

**ERIA Discussion Paper Series****No. 415****COVID-19: Impacts on Indonesia's Trade**

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**Abstract:** *This paper analyses how the coronavirus (COVID-19) has affected Indonesia's exports and imports, both in terms of volume and value. We use monthly trade data at the Harmonized System (HS) 8-digit level from January 2017 to December 2020. We use fixed effects and difference-in-differences (DID) approaches. The findings show that COVID-19 lowers the export volume by 10.7% (export value by 13.4%). At the same time, COVID-19 reduces import volume by 16.42% (import value by 25.9%). Analysing the causes of decreases in Indonesia's trade will shed light on the causes of the drop in such trade figures. It will help design appropriate policy responses to enhance trade for the Indonesian economy's swift recovery.*

**Keywords:** Indonesia, Covid-19, Trade, Empirical studies, Southeast Asia

**JEL Classification:** F1, F13, F15

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## **1. Introduction**

The unprecedented shock caused by COVID-19 has significantly affected global trade. The global merchandise trade volume recorded its sharpest ever decline – 14.3% (qoq) in the second quarter (Q2) of 2020, resulting in an annual contraction of 9.2% in 2020. The magnitude of the decline in trade differed across regions. In 2020, North America and Europe experienced the largest drop in merchandise export volume, with an annual percentage change of –14.7% and –11.7%, respectively. The largest decline in import volume was reported in South and Central America and Europe, with a contraction of 13.5% and 10.3%, respectively. Asia recorded the lowest decline in trade, as the export volume declined by 4.5% and the import volume fell by 4.4% (WTO, 2020).

Indonesia, the largest economy in Southeast Asia, also experienced a sharp decline in trade. In 2020, the volume of Indonesia's exports and imports dropped by 11.3% and 6.6% year on year (yoy), respectively (Statistics Indonesia, 2021a). In terms of value, Indonesia's total exports dropped by 2.6%, from \$167.7 billion in 2019 to \$163.3 billion in 2020. The value of total imports decreased more than exports, with an annual decline of 17.3% from \$171.3 billion to \$141.6 billion. So, even though Indonesia recorded a trade surplus of \$21.7 billion in 2020, it was mainly driven by a larger decline in imports than exports. One important note is that even before the pandemic (since early 2018), Indonesia's exports had declined at higher rates than its imports. The pandemic has magnified the issues.

In this chapter, we empirically examine how COVID-19 affects Indonesia's trade. Section 2 reviews the impacts of the COVID-19 pandemic on world trade. Section 3 presents Indonesia's current trade. Section 4 presents empirical analyses on how COVID-19 affects Indonesia's exports and imports. Section 5 concludes.

## **2. Impacts of COVID-19 on World Trade**

COVID-19 has hit both the demand and supply sides of world trade. On the demand side, limited movement of people has significantly reduced demand in most sectors that eventually decreased world demand. On the supply side, COVID-19 has pushed producers to reduce their production scale with supply chains interrupted – reducing overall production. Exports have fallen mainly in industries where remote work

or industry operation is less feasible. The world economy has even worsened due to the multiplier and prolonged effects of the pandemic.

Park et al. (2020) estimated COVID-19 to lower the world economy by US\$5.8 trillion (6.4% of global gross domestic product (GDP) under a 3-month containment scenario and US\$8.8 trillion (9.7% of global GDP) under a 6-month containment scenario. Globally, United States (US) exports were expected to decline by almost \$85 billion – with services exports the most impacted. China is largely affected by declines in exports of manufactured goods, and Thailand is negatively affected by both declines in exports of manufactured goods and services (Maliszewska, Mattoo, and van der Mensbrugge, 2020). Barua (2020) predicted the pandemic to affect trade relations and globalisation, resulting in some winners and others losers. By investigating 186 countries empirically in Q1 2020, using a gravity approach, Hayakawa and Mukunoki (2020) assessed that COVID-19 has significant negative effects on trade for exporting countries but not for importing countries. They also found that the negative impacts of COVID-19 are seen in exports from developing countries but not from developed countries. Using Canadian data, Barichello (2020) observed that international demand for agricultural trade would continue due to availability and price. Livestock, pulses, and horticulture would likely face a larger trade decline due to the significant loss of purchasing power in many importer countries.

### **3. Indonesia's Exports and Imports during the time of COVID-19**

In 2020, the volume of total Indonesian exports and imports (combined) decreased by 10.4%, from 816 million tonnes in 2019 to 732 million tonnes in 2020. The total values of Indonesia's exports and imports fell by 10.1%, from US\$339 billion to US\$305 billion over the same period.

Table 1 shows that in 2020, in terms of volume, exports of oil and gas increased by 4.8%, while non-oil and gas exports dropped by 12% compared with 2019. The volume of non-oil and gas imports fell by 6.1% to 37.7 million tonnes, while oil and gas imports dropped by 8% to 114.23 million tonnes. In terms of value, Indonesia's total exports decreased from US\$167.7 billion in 2019 to US\$163.3 billion in 2020 – a 2.6% drop. As the average oil and gas prices declined sharply, the value of oil and gas exports fell by

almost 30%, while that of non-oil and gas exports dropped by 0.6%. The volume of Indonesia's oil and gas imports fell by nearly 8%, and that of non-oil and gas imports declined by 6%. In terms of value, they dropped by even higher rates – around 35% for oil and gas imports and 15% for non-oil and gas imports.

**Table 1: Indonesia's Exports and Imports, 2019–2020**

<b>Exports</b>				<b>Imports</b>			
<b>Volume of Indonesia's exports (million tonnes)</b>				<b>Volume of Indonesia's imports (million tonnes)</b>			
	<b>2019</b>	<b>2020</b>	<b>Change (%)</b>		<b>2019</b>	<b>2020</b>	<b>Change (%)</b>
Oil and gas	26.53	27.79	4.76	Oil and gas	40.93	37.65	-7.99
Non-oil and gas	627.95	552.68	-11.99	Non-oil and gas	121.70	114.23	-6.14
<b>Total</b>	<b>654.48</b>	<b>580.47</b>	<b>-11.30</b>	<b>Total</b>	<b>162.63</b>	<b>151.88</b>	<b>-6.61</b>

