Young Researchers' Section

Similarities between Stock Market Reactions During the 2007 Financial Crisis and the 2020-2021 Coronavirus Pandemic. Correlation and Cointegration Analyses

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Abstract
In light of two recent global economic shocks, the global financial crisis of 2007/08 and the COVID-19 pandemic, this paper analyzes the relationships between global shocks and the national stock markets, looking to trends in volatility for the leading stock indices in six CEE countries, namely Austria, Bulgaria, Czech Republic, Hungary, Poland, and Romania, and indices from Germany (DAX) and the United States (S&P 500). The selected indices include the largest domestic companies in each country and make up most of the domestic market capitalization. For the analysis we used Garman-Klass (GK) volatility estimator, as the volatility was considered the most important proxy for market uncertainty. Then we used a simple correlation matrix to show initial tendencies. Also, the Johansen's test was used to determine if the indices are cointegrated and if this relationship has changed significantly in the non-crisis periods. We analyze Granger causality and the network approach as proposed by Diebold and Yilmaz (2015). The GK volatility results were individualized in three periods: 2007-2011 as a proxy for the global financial crisis and European sovereign debt; 2012-2019 representing a period of economic recovery and ultimately 2020-2021 representing the data points for the COVID-19 global pandemic. We find that particularly during periods of global distress, correlations between patterns of volatility for the stock market indices from these countries increase, and they exhibit stronger patterns of cointegration. These findings highlight the increasing connectivity in global financial markets and added challenges in crafting portfolio diversification strategies based on geography of stock holdings.

Keywords: COVID-19; stock markets; financial crisis; volatility;

JEL Classification: G01; G40;

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1. Introduction

Raising capital has been a priority of the transition process to market economies for countries in Central and Eastern Europe. Stock markets can play a central role in deepening domestic capital markets in support of increasing investments in the real economy and achieving development goals. However, participation in global financial markets can also increase risks to financial stability and exposure to volatile flows of capital (Ocampo, 2017).

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This paper aims to investigate the relationships between global shocks and the national stock markets, in six CEE economies: Bulgaria, Czech Republic, Hungary, Poland, Romania, and Austria (Austria being one of the main sources of investment for CEE countries), and two leading global indices from Germany and the United States. The selected indices include the largest domestic companies in each country and make up most of the domestic market capitalization.

The Global Financial Crisis (GFC) and the shock triggered by COVID-19 are used for benchmarks for external global shocks. The global financial crisis of 2007/2008 and the pandemic and economic shock triggered by COVID-19 had a significant impact on growth, on the financial, economic and social indicators, highlighting how increasingly interconnected economies are. The pandemic that started at the beginning of 2020, persists to this day and continues to affect global markets and economic performance everywhere. There is merit to analyze how the impact of the pandemic differs from the financial crisis of 2008, acknowledging that both crises rapidly spread through the world, causing a global economic shock.

