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Trade Flows, Private Credit and the Covid-19 Pandemic: Panel Evidence from 35 OECD Countries

Abstract

This paper analyses the impact of the Covid-19 pandemic on exports and imports in the case of 35 OECD countries during the 2019Q1-2021Q2 period using a dynamic panel approach, specifically the system Generalized Method of Moments (GMM). In contrast to earlier studies, the empirical specification incorporates not only an index for the restrictive (and fiscal) measures adopted by national governments, but also an interaction term with private credit which captures the role of the financial sector in the context of the current crisis. The findings suggest that the negative effects of the Covid-19 pandemic on international trade can be attenuated through (policies supporting) private credit, which confirms the importance of the trade-finance nexus.

JEL-Codes: C250, E610, F130, F150.

Keywords: Covid-19 pandemic, stringency index, overall government response index, credit to the private non-financial sector, dynamic panel models, GMM.

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1. Introduction

The Covid-19 pandemic is an unprecedented health crisis whose effects on the world economy have been enhanced by the restrictive measures that national governments were forced to adopt to reduce the spread of the virus. Trade, production, consumption and the financial sector have all been hit (Hayakawa and Mukunoki, 2020; Espitia et al., 2021); supply and demand shocks have also led to a disruption in global value chains (Del Rio-Chanona et al., 2020). According to the World Trade Organization (WTO, 2020), during the current pandemic trade has fallen more sharply than during the global financial crisis of 2007-08; more precisely, it declined by 15 percent in the second quarter of 2020 (when lockdown policies were introduced in most countries). Both exports and imports have dropped sharply relative to 2019**.** Exporting countries have experienced a decrease in output resulting from a lower labour supply, and also an increase in the cost of transport, which has disrupted their export supply chain (Bonadio et al., 2020). However, the impact of supply shocks depends on the heterogeneous industrial structure of the economies affected and on whether remote work is possible (Dingel and Neiman, 2020). Sectors specialising in essential products, such as food and medical products related to Covid-19 (e.g., personal protective equipment, ventilators, and sanitizers), have been hit less severely. Trade in those products, and also in non-medical ones such as home office equipment (including Wi-Fi routers, laptops, portable storage etc.), rose significantly in the second quarter of 2020 (UNCTAD, 2021). As for importing countries, their trade decreased as a result of lower aggregate income and demand as well as business closures. Trade gradually picked up again in the third and fourth quarter of 2020 in most OECD countries (see Figure 1).

INSERT FIGURE 1 ABOUT HERE

As already mentioned, the Covid-19 crisis has also threatened the banking and financial sector. National lockdowns led to a sharp fall in business activity which constrained firms' cash flows in the short term, and impaired their ability to continue their activities and meet their financial commitments, a stronger demand for credit putting an upward pressure on borrowing costs. However, it is noteworthy that banks entered the current health crisis with a higher level of capital and liquidity than in other recent crisis episodes (Altavilla et al., 2020). Moreover, governments have adopted monetary and fiscal policy measures to counter the downturn and provide income support to firms and households. In particular, cost and capital relief measures aimed at supporting bank lending appear to have been rather successful (see Altavilla et al., 2020): credit to the private non-financial sector has increased in most OECD countries during the pandemic period (Figure 1).

This paper analyses the impact of the Covid-19 pandemic on quarterly exports and imports in the case of 35 OECD countries[1] during the 2019Q1-2021Q2 period using a dynamic panel data approach, specifically the system Generalized Method of Moments (GMM). Compared to earlier

[1] Australia, Austria, Belgium, Canada, Chile, Colombia, Costa Rica, Czech Republic, Germany, Denmark, Finland, France, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Republic of Korea, Sweden, Spain, Switzerland, Turkey, United Kingdom, USA, Saudi Arabia, South Africa.

studies, the present one is characterized by a much wider coverage and adopts an empirical specification incorporating not only an index for the restrictive (and fiscal) measures adopted by national governments, but also an interaction term which captures the role of private credit (and of policies aimed at boosting it) in the context of the current crisis.