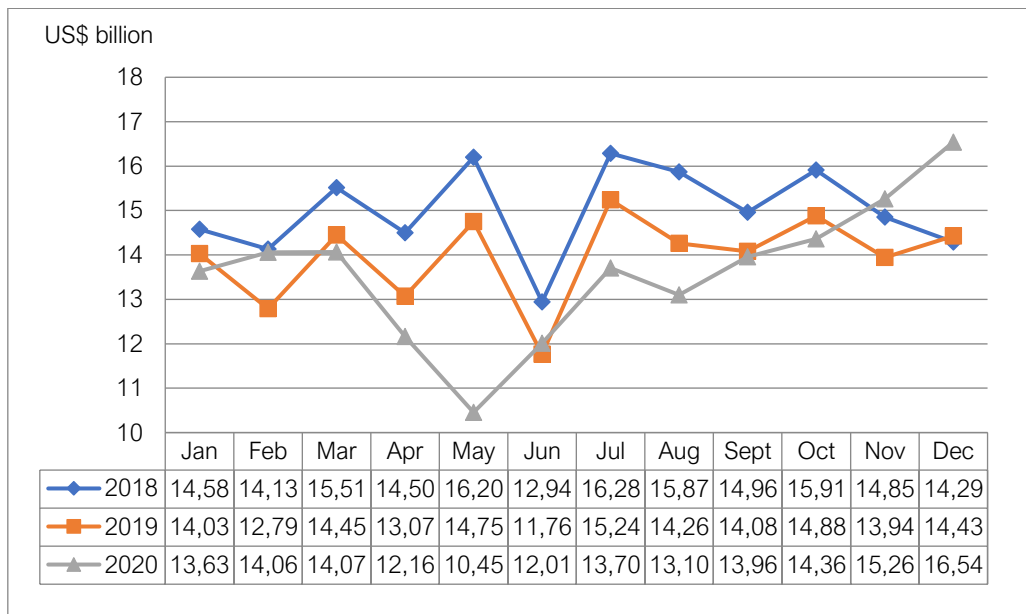
  

<b>Value of Indonesia's exports (US\$ billion)</b>				<b>Value of Indonesia's imports (US\$ billion)</b>			
	<b>2019</b>	<b>2020</b>	<b>Change (%)</b>		<b>2019</b>	<b>2020</b>	<b>Change (%)</b>
Oil and gas	11.79	8.31	-29.52	Oil and gas	21.88	14.26	-34.85
Non-oil and gas	155.89	155.00	-0.57	Non-oil and gas	149.39	127.31	-14.78
<b>Total</b>	<b>167.68</b>	<b>163.31</b>	<b>-2.60</b>	<b>Total</b>	<b>171.27</b>	<b>141.57</b>	<b>-17.34</b>

Source: Statistics Indonesia (2021b).

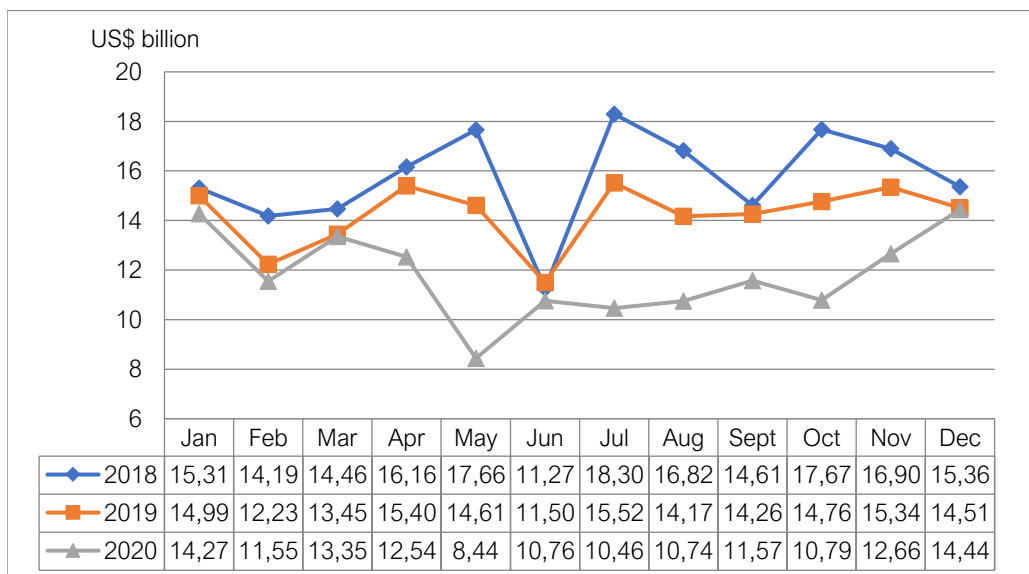
Figure 1a shows that Indonesia's exports fell more than usual in April 2020. Contrary to the previous 2 years when exports usually picked up in May, exports worsened in May 2020. At the same time, imports had also been plummeting, as illustrated in Figure 1b. Indonesia's imports fell to US\$8.4 billion in May 2020, mainly driven by decreases in imports of machinery and intermediate goods. Imports were dominated by intermediate goods (72.9%) in 2020, followed by capital goods (16.7%) and consumption goods (10.4%). The share of intermediate goods was lower in 2020 than in 2019, while the share of capital and consumption goods rose. All components of import goods experienced negative growth in 2020, with the highest drop in the import value of intermediate goods (18.3%).

**Figure 1a: Value of Indonesia's Exports, Monthly, 2018–2020 (US\$ billion)**



Source: Statistics Indonesia (2021b) (accessed 15 February 2021).

**Figure 1b: Value of Indonesia's Imports, Monthly, 2018–2020 (US\$ billion)**



Source: Statistics Indonesia (2021b) (accessed 15 February 2021).

Tables 2a and 2b present export destinations and import origins. Table 2a records that China, the US, Japan, India, and Singapore remained Indonesia's top five export destinations in 2020. The value of Indonesia's total exports to China grew by 13.6%, and the share of exports to China to total exports increased to 19.4% in 2020. Similarly, the value of Indonesia's exports to the US grew by 4.4% to 11.4%. However, its exports to Japan, India, and Singapore fell by 14%, 17%, and 11%, respectively. Table 2b shows that Indonesia's main import origins in 2020 were China (28%), Singapore (8.7%), Japan (7.5%), the US (6.1%), and Malaysia (4.9%). However, the value of imports from each of these countries dropped in 2020. Imports from Japan experienced the largest drop (31.9%), followed by Singapore (30%), China (12%), Malaysia (11%), and the US (7%).

**Table 2a: Indonesia's Top 5 Export Destinations**

Country	Value (\$ billion)			Share (%)		
	2019	2020	Change (%)	2019	2020	Change
China	27.96	31.78	13.64	16.68	19.46	2.78
United States	17.84	18.62	4.35	10.64	11.40	0.76
Japan	16.00	13.66	-14.62	9.54	8.37	-1.18
Singapore	12.92	10.71	-17.07	7.70	6.56	-1.14
India	11.82	10.41	-11.92	7.05	6.38	-0.67

Source: Statistics Indonesia (2021a) (accessed 28 April 2021).

**Table 2b: Indonesia's Top 5 Import Origins**

Country	Value (US\$ billion)			Share (%)		
	2019	2020	Change (%)	2019	2020	Change
China	44.93	39.63	-11.80	26.23	28.00	6.72
Singapore	17.59	12.34	-29.85	10.27	8.72	-15.12
Japan	15.66	10.67	-31.86	9.14	7.54	-17.56
United States	9.26	8.58	-7.34	5.41	6.06	12.08
Malaysia	7.77	6.93	-10.81	4.54	4.90	7.88

Source: Statistics Indonesia (2021a) (accessed 28 April 2021).

## 4. Impacts of COVID-19 on Indonesia's Trade: Product Level Analysis

### 4.1. Estimation strategy

To examine the effects of the COVID-19 pandemic on Indonesia's exports and imports, we will proceed with the following estimation strategy. First, we define the following model:

$$\begin{aligned} X_{i,t} &= \alpha + \beta COVID_t + \gamma Z_{i,t} + \theta X_i^0 + \lambda_{k,y} + \varepsilon_{i,t} \\ M_{i,t} &= \alpha + \beta COVID_t + \gamma Z_{i,t} + \theta M_{0i}^0 + \lambda_{k,y} + \varepsilon_{i,t} \end{aligned} \quad (1)$$

$X$  and  $M$  represent exports and imports. Exports (imports) are measured both in terms of value and volume.  $Z$  is a set of time-variant sector characteristics: Indonesia's GDP and population; the average GDP and average population of Indonesia's top 10 trading partners; the average COVID-19 and health-related indicators of Indonesia's top 10 trading partners; Indonesia's tariff rates and prevalence score of non-tariff measures (NTMs) (for imports), and the average tariff rates and prevalence score of NTMs of Indonesia's top 10 trading partners (for exports); the value of Indonesia's foreign direct investment (FDI) inflows, and business activity realisation by sector of Indonesia.  $COVID$  is a dummy variable: 1 for March to December 2020, and 0 otherwise. The coefficient of interest,  $\beta$ , captures the average differences in exports (imports) before and during the COVID-19 pandemic;  $i$  stands for products at the Harmonized System (HS) 6-digit level and  $t$  stands for time, monthly;  $k$  stands for sectors at the HS 2-digit level,  $i \in k$ .  $y$  stands for year, and  $\varepsilon$  is an error term. The estimation results from running Equation 1 will show how COVID-19 affects trade.

