Cross-Cultural Management Journal
Volume XXIII, Issue 2/2021

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THE IMPACT OF PANDEMIC DOWNTURN EXPOSURE ON ECONOMIC GROWTH

Case Study

Keywords
Sustainable development goals;
COVID-19;
Economic downturn;
Pandemic recovery;

JEL Classification
C54; Q10; Q40

Abstract

Sustainable Development Goals (SDGs) promote a vision of a fairer, more prosperous, peaceful and sustainable growth. However, few previous studies have examined and predicted the complex socio-economic impacts of global pandemic recovery and taken SDGs into account. The primary goal of this study is to gain novel insights into whether SDGs can be implemented by exploring the interrelationships between the different dimensions of economic risks and development stages. A cross-country comparative framework was used, and the datasets were published by SolAbility Sustainable Intelligence, the World Bank, for 2019-2020. An OLS regression is applied to compute the links between economic growth and downturn exposure issues. The results suggest that (a) the ex-post economic growth is controversially related to the level of income stages, (b) the increase in the economic downturn will decrease economic growth per annum. The practical implication of the study is that policymakers need to emphasise the impacts of economic fallouts exposure to support structural reforms.

INTRODUCTION

Sustainable Development Goals (SDGs) promote a vision of a fairer, more prosperous, peaceful and sustainable growth in which nobody is left behind (FAO, 2015). SDGs require efforts to promote renewed policies and approaches to major challenges (Máté, Rabbi, Novotny, & Kovács, 2020). For example, SDG8 refers to "decent work and economic growth", which improves the living standards and supports the elderly population through pensions, social assistance and lifelong learning (Schroeder, Anggraeni, & Weber, 2019). Responses to SDGs and COVID as a double-helix pose a severe threat to economic and human issues and cannot be treated with different approaches in the future (Bhatt, Arora, & Prajapati, 2020). Serious, long-term consequences of the COVID-19 epidemic could push millions of people into deep poverty through the economic and health crisis (Lakner, Mahler, Negre, & Prydz, 2019).

The spread of COVID-19 suggests that only good governance and learning from past epidemics have the most significant impact on the proper responses to the socio-economic challenges (Victor, Karakunnel, Loganathan, & Meyer, 2021) and achieving decent work and economic growth (Sharma, Borah, & Moses, 2021). The current global economic and epidemiological challenges offer an opportunity for a profound, systemic transition to a more sustainable economy that benefits both people and the planet (Codagnone et al., 2020).

Only few previous studies have examined and predicted the complex socio-economic impacts of global pandemic recovery and taking SDGs into account (Bhatt et al., 2020; Kovács, Rabbi, & Máté, 2021). However, the current global economic and pandemic issues is an opportunity for a profound, systemic transition to a more sustainable economy that benefits both people and the planet (United Nations Environment Programme, 2020). Governments worldwide need to devote significant effort to developing plans that create a more sustainable future for their citizens (Török, 2019).

The primary goal of this study is to gain novel insights into whether SDGs can be implemented by exploring the interrelationships between the different dimensions of economic risks and development stages. The novelty of this experimental approach is that economic exposure of COVID analysis may lead to more nuanced findings on how economic recovery policies could be addressed at the country level.

This study assumes an association between the economic fallout exposure of COVID-19, economic growth, and UN countries' income stages. Namely,

H1: The increased level of economic fallout exposure is negatively associated with economic growth.

H2: High-income countries seem to have higher post-pandemic economic growth than lower ones.

A cross-country comparative framework was used, and datasets were published by SolAbility Sustainable Intelligence, the World Bank for 2019-2020. Section 2 contains the data design of selected variables and the description of the selected methodology. An OLS regression is applied to compute the links among variables. Section 3 and 4 present the results based on the hypotheses, and the study ends with conclusions stemming from the results that the current economic policies seem to be inadequate to deal with the current pandemic crisis of this magnitude.

DATA AND METHOD

This study selected variables related to economic growth and downturn exposure issues. Data were collected in 2019 and 2020 in United Nations (UN) countries (128) using World Bank and Solability databases based on the available releases. The economic risks measure were related to the year (2019) before the onset of the crisis and annual GDP growth (2020) after the pandemic spreads globally.

