Log(Tot Wage)	(7) Log(Sales/L)
MAXS (populated)	-0.0000961 (0.000188)	-0.000755*** (0.000196)	-0.000755 (0.000425)	-0.000156 (0.0000930)	0.00000195 (0.0000914)	-0.000154 (0.000108)	-0.0000980 (0.000168)
maxs_pop_only_lag1	0.000363 (0.000187)	0.000460*** (0.000139)	0.0000433 (0.000281)	0.0000468 (0.0000676)	0.0000997 (0.0000767)	0.000146 (0.0000881)	0.000263 (0.000166)
maxs_pop_only_lag2	0.000482** (0.000156)	0.000878*** (0.000180)	0.00173*** (0.000343)	-0.000270** (0.0000857)	0.000301*** (0.0000849)	0.0000302 (0.0000911)	0.000182 (0.000144)
maxs_pop_only_lag3	-0.000535*** (0.000147)	0.000833*** (0.000187)	-0.0000794 (0.000358)	-0.000531*** (0.0000695)	0.000331*** (0.0000718)	-0.000200* (0.0000812)	-0.000866*** (0.000135)
maxs_pop_only_lag4	-0.000326* (0.000154)	0.00107*** (0.000236)	0.000336 (0.000342)	-0.000390*** (0.0000749)	0.000411*** (0.0000859)	0.0000210 (0.0000811)	-0.000737*** (0.000153)
maxs_pop_only_lag5	-0.0000702 (0.000140)	0.00117*** (0.000190)	-0.00266*** (0.000561)	0.00000296 (0.0000874)	-0.00000242 (0.0000737)	0.000000537 (0.0000921)	-0.0000678 (0.000126)
N	864287	864287	864287	864287	864287	864287	864287
Plant FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.820	0.731	0.673	0.584	0.863	0.847	0.711

Standard errors in parentheses

Plant and year fixed effects are included in each specification. All variables are real values.

Errors are clustered on both plant-level and region-by-year level.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 9: ?

	(1) Log(Input)	(2) Log(VA)	(3) Log(VA/Labor)
MAXS (populated)	-0.0000953 (0.000197)	0.000522 (0.000382)	0.000520 (0.000354)
maxs_pop_only_lag1	0.000307 (0.000194)	0.000916** (0.000343)	0.000816* (0.000325)
maxs_pop_only_lag2	0.000659*** (0.000166)	-0.000897** (0.000319)	-0.00120*** (0.000315)
maxs_pop_only_lag3	-0.000516*** (0.000154)	-0.00152*** (0.000335)	-0.00185*** (0.000340)
maxs_pop_only_lag4	-0.000555*** (0.000164)	-0.000199 (0.000429)	-0.000610 (0.000446)
maxs_pop_only_lag5	-0.000219 (0.000145)	-0.000564 (0.000397)	-0.000562 (0.000390)
N	864287	864287	864287
Plant FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Adjusted R-squared	0.807	0.713	0.506

Standard errors in parentheses

Plant and year fixed effects are included in each specification. All variables are real values.

Errors are clustered on both plant-level and region-by-year level.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 10: ?

	(1) Log(Sales)	(2) Log(Labor Cost)	(3) Log(K)	(4) Log(Avg Wage)	(5) Log(L)	(6) Log(Tot Wage)	(7) Log(Sales/L)
N of Storms (populated)	0.00128 (0.00430)	-0.0135*** (0.00341)	0.00524 (0.00808)	-0.000469 (0.00145)	-0.00207 (0.00161)	-0.00254 (0.00185)	0.00335 (0.00406)
storm_pop_only_lag1	0.00117*** (0.000206)	0.00132*** (0.000174)	0.000262 (0.000305)	0.0000896 (0.0000610)	0.000473*** (0.0000823)	0.000563*** (0.0000901)	0.000692*** (0.000191)
storm_pop_only_lag2	0.00135*** (0.000308)	0.000992*** (0.000174)	0.000106 (0.000301)	-0.0000814 (0.0000799)	0.000408*** (0.0000996)	0.000326** (0.000126)	0.000940*** (0.000285)
storm_pop_only_lag3	-0.000488 (0.000297)	0.000428** (0.000144)	0.000564* (0.000280)	-0.000541*** (0.0000682)	0.000222** (0.0000841)	-0.000319*** (0.0000880)	-0.000710** (0.000273)
storm_pop_only_lag4	-0.000607* (0.000239)	0.000773*** (0.000175)	0.000542 (0.000348)	-0.000372*** (0.0000736)	0.000446*** (0.0000875)	0.0000746 (0.0000854)	-0.00105*** (0.000224)
storm_pop_only_lag5	0.000367 (0.000201)	0.000761*** (0.000143)	-0.00204*** (0.000506)	0.0000369 (0.0000815)	0.0000915 (0.0000679)	0.000128 (0.0000958)	0.000275 (0.000192)
N	1363767	1363767	1363767	1363767	1363767	1363767	1363767
Plant FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.739	0.702	0.652	0.574	0.832	0.816	0.631