To deal with potential confounders, such as any policies related to the initial sectoral structure differences, we incorporate a vector of initial conditions ( $X^0$  and  $M^0$ ) and the average of 6 months of exports (imports) before the period of analysis. We also include interactive two-digit sector-year fixed effects,  $\lambda$ , to control for shocks over time affecting trade across all sectors in major sectoral groups.

We also carefully anticipate that there may be an argument that the results can be misleading (overestimation of the impacts of COVID-19 on Indonesia's trade), as other factors could be driving the changes in trade. Thus, we conduct robustness checks to assess whether and to what extent changes in Indonesia's exports and imports are only affected by COVID-19, compared with what would have been expected in the absence of the pandemic. For that purpose, we incorporated a control group to help filter out any other effects. Such a control group would have to remain unaffected by the treatment. As COVID-19 is a global crisis affecting almost all aspects of life, including trade, identifying sectors suitable as a control group would not be a good solution. Therefore, following Metcalfe, Powdthavee, and Dolan (2011), Powdthavee et al. (2019), and Vadoros (2020), we use trends of the same variable, in earlier months, as a control group.

We use a difference-in-differences (DID) econometric approach to compare trends in trade figures during COVID-19 with the control group. The DID approach addresses the unobserved confounders problem and fixed omitted variables by exploiting the time or cohort dimension (Angrist and Pischke, 2009). Using this approach, we create a counterfactual trend of treating and controlling products (HS 6-digit level). This approach assumes that the trends of behaviour control and treatment group are similar or parallel before COVID-19, so we check whether the common trend assumption is conformed (results reported in section 5).<sup>1</sup> We use the monthly trade volume and value in the previous 3 years as a control group. Likewise, we use the monthly volume and value of trade in the first 2 months in previous years as a control group for the non-COVID-19 trade impact in the first 2 months of 2020. The treatment period starts in month 3 when the first COVID-19 case was registered in Indonesia (KPC-PEN, 2020).

We apply the DID method approach by estimating the following equation:

$$\begin{aligned} X_{i,t} &= \beta_0 + \beta_1 D_{post} + \beta_2 D_{tr} + \beta_3 D_{post}D_{tr} + \beta_4 X_{it} + \varepsilon_{i,t} \\ M_{i,t} &= \beta_0 + \beta_1 D_{post} + \beta_2 D_{tr} + \beta_3 D_{post}D_{tr} + \beta_4 M_{it} + \varepsilon_{i,t} \end{aligned} \quad (2)$$

The DID model includes a treatment group dummy variable: 1 for the group affected by the intervention and 0 otherwise. In this case, observations from March to December 2020 take the value of 1, and observations in previous months take 0. Another dummy included is the *post* variable, which takes the value of 1 in the period after an intervention (i.e. from March each year, for both groups, 2020 and other years), and 0

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<sup>1</sup> Before running the DID model, we checked whether the figure shows the common trend assumption to ensure the results of the DID approach are valid.



otherwise. The interaction of these two dummy variables (*treatment\*post*) is the main variable of interest.

## 4.2. Data

The main data set for our analysis consists of monthly data of the volume of exports (imports) and the value of exports (imports) from January 2017 to December 2020. We use exports and imports by product at the HS 6-digit level. The data are from the CEIC Indonesia Premium Database, (CEIC, 2021).

The first COVID-19 case in Indonesia was registered on 2 March 2020, while the first death occurred on 11 March 2020 (COVID-19 National Task Force, 2020). Therefore, we considered the period from March to December 2020 as the COVID-19 period. We set a dummy for COVID-19 that equals 1 during this period, and 0 otherwise. COVID-19 health-related indicators include main measures such as the total number of tests per case of COVID-19 and the infection rate ( $R_0$ ). The basic reproduction number ( $R_0$ ) is a well-known epidemiological concept to measure the spread of an infectious disease. It is the average number of secondary cases that one primary case will generate in a population where nobody is either immune or vaccinated (Heesterbeek, 2002). Health indicators are extensively available daily, so we aggregated them onto a monthly level. We also incorporate a variable that defines changes from the baseline in the workplace activities of Indonesia's top 10 trading partners.

For control variables, we include key economic and COVID-19-related health indicators for Indonesia and its top 10 trading partners. Trading partners' indicators are proxied by the average value of Indonesia's top 10 trading partners. The economic indicators include GDP, FDI flows, the average applied tariff rates by product at the HS 6-digit level based on HS classification in 2017, the prevalence score of NTMs,<sup>2</sup> and the World Bank's Logistics Performance Index. We also include key sectoral activity measures for Indonesia, such as business activity and production capacity utilisation by sector provided by the Central Bank of Indonesia (Bank Indonesia). Variables, variable definitions, unit descriptions, and data sources are in Table 3.

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<sup>2</sup> The data on NTMs are available in the ERIA–UNCTAD database. TRAINS: The Global Database on Non-Tariff Measures, <https://trains.unctad.org/Default.aspx> (accessed 26 February 2021).

**Table 3: Summary of Variables**

Description	Year	Frequency	Unit	Original Source
Value of exports by HS 6 code	2017–2020	Monthly	US\$ million	BPS/CEIC
Volume of exports by HS 6 code	2017–2020	Monthly	kg million	BPS/CEIC
Value of imports by HS 6 code	2017–2020	Monthly	US\$ million	BPS/CEIC
Volume of imports by HS 6 code	2017–2020	Monthly	kg million	BPS/CEIC
Weighted average of population of top trading partners	2017–2020	Monthly	persons	United Nations
Indonesian population	2017–2020	Annually	persons	BPS/CEIC
Nominal GDP of Indonesia	2017–2020	Quarterly	US\$ billion	BPS/CEIC
Ln of nominal GDP of Indonesia	2017–2020	Monthly		BPS/CEIC
Weighted average of nominal GDP of Indonesia's top trading partners	2017–2020	Quarterly	US\$ billion	Economist Intelligence Unit
Ln of weighted average of nominal GDP of top trading partners (\$)	2017–2020	Quarterly		Economist Intelligence Unit
Initial conditions: Jul–Dec 2016 average of Indonesia's value of exports	2016	Monthly	US\$ million	BPS
Initial conditions: Jul–Dec 2016 average of Indonesia's volume of exports	2016	Monthly	kg million	BPS
Initial conditions: Jul–Dec 2016 average of Indonesia's value of imports	2016	Monthly	\$ million	BPS
Initial conditions: Jul–Dec 2016 average of Indonesia's volume of imports	2016	Monthly	kg million	BPS
Simple average applied most favoured nation tariff rates of Indonesia's top 10 trading partners	2017–2020	Annually		UNCTAD TRAIN (WITS)
Simple average applied most favoured nation tariff rates of Indonesia	2017–2020	Annually	%	UNCTAD TRAINS (WITS)
NTM prevalence score of Indonesia (imposed by Indonesia)	2017–2020	Annually		Authors' calculations based on ERIA—UNCTAD NTMS database
Business activity realisation of Indonesia, by sector	2017–2020	Annually	%	Bank Indonesia/CEIC
Production capacity utilisation of Indonesia, by sector	2017–2020	Annually	%	Bank Indonesia/CEIC
FDI inflow by sector	2017–2020	Quarterly	US\$ million	BKPM (CEIC)
Number of tests per case of top trading partners	Jan 2020–Feb 2021	Daily	ratio	Our World in Data/Johns Hopkins University
Reproduction rate of top trading partners	Dec 2019–Nov 2020	Daily	ratio	Our World in Data/Johns Hopkins University
Change from baseline in workplace activities of top trading partners	Feb 2020–Feb 2021	Daily	%	Google Mobility Index