The economic downturn exposure pillar contains various World Health Organization (WHO) and World Bank indices collected by the SolAbility Sustainable Intelligence (SolAbility, 2021). Quantitative datasets based on sustainable competetiveness performance highlight the potential impacts of the COVID-19 epidemic on various countries in terms of global econmic and health crises.

The risks of the economic downturn involve such areas that, i.e. the independence of global markets, the state of public finances, exposure to financial market fluctuations, internal income inequality, and the 'height' of the economic fall. First, (a) the dependency of trade, employment in service and agricultural sectors, and innovation capabilities. (b) The potential (10%) reduction in GDP is higher in absolute terms in high-income countries. (c) The internal inequality measurements of income and asset share hold by the lowest 20%, 40% and 60% of the population. (d) The current state of government debt and interest payments, and (e) the private and corporate debt measured as the value of stock and annual stock turnover (SolAbility, 2021).

GDP growth (annual %) at market prices based on constant local currency. Aggregates are based on constant 2015 US$ prices. GDP (Gross Domestic Product) is the sum of gross value added by all

resident producers in the economy plus product taxes and minus subsidies not included in the value of the products. It is calculated without deductions for depreciation of fabricated assets or depletion and degradation of natural resources (World Bank, 2021).

Linear (OLS) regression analyses are used to test the hypotheses with heteroscedasticity consistent and robust (HAC) standard errors. The results of these models do not contain heteroscedastic residuals (e), and the disturbances have the same variance across all observations (White, 1980). The model contains six independent variables (Equation 1):

$$GDP\_growth_i = \beta_0 + \beta_1 CEX_i + \beta_2 DINCOME_i + e_i \quad (1)$$

where at country [i],
GDP_growth = GDP growth (annual %)
CEX = Economic fallout risk exposure of COVID ((1-5) 1 – least vulnerable)
*D*Income = Classifying countries by income

The income classification by dummies is based on national income per person, or GNI per capita, calculated using the Atlas method. WB reported the first World Development Report (WDR) in 1978. A taxonomy is introduced groupings of "low-income" and "middle-income" countries using $250 per capita income as a threshold between the groups. Meanwhile, in 1983, the "middle-income group" was split into "lower-middle" and "upper-middle" groups, and in 1989 a "high income" country definition was also introduced. Since then, the thresholds to distinguish between the income groups have been adjusted for prices over time. As of 2019, low-income economies are defined as those of $1,025 or less in 2018. The lower-middle-income economies have a GNI between $1,026 and $3,995; upper-middle-income economies are those between $3,996 and $12,375; high-income economies are those of $12,376 or more (Luciani, 2016).

RESULTS

A cross-country comparative framework was established to analyse UN countries' annual economic growth and downturn exposure lists (see Table 1) after merging the two databases. Table 1 shows the rankings of the ten best and worst-performing countries based on the economic growth, exposure risks and the classification of countries by income. Ethiopia, with the lowest economic risks exposure, has one of the best economic growth positions. This country and less developed African and Asian countries, i.e. Uganda, Tajikistan, Benin and Egypt, appear to be the highest rank positions (with Ireland) after the pandemic. Moreover, the more economically developed UN countries appear to be a tremendous economic downturn due to the current global pandemic. The most economically insecure countries are Qatar, Singapore and the United Kingdom. Economic fallout exposure of pandemic is a fundamental aspect of economic development, and the analyses suggest that ex-post economic growth is negatively related to the level of income stages.

The relationship between economic growth and the economic fallout risk exposure is illustrated in Figure 1.

The economic growth ratio was the highest, and economic downturn risk was the lowest in some less developed countries of Africa and South Asia. In some European countries (Spain, United Kingdom and Italy), these two indicators were generally opposite. Moreover, countries (Japan, Canada) with higher income seems to support the first H1 assumption. Hence, an increase in economic fallout risks will result in a higher economic recession.

Table 2 represents the results of the estimations (Models 1 to 4) with the heteroscedasticity consistent (HAC) and corrected robust standard errors in parentheses. Model 1 contains the first independent variable of economic exposure (CEX), while Models 2 and 3 measure the role of income level by dummies. Here, the categories of the countries by income are high-, medium-high and low, and low-income (Model 3) as the control of dummy trap. Model 4 show the cross effect of the CEX*LOW coefficient. The results seem to be robust, and the reported F-tests were conducted to validate the preferred linear regression models' results and confirm the robustness of the selected specifications. The maximum variance inflation factor (VIF) values in each model indicate that multicollinearity is not a significant concern and ranges from 1.254 to 2.921. VIF scores remain below the maximum acceptable level of 10 (Hair, Black, Babin, & Anderson, 2010) and are even less than 5 (Diamantopoulos & Winklhofer, 2001).

