

Analysis of the COVID-19 Shock, Technology and Trade

Regressions for Technology Adopters Types in the Pre-Covid period

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We have calculated the total export/import value for each firm-product throughout the pre-COVID period. Specifically, this period spans from July 2018 to December 2019 for Mexico and India, and from February 2019 to December 2019 for Indonesia. Following this data collection, we carried out various sets of regressions which will be explained in the upcoming sections.

COVID Adopters and Old Adopters vs Never Adopters

In this case, the regression sample includes firms that are Covid Adopters, Old Adopters and Never Adopters. The following regressions is estimated:

$$y_{ip} = \alpha_0 + \alpha_1 CovidAdopter_i + \alpha_2 OldAdopter_i + FE_p + \epsilon_{ip}$$

Where the baseline category is Never Adopter.

Table 1: India - Regression Results for COVID, Old and Never Adopters - Pre-Covid Period.

	Dependent Variables	
	Log. Imports	Log. Exports
COVID Adopter	0.016 (0.065)	-0.155*** (0.056)
Old Adopter	-0.055 (0.055)	-0.271*** (0.053)
Num. Obs.	349,997	268,228
Adj.R-squared	0.219	0.164
Product FE	Yes	Yes

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note:

Baseline category is never adopter. The regression sample only includes the pre-Covid period. Clustered standard errors at the firm level

Table 2: Indonesia - Regression Results for COVID, Old and Never Adopters - Pre-Covid Period.

	Dependent Variables	
	Log. Imports	Log. Exports
COVID Adopter	0.208* (0.112)	-0.008 (0.201)
Old Adopter	-0.060 (0.134)	-0.399 (0.326)
Num. Obs.	134,372	19,262
Adj.R-squared	0.193	0.231
Product FE	Yes	Yes

* p < 0.1, ** p < 0.05, *** p < 0.01

Note:

Baseline category is never adopter. The regression sample only includes the pre-Covid period. Clustered standard errors at the firm level

Table 3: Mexico - Regression Results for COVID, Old and Never Adopters - Pre-Covid Period.

	Dependent Variables	
	Log. Imports	Log. Exports
COVID Adopter	0.097 (0.086)	-0.102 (0.156)
Old Adopter	0.106 (0.077)	-0.091 (0.117)
Num. Obs.	216,570	44,248
Adj.R-squared	0.159	0.167
Product FE	Yes	Yes

* p < 0.1, ** p < 0.05, *** p < 0.01

Note:

Baseline category is never adopter. The regression sample only includes the pre-Covid period. Clustered standard errors at the firm level

COVID Adopters vs Old Adopters

In this case, we only include in our regression sample firms that are either Covid Adopters or Old Adopters. The estimated regression is:

$$y_{ip} = \alpha_0 + \alpha_1 CovidAdopter_i + FE_p + \epsilon_{ip}$$

Table 4: India - Regression Results for COVID and Old Adopters - Pre-Covid Period.

	Dependent Variables	
	Log. Imports	Log. Exports
COVID Adopter	0.082 (0.080)	0.114* (0.066)
Num. Obs.	114,708	77,392
Adj.R-squared	0.181	0.146
Product FE	Yes	Yes

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note:

Baseline category is old adopter. The regression sample only includes the pre-Covid period. Clustered standard errors at the firm level

Table 5: Indonesia - Regression Results for COVID and Old Adopters - Pre-Covid Period.

	Dependent Variables	
	Log. Imports	Log. Exports
COVID Adopter	0.258* (0.156)	0.259 (0.416)
Num. Obs.	43,602	6,872
Adj.R-squared	0.168	0.18
Product FE	Yes	Yes

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note:

Baseline category is old adopter. The regression sample only includes the pre-Covid period. Clustered standard errors at the firm level

Table 6: Mexico - Regression Results for COVID and Old Adopters - Pre-Covid Period.

	Dependent Variables	
	Log. Imports	Log. Exports
COVID Adopter	-0.003 (0.097)	0.001 (0.172)
Num. Obs.	101,695	21,675
Adj.R-squared	0.152	0.167
Product FE	Yes	Yes

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note:

Baseline category is old adopter. The regression sample only includes the pre-Covid period. Clustered standard errors at the firm level

COVID Early Adopters vs COVID Late Adopters

In this case, we only include in our regression sample firms that are Covid Adopters. Within this category we have two categories: Covid early adopters and Covid late adopters. The estimated regression is:

$$y_{ip} = \alpha_0 + \alpha_1 CovidEarlyAdopter_i + FE_p + \epsilon_{ip}$$

And the baseline category is Covid Late Adopter.