BKPM = Badan Koordinasi Penanaman Modal (Indonesian Investment Coordinating Board), BPS = Badan Pusat Statistik (Statistics Indonesia), FDI = foreign direct investment, GDP = gross domestic product, HS = Harmonized System, Ln = logarithm, NTM = non-tariff measure, ERIA = Economic Research Institute for ASEAN and East Asia, UNCTAD TRAINS = United Nations Conference on Trade and Development Trade Analysis and Information System, WITS = World Integrated Trade Solution.

Source: Authors' compilations

### 4.3. Empirical Results

Tables 4 and 5 show our estimation results of model (1) in examining the impacts of COVID-19 on Indonesia's exports, in terms of volume and value (HS 6-digit level), from January 2017 to December 2020. They show that COVID-19 negatively affects Indonesia's exports, both in volume and value, and the correlations hold with different specifications by alternating or adding more control variables in our model.

COVID-19 is associated with a decrease of 4.6% in Indonesia's exports in terms of volume and 5.6% in terms of value.<sup>4</sup> Indonesia's GDP and the weighted average of nominal GDP of its top 10 trading partners positively correlated with export volume (1.1% and 0.9% in Table 4) and export value (1.2% and 0.8% in Table 5). This is in line with the gravity model framework, which emphasises the role of economic size from trading countries. Higher income in the exporting country indicates the availability of goods for exports. Larger economies of Indonesia's trading partners (generally translated into higher demand) are associated with increased exports. Meanwhile, other control variables are not statistically significant.

Tables 6 and 7 show that the COVID-19 pandemic is associated with reductions in Indonesia's import volume and value – a decrease of 7.3% in import volume and 11.6% in import value. The estimates of other covariates, in general, show the same pattern with export volume and value.

To ensure that COVID-19 rigorously affects exports and imports, we also exercise alternatives of specifications of COVID-19. We replace the dummy of COVID-19 and include the COVID-19 health variables. To examine COVID-19 affecting demand for Indonesia's exports, we use COVID-19 variables of top trading partners, including the COVID-19 reproduction rate, percentage changes from the baseline in workplace activities, and the number of COVID-19 tests per case.

Table 8 shows the results of how these COVID-19 variables affect export volume and value. COVID-19's reproduction rate of Indonesia's trading partners is associated with reduced export volume and value. In contrast, tests per case representing government responses to the pandemic have positive effects on exports. This means that, on average,

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<sup>4</sup> Exp (0.0456)  $\approx$  1.046; exp (0.0549)  $\approx$  1.054; (column 2 of Tables 4 and 5).

countries with better responses to the pandemic tend to have a higher demand for Indonesia's exports than other countries. The positive change of work-related activities in Indonesia's trading partners is also positively correlated to the country's exports.

To counter an argument of overestimation of the impacts of COVID-19 on trade presented, as other factors could be driving the changes, we conduct robustness checks to assess the extent the changes in Indonesia's exports and imports are only affected by COVID-19 than what would have been expected in the absence of the virus. We use a DID approach that addresses the unobserved confounders problem and fixed omitted variables by exploiting the time or cohort dimension.

**Table 4: Impacts of COVID-19 on Indonesia's Export Volume**

DV: Ln Volume of Indonesia's Exports	(1)	(2)	(3)	(4)
	Fixed Effect			
COVID-19	-0.0451* (0.0224)	-0.0456* (0.0226)	-0.0461* (0.0226)	-0.0456* (0.0226)
Ln of Indonesian nominal GDP	1.086*** (0.136)	1.119*** (0.137)	1.006*** (0.139)	1.118*** (0.137)
Ln of nominal GDP of top 10 trading partners	0.951*** (0.175)	0.973*** (0.178)	0.973*** (0.178)	0.973*** (0.178)
Ln Indonesian population	-0.31 (39.02)	3.752 (39.27)	3.681 (39.26)	3.66 (39.27)
Ln of top trading partners population	-0.00332 (0.0266)	-0.0081 (0.0271)	-0.00823 (0.0271)	-0.00809 (0.0271)
Ln of 6-month initial conditions (export volume)				
Applied MFN tariff rates		-0.0697 (0.0663)	-0.0694 (0.0663)	-0.0697 (0.0663)
Business activity realisation of Indonesia, by sector			0.0369*** (0.0076)	
Ln of foreign investment realisation into Indonesia, by sector				-0.00393 (0.00788)
Constant	-50.27 (757.3)	-130.2 (762.1)	-124.7 (762)	-128.3 (762.1)
Sector-year interaction	Yes	Yes	Yes	Yes
Observations	141,477	138,934	138,934	138,934

COVID-19 = coronavirus disease, DV = dependent variable, GDP = gross domestic product, Ln = logarithm, MFN = most-favoured nation.

Notes: Standard errors in parentheses. \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

Source: Authors' estimations.

**Table 5: Impacts of COVID-19 on Indonesia's Export Value**

DV: Ln Value of Indonesia's Exports	(1)	(2)	(3)	(4)
	Fixed Effect			
COVID-19	-0.0558*	-0.0549*	-0.0552*	-0.0549*
	(0.0219)	(0.022)	(0.022)	(0.022)
Ln of Indonesian nominal GDP	1.174***	1.201***	1.142***	1.201***
	(0.133)	(0.134)	(0.136)	(0.134)
Ln of nominal GDP of top 10 trading partners	0.789***	0.812***	0.812***	0.812***
	(0.171)	(0.173)	(0.173)	(0.173)
Ln Indonesian population	23	24.92	24.88	24.93
	(38.29)	(38.52)	(38.52)	(38.52)
Ln of top trading partners population	0.0158	0.0135	0.0135	0.0135
	(0.0259)	(0.0264)	(0.0264)	(0.0264)
Ln of 6-month initial conditions (export value)				
Applied MFN tariff rates		-0.0286	-0.0284	-0.0286
		(0.0648)	(0.0648)	(0.0648)
Business activity realization of Indonesia, by sector			0.0194**	
			(0.00742)	
Ln of foreign investment realisation into Indonesia, by sector				0.000381
				(0.00769)
Constant	-499.8	-538.5	-535.6	-538.7
	(743.1)	(747.6)	(747.6)	(747.6)
Sector-year interaction	Yes	Yes	Yes	Yes
Observations	141,668	139,123	139,123	139,123

COVID-19 = coronavirus disease, DV = dependent variable, GDP = gross domestic product, Ln = logarithm, MFN = most favoured nation.

Notes: Standard errors in parentheses. \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

Source: Authors' estimations.

