論　説

The Political Economy of Policy Changes during the COVID-19 Pandemic*

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Abstract

This study explores the determinants of trade restrictions during the COVID-19 pandemic using monthly data of country regulations from January to July in 2020. The main results are threefold. First, a high number of patients led to the introduction of additional export restrictions. Second, non-tariff measure variables might have a positive effect on the implementation of export and import restrictions, while it might negatively affect export restrictions in the medical sector. Finally, a high level of national governance has a negative effect on the introduction of trade restriction policies during the pandemic. A policy implication is that international communities need to develop laws in ordinary times and to monitor ungoverned countries to avoid implementing unnecessary trade restrictions.

JEL classification: F13, F14, F23

Key words: Political economy, Protectionism, COVID-19

1. Introduction

Since the start of 2020, COVID-19 has inflicted enormous damage to many countries. In particular, the economic damage requires immediate resolution. Governments in some countries decided to restrict the international movement of people and goods, and such policy changes hurt the global economy and the international division of labour. According to the World Bank's *COVID-19 Trade Policy Database,* China implemented export-control measures for medical supplies, which include COVID-19 testing kits, medical masks, personal protective equipment, and so on. In addition, the U.S. introduced import-control measures that target specific goods and countries. These measures are non-tariff measures (NTMs)—policies that have a potential effect on trade (UNCTAD and the World Bank 2018). These restrictive policies might have a negative impact on the quality of life (Friedman 2020). In contrast, some countries did not enforce restrictive policies, despite a large number of infections. What are the differences among those countries? The idea of political economy is useful in identifying these factors.

'Political economy is the integration of political and economic factors in our analysis of modern society. Inasmuch as just about everyone would agree that politics and economics are intricately and irretrievably interwoven—politics affects the economy and the economy affects politics—this approach seems natural. It has proved itself powerful in *understanding* governments and societies; it can also be a powerful tool for those interested in *changing* governments and societies. Policymakers should hold these important lessons in mind today as they tackle the COVID-19 pandemic'. (Friedman 2020, p. 9).

Governments across the world are facing problems of budget deficit, economic and monetary policies, and imminent elections, during the COVID-19 pandemic. This indicates that the determinants of these factors might be a mixture of political and economic factors. To prepare for future crises, it might be important to investigate how they determine the introduction of regulations and trade restrictions.

This study aims to identify the determinants of trade restrictions during the pandemic using the latest data on COVID-19 related policy measures from the viewpoint of political economy. Our main results are threefold. The econometric results show that a high number of patients results in the introduction of additional export restrictions. In addition, non-tariff measure variables might have a positive effect on the implementation of export and import restrictions, while they might negatively affect export restrictions in the medical sector. Finally, a high level of national governance has a negative effect on the introduction of trade restriction policies during the pandemic. A policy implication is that international communities need to develop laws in ordinary times and monitor ungoverned countries to avoid implementing unnecessary trade restrictions.

The remainder of this paper is organised as follows: Section 2 reviews related literature, while Section 3 summarises the characteristics of new trade restrictions due to the spread of COVID-19. Section 4 presents the econometric analyses and Section 5 concludes.

2. Literature review and hypothesis development

This study attempts to identify the political and economic determinants of trade restrictions during the COVID-19 pandemic using econometric

analyses. The literature on trade restrictions, public choice, and political economy contains three primary discussions on the determinants of protectionism. First, many studies have investigated the connection between the introduction of NTMs and import penetration and competition. For instance, Trefler (1993) and Lee and Swagel (1997) empirically show that import penetration and competition lead to a high level of protection. This implies that increasing the domestic market share of imports might result in protectionism. Recently, Tella and Rodrik (2019), using questionnaires, found that unemployment caused by an increase in imports and overseas transfer of production leads to protectionism in the U.S. Second, some studies suggest that NTMs might replace tariffs (Orefice 2017, Bevebelli et al. 2014, Moore and Zanardi 2011). However, the results are mixed, and the relationship depends on the characteristics of the country, industry, and type of NTMs.

Finally, early studies investigated the impact of business groups on the introduction of trade restriction policy (Belloc 2015, Mitra et al. 2002). Most studies adapt the theoretical model, also known as the protection for sale model, developed by Grossman and Helpman (1994). In this model, policymakers improve their winning rate by maximising the function, which consists of national income, consumer surplus, tariff revenue, and support from lobbyists. Owing to the lobbying by capitalists, it is possible that the government introduces the protectionist trade policy. In addition, Herghelegiu (2018) focuses on transnational lobbying activities at the World Trade Organization (WTO). Their econometric results indicate that the participation of business groups at the ministerial conferences affects the introduction of NTMs.