Standard errors in parentheses

Plant and year fixed effects are included in each specification. All variables are real values.

Errors are clustered on both plant-level and region-by-year level.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 11: ?

	(1) Log(Sales)	(2) Log(Labor Cost)	(3) Log(K)	(4) Log(Avg Wage)	(5) Log(L)	(6) Log(Tot Wage)	(7) Log(Sales/L)
N of Storms (populated)	-0.00924*** (0.00268)	-0.0221*** (0.00464)	0.0209** (0.00773)	-0.00360* (0.00158)	0.000493 (0.00153)	-0.00310 (0.00166)	-0.00974*** (0.00262)
storm_pop_only_lag1	0.000383* (0.000186)	0.000613*** (0.000146)	0.000193 (0.000277)	0.0000783 (0.0000651)	0.0000992 (0.0000727)	0.000178* (0.0000824)	0.000284 (0.000165)
storm_pop_only_lag2	0.000425** (0.000160)	0.000755*** (0.000170)	0.00188*** (0.000370)	-0.000289** (0.0000886)	0.000304*** (0.0000869)	0.0000142 (0.0000927)	0.000122 (0.000148)
storm_pop_only_lag3	-0.000483** (0.000152)	0.000833*** (0.000179)	-0.000432 (0.000351)	-0.000539*** (0.0000656)	0.000327*** (0.0000715)	-0.000211** (0.0000774)	-0.000810*** (0.000137)
storm_pop_only_lag4	-0.000317* (0.000154)	0.00107*** (0.000232)	0.000272 (0.000345)	-0.000392*** (0.0000750)	0.000411*** (0.0000857)	0.0000185 (0.0000806)	-0.000728*** (0.000153)
storm_pop_only_lag5	-0.0000620 (0.000139)	0.00112*** (0.000182)	-0.00280*** (0.000567)	-0.00000806 (0.0000869)	-0.00000324 (0.0000702)	-0.0000113 (0.0000904)	-0.0000587 (0.000126)
N	864287	864287	864287	864287	864287	864287	864287
Plant FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.820	0.731	0.673	0.584	0.863	0.847	0.711

Standard errors in parentheses

Plant and year fixed effects are included in each specification. All variables are real values.

Errors are clustered on both plant-level and region-by-year level.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 12: ?

	(1) Log(Input)	(2) Log(VA)	(3) Log(VA/Labor)
N of Storms (populated)	-0.00727* (0.00284)	0.00864 (0.00650)	0.00814 (0.00654)
storm_pop_only_lag1	0.000327 (0.000195)	0.000810* (0.000348)	0.000711* (0.000335)
storm_pop_only_lag2	0.000615*** (0.000169)	-0.000855** (0.000309)	-0.00116*** (0.000302)
storm_pop_only_lag3	-0.000479** (0.000160)	-0.00147*** (0.000326)	-0.00179*** (0.000329)
storm_pop_only_lag4	-0.000548*** (0.000165)	-0.000187 (0.000427)	-0.000598 (0.000444)
storm_pop_only_lag5	-0.000215 (0.000144)	-0.000520 (0.000384)	-0.000517 (0.000377)
N	864287	864287	864287
Plant FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Adjusted R-squared	0.807	0.713	0.506

Standard errors in parentheses

Plant and year fixed effects are included in each specification. All variables are real values.

Errors are clustered on both plant-level and region-by-year level.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$