**Table 6: Impacts of COVID-19 on Indonesia's Import Volume**

DV: Ln Volume of Indonesia's Imports	(1)	(2)	(3)	(4)
	Fixed Effect			
COVID-19	-0.0737*** (0.0162)	-0.0739*** (0.0162)	-0.0749*** (0.0162)	-0.0738*** (0.0162)
Ln of Indonesian nominal GDP	2.077*** (0.0983)	2.064*** (0.0984)	1.989*** (0.1)	2.067*** (0.0984)
Ln of nominal GDP of top trading partners	1.189*** (0.146)	1.213*** (0.148)	1.213*** (0.148)	1.213*** (0.148)
Ln Indonesian population	-0.401 (27.34)	-0.345 (27.33)	-0.327 (27.33)	-0.171 (27.33)
Ln of top trading partners population	-0.000742 (0.0228)	-0.000634 (0.0228)	-0.000517 (0.0228)	-0.000627 (0.0228)
Ln 6-month initial conditions (import volume)				
Applied MFN tariff rates		-0.00101 (0.0011)	-0.00102 (0.0011)	-0.00101 (0.0011)
Business activity realization of Indonesian, by sector			0.0220*** (0.00557)	
Ln of foreign investment realisation into Indonesia, by sector				0.00965 (0.00576)
Constant	-91.13 (531)	-92.43 (530.7)	-90.03 (530.7)	-96.09 (530.7)
Sector-year interaction	Yes	Yes	Yes	Yes
Observations	200,675	199,902	199,902	199,902

COVID-19 = coronavirus disease, DV = dependent variable, GDP = gross domestic product, Ln = logarithm, MFN = most favoured nation.

Notes: Standard errors in parentheses. \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

Source: Authors' estimations.

**Table 7: Impacts of COVID-19 on Indonesia's Import Value**

DV: Ln Value of Indonesia's Imports	(1)	(2)	(3)	(4)
	Fixed Effect			
Dummy 1 from March 2020; 0 otherwise	-0.117*** (0.0136)	-0.118*** (0.0136)	-0.118*** (0.0136)	-0.118*** (0.0136)
Ln of Indonesian nominal GDP	2.198*** (0.0828)	2.180*** (0.0829)	2.157*** (0.0844)	2.183*** (0.0829)
Ln of nominal GDP of top trading partners	1.360*** (0.123)	1.381*** (0.125)	1.381*** (0.125)	1.381*** (0.125)
Ln Indonesian population	-5.285 (23.05)	-5.197 (23.02)	-5.192 (23.02)	-5.025 (23.02)
Ln of top trading partners population	-0.00989 (0.0192)	-0.00979 (0.0192)	-0.00975 (0.0192)	-0.00978 (0.0192)
Ln of 6-month initial conditions (import value)				
Applied MFN tariff rates		-0.000823 (0.000924)	-0.000825 (0.000924)	-0.000823 (0.000924)
Business activity realization of Indonesia, by sector			0.00668 (0.00469)	
Ln of foreign investment realisation into Indonesia, by sector				0.00956* (0.00485)
Constant	-3.72 (447.6)	-5.377 (447)	-4.651 (447)	-9.006 (447)
Sector-year interaction	Yes	Yes	Yes	Yes
Observations	200,675	199,902	199,902	199,902

COVID-19 = coronavirus disease, DV = dependant variable, GDP = gross domestic product, Ln = logarithm, MFN = most favoured nation.

Notes: Standard errors in parentheses. \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

Source: Authors' estimations.



**Table 8: COVID-19 Health Variables: Export Volume and Export Value**

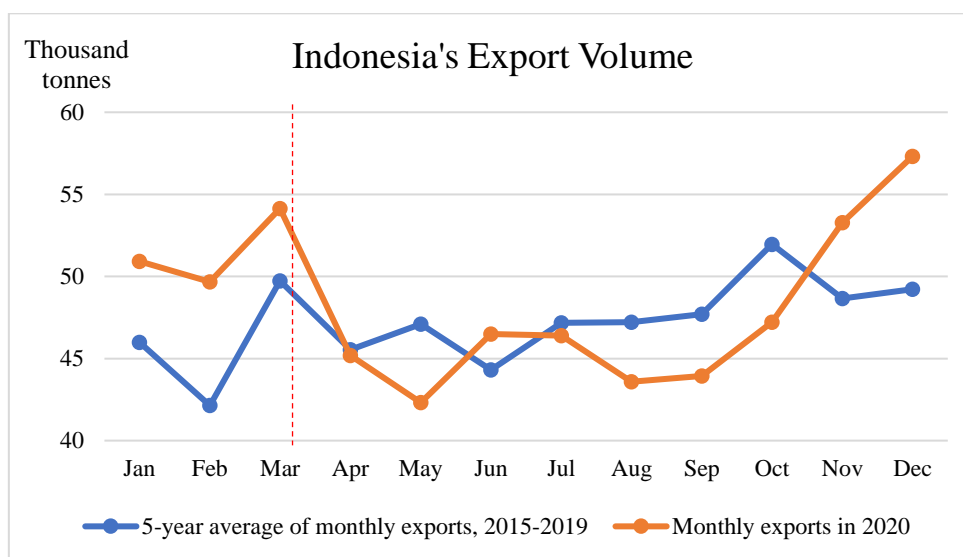
Fixed Effect Regression	Dependent Variable: Ln of Export Volume					Dependent Variable: Ln of Export Value				
	(1)	(2)	(3)	(4)	(5)	(1b)	(2b)	(3b)	(4b)	(5b)
Reproduction rate of top trading partners	-0.0418** (0.0143)	-0.0568** (0.021)				-0.0387** (0.014)	-0.0518* (0.0205)			
Percentage change from baseline in workplace activities in top trading partners		0.00327** (0.00108)		0.00301** (0.00103)	0.00317** (0.00102)		0.00303** (0.00106)		0.00301** (0.00103)	0.00294** (0.000993)
Tests per case of top trading partners			0.0000315** (0.0000117)	0.0000292* (0.0000119)				0.0000248* (0.0000114)	0.0000239* (0.0000116)	
Constant	-178.0*** (16.4)	-147.7*** (19.65)	-169.1*** (15.44)	-137.3*** (19.5)	-136.7*** (19.47)	-183.7*** (16.06)	-156.9*** (19.19)	-176.3*** (15.1)	-148.4*** (19.03)	-147.3*** (19.01)
Set of controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Initial conditions	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector-year interaction dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	33,081	31,447	33,717	31,691	31,860	33,135	31,501	33,771	31,745	31,914
R2	0.01	0.011	0.01	0.011	0.011	0.009	0.01	0.01	0.011	0.01
F stat	74.32	61.54	77.21	62.48	77.13	70.96	61.54	73.93	60.25	74.68

COVID-19 = coronavirus disease, GDP = gross domestic product.