Another type of study focuses on the connection between political institutions and protectionism. The higher degree of democracy leads to

liberal trade, although the calculation of the 'Democracy' variable could be biased (Milner and Mukherjee 2009, Acemoglu and Robinson 2006, Casper and Tufis 2003). Essentially, these studies only included samples during normal times. However, some studies have attempted to investigate both political and economic changes due to the COVID-19 pandemic. Friedman (2020) states that during the pandemic, the lack of international cooperation and the introduction of trade restrictions may make all people worse off. In addition, he mentions that it is difficult for most countries to introduce effective public health policies because politicians maximise their winning rate. Consequently, many countries faced the COVID-19 threat without adequate preparation. Well-prepared countries tend not to introduce additional restrictions during the pandemic. Thus, national governance may be a determinant of policy changes due to the pandemic.

Unfortunately, no econometric analyses explore the political economy of policy changes during the COVID-19 epidemic. In the econometric analyses, to fill the gap, we test the following hypotheses:

Hypothesis 1: *A country with a high number of COVID-19 infected patients promotes trade restrictions during the pandemic.*

Hypothesis 2: *A country with a high number of NTMs promotes trade restrictions during the pandemic.*

Hypothesis 3: *A country with a low level of national governance promotes trade restrictions during the pandemic.*

In the next section, this paper summarises the characteristics of policy changes due to COVID-19 using data collected from the World Bank, *COVID-19 Trade Policy Database.*

3. Trade restrictions during the pandemic

This section explains the characteristics of trade restrictions in the medical and food industries during the spread of COVID-19, using data obtained from the World Bank, *COVID-19 Trade Policy Database*. The database collects information on export and import restriction measures from the Global Trade Alert, websites of relevant government agencies and international organisations, online media sources, and non-government organisations[1].

Table 1 summarises the number of political measures in the medical sector by countries that

Table 1: Number of political measures by trade flow in medical sector (January-July 2020)

Country	Export restriction	Import restriction	Export liberalisation	Import liberalisation	Total
Argentina	3	3	0	13	19
Azerbaijan	1	0	0	4	5
Bangladesh	2	0	0	4	6
Brazil	5	6	0	25	36
China	2	0	0	7	9
Colombia	1	0	0	6	7
India	11	10	1	9	31
Indonesia	3	1	0	8	12
Iran	4	0	0	3	7
Korea	4	0	0	2	6
Norway	31	0	0	0	31
Pakistan	2	0	0	6	8
Paraguay	2	2	0	8	12
Serbia	3	0	1	1	5
Turkey	3	6	0	5	14
United Kingdom	7	0	0	6	13
United States	5	1	0	3	9
Uzbekistan	1	1	0	3	5
Viet Nam	2	0	0	3	5
Zambia	0	0	1	4	5

Source: The World Bank, COVID-19 Trade Policy Database (last accessed 18/9/2020).

Table 2: Number of political measures by trade flow in food sector (January-July 2020)

Country	Export restriction	Import restriction	Export liberalisation	Import liberalisation	Total
Argentina	2	1	1	1	5
Chile	0	4	0	6	10
China	0	5	0	2	7
El Salvador	1	0	0	4	5
India	2	20	1	11	34
Indonesia	2	1	0	3	6
Morocco	0	0	0	5	5
Pakistan	3	0	1	6	10
Sri Lanka	0	5	1	4	10
Turkey	2	2	1	3	8

Source: The World Bank, COVID-19 Trade Policy Database (Last accessed 18/9/2020).

implement more than five policy changes. In terms of restriction measures, it seems that the number of export restrictions is higher than that of import restrictions. In terms of liberalisation measures, policy changes concentrate on imports. This implies that many countries try to prevent the export of medical goods to other countries, while accelerating the import of medical supplies. The government strives to provide medical goods to both patients and the entire country. However, the determinants of these protections seem vague. It is not always true that countries with a large number of infections introduce restrictions. Thus, we must conduct econometric analyses to identify the determinants of the protections. We will then check the characteristics of trade restrictions in the food sector.