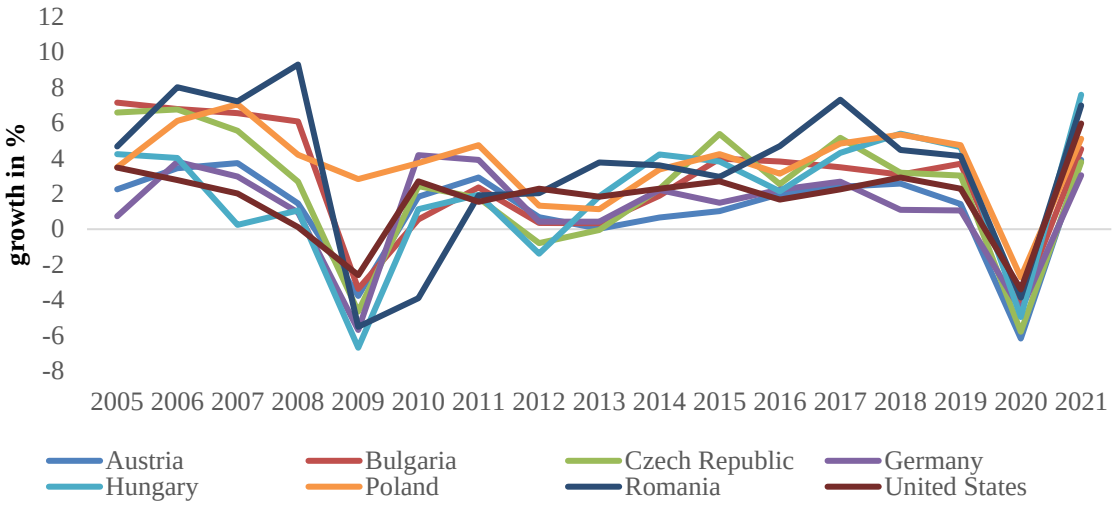
The GFC was triggered by the failure of several renowned and reputable financial institutions as a direct result of the subprime mortgage crisis (real estate). The crisis spread from the financial sector into the real economy and through financial linkages from the United States through Europe and the rest of the world. In Europe what started as a crisis in the banking sector was followed by a debt crisis. COVID-19, however, caused an immediate shock to all industries and sectors as the virus-related lockdowns spread through the world. The impacts of the GFC in Europe lasted from 2008 to 2012, with the situation showing improvement in countries such as Portugal, Spain or Ireland as late as 2014. The COVID-19 crisis is ongoing, so an analysis of the or aftermath of this crisis is not yet possible.

This paper adds to the literature on price volatility and the transmission of shocks through national markets by providing a comparison of price volatility of the national stock indices in the selected CEE countries and the leading market in Germany and the US, and an analysis of how cointegration effects change during time of distress using of the two recent major global economic shocks as benchmarks.

2. Background

Figure 1 shows the impact of the GFC and COVID-19 on GDP growth in the countries selected for this analysis. During the GFC, Poland experienced a somewhat milder shock but both episodes impacted all countries. For European countries the recovery started after 2012, with a debt crisis following the GFC. For the purpose of this paper, we will consider the period 2007 to 2011 as the GFC, followed by a recovery between 2012-2019, and COVID-19 starting in 2020.