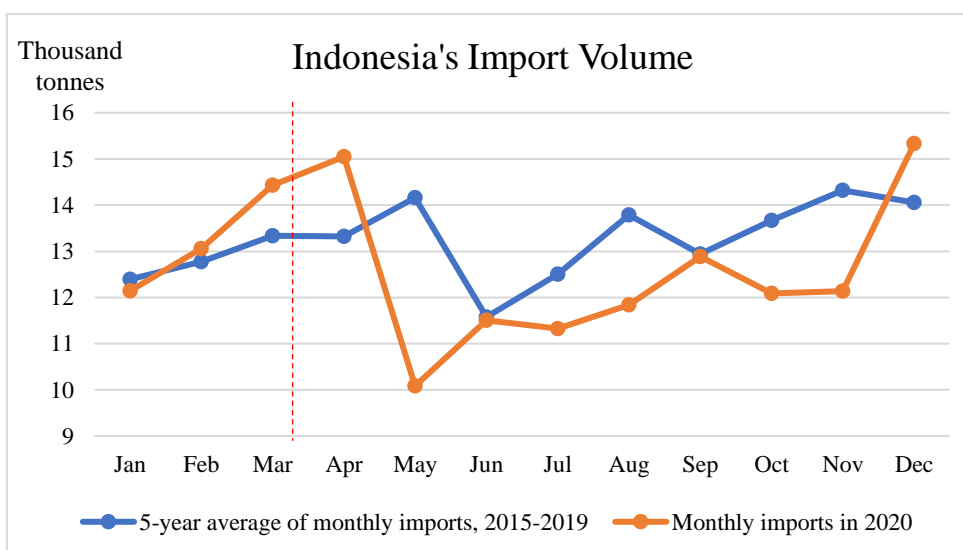
Notes: A set of controls includes the GDP of Indonesia, GDP of top trading partners, population of Indonesia, population of top trading partners, import tariff of top trading partners, and business activity of Indonesia. Initial conditions are the export volume before the period of analysis, i.e. the average of 6 months of Indonesia's export volumes in 2016. Standard errors in parentheses. \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

Source: Authors' estimations.

**Figure 2: Comparison of Indonesia's Average Monthly Trade in 2015–2019 vs 2020**



Source: Authors' calculations based on Indonesia's Ministry of Trade data (accessed 12 April 2021).



Source: Authors' calculations based on Indonesia's Ministry of Trade data (accessed 12 April 2021).

Then we run model 2 using the DID approach, which requires the trends in treatment and control groups to be parallel before the intervention. To test whether this common assumption is met, we observe the trends described in Figure 2 presenting the monthly trade volume in 2020 and the average for 2015–2019. The dotted vertical line shows when the first COVID-19 case was registered (Indonesia Information Portal, 2020).

Both average and monthly values of Indonesia's exports are reasonably parallel from January to March. However, the 2020 volume fell compared to the average exports after March. The gap between them can be associated with the COVID-19 pandemic. Furthermore, the import volume trend (5-year average and 2020 figure) fluctuated more after the pandemic. But the trend of the drop in import volume in 2020 is more apparent than the 5-year average. Figure 2 indicates that the two groups have a common trend before the intervention.

Tables 9–12 present the results of the impacts of COVID-19 on Indonesia's exports and imports, using the DID approach. DID is the interaction between a treatment group dummy and a treatment period dummy, as explained in section 3. The coefficients of DID variables show the correlations between the presence of COVID-19 with exports and imports. In general, DID coefficients are shown in stronger magnitudes in capturing the impacts of COVID-19 on Indonesia's exports and imports, compared with that of a dummy of COVID-19 in model 1 presented in Tables 4–7.

On exports, Tables 9 and 10 show that the DID coefficients are around  $-0.102$  and  $-0.126$  for export volume and value, respectively. This means COVID-19 contributed to a decrease in the export volume and value of 10.7% and 13.4%, respectively, in the pandemic period from March to December 2020.<sup>5</sup>

Tables 11 and 12, on imports, show that the DID coefficients are around  $-0.152$  and  $-0.231$ , respectively. Thus, the data show that COVID-19 was associated with a decrease of 16.4% in import volume and 25.9% in import value.<sup>6</sup>

Last, to ensure that the effects of COVID-19 on Indonesia's exports and imports are not random, we perform placebo tests limiting the sample to the pre-treatment period up to February 2020, i.e. before the first registered COVID-19 case in March 2020, using an earlier random treatment period starting in February. We find no effects lending additional evidence that the findings of the baseline model are not random. The results of the placebo tests are in the Appendix.

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<sup>5</sup>  $\text{Exp}(0.102) \approx 1.107$ ;  $\text{exp}(0.126) \approx 1.134$ .

<sup>6</sup>  $\text{Exp}(0.152) \approx 1.164$ ;  $\text{exp}(0.231) \approx 1.259$ .

**Table 9: Impacts of COVID-19 on Indonesia's Export Volume, Using DID Approach**

DV: Ln Volume of Indonesia's Exports	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Fixed Effect						
Dummy treatment 1 if in treatment group (Dtr)	-0.0583* (0.0232)	-0.0685** (0.0245)	-0.0141 (0.025)	-0.0684** (0.0245)	-0.0134 (0.0251)	-0.132 (0.158)	0.0205 (0.396)
Dummy post-COVID-19 equals 1 if from March 2020 (Dpost)	0.0438*** (0.0127)	0.0442*** (0.0129)	0.0427*** (0.0129)	0.0441*** (0.0129)	0.0425*** (0.0129)	0.0432*** (0.0129)	0.0433*** (0.0129)
<b>Dummy interaction of Dtr and Dpost</b>	-0.104*** (0.0254)	-0.103*** (0.0259)	-0.0982** (0.0259)	-0.103*** (0.0259)	-0.0979*** (0.0259)	-0.0990*** (0.0258)	-0.102*** (0.0258)
Ln of weighted average of nominal GDP of top trading partners		-0.423*** (0.0988)	-0.462*** (0.0989)	-0.419*** (0.101)	-0.448*** (0.101)	1.031*** (0.169)	0.900*** (0.175)
Ln of weighted average of population of top trading partners		0.00488*** (0.00136)	0.00433** (0.00136)	0.00483*** (0.00138)	0.00419** (0.00138)	-0.00174 (0.027)	-0.00399 (0.0269)
Weighted average of applied MFN tariff rates of Indonesia's top 10 trading partners		-0.00107 (0.00117)	-0.00107 (0.00117)	-0.00107 (0.00117)	-0.00107 (0.00117)	-0.00132 (0.00117)	-0.00246* (0.00122)
Business activity realisation of Indonesia, by sector					0.0695*** (0.00669)	0.0693*** (0.00668)	0.0507*** (0.00743)
Ln of foreign investment realisation into Indonesia, by sector				0.00167 (0.00715)	0.00518 (0.00716)		
Constant	9.855*** (0.0116)	21.86*** (2.822)	22.96*** (2.823)	21.70*** (2.906)	22.46*** (2.906)	-19.48*** (4.828)	-15.85** (5.033)
Dummy year	No	No	No	No	No	Yes	No
Sector interaction	No	No	No	No	No	No	Yes
Observations	148,666	143,840	143,840	143,840	143,840	143,840	143,840

COVID-19 = coronavirus disease, DID = difference in differences, DV = dependent variable, GDP = gross domestic product, Ln = logarithm, MFN = most favoured nation, NTM = non-tariff measure.

Notes: Standard errors in parentheses. \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

Source: Authors' estimations.