Table 2 summarises the number of policy changes by trade flow in food sector. It shows that the total number of trade restrictions in the food sector is less than that in the medical sector. In addition, policy changes concentrate on import restrictions, indicating that the government prevents the influx of COVID-19 through food imports. Furthermore, the number of infected people seems not to be the main reason for the introduction of restrictions. Again, empirical analysis is necessary to investigate the

political and economic determinants of protections.

The next section explains the econometric specifications and summarises the estimation results.

4. Determinants of trade restrictions during the pandemic

In this section, we conduct econometric analyses to explore the determinants of trade restrictions due to the spread of COVID-19[2]. First, we explain the estimation specification in the next sub-section. We then discuss the estimation results and policy implications.

(1) Estimation model

This section contains two steps. First, we employ the Poisson pseudo-maximum likelihood (PPML) estimator to estimate the regressions, including all samples. Second, we divide the samples in the econometric analyses to check the differences between the medical and food sectors.

In the first stage of the empirical section, the baseline specification is as follows:

$$lnRestriction_{iklt} = \beta_1 \, lnVictim_{it} + \beta_2 \, lnNX_{ikl} + \beta_3 \, lnNTM_{ikl} + \beta_4 \, Tariff_i$$
$$+ \beta_5 \, Governance_i + \eta_k + \eta_t + \varepsilon_{iklt} \tag{1}$$

where i, k, l, and t denote *the reporter, sector, trade flow, and month, respectively. Restriction* is the number of trade restrictions. In addition, *Victim, NX, NTM* and *Tariff* are defined as the number of COVID-19-infected patients, net exports, number of NTMs, and tariff rate, respectively. *Governance* represents the quality of governance, such as corruption, regulation, and control of speech. Finally, η and ε are the fixed effect and

error term, respectively. The expected sign of β_1, β_2, β_3 and β_4 is positive, while that of β_5 is negative. Tables B and C summarise the definitions and sources of each variable as well as the summary of key statistics (see Appendix).

Silva and Tenreyro (2006) state that there are two problems in estimating the regressions using the OLS. The first is heteroskedasticity. If the variance of the error term is a function of observable variables and there is heteroskedasticity in the data, the error term will correlate with the right-hand side of the regression, namely, independent variables, and this will cause an endogeneity problem. The second issue is zero values in the dependent variables. Because the log of zero cannot be calculated, we cannot include zero in the log-linear model. This may cause a sample selection bias and lead to inconsistent parameter estimates. To avoid these problems, Silva and Tenreyro (2006) introduced the PPML estimator as an alternative method. In the second stage of our empirical analysis, we define the specification as follows:

$$Restriction_{iklt} = \exp[\gamma_1 \, lnVictim_{it} + \gamma_2 \, lnNX_{ikl} + \gamma_3 \, lnNTM_{ikl} + \gamma_4 \, Tariff_i$$
$$+ \gamma_5 \, Governance_i + \eta_k + \eta_t + \varepsilon_{iklt} \quad] \tag{2}$$

We estimate Equation (2) using the PPML estimator with robust standard errors[3]. Note that all dependent variables are in level in the PPML estimation. The paper summarises the results in the next sub-section.

(2) Estimation results

Table 5 summarises the estimation result for all samples. Regarding the estimation of exports, the coefficient on *Victim* and *NX* is positive and statistically significant. This implies that countries with a large number of

infected patients and net exports tend to restrict exports. In terms of import side, *NX*, *NTM* and *Tariff* have a positive impact on the number of policy changes, while *Governance* has a negative effect. These results indicate that the determinants of policy changes may be different for exports and imports. We will also check for sector heterogeneity in the next regressions.

Table 6 summarises the results of the medical sector. For the results of exports, the only difference is that the coefficient on NTM is statistically significant and negative. Interestingly, the results suggest that countries that used to pursue an open-door policy tend to introduce export restrictions during the pandemic. For import restrictions, the results seem almost the same as those of all products. Next, we summarise the results of food products.

Table 5: Results of all samples

Independent variables	Export		Import			
Victim	0.132***	0.138***	0.098	0.046	0.053	-0.021
	(0.047)	(0.047)	(0.101)	(0.085)	(0.089)	(0.076)
NX	0.169***	0.170***	0.604**	0.525**	0.721**	0.696**
	(0.057)	(0.057)	(0.282)	(0.238)	(0.309)	(0.287)
NTM		-0.011		0.110***		0.126***
		(0.012)		(0.022)		(0.026)
Tariff					0.089*	0.038
					(0.049)	(0.047)
Governance	-0.019	-0.022	-0.204***	-0.157***	-0.170***	-0.150***
	(0.037)	(0.037)	(0.045)	(0.039)	(0.053)	(0.050)
Month fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Sector fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	678	678	678	678	591	591
Pseudo-R2	0.221	0.222	0.214	0.268	0.269	0.333

Note: Robust standard errors are in parentheses. ***, ** and * indicate that the results are statistically significant at 1 percent, 5 percent and 10 percent, respectively.

