

# Impact of trade flows on household welfare: Panel data evidence from OECD countries

101

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## **ABSTRACT**

While there is some emerging evidence regarding the relationship between the COVID-19 related policy interventions and trade volumes, there is limited evidence examining the relationships between trade volumes and household welfare or the impact of the pandemic on household welfare. This study aims to fill the gap by applying statistical modelling to panel data compiled from the UN COMTRADE and the OECD Social and Welfare Statistics databases. The results suggest that international trade flows are significantly associated with unemployment, labour underutilization and household savings. The results further reveal that the COVID-19 pandemic had a significant effect on all examined aspects of household welfare.

## **KEYWORDS**

Trade flows; household welfare; panel data; panel regression, COVID-19

## **EDITORIAL NOTE**

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PANEL DATA EVIDENCE FROM OECD COUNTRIES**

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## 1. INTRODUCTION

Global trade has proven to be not only a driving force for macro-level economic growth, but also to have multiple effects on household (HH) welfare. While intuitively such associations seem to make sense, there is little quantitative evidence regarding specifically how trade values affect different aspects of household welfare. As of quarter one, 2022 global trade volumes accounted for 65 million (UN, 2022). According to a recent report from UNCTAD (2022), global trade growth accelerated in the last quarter of 2021 and it is likely to slow down in the first quarter of 2022.

International trade enables countries to expand their markets and gives access to goods and services that are not available domestically. International trade forms a competitive market and leads to more competitive prices and cheaper products. Regional trade boosts economic growth as many jobs are generated through trade (Salvatore, 2019). In turn, unemployment rates go down and business opportunities increase because trade creates domestic jobs throughout value chains (Salvatore, 2019). Trade can therefore be beneficial to households in that it directly and indirectly raises living standards.

In a study on employment and globalization in the Organisation for Economic Co-operation and Development (OECD) countries, Molnar et al. (2008) showed that the wage of more skilled workers and returns to capital are likely to increase, compared to the wages of less skilled workers. The study suggests that greater international openness and widening of wage dispersions occurred in most of OECD countries at the same time in the past two decades (Molnar et al. 2008). In East Asia, Hayakawa et al. (2021) examined the impact of Chinese import penetration on employment in Japan. The study found that there were negative impacts on total employment particularly in industries that produce competing products to Chinese imports. Positive impacts were also found in industries from which firms purchase their inputs.

While the global trade volumes accelerated in the last quarter of 2021 (UNCTAD, 2021), experts highlight that the ongoing global supply chains challenges triggered by COVID-19 are likely to affect world trade in 2022. Logistic disruptions, a semiconductor shortage and rising energy prices have further mounted pressures on supply chains. A study by Decerf et al. (2021)

found that COVID-19 pandemic has caused increases in mortality, ill-health and suffering from closing of schools. Due to the economic downturn, 4.8% to 8.9% drop in GDP is expected in low-income and hi-income countries. Decerf et al. (2021) estimated that the pandemic has generated 4.3 million lost years and 68.2 million additional poverty years.

A recent study by Wang and Mo (2022) revealed three factors associated with how COVID-19 influenced the mechanism of imports and exports. First, it influenced the simultaneous reduction of export and import trade under the global supply chain system. Second, pandemic prevention policies that complicated import procedures boosted regional trade. During COVID-19 it was difficult to strike a balance between imports and exports since many countries took measures to control or restrict export for epidemic prevention and food security. Third, consumer behavior resulted in decline in demand and therefore reduced imports of commodities.

Given the above background, while existing studies provide some evidence regarding the impact of trade on wellbeing and welfare, structured statistical evidence at the OECD level is missing. The present study aims to fill this gap by examining macro level data from OECD and World Bank databases using panel regression analysis. It is expected that the findings of this study will not only contribute to filling the existing research gaps, but also yield policy-relevant evidence.

## **2. DATA AND METHODS**

### **2.1. DATA**

The study used a pooled dataset based on macro-level data made available by the OECD. Most variables were drawn from the OECD Social and Welfare Statistics. The time series from 2010 to 2020 were considered for all variables. All variables are continuous with the exception of the “Covid year” variable, which was binary variable (2020 was classified as a “Covid year”). All continuous explanatory variables were log transformed. Descriptive statistics for all variables used in the analysis are summarized in Table 1.