2. Empirical Framework and Data Description

To analyse the impact of the Covid-19 pandemic on trade we estimate the following dynamic panel model:

$$Trade^{n}_{i,t} = \alpha_i + \beta_1 Trade^{n}i,t\text{-}1 + \beta_2\ Covid19pandemic^{\ j}i,t + \beta_3 CV^{k}i,t + \mu_t + \eta_i + \varepsilon_{i,t} \quad (1)$$

where the dependent variable $Trade^{n}_{i,t}$ denotes exports and imports in turn. $Covid19pandemic^{j}_{i,t}$ is a Covid-19 index, specifically either a stringency ($Stringency_{i,t}$) or an overall government response index ($Govresp_{i,t}$) – both can also be interpreted as a proxy for the severity of the Covid-19 health situation and range between 0 and 100, with higher values indicating tighter restrictions/stronger policy responses; the first is based on 9 indicators of restrictive measures (e.g., school closures, workplace closures, and travel bans), whilst the second includes a wider set of containment and closure policies, economic policies (income support and debt relief), and health system policies. $CV^{k}_{i,t}$ stands for a set of control variables including real GDP per capita ($RGDPC_{i,t}$), a World Trade Uncertainty Index ($WTU_{i,t}$), the consumer price index ($CPI_{i,t}$), and EU membership (EU); μ_t and η_i stand for time-specific and country-specific effects respectively, and ε_{it} is a white noise error with zero mean.

To shed light on the role of the financial sector in mitigating the adverse effect of the Covid-19 crisis on trade we also re-estimate equation (1) including an additional variable, namely an interaction term between each of the two pandemic indices and credit to the private non-financial sector PC (i.e., $Covid\text{-}19\ pandemic^{j}_{i,t} \times PC_{i,t}$);

$$Trade^{n}_{i,t} = \alpha_i + \beta_1 Trade^{n}i,t\text{-}1 + \beta_2\ Covid19pandemic^{\ j}i,t\ \ x\ PC_{i,t} + \beta_3 CV^{k}i,t + \mu_t + \eta_i + \varepsilon_{i,t} \quad (2)$$

This inclusion is motivated by the evidence provided by numerous empirical studies of a relationship between trade and finance; in particular, a well-developed financial system appears to lead to a higher volume of trade and also to have an impact on its structure (Beck 2002; Manova, 2013; Caporale et al., 2021). Thus two model specifications are estimated: *Covid19pandemic* is included in both cases, but whilst Model 1 examines its direct impact on trade, Model 2 allows it to interact with PC. Both sets of models are estimated using quarterly data over the period 2019 Q1-2021Q2.

The trade data are taken from UN-COMTRADE, those on PC (credit to the private non-financial sector, which includes non-financial corporations and households and non-profit organizations) from the BIS database[2], WTU (World Trade Uncertainty Index) from https://worlduncertaintyindex.com, real GDP per capita (RGDPC) and CPI from the OECD database, and the Covid-19 pandemic indices from the Oxford Covid-19 Government Response Tracker.[3]

We estimate dynamic panel regressions with lagged values of the explanatory endogenous variables as instruments and employ the system GMM estimator developed by Arellano and Bover (1995), which combines a regression in differences with one in levels, since the inclusion of the latter reduces the potential bias in finite samples and the asymptotic inaccuracy associated with the difference estimator (Blundell and Bond, 1998). The consistency of the GMM estimator depends on the error term not exhibiting serial correlation (for which we carry out appropriate tests) and on the validity of the instruments chosen from the lagged endogenous and explanatory variables (which we check by means of the Sargan test of over-identifying restrictions proposed by Arellano and Bond, 1991).

3. Empirical Results

Table 1 displays the estimation results as well as serial correlation (both AR (1) and AR(2)) and Sargan test statistics. For each of the dependent variables, we estimate four different specifications: first, we focus on the direct effects of each of the two Covid-19 pandemic indices on exports and imports in turn; second, we examine the role of private credit as a mitigating factor through the interaction term with each of the two indices.