Regression coefficients indicate that CEX is a consistent and robust predictor ($p<0.001$) of GDP growth; hence its inclusion in the models has been justified. In other words, if there is one unit increase in an economic downturn, it will decrease economic growth per annum. H1 is supported. The results also indicate that income level is one of the elements examined which similarly affect economic growth. However, each of the income dummies was statistically significant. The high-income countries were associated with less economic growth than lower ones. Meanwhile, the low-income countries are positively ($p<0.001$) associated with ex-post economic growth. H2 is rejected. Moreover, the coefficient of cross-effect (CEX*LOW) is positively ($p<0.001$) associated

with economic growth. In the case of low-income countries, the effect of economic downturn exposure rise seems to be resulted in (positively) altered economic growth.

CONCLUSIONS

The objective of this study was to examine the interrelations of pandemic (COVID) economic risk exposures to shed light on novel research perspectives on Sustainable Development Goals. An Ordinary Least Squares (OLS) regression approach was used to calculate correlations between the economic fallout risks while also taking the development stages of examined UN countries into account. The advantage of the HAC corrected OLS method is that the predictions based on the models will be more efficient as OLS estimation yield higher values of the variance of the estimated coefficients, and the results do not contain heteroscedastic residuals.

Contrary to previous approaches, the complexity of pandemic risks was considered by analysing economic fallout exposure is essential for exploring the interconnections of socio-economic issues. The study results are the following: (a) the ex-post economic growth is controversially related to the level of income stages, (b) the increase in an economic downturn will decrease economic growth per annum. In the ranking of pandemic factors by country (c), Qatar, Singapore, and the United Kingdom are the most economically insecure countries; and Ethiopia, with the lowest economic risks exposure, has one of the best economic growth positions. Controversially to Noy, Doan, Ferrarini, & Park (2020), it can be stated that the least economically affected countries by pandemics are the most developed ones, and the low-income (African) ones are exposed to be a lower economic risk.

Consequently, the coronavirus epidemic shows that emerging and developed countries are fragile, even inadequate to sustain growth with the previous magnitude (Kovács et al., 2021). Although there is no clear evidence to accept the belief of linkage between COVID fallout exposure and economic development, the developed countries are also unable to protect their economy effectively.

The contributions of the study are twofold. First, the study investigated the global economic risks of COVID associated with the interconnections of socio-economic issues. Secondly, the practical implication of the study is that policymakers need to emphasise the impacts of economic fallouts exposure more to support structural reforms. Decent working conditions and policies are needed to promote inclusive development and productivity (Török, 2020a).

This study has some limitations in terms of the methodologies and variables chosen. The most important is the bias of the omitted variables, as the selected variables only reflect the subjective choices of the authors. The other is related to the lack of the quantitative indicators measured before the transmission of the virus do not reflect the complete risks (i.e. health) of an epidemic. The study is based on the current judgment of the authors.

Further research is needed to examine the structure of complexity of risk indicators related to the dilemma of selecting appropriate variables. These indicators are essential for policymakers to unremittingly control SDG progress and reduce public debts (Török, 2020b). Researchers may also consider using more inclusive measures to analyse jeopardies in different regions and periods.

Acknowledgements

Supported by the ÚNKP-21-5-DE-78 New National Excellence Program of the Ministry for Innovation and Technology from the source of the National Research, Development and Innovation Fund.

REFERENCE LIST

[1] Bhatt, A., Arora, P., & Prajapati, S. K. (2020). Occurrence, fates and potential treatment approaches for removal of viruses from wastewater: A review with emphasis on SARS-CoV-2. Journal of Environmental Chemical Engineering, 8(5), 104429. https://doi.org/10.1016/j.jece.2020.104429

[2] Codagnone, C., Bogliacino, F., Gómez, C., Charris, R., Montealegre, F., Liva, G., … Veltri, G. A. (2020). Assessing concerns for the economic consequence of the COVID-19 response and mental health problems associated with economic vulnerability and negative economic shock in Italy, Spain, and the United Kingdom. PLOS ONE, 15(10), e0240876. https://doi.org/10.1371/journal.pone.0240876

[3] Diamantopoulos, A., & Winklhofer, H. M. (2001). Index Construction with Formative Indicators: An Alternative to Scale Development. Journal of Marketing Research, 38(2), 269–277. https://doi.org/10.1509/jmkr.38.2.269.18845

[4] FAO. (2015). FAO and the 17 Sustainable Development Goals.