Summary of descriptive statistics for the variables included in panel regressions ( $n = 344$ )					
Variable	Mean	Std. Dev.	Min	Max	
Household savings, %	12	5	-	6	25
HH consumption growth, %	1	3	-	12	11
Unemployment rate, %	8	4	2		27
Labour underutilisation, %	16	7	3		39
Total trade value (mln, USD)	571,283	762,919	8,790		4,206,971
Covid-19 year (yes/no)	0				
Trust in government	43	17	11		85
Consumer confidence	100	2	93		105
Population (mln)	35	57	0		329
GDP (mln, USD)	1,452,488	3,070,147	13,059		21,400,000

**Table 1:** Descriptive statistics

## 2.2. METHODS

To examine the impact of trade flows on household welfare, we used statistical modelling. First descriptive analysis was carried out (correlation analysis, trend analysis, scatter plots). Then the analysts carried out standard unit root tests and co-integration test following which random effects Generalized Least Squares (GLS) regression was performed. Each model can be expressed as in Equation 1.

$$Y_{it} = \alpha + \beta X_{it} + U_i + \varepsilon_{it} \quad \text{Eq. (1)}$$

where  $Y_{it}$  represents the value of trade flows for a given country  $i$  and year  $t$ ,  $\alpha$  is the intercept,  $X_{it}$  is a vector of observed explanatory variables,  $\beta$  is a vector of coefficients for the explanatory variables,  $U_i$  represents the time-invariant country-specific effects, and finally  $\varepsilon_{it}$  stands for the error term.

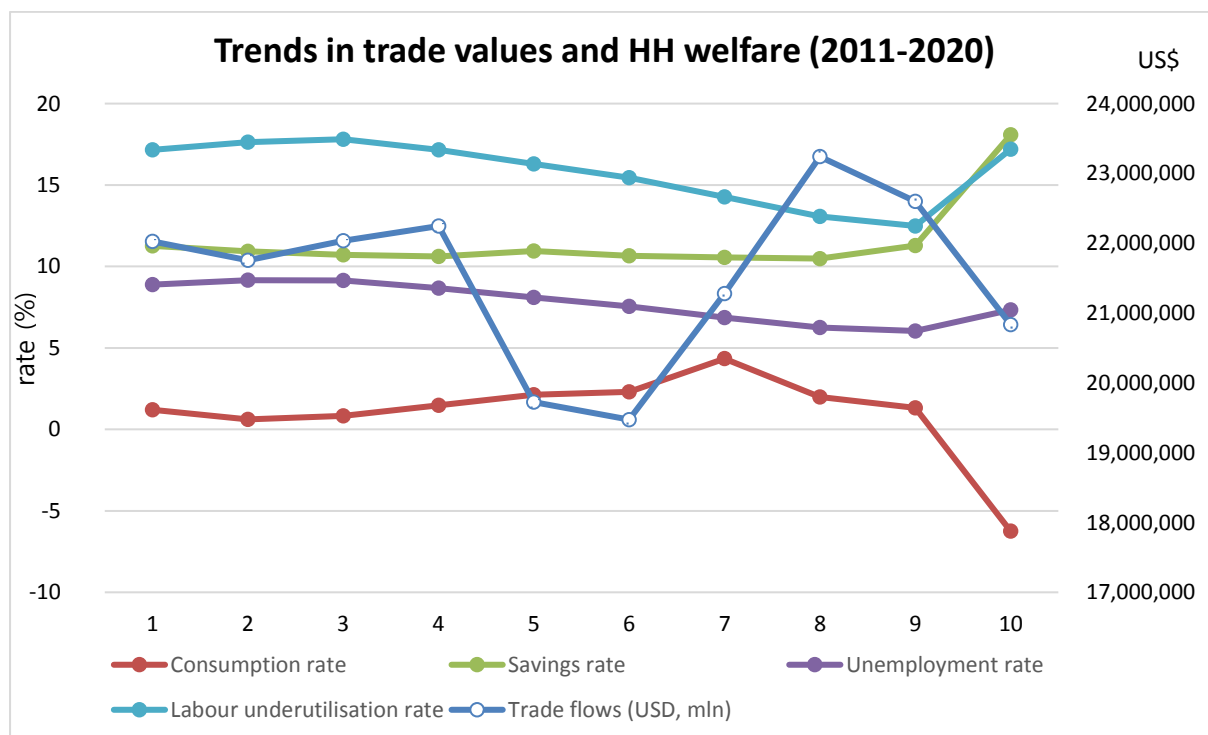


### 3. RESULTS

#### 3.1. DESCRIPTIVE STATISTICS

Figure 1 illustrates the trends in trade flow values and HH welfare between 2011 and 2020. It can be observed that trade flows decreased sharply between 2018 and 2020 (a decrease of USD 2,407,610 million). At the same time, unemployment rate and labor underutilisation rates showed a positive trend, while HH consumption rate decreased sharply. Savings rate followed the trend of the labour underutilization, probably in anticipation of economically difficult times.