Table 7 reports the results for the food sector. The main differences are threefold in the results of exports. First, the coefficient on *Victim* is not statistically significant. Second, *NTM* has a positive effect on trade restrictions. Finally, the coefficient on *Governance* is now positive and statistically

Table 6: Results of medical products

Independent Variables	Export		Import			
Victim	0.157***	0.170***	0.155	0.054	0.136	0.002
	(0.056)	(0.054)	(0.158)	(0.138)	(0.138)	(0.111)
NX	0.173**	0.157*	0.613	0.730	0.697*	1.014**
	(0.085)	(0.085)	(0.393)	(0.515)	(0.417)	(0.479)
NTM		-0.061*		0.352***		0.478***
		(0.033)		(0.106)		(0.184)
Tariff					0.208	0.187**
					(0.132)	(0.081)
Governance	0.021	0.016	-0.225***	-0.200***	-0.111	-0.138*
	(0.043)	(0.044)	(0.058)	(0.059)	(0.090)	(0.078)
Month fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	678	678	660	660	576	576
Pseudo-R2	0.220	0.226	0.198	0.301	0.263	0.396

Note: Robust standard errors are in parentheses. ***, ** and * indicate that the results are statistically significant at 1 percent, 5 percent and 10 percent, respectively.

Table 7: Results of food products

Independent variables	Export		Import			
Victim	0.093	0.062	0.114	0.052	0.090	0.031
	(0.082)	(0.082)	(0.098)	(0.098)	(0.092)	(0.096)
NX	0.404***	0.363**	0.230**	0.127*	0.212**	0.148*
	(0.142)	(0.153)	(0.104)	(0.075)	(0.087)	(0.077)
NTM		0.101**		0.187***		0.176***
		(0.045)		(0.041)		(0.042)
Tariff					0.076	0.050
					(0.052)	(0.049)
Governance	-0.207***	-0.195***	-0.097***	-0.074***	-0.077***	-0.062**
	(0.038)	(0.038)	(0.027)	(0.028)	(0.026)	(0.028)
Month fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	660	660	678	678	483	483
Pseudo-R2	0.219	0.232	0.103	0.148	0.096	0.138

Note: Robust standard errors are in parentheses. ***, ** and * indicate that the results are statistically significant at 1 percent, 5 percent and 10 percent, respectively.

significant. This result is consistent with hypotheses 2 and 3, while it rejects hypothesis 1. In terms of import side estimation, the result is similar to that of the medical sector. This implies that the mechanism may be the same for both the medical and food sectors.

In this section, we conduct econometric analyses to test three hypotheses on the political and economic determinants of trade restrictions. For hypothesis 1, the number of COVID-19 infections may only affect the introduction of export restrictions in the medical sector. This suggests that countries with a higher number of patients tried to prevent medical supply leakage during the COVID-19 pandemic. For hypothesis 2, all results are consistent with those, except for export restrictions in the medical sector. This indicates that countries could change their position from liberalism to protectionism during the pandemic. For hypothesis 3, the results are the

same as in hypothesis 2. Economic factors may only drive export restrictions in the medical industry, while a low level of national governance leads to a higher probability of trade restrictions.

Political motivation could drive the introduction of regulations and restrictions, and the global trading system may change during the pandemic. One policy implication is that the government should equip the development of legal systems for the country to avert the damage from this crisis and trade restrictions. In addition, the international society should monitor counties with low levels of national governance.

This study presents some challenges for future research. First, this study does not include the trade liberalisation variable and it is possible that some counties promote trade liberalisation. Second, the target industries are limited. Finally, this study neglects the type of trade restrictions. Future studies should consider these issues.

5. Concluding remarks

The spread of COVID-19 has changed our lives and harmed economic activity worldwide. Governments across the globe implement new policies, although with differences.