[5] Hair, J., Black, B., Babin, B., & Anderson, R. (2010). Multivariate data analysis. Prentice-Hall.

[6] Kovács, S., Rabbi, M. F., & Máté, D. (2021). Global Food Security, Economic and Health Risk Assessment of the COVID-19 Epidemic. Mathematics, 9(19), 2398. https://doi.org/10.3390/math9192398

[7] Lakner, C., Mahler, D. G., Negre, M., & Prydz, E. B. (2019). How Much Does Reducing Inequality Matter for Global Poverty? How Much Does Reducing Inequality Matter for Global Poverty? World Bank, Washington, DC. https://doi.org/10.1596/1813-9450-8869

[8] Luciani, G. (2016). Review of Development economics through the decades. A critical look at 30 years of the world development report. Journal of Economics, 99(1), 1–23.

[9] Máté, D., Rabbi, M. F., Novotny, A., & Kovács, S. (2020). Grand Challenges in Central Europe: The Relationship of Food Security, Climate Change, and Energy Use. Energies, 13(20), 5422. https://doi.org/10.3390/en13205422

[10] Noy, I., Doan, N., Ferrarini, B., & Park, D. (2020). Measuring the Economic Risk of COVID-19. Global Policy, 11(4), 413–423. https://doi.org/10.1111/1758-5899.12851

[11] Schroeder, P., Anggraeni, K., & Weber, U. (2019). The Relevance of Circular Economy Practices to the Sustainable Development Goals. Journal of Industrial Ecology, 23(1), 77–95. https://doi.org/10.1111/jiec.12732

[12] Sharma, A., Borah, S. B., & Moses, A. C. (2021). Responses to COVID-19: The role of governance, healthcare infrastructure, and learning from past pandemics. Journal of Business Research, 122, 597–607. https://doi.org/10.1016/j.jbusres.2020.09.011

[13] SolAbility (2021). Corona: Economic Impact by Country. Retrieved July 20, 2021, from https://solability.com/all-news/corona-risk-exposure-by-country

[14] Török, L. (2019). Do Changes in the Economic Role of States through Privatisation matter?: The Brazilian Case. International Journal of Engineering and Management Sciences, 4(4), 125–136. https://doi.org/10.21791/ijems.2019.4.13.

[15] Török, L. (2020a). The Link Between Car Sales and the Economic Crisis in the European Union at the Time of the Covid-19 Epidemic. International Journal of Economics and Business Administration, VIII(Issue 4), 1033–1042. https://doi.org/10.35808/ijeba/648

[16] Török, L. (2020b). Rise of Public Debt in EU Countries Due to the Coronavirus : Post-recovery Public Debt Rates along with Different Recession Scenarios. Pénzügyi Szemle = Public Finance Quarterly, 65(3), 348–361. https://doi.org/10.35551/PFQ_2020_3_2

[17] United Nations Environment Programme. (2020). A UN framework for the immediate socio-economic response to COVID-19. United Nations. Retrieved from https://unsdg.un.org/resources/un-framework-immediate-socio-economic-response-covid-19

[18] Victor, V., Karakunnel, J. J., Loganathan, S., & Meyer, D. F. (2021). From a Recession to the COVID-19 Pandemic: Inflation–Unemployment Comparison between the UK and India. Economies, 9(2), 73. https://doi.org/10.3390/economies9020073

[19] White, H. (1980). A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity. Econometrica, 48(4), 817. https://doi.org/10.2307/1912934

[20] World Bank (2021). World Development Indicators | DataBank. Retrieved May 11, 2021, from https://databank.worldbank.org/data/source/world-development-indicators

LIST OF FIGURES AND TABLES

Table 1
The Ranks of Top and Worst Ten (10) Countries listed by COVID Economic Fallout Risk Exposure and GDP Growth (%)