Based on the correlation analysis (Appendix 1), it can be observed that there is a slight negative correlation between international trade values and unemployment and labour underutilization rate, while there is a positive correlation between international trade values and HH savings. A strong positive correlation can be observed between countries' GDP and population size. Unsurprisingly, there is also a relatively strong positive correlation between consumer confidence and consumer consumption.



**Figure 1:** Trends in trade flow values and household welfare (OECD countries).

### 3.2. PANEL REGRESSION

Results of the regression analysis (4 models) are summarised in Table 2. It can be observed that in three out of the four models trade values are significantly associated with different aspects of HH welfare. More specifically, trade is significantly and negatively associated with unemployment rate ( $\beta=-2.02$ ,  $SE=0.68$ ) and labour underutilisation rate ( $\beta=-4.29$ ,  $SE=1.10$ ). On the other hand, controlling for other factors included in the model, trade is significantly and positively associated with HH savings (3.75,  $SE=1.03$ ), and has no significant effect on HH consumption. Considering the effect of the COVID year (2020), it had a significant positive effect on the labour underutilization rate ( $\beta=2.48$ ,  $SE=0.49$ ) and HH savings ( $\beta=6.78$ ,  $SE=0.40$ ), while HH consumption was found to be negatively associated with this time period. As expected, GDP was found to be negatively associated with unemployment and labour underutilization rate. Surprisingly, GDP was also negatively associated with household consumption, however the observed result might be affected by the effect of the size of the country. For example, it might be the overall GDP of Luxemburg is smaller than that of Mexico, but the opposite is true when taking into account GDP per capita. As expected, consumer confidence was found to be significantly and positively associated with HH consumption ( $\beta=0.65$ ,  $SE=0.05$ )

<b>DV</b>	<b>Unemployment</b> <b>β (SE)</b>	<b>Labour underutilisation</b> <b>β (SE)</b>	<b>HH consumption</b> <b>β (SE)</b>	<b>HH savings</b> <b>β (SE)</b>
Trade value	-2.02 (0.68)*	-4.29 (1.10)*	-0.37 (0.29)	3.75 (1.03)*
Covid year (2020)	-0.80 (0.34)	2.48 (0.49)*	-6.67 (0.32)*	6.78 (0.40)*
Not a Covid year (ref)	0.00	0	0.00	0
Trust in government	0.003 (0.01)	-0.68 (0.51)*	0.002 (0.01)	0.09 (0.41)
Consumer confidence	-0.51 (0.05)*	-41.79 (7.70)*	0.65 (0.05)*	-6.86 (6.71)
GDP	-5.60 (0.86)*	-12.28 (1.33)*	-1.58 (0.53)*	0.64 (1.29)
Population size	6.81 (0.95)*	15.94 (1.47)*	1.66 (0.39)*	-2.66 (1.49)
Constant	140.25 (15.35)*	385.23 (31.76)*	-42.09 (5.51)*	-7.50 (26.49)
sigma_u	3.30	4.84	0.62	4.44
sigma_e	1.45	1.88	1.60	1.48
Rho	0.84	0.87	0.13	0.9
N	344.00	304	344.00	218
R-sq	0.22	0.238	0.71	0.416

**Table 2:** Regression results (3-4 models)

**Note:** The standard errors are in parentheses. \*  $p < 0.01$

#### **4. DISCUSSION AND CONCLUSIONS**

This paper aimed to examine the effect of trade flow values on HH welfare in OECD countries. Our results revealed that trade flows have significant negative impact on unemployment and labour underutilization, while having significant positive impact on HH savings. Seshan (2005) studied the impact of trade liberalisation on household welfare in South-East Asia and found that trade liberalisation did not impact income inequality, but did generate gains for rural households. This is consistent with our findings, which showed that trade value increases household savings. In terms of unemployment and labour underutilisation, Felbermayr (2009) found that, in the long-run, higher trade is associated with lower rate of unemployment and labour underutilization. More specifically, our study found that a 10 percent increase in total trade reduces unemployment by about one percentage point.

In terms of the effect of COVID-19 on household welfare, our findings reveal that COVID-19 pandemic has significant negative impact on household consumption and positive impact on labour underutilization and household savings. These findings are consistent with several existing studies. For example, Webster (2021) examined the evidence of the effects of COVID-19 on labour markets in Southern Europe and found a significant number of firm closures with a consequent loss of employment, leading to a substantial loss of labour weeks. Shimizutani (2021) examined the impacts of COVID-19 on a variety of household welfares in Tajikistan and found that household migration and remittances have helped to mitigate the adverse economic outcomes at home during the COVID-19 period.