The econometric analyses find several features of the determinants of trade restrictions during the COVID-19 epidemic. A high number of infections result in the implementation of new export restrictions. In addition, non-tariff measure variables may have a positive impact on the introduction of restrictions, while they might negatively affect export policy implementation in the medical sector. Finally, the level of national governance is significant for the introduction of trade restriction policies during the pandemic.

A policy implication is that international communities must develop laws in ordinary times and monitor ungoverned countries to avoid implementing unnecessary trade restrictions.

Future research should consider including the trade liberalisation variable, expansion of the target industry and sector, and a more detailed definition of restrictions.

Footnote

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1 Export restriction measures include export bans, export control, export quotas, export licensing requirement, and so on. In addition, import restriction measures involve import bans, import tariff, import quotas, import licensing requirement, import monitoring regime, trade facilitation measures, and so on.

2 The paper incudes countries listed in *World Development Indicators,* which is provided by the World Bank, in the econometric analyses.

3 Lagged variables are not included because COVID-19 related policies tend to ne introduced promptly. Also, a country-fixed effect is excluded as *NX*, *NTM*, *Tariff* and *Governance* are time-invariant country-level variables.

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Appendix

Table A: List of target products (HS6-digit classification)

Medical Supplies		Anti-epidemic goods	Medicines	Medical Equipment	Food
300213	611300	220710	300220	382200	201
300120	611420	220890	300310	841391	203
300190	611430	284700	300320	842139	204
300212	611490	290512	300331	847989	207
300214	611610	340111	300339	901050	304
300215	621010	340130	300341	901110	305
300219	621020	340212	300342	901180	306
300290	621030	340213	300343	901811	401
300510	621040	340220	300349	901812	405
300590	621050	350400	300360	901813	406
300610	621132	380894	300390	901814	407
300620	621133	382499	300410	901819	701
300630	621139	390421	300420	901820	708
300650	621142	391610	300431	901832	713
300670	621143	391620	300432	901839	801
350790	621149	391690	300439	901890	802
370110	621600	481810	300441	901920	803
370210	650500	481890	300442	902000	805
382100	650610	560311	300443	902150	901
392329	701710	560312	300449	902212	1001
392390	701720	560313	300450	902214	1002
392620	701790	560314	300460	902219	1003
392690	841920	560391	300490	902221	1004
401490	842129	560392		902229	1005
401511	842199	560393		902230	1006
401519	900490	560394		902290	1007
401590	901831	560410		902511	1008
590700		560600		902519	1201
		600240		902780	1202
		600290		903020	1207
		621790		940290	1208
		630790		390210	1504
		721790			1507
		732690			1508
		760410			1509
		760429			1511
		761699			1512
					1513
					1514
					1701
					1801

Source: The World Bank, COVID-19 Trade Policy Database (last accessed 18/9/2020).

Table B: Definition and source of variables

Variable	Definition	Source
Restriction	The number of trade restrictions	The World Bank, *COVID-19 Trade Policy Database*
Victim	The number of COVID-19-infected patients	Our World in Data, *Coronavirus Source Data*
NX	The value of net export (exports - imports)	UN, *Comtrade database*
NTM	The number of Non-Tariff mesures	UNCTAD, *TRAINS database*
Tariff	Average tariff rate	World Bank, *World Development Indicators*
Governance	Total value of five governance indicators ranging from -2.5 to 2.5 (Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Control of Corruption and Rule of Law)	World Bank, *World Governance Indicators*

Table C: Descriptive statistics

Variable	Mean	P50	SD	P1	P99
Restriction_export_medical	0.10	0.00	0.51	0.00	2.00
Restriction_import_medical	0.02	0.00	0.27	0.00	1.00
Restriction_export_food	0.02	0.00	0.16	0.00	1.00
Restriction_import_food	0.03	0.00	0.30	0.00	1.00
Log of victim	5.87	5.94	3.16	0.00	12.60
Log of ntms_export_medical	1.46	0.00	2.60	0.00	10.06
Log of ntms_import_medical	2.28	0.00	3.42	0.00	10.50
Log of ntms_export_food	1.65	0.00	2.82	0.00	10.87
Log of ntms_import_food	2.54	0.00	3.77	0.00	10.99
Tariff	6.87	5.04	4.94	0.00	23.66
Governance	-0.19	-0.81	5.44	-12.62	10.59
Log of net exports_medical	-1.86	-1.37	2.22	-8.75	1.02
Log of net exports_food	-0.82	-0.41	1.99	-8.04	1.98