			BEST 10G			
Rank	*Country*	*Economic Downturn*	*WB Rank*	*Country*	*GDP Growth (%)*	*WB Rank*
1	Ethiopia	1.83	1	Ethiopia	6.06	1
2	Nepal	2.11	2	Ireland	5.87	4
3	Mali	2.41	1	Tajikistan	4.50	1
4	Moldova	2.41	2	Benin	3.85	2
5	Zimbabwe	2.54	2	Egypt, Arab Rep.	3.57	2
6	Burundi	2.56	1	Vietnam	2.91	2
7	Tanzania	2.56	2	Uganda	2.86	1
8	Bangladesh	2.58	2	Bangladesh	2.38	2
9	Azerbaijan	2.59	3	China	2.30	3
10	Malawi	2.61	1	Tanzania	2.00	2
			WORST 10			
10	Panama	4.11	4	United Kingdom	-9.79	4
9	Portugal	4.15	4	Argentina	-9.91	3
8	Canada	4.27	4	Jamaica	-10.20	3
7	Brunei	4.29	4	Spain	-10.82	4
6	United States	4.29	4	Lesotho	-11.06	2
5	Malaysia	4.32	3	Peru	-11.15	3
4	Spain	4.37	4	Cape Verde	-14.78	2
3	United Kingdom	4.39	4	Mauritius	-14.87	4
2	Singapore	4.45	4	Montenegro	-15.16	3
1	Qatar	4.47	4	Panama	-17.95	4

Note: WB: World Bank.

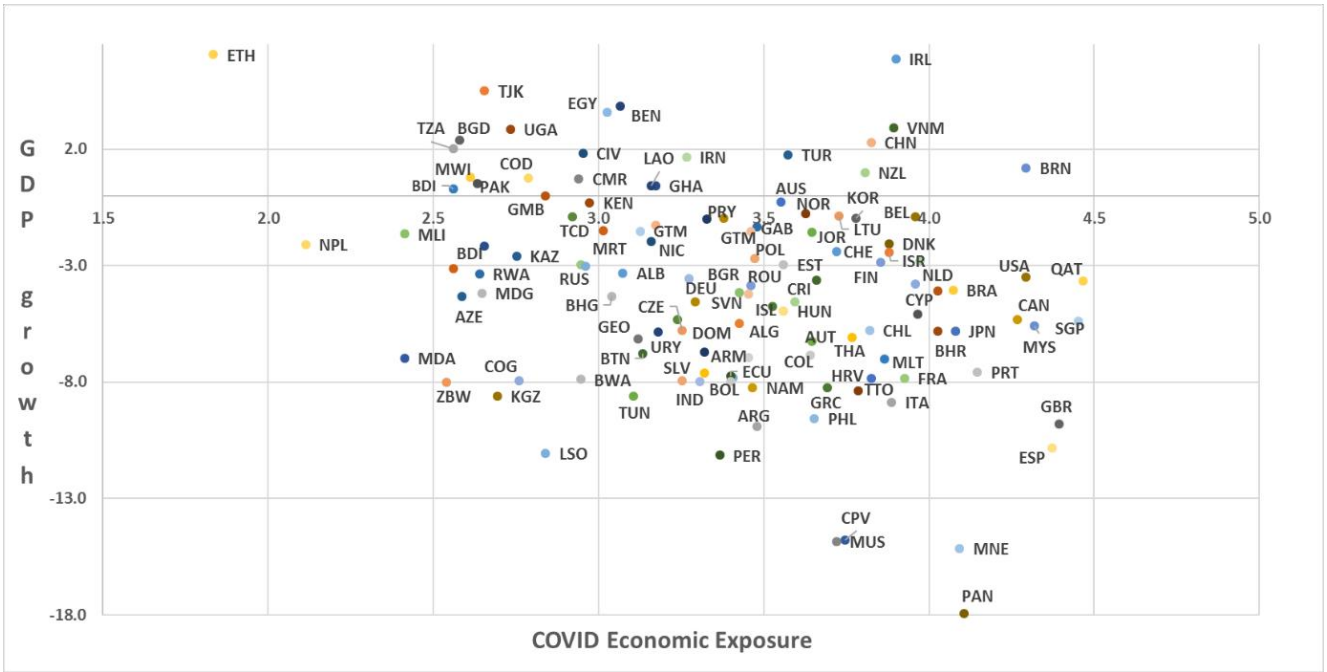

Figure 1
GDP Growth (%) and COVID Economic Exposure (right axis)
Source: own compilations, N=128