Existing studies on OECD countries also revealed similar results to our findings. Kim (2011) analyzed the data for twenty OECD countries for the years 1961-2008 and found that an increase in trade may reduce aggregate unemployment if the labour market is characterised by flexibility. Almeida (2021) analysed the impact of the COVID-19 crisis on European Union (EU) households' income and found that the COVID-19 pandemic significantly affected households' disposable income in the EU, with lower income households being more severely hit. The authors concluded that policy interventions are instrumental in cushioning against the impact of COVID-19 on households' inequality and poverty.

While the present study advances our knowledge in the area of social effects of international trade flow, it is not without limitations. First, this study used a relatively short panel of 10 years, and some missing values were also observed. Second, the analysis used a number of key variables, and did not consider environmental and governance related factors. Finally, as it is the case in macro-level analyses, the study did not take into account any intra-country or intra-regional effects. Future studies might therefore need to consider more comprehensive databases and more sophisticated analyses to contribute further evidence towards this policy relevant research theme.

## 5. REFERENCES

- Almeida, V., Barrios, S., Christl, M., De Poli, S., Tumino, A., & Van der Wielen, W.** (2021) The impact of COVID-19 on households' income in the EU. *The Journal of Economic Inequality*. 19, 413-431.  
<https://doi.org/10.1007/s10888-021-09485-8>
- Decerf, B., Ferreira, F. H. G.; Mahler, D. G.; & Sterck, O.** (2020). Lives and Livelihoods: Estimates of the Global Mortality and Poverty Effects of the COVID-19 Pandemic. *Policy Research Working Paper; No. 9277*. World Bank, Washington, DC. World Bank.  
<https://openknowledge.worldbank.org/handle/10986/33938> License: CC BY 3.0 IGO.
- Felbermayr, G., Prat, J., & Schmerer, H.** (2011). Trade and Unemployment: What do the data say? *European Economic Review*. Vol. 55, Issue 6, 741-758.
- Hayakawa, K., Ito, T. & Urata, S.** (2021). Impacts of increased Chinese imports on Japan's labor market, *Japan and the World Economy*, 59, 101087.  
<https://www.sciencedirect.com/science/article/abs/pii/S0922142521000347>
- Kim, J.** (2011). The Effects of Trade on Unemployment: Evidence from 20 OECD countries. *Research Papers in Economics*, 19. Department of Economics. Stockholm University.
- Molnar, M., Pain, N., & Taglioni, D.** (2008). Globalisation and Employment in the OECD. *OECD Journal: Economic Studies* 2008(1): 83-116.
- Salvatore, D.** (2019). Overview of technology, productivity, trade, growth, and jobs in the United States and the world. *Journal of Policy Modeling* 41(3): 435-443.
- Seshan, G.** (2005). The Impact of Trade Liberalization on Household Welfare in Vietnam. *Policy Research Working Paper; No. 3541*. World Bank, Washington, DC.  
<https://openknowledge.worldbank.org/handle/10986/8818> License: CC BY 3.0 IGO.
- Shimizutani, S., & Yamada, E.** (2021). Resilience against the pandemic: The impact of COVID-19 on migration and household welfare in Tajikistan. *PLoS ONE* 16(9): e0257469. <https://doi.org/10.1371/journal.pone.0257469>.
- United Nations (UN).** (2022). UNCOMTRADE. UN comtrade. <http://comtrade.un.org/>.
- Wang R. & Mo, Y.** (2021). The Impact of COVID-19 on Global Import and Export Trade. *Review of Business*. 42 (1). 19-22..
- Webster, A., Khorana, S., & Pastore, F.** (2021). The Labour Market Impact of COVID-19 Early Evidence for a Sample of Enterprises from Southern Europe. *Enterprise Surveys*, The World Bank.
- UNCTAD.** (2022). Global Trade Update 2022.  
[https://unctad.org/system/files/official-document/ditcinf2022d1\\_en.pdf](https://unctad.org/system/files/official-document/ditcinf2022d1_en.pdf).

## 6. APPENDIX

	Unemployment	Labour underutilisation	Savings	HH consumption	International trade	Consumer confidence	Trust in government
Unemployment	1						
Labour underutilisation	0.7767	1					
Savings	-0.545	-0.2861	1				
HH consumption	-0.096	-0.2234	-0.2995	1			
International trade	-0.2058	-0.1468	0.2646	-0.0815	1		
Consumer confidence	-0.4323	-0.4646	0.1367	0.5198	0.0357	1	
Trust in government	-0.2318	-0.1137	0.1165	-0.1165	0.056	0.0507	1
GDP	-0.1251	-0.0891	0.1273	-0.0398	0.8847	0.0058	-0.0378
Population	-0.11	0.0001	0.1464	-0.0318	0.8605	-0.0356	-0.0636
	GDP	Population					
GDP	1						
Population	0.9553	1					

**Appendix 1:** Correlation matrix




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