**Table 10: Impacts of COVID-19 on Indonesia's Export Value, Using the DID Approach**

DV: Ln Value of Indonesia's Exports	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Fixed Effect						
Dummy treatment 1 if in treatment group	0.00228 (0.0226)	-0.0199 (0.0239)	0.0216 (0.0244)	-0.0189 (0.0239)	0.0233 (0.0245)	-0.127 (0.154)	0.263 (0.389)
Dummy post COVID-19 equals 1 if from March 2020	0.0509*** (0.0124)	0.0520*** (0.0126)	0.0509*** (0.0126)	0.0515*** (0.0126)	0.0503*** (0.0126)	0.0511*** (0.0126)	0.0515*** (0.0125)
<b>Dummy interaction of Dtr and Dpost, equals 1, if both are 1</b>	-0.125*** (0.0248)	-0.125*** (0.0252)	-0.122*** (0.0252)	-0.125*** (0.0252)	-0.121*** (0.0252)	-0.122*** (0.0252)	-0.126*** (0.0252)
Ln nominal GDP of top trading partners		-0.13 (0.0964)	-0.16 (0.0965)	-0.102 (0.0983)	-0.125 (0.0983)	0.645*** (0.165)	0.710*** (0.171)
Ln of top trading partners population		0.00626*** (0.00133)	0.00584*** (0.00133)	0.00598*** (0.00134)	0.00549*** (0.00134)	0.0173 (0.0263)	0.015 (0.0262)
Applied MFN tariff rates of Indonesia's top 10 trading partners		-0.00191 (0.00114)	-0.00191 (0.00114)	-0.00192 (0.00114)	-0.00193 (0.00114)	-0.00205 (0.00114)	-0.00275* (0.00119)
Business activity realisation of Indonesia, by sector			0.0528*** (0.00652)		0.0534*** (0.00653)	0.0528*** (0.00652)	0.0336*** (0.00725)
Ln of foreign investment realisation into Indonesia, by sector				0.0103 (0.00698)	0.013 (0.00698)		
Constant	11.55*** (0.0113)	15.19*** (2.753)	16.04*** (2.754)	14.20*** (2.834)	14.79*** (2.834)	-7.003 (4.711)	-9.217 (4.909)
Dummy year	No	No	No	No	No	Yes	No
Sector interaction	No	No	No	No	No	No	Yes
Observations	148,874	144,038	144,038	144,038	144,038	144,038	144,038

COVID-19 = coronavirus disease, DID = difference in differences, DV = dependent variable, GDP = gross domestic product, Ln = logarithm, MFN = most-favoured nation, NTM = non-tariff measure.

Notes: Standard errors in parentheses. \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

Source: Authors' estimations.

**Table 11: Impacts of COVID-19 on Indonesia's Import Volume, Using the DID Approach**

DV: Ln Volume of Indonesia's Imports	(1)	(2)	(3)	(4)	(5)	(6)
	Fixed Effect					
Dummy treatment 1 if in treatment group	-0.178*** (0.017)	-0.231*** (0.0175)	-0.232*** (0.0175)	-0.201*** (0.0179)	-0.202*** (0.0249)	0.0133 (0.217)
Dummy post-COVID-19 equals 1 if from March 2020	0.0369*** (0.00931)	0.0378*** (0.00937)	0.0372*** (0.00938)	0.0355*** (0.00938)	0.0362*** (0.00937)	0.0363*** (0.00932)
<b>Dummy interaction of Dtr and Dpost, equals 1, if both are 1</b>	-0.141*** (0.0187)	-0.153*** (0.0188)	-0.152*** (0.0188)	-0.149*** (0.0188)	-0.150*** (0.0188)	-0.152*** (0.0187)
Ln of nominal GDP of top trading partners		1.015*** (0.0598)	1.049*** (0.061)	1.050*** (0.061)	1.063*** (0.13)	1.050*** (0.147)
Simple average applied tariff rates of Indonesia		-0.116 (0.0604)	-0.117 (0.0604)	-0.117 (0.0604)	-0.119* (0.0604)	-0.138* (0.061)
NTM prevalence score of Indonesia (i.e. imposed by Indonesia)						
Business activity realisation of Indonesia, by sector				0.0419*** (0.00494)	0.0405*** (0.00494)	0.0407*** (0.00549)
Ln of foreign investment realisation into Indonesia, by sector			0.0150** (0.00523)	0.0170** (0.00523)		
Constant	10.80*** (0.0085)	-18.01*** (1.816)	-19.30*** (1.871)	-19.37*** (1.871)	-19.42*** (3.817)	-19.08*** (4.354)
Dummy year	No	No	No	No	No	Yes
Sector interaction	No	No	No	No	No	No
Observations	207,632	201,296	201,296	201,296	201,296	201,296

COVID-19 = coronavirus disease, DID = difference in differences, DV = dependent variable, GDP = gross domestic product, Ln = logarithm, NTM = non-tariff measure.

Notes: Standard errors in parentheses. \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

Source: Authors' estimations.

**Table 12: Impacts of COVID-19 on Indonesia's Import Value, Using DID Approach**

DV: Ln of Value of Indonesia's Imports	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Fixed Effect						
Dummy treatment 1 if in treatment group	-0.119*** (0.0144)	-0.190*** (0.0148)	-0.164*** (0.0151)	-0.191*** (0.0148)	-0.165*** (0.0151)	-0.117*** (0.021)	0.0601 (0.182)
Dummy post-COVID-19 equals 1 if from March 2020	0.0681*** (0.00788)	0.0696*** (0.00789)	0.0683*** (0.0079)	0.0691*** (0.0079)	0.0677*** (0.0079)	0.0684*** (0.00789)	0.0684*** (0.00784)
<b>Dummy interaction of Dtr and Dpost, equals 1, if both equal to 1</b>	-0.221*** (0.0158)	-0.232*** (0.0158)	-0.230*** (0.0158)	-0.231*** (0.0158)	-0.229*** (0.0158)	-0.230*** (0.0158)	-0.231*** (0.0157)
Ln of nominal GDP of top trading partners		1.321*** (0.0504)	1.318*** (0.0504)	1.350*** (0.0514)	1.350*** (0.0514)	1.088*** (0.109)	1.245*** (0.124)
Simple average applied MFN tariff rate of Indonesia		-0.110* (0.0509)	-0.111* (0.0509)	-0.110* (0.0509)	-0.111* (0.0509)	-0.112* (0.0509)	-0.140** (0.0513)
NTM prevalence score of Indonesia (i.e. imposed by Indonesia)							
Business activity realisation of Indonesia, by sector			0.0344*** (0.00415)		0.0350*** (0.00416)	0.0322*** (0.00416)	0.0271*** (0.00462)
Ln of foreign investment realisation into Indonesia, by sector				0.0127** (0.0044)	0.0143** (0.00441)		
Constant	12.59*** (0.00719)	-25.24*** (1.53)	-25.16*** (1.529)	-26.33*** (1.576)	-26.39*** (1.575)	-18.45*** (3.213)	-23.00*** (3.665)
Dummy year	No	No	No	No	No	Yes	No
Sector interaction	No	No	No	No	No	No	Yes
Observations	207,632	201,296	201,296	201,296	201,296	201,296	201,296

COVID-19 = coronavirus disease, DID = difference in differences, DV = dependent variable, GDP = gross domestic product, Ln = logarithm, MFN = most favoured nation, NTM = non-tariff measure.

Notes: Standard errors in parentheses. \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

Source: Authors' estimations.

Overall, we see Indonesia's exports and imports decline in volume and value due to the COVID-19 pandemic.

On the demand side, the drop in global demand – especially from Indonesia's major export destinations (China, the US, India, and Singapore) – significantly reduced Indonesia's exports. Singapore, Indonesia's largest trading partner and investor, has faced a recession from Q2 2020 to Q1 2021. At the same time, the US and India remain far from recovery as they are still struggling with an increased number of COVID-19 cases, which are amongst the highest in the world. US demand is projected to rebound from Q3 2021, as it has improved its response to the pandemic by putting prevention measures in place and significantly increasing vaccine coverage. India is still facing the third wave, with the largest number of daily cases (250,000–300,000) and deaths (4,000) in the world. The only source of Indonesia's export increase in 2021 may come from its palm oil and coal exports to China, as China's trade and economy have bounced back after Q4 2020. Furthermore, Indonesia's exports also declined due to the disruption of supply chains, as its exports rely mainly on imported machinery and intermediate inputs.