Table 2
Estimates of OLS Regression Models

DV	***GDP_growth***			
IVs:	Model1	Model2	Model3	Model4
Constant	4.889*	0.134	−4.479***	2.456
	(1.891)_	(0.182)_	(−11.171)	(0.947)_
CEX	−2.632***			−1.985***
	(−3.503)			(−2.967)
HIGH		−5.047***		
		(−4.599)		
MHIGH		−4.881***		
		(−5.511)		
MLOW		−3.881***		
		(−3.096)		
LOW			4.614***	
			(5.642)_	
CEX*LOW				0.937***
				(3.448)_
R^2	0.088	0.213	0.201	0.239
Adj. R^2	0.081	0.194	0.195	0.227
F-value	12.71***	11.25***	31.83**	19.68***
max(VIF)	-	2.921	-	1.254
Observations	128			

*Note: ***: significant at 0.001 (p<0.001), **: significant at 0.05 p-level, *: significant at 0.1 p-level*

APPENDIX

List of observed countries with their 3-digit abbreviations.

ALB-Albania, ALG-Algeria, ARG-Argentina, ARM-Armenia, AUS-Australia, AUT-Austria, AZE-Azerbaijan, BHR-Bahrain, BGD-Bangladesh, BEL-Belgium, BEN-Benin, BHG-Bosnia and Herzegovina, BTN-Bhutan, BOL-Bolivia, BWA-Botswana, BRA-Brazil, BRN-Brunei Darussalam, BGR-Bulgaria, BDI-Burundi, KHM-Cambodia, CMR-Cameroon, CAN-Canada, CPV-Cape Verde, CHD-Chad, CHL-Chile, CHN-China, COL-Colombia, COD-Congo, Dem. Rep., COG-Congo, Rep., CRI-Costa Rica, CIV-Cote d'Ivoire, HRV-Croatia, CYP-Cyprus, CZE-Czech Republic, DNK-Denmark, DOM-Dominican Republic, ECU-Ecuador, EGY-Egypt, Arab Rep., SLV-El Salvador, EST-Estonia, ETH-Ethiopia, FIN-Finland, FRA-France, GAB-Gabon, GMB-Gambia, GEO-Georgia, DEU-Germany, GHA-Ghana, GRC-Greece, GTM-Guatemala, HND-Honduras, HUN-Hungary, ISL-Iceland, IND-India, IDN-Indonesia, IRN-Iran, Islamic Rep., IRL-Ireland, ISR-Israel, ITA-Italy, JAM-Jamaica, JPN-Japan, JOR-Jordan, KAZ-Kazakhstan, KEN-Kenya, KOR-Korea, Rep., KGZ-Kyrgyz Republic, LAO-Lao PDR, LVA-Latvia, LSO-Lesotho, LTU-Lithuania, LUX-Luxembourg, MDG-Madagascar, MWI-Malawi, MYS-Malaysia, MLI-Mali, MLT-Malta, MRT-Mauritania, MUS-Mauritius, MEX-Mexico, MDA-Moldova, MNG-Mongolia, MNE-Montenegro, MAR-Morocco, MOZ-Mozambique, NAM-Namibia, NPL-Nepal, NLD-Netherlands, NZL-New Zealand, NIC-Nicaragua, NGA-Nigeria, NOR-Norway, PAK-Pakistan, PAN-Panama, PRY-Paraguay, PER-Peru, PHL-Philippines, POL-Poland, PRT-Portugal, QAT-Qatar, ROU-Romania, RUS-Russian Federation, RWA-Rwanda, SAU-Saudi Arabia, SEN-Senegal, SRB-Serbia, SLE-Sierra Leone, SGP-Singapore, SVK-Slovak Republic, SVN-Slovenia, ZAF-South Africa, ESP-Spain, LKA-Sri Lanka, SWE-Sweden, CHE-Switzerland, TJK-Tajikistan, TZA-Tanzania, THA-Thailand, TTO-Trinidad and Tobago, TUN-Tunisia, TUR-Turkey, UGA-Uganda, UKR-Ukraine, GBR-United Kingdom, USA-United States, URY-Uruguay, VNM-Vietnam,ZMB-Zambia, ZBW-Zimbabwe.