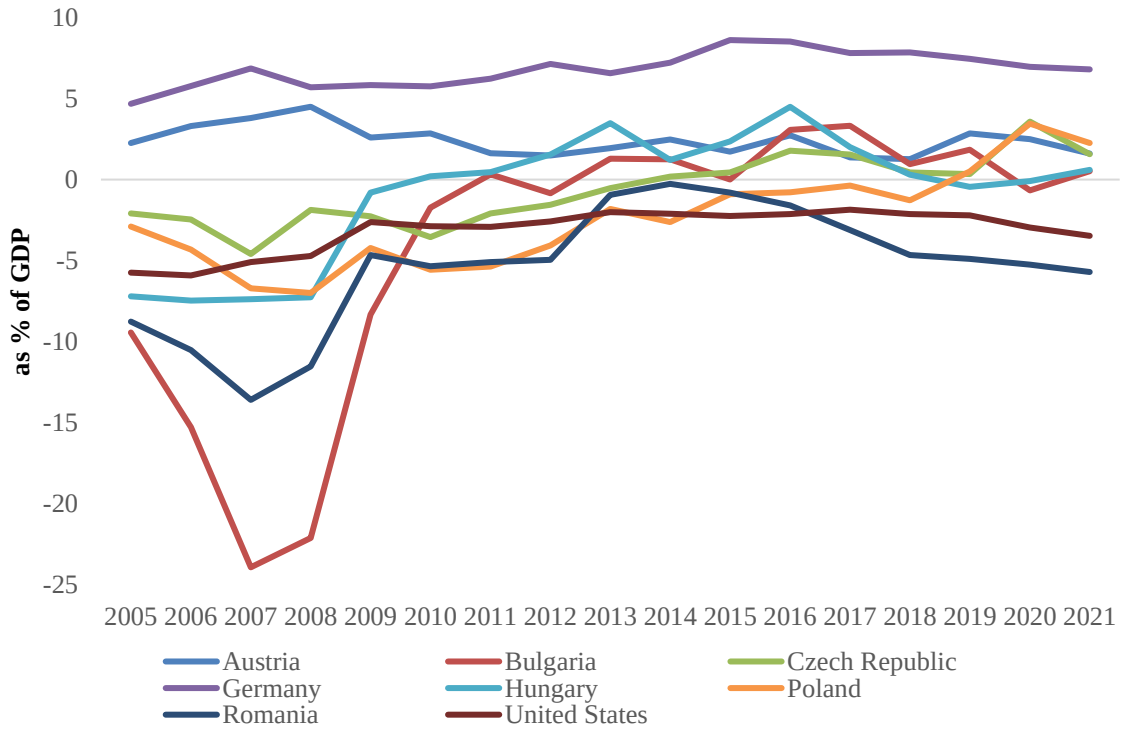
Figure 1. Real GDP growth



Source: IMF (2022)

While the GFC and COVID-19 shocks had similar impacts on growth, the impacts on the current account balance, which records the net total income flows between each country and the rest of the world, diverged. All five transition CEE countries experienced a deterioration in their current account as part of the GFC, which was particularly sharp for Bulgaria. No similar effect occurred following the COVID-19 shock. This is illustrated in **Figure 2**.

Figure 2. Current account balance as % of GDP

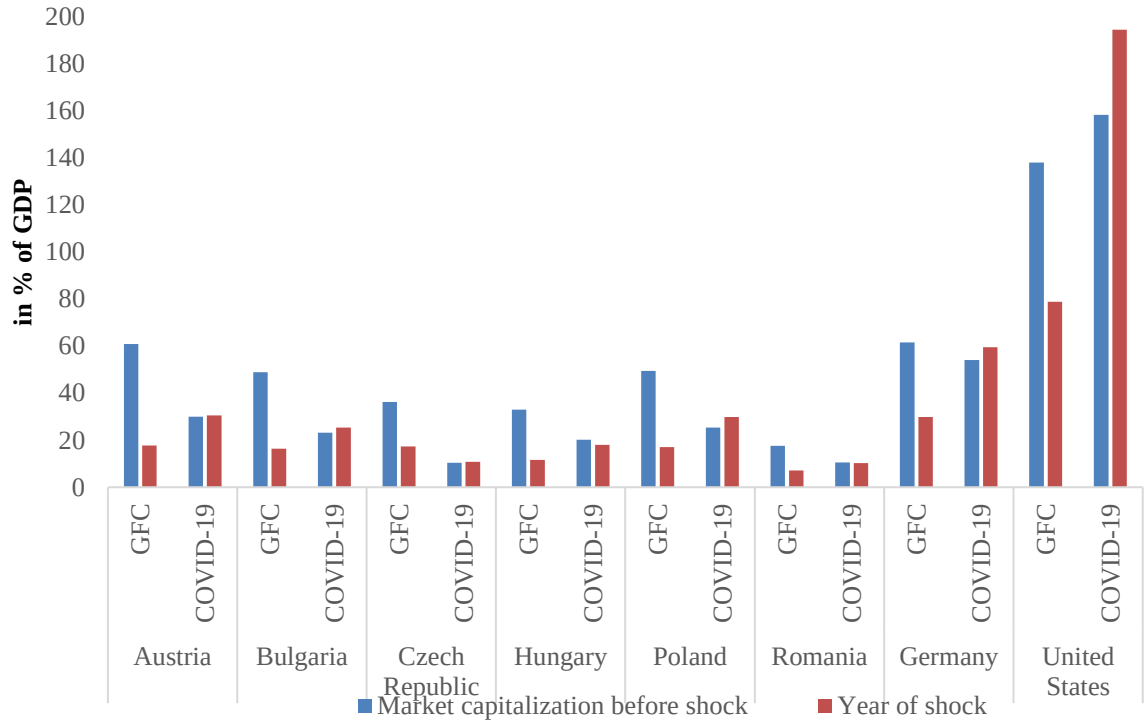


Source: World Bank (2022)

The CEE countries have much lower market capitalization of listed domestic companies relative to the size of the economy than Germany and the United States. Austria, despite being an advanced economy with a long tradition and history of hosting a stock exchange, has a capitalization of listed domestic companies that is closer in scale to the rest of CEE countries. In relative terms, the GFC had a severe impact on wiping out a large share of valuations.