Table 7: India - Regression Results for COVID Adopters - Pre-Covid Period.

	Dependent Variables	
	Log. Imports	Log. Exports
COVID Early Adopter	-0.005 (0.129)	-0.107 (0.102)
Num. Obs.	43,299	28,647
Adj.R-squared	0.194	0.161
Product FE	Yes	Yes

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note:

Baseline category is COVID late adopter. The regression sample only includes the pre-Covid period. Clustered standard errors at the firm level

Table 8: Indonesia - Regression Results for COVID Adopters - Pre-Covid Period.

	Dependent Variables	
	Log. Imports	Log. Exports
COVID Early Adopter	-0.080 (0.189)	0.138 (0.469)
Num. Obs.	15,783	2,437
Adj.R-squared	0.197	0.212
Product FE	Yes	Yes

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note:

Baseline category is COVID late adopter. The regression sample only includes the pre-Covid period. Clustered standard errors at the firm level

Table 9: Mexico - Regression Results for COVID Adopters - Pre-Covid Period.

	Dependent Variables	
	Log. Imports	Log. Exports
COVID Early Adopter	0.034 (0.169)	-0.165 (0.251)
Num. Obs.	31,048	6,928
Adj.R-squared	0.185	0.189
Product FE	Yes	Yes

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note:

Baseline category is COVID late adopter. The regression sample only includes the pre-Covid period. Clustered standard errors at the firm level

Old Adopters

Finally, we estimate a regression where we only include Old Adopters. Within this category, the firms can be classified into pre-2017 adopter, 2017-adopter, 2018-adopter and 2019-adopter. The baseline category is pre-2017 adopter.

$$y_{ip} = \alpha_0 + \alpha_1 2017Adopter_i + \alpha_2 2018Adopter_i + \alpha_3 2019Adopter_i + FE_p + \epsilon_{ip}$$

Since Indonesia only has BuiltWith data since 2017, the estimated regression for that country is:

$$y_{ip} = \alpha_0 + \alpha_1 2018Adopter_i + \alpha_3 2019Adopter_i + FE_p + \epsilon_{ip}$$

And the baseline category is pre-2018 adopter.

Table 10: India - Regression Results for Old Adopters - Pre-Covid Period.

	Dependent Variables	
	Log. Imports	Log. Exports
2017-Adopter	-0.052 (0.155)	0.132 (0.144)
2018-Adopter	-0.172 (0.130)	0.252** (0.103)
2019-Adopter	-0.106 (0.135)	0.225 (0.145)
Num. Obs.	71,409	48,745
Adj.R-squared	0.175	0.139
Product FE	Yes	Yes

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note:

Baseline category is pre-2017 adopter. The regression sample only includes the pre-Covid period. Clustered standard errors at the firm level

Table 11: Indonesia - Regression Results for Old Adopters - Pre-Covid Period.

	Dependent Variables	
	Log. Imports	Log. Exports
2018-Adopter	-0.295 (0.298)	-0.043 (0.630)
2019-Adopter	-0.199 (0.144)	-0.373 (0.434)
Num. Obs.	25,819	4,255
Adj.R-squared	0.156	0.173
Product FE	Yes	Yes

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note:

Baseline category is pre-2018 adopter. The regression sample only includes the pre-Covid period. Clustered standard errors at the firm level

Table 12: Mexico - Regression Results for Old Adopters - Pre-Covid Period.

	Dependent Variables	
	Log. Imports	Log. Exports
2017-Adopter	-0.004 (0.165)	0.488* (0.268)
2018-Adopter	-0.089 (0.162)	0.392* (0.234)
2019-Adopter	-0.108 (0.162)	0.021 (0.251)
Num. Obs.	70,647	14,747
Adj.R-squared	0.145	0.165
Product FE	Yes	Yes

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note:

Baseline category is pre-2017 adopter. The regression sample only includes the pre-Covid period. Clustered standard errors at the firm level