INSERT TABLE 1 ABOUT HERE

The estimated coefficients from equation (1) (column 1-2 for exports and 5-6 for imports) show that the *Stringency Index* had a negative impact on trade in the case of our panel of 35 OECD countries (Table 1). The robustness of these results is confirmed by the estimates obtained using the other proxy for the Covid-19 pandemic, namely the overall government response index. It appears that the restrictions imposed to contain the spread of the virus (including school and workplace closures, travel bans and social distancing) made both export and imports plunge during the Covid-19 pandemic, and that their effects outweighed those of other measures, such as income support and debt relief, adopted to help business and households. These results are in line with previously reported ones (Baldwin and Tomiura, 2020; Liu et al., 2021; Hayakawa and Mukunoki, 2020). As already mentioned, exporting countries have experienced a fall in both production and exports whilst imports have decreased owing to the contraction in demand resulting from lower incomes and business closures. Globalisation has played an important role in the propagation of the economic impact of the Covid-19 shock through final and intermediate goods trade

[2] https://www.bis.org/statistics/totcredit.htm
[3] https://ourworldindata.org/coronavirus

(Kohlscheen et al., 2020); countries relying on intermediate goods sourced from foreign regions have been particularly hit by the pandemic.

The estimates from equation (2), which includes an interaction term between the Covid-19 variable and private credit, are displayed in columns 3 and 4 for exports and 6 and 8 for imports. These results show the important role played by private credit in boosting trade during the pandemic: it can be seen that the coefficient measuring the impact of the pandemic decreases from -0.369 to -0.028 in the case of exports and from -0.414 to -0.039 in the case of imports when using the first Covid-19 index. Qualitatively similar results are obtained when including the wider index. This suggests that the trade-finance nexus has been beneficial during the current pandemic, and that presumably policies designed to boost private credit have helped attenuate the negative impact of the Covid-19 restrictions on trade.

Finally, the coefficients on the control variables are mostly significant and have the expected signs; in particular, real GPD per capita has a positive and significant impact (as per capita income increases, product variety and trade volumes also increase); trade uncertainty and CPI instead have a negative effect, and the coefficient on EU membership is positive but insignificant.

4. Conclusions

This paper investigates the effects of the Covid-19 pandemic on trade as well the role of private credit (and thus the importance of policies supporting it) in reducing its adverse impact in the case of 35 OECD countries over the period 2019Q1-2021Q2. For this purpose, a dynamic panel model is estimated which also includes an interaction term between the Covid-19 restrictive (and fiscal) measures and private credit.

Our analysis suggests that trade has been severely affected by the restrictions adopted by national governments (whether the narrower stringency index or the wider overall government response one is used). Most interestingly, it appears that private credit (supported by appropriate policy measures) was instrumental in reducing the adverse effects of the current health crisis on both exports and imports, as indicated by the estimated coefficient on an interaction term with the Covid-19 variable. These results confirm the importance of the trade-finance nexus in the context of the current pandemic and also of policies aimed at encouraging lending and boosting liquidity, which could be more effective than fiscal packages in helping the economy to recover.