While data beyond 2020 to fully assess the impact of COVID-19 is not yet available, throughout 2020, due to large-scale government responses and support, overall market capitalization was not impacted that severely, and even increased as a share of GDP (World Bank, 2022). **Figure 3** shows the change in market capitalization of domestic listed companies within the first year for each shock. Additionally, **Figure 3** illustrates that with the exception of the United States, which has the highest market capitalization of domestic companies, no other country has achieved pre-GFC level for this indicator.

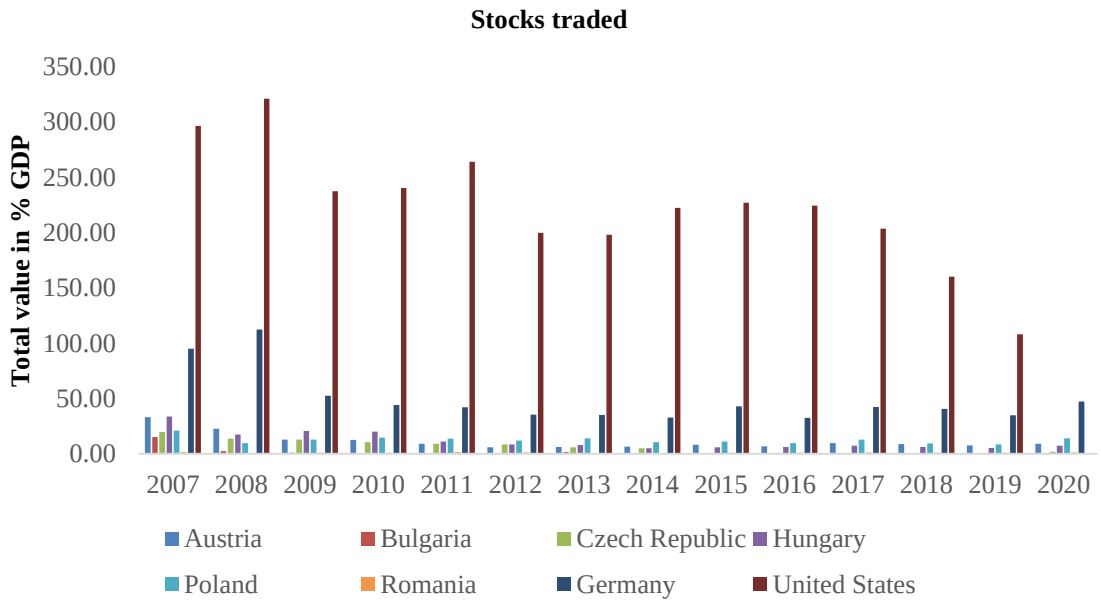
Figure 3. Market capitalization of listed domestic companies (% of GDP)



Source: World Bank (2022)

The United States is also an outlier when it comes to the value of total stocks traded each year as a percentage of its GDP. The transaction volume peaked in the Unites States at over 321 per cent of GDP in 2008, and for Germany at 112 per cent of GDP. Meanwhile, for Romania, values are around 1 per cent of GDP, and for Bulgaria 2020 numbers dropped at 0.3 per cent of GDP. This is illustrated in **Figure 4**.