Indonesia's producers and exporters may have halted production on the supply side due to prolonged declines in world demand. At the same time, Indonesia's overall demand for imports decreased (reflected in the recession during Q3 and Q4 2020) due to social distancing and a semi-lockdown in major cities of the country. In addition, investors opted to wait and see as prolonged shocks were expected.

## **5. Conclusions and Way Forward**

As for many other countries, Indonesia's exports and imports significantly dropped during the COVID-19 pandemic. Using the country's monthly trade data at the HS 6-digit level from January 2017 to December 2020 and the DID approach, we found that COVID-19 lowered the export volume by 10.7% (the export value, by 13.4%). At the same time, it reduced the import volume by 16.42% (the import value, by 25.9%). The results are robust to any specifications and methodology in the study.

We carefully note that our analyses might have limitations. First, the control economic variables are mainly available in quarterly, not monthly, data. Second, as COVID-19 affected most sectors in all countries, we use the trends of the same variable, in earlier years, as a control group. The shocks on the Indonesian economy from COVID-



19 cannot be separated from its impacts on other countries. Despite these limitations, this is one of the first analyses attempting to empirically capture the impacts of the COVID-19 pandemic on Indonesia's trade. The robustness check results showed that the impacts of COVID-19 on Indonesia's trade are reliable, and placebo tests confirmed that the decreases in trade are not simply random.

The findings can shed light on improving understanding of Indonesia's trade, and thus help formulate appropriate targeted responses to improve trade performance.

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## Appendix

**Table A1: Placebo Test: Impacts of COVID-19 on Indonesia's Export Volume, Using DID Approach**

DV: Ln of Volume of Indonesia's Exports	(1)	(2)	(3)	(4)	(5)	(6)
	Fixed Effect					
Dummy treatment 1 if in treatment group (Dtr)	-0.0876** (0.0318)	0.0737 (0.0411)	0.0741 (0.0412)	0.0742 (0.0419)	0.121 (0.244)	0.566 (0.857)
Dummy post-COVID-19 equals 1 if from 2020m3 (Dpost)	0.0204 (0.0165)	0.00105 (0.0191)	0.00116 (0.0191)	0.00115 (0.0191)	0.00104 (0.0191)	0.00168 (0.019)
<b>DID</b>	0.022 (0.0422)	0.0447 (0.0439)	0.0446 (0.0439)	0.0446 (0.0439)	0.0447 (0.0439)	0.0466 (0.0439)
Ln of weighted average of nominal GDP of top trading partners (\$)		0.431* (0.22)	0.431* (0.22)	0.431* (0.22)	0.43 (0.22)	0.313 (0.228)
Ln of nominal GDP of Indonesia (Rp)		0.356* (0.164)	0.355* (0.164)	0.355* (0.165)	0.356* (0.165)	0.334* (0.164)
Ln of weighted means of population of top trading partners		-0.000356 (0.0015)	-0.000333 (0.00151)	-0.000333 (0.00151)	-0.00548 (0.0263)	-0.00708 (0.0263)
Ln Indonesian population		-10.16*** (1.706)	-10.18*** (1.71)	-10.18*** (1.712)	-10.72** (3.329)	-29.16 (39.59)
Weighted average of simple average applied MFN tariff rates of Indonesia's top trading partner (applied on Indonesia's exports)		-0.000134 (0.00122)	-0.000134 (0.00122)	-0.000134 (0.00122)	-0.000135 (0.00122)	-0.00183 (0.00128)
Business activity realisation of Indonesia, by sector				0.0000293 (0.00955)	0.000276 (0.00945)	-0.0147 (0.0103)
Ln of foreign investment realisation into Indonesia, by sector			-0.00149	-0.00149		

			(0.00793)	(0.00801)		
Constant	9.862*** (0.0158)	181.7*** (25.2)	182.3*** (25.34)	182.3*** (25.37)	192.7** (61.32)	554.5 (768)
Dummy year	No	No	No	No	Yes	No
Dummy sector-year	No	No	No	No	No	Yes
Observations	118,258	114,395	114,395	114,395	114,395	114,395

COVID-19 = coronavirus disease, DID = difference in differences, GDP = gross domestic product, MFN = most favoured nation.  
Source: Authors' estimations.

**Table A2: Placebo Test: Impacts of COVID-19 on Indonesia's Import Volume, Using DID Approach**

DV: Ln of Volume of Indonesia's Imports	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Fixed Effect						
Dummy treatment 1 if in treatment group (Dtr)	0.0594*** (0.0122)	-0.546 (0.482)	-0.545 (0.482)	-0.536 (0.482)	-0.535 (0.482)	-0.691 (0.484)	-0.57 (0.694)
Dummy post-COVID-19 equals 1 if from 2020m3 (Dpost)	0.0670*** (0.00863)	-0.130*** (0.0124)	-0.133*** (0.0125)	-0.130*** (0.0124)	-0.132*** (0.0125)	-0.163*** (0.0152)	-0.163*** (0.0151)
<b>DID</b>	-0.0685*** (0.0146)	0.025 (0.0152)	0.0252 (0.0152)	0.016 (0.0153)	0.0164 (0.0153)	0.0254 (0.0152)	0.0251 (0.0151)
Ln of nominal GDP of Indonesia (Rp) – quarterly		3.236*** (0.143)	3.278*** (0.146)	3.281*** (0.143)	3.302*** (0.146)	3.774*** (0.202)	3.778*** (0.201)
Ln of weighted average of nominal GDP of top trading partners (\$)		0.731*** (0.155)	0.749*** (0.156)	0.740*** (0.155)	0.749*** (0.156)	0.999*** (0.171)	0.643*** (0.192)
Ln population of Indonesia		8.174 (27.69)	7.664 (27.7)	8.206 (27.69)	7.937 (27.69)	8.661 (27.7)	19.37 (47.58)
Ln of weighted means of population of top trading partners		0.0383 (0.0369)	0.0383 (0.0369)	0.0386 (0.0369)	0.0386 (0.0369)	0.0341 (0.037)	0.0325 (0.0369)
Simple average applied MFN tariff rates of Indonesia (applied to Indonesia's imports)		-0.147* (0.0604)	-0.147* (0.0604)	-0.147* (0.0604)	-0.147* (0.0604)	-0.148* (0.0604)	-0.169** (0.061)
Business activity realisation of Indonesia, by sector			-0.0105 (0.00691)		-0.0055 (0.007)	-0.00592 (0.00703)	-0.0102 (0.00769)
Ln of foreign investment realisation in Indonesia, by sector				0.0282*** (0.00587)	0.0274*** (0.00594)		

Constant	10.76*** (0.00705)	-284.2 (537.5)	-276.4 (537.6)	-287.3 (537.5)	-283.1 (537.5)	-320.6 (537.7)	-518.1 (923.3)
Dummy year	No	No	No	No	No	Yes	No
Dummy sector-year	No	No	No	No	No	No	Yes
Observations	164,731	159,691	159,691	159,691	159,691	159,691	159,691

Notes: COVID-19 = coronavirus disease, DID = difference in differences, GDP = gross domestic product, MFN = most favoured nation, NTM = non-tariff measure.

Source: Authors' estimations.

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