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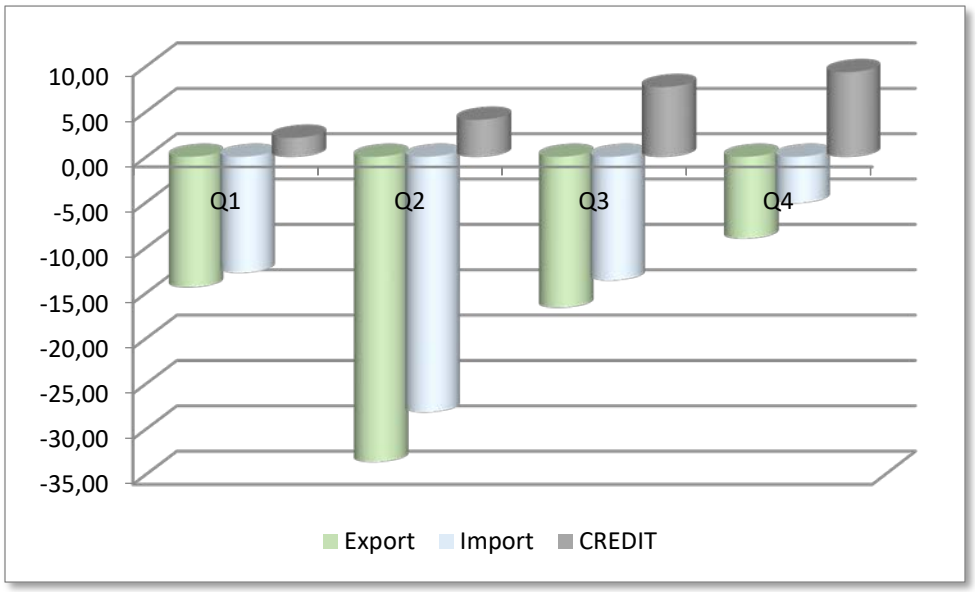
Figure 1

Percentage changes in exports, imports and credit to the private non-financial sector in 35 OECD countries, 2020



Source: Authors' calculations using trade data from UN-COMTRADE.

Table 1: The impact of the Covid-19 pandemic on exports and imports

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	exp	exp	exp	exp	imp	imp	imp	imp
L.	0.014	-0.003	0.166	0.194	0.061	0.015	0.177	0.175
	(0.12)	(0.02)	(1.59)	(1.64)	(0.52)	(0.11)	(1.66)*	(1.46)
rgdpc	0.201	0.328	0.074	0.125	0.180	0.322	0.093	0.172
	(1.95)*	(1.87)*	(1.75)*	(1.77)*	(1.84)*	(1.74)*	(1.80)*	(2.18)**
wtu	-0.418	-0.491	-0.277	-0.316	-0.418	-0.509	-0.297	-0.356
	(7.47)***	(6.90)***	(6.04)***	(5.52)***	(6.98)***	(6.78)***	(5.90)***	(5.78)***
cpi	-0.336	-0.261	-0.371	-0.288	-0.394	-0.330	-0.448	-0.376
	(4.35)***	(3.47)***	(4.61)***	(3.60)***	(4.83)***	(4.15)***	(5.23)***	(4.42)***
eu	0.042	0.017	0.058	0.044	0.016	-0.010	0.030	0.012
	(1.12)	(0.44)	(1.61)	(1.18)	(0.39)	(0.24)	(0.74)	(0.29)
string	-0.369				-0.414			
	(5.96)***				(6.26)***			
gov_rs		-0.395				-0.461		
		(4.87)***				(5.34)***		
string x pc			-0.028				-0.039	
			(3.65)***				(4.63)***	
gov_rs x pc				-0.032				-0.042
				(2.76)***				(3.85)***
Constant	8.945	8.611	7.982	7.368	8.590	8.501	7.973	7.599
	(7.75)***	(6.71)***	(7.21)***	(6.19)***	(7.40)***	(6.60)***	(7.03)***	(6.27)***
Observations	245	245	245	245	245	245	245	245
AR(1)[a]	-4.81 / (0.00)	-4.83 / (0.00)	-4.86 / (0.00)	-4.84 / (0.00)	-4.84 / (0.00)	-5.16 / (0.00)	-5.22 / (0.00)	-5.20 / (0.00)
AR(2)[a]	-0.14 / (0.892)	0.45 / (0.653)	-0.95 / (0.343)	-1.18 / 0.236)	-0.12 / 0.908)	0.53 / (0.597)	-0.98 / (0.328)	-1.18 / (0.238)
Sargan [b]	0.53 / (0.467)	0.58 / (0.445)	0.54 / (0.463)	0.55 / (0.456)	-0.55 / (0.456)	0.03 / (0.856)	0.02 / (0.884)	0.03 / (0.868)
Absolute value of t statistics in parentheses								
* significant at 10%; ** significant at 5%; *** significant at 1%								
[a]: z and (Pr > z) ; [b]: chi2 and (Prob > chi2)								