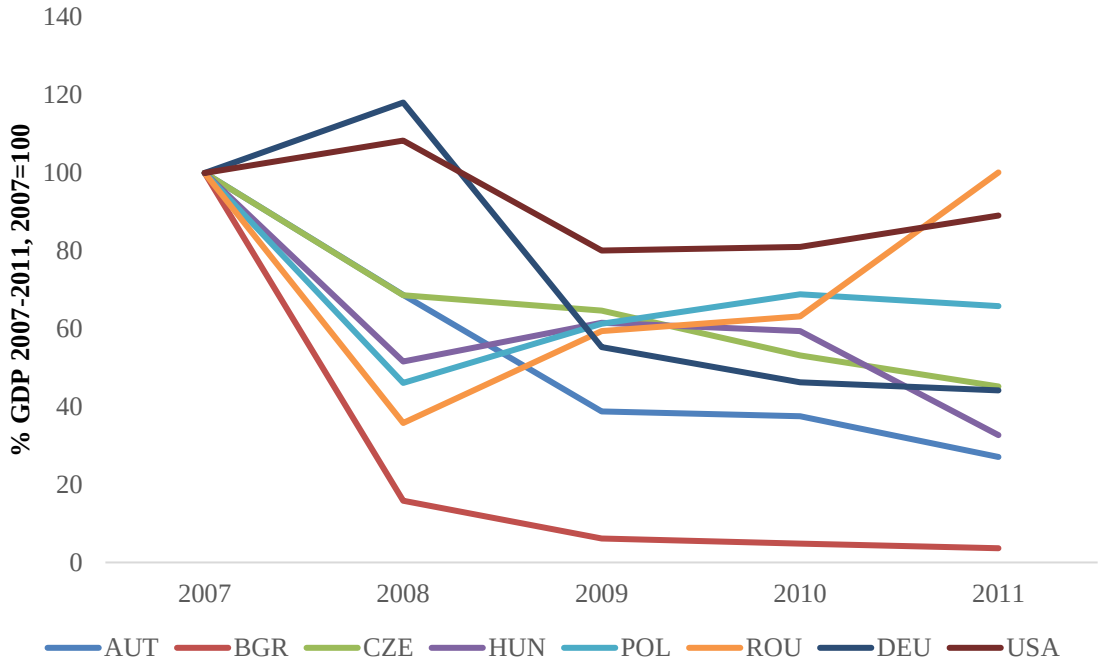
Figure 4. Stocks traded, total value (%GDP)



Source: World Bank (2022)

In the immediate aftermath of the GFC, between 2007 and 2008 the value of stocks traded actually increased in the US and Germany, before falling. The change in volume of stocks traded between 2007 and 2011 is shown in **Figure 5**.

Figure 5. Change in volume of stocks traded as % GDP (2007-2011, 2007=100)



Source: World Bank (2022)

As shown, the eight countries included in this study were impacted similarly by each shock in terms of growth. However, their current accounts showed different exposure to capital flow volatility following shocks, and their stock markets have different characteristics, depth, and scale. Considering these circumstances, we aim to analyze the relationship between the volatility registered by their leading domestic stock indices and how it is affected by economic distress using Garman-Klass historical volatility.

In Romania and Bulgaria, the stock market has been a source for raising the capital they need in order to expand available finance for business operations. However, the return of these markets appears to not only reflect fundamental valuations, but also to incorporate other risk factors such as geographical risk, which is imperative for investors to understand. The Romanian market is only limitedly dependent on institutional investors such as pension funds, the SIFs and Proprietatea Fund. An estimate in 2019 shows that these represent less than 20% of the market. A lower concentration in institutional investors would suggest a higher independency from geographic exposure as the national stock markets include companies that are generally local players and not European or global players.

The Global Financial Crisis and the COVID-19 crisis have very different causes but had similar large-scale impacts on global economic performance. The GFC was probably the most severe financial crisis since the great depression of 1929. What started as a real estate bubble backed by US mortgages turned out to show the effects of deregulation as well as political packages encouraging house-hold acquisitions of the previous years and increasing financial engineering of bundling different risk classes (risk-averse and risk seeking) across different asset types to reduce the risk profile. In other words, mortgage-based securities and their default triggered a liquidity shockwave in the financial markets. At the same time the derivatives tied to these securities were triggering defaults, spiraling the effect across different markets. The effect of these defaults damaged financial institutions and led to a strong contraction in their liquidity planning. This in turn resulted on a deteriorating capacity to make due on upcoming financial obligations, triggering fire sale of assets to address liquidity pressures and down-wards spiral in asset prices that caused a further contraction in markets. A major banking crisis ensued. Governments worldwide deployed support packages, so called bailout packages, for banks, to ensure the necessary liquidity for their operations supported also by monetary and fiscal policy measures. The above initiated a strong contraction of the economy resulting in high unemployment and a severe distrust in financial institutions. On the European side the increasing unemployment and contracting global trade resulted in a recession that was the spark of the European debt crisis. The economic down-turn that started in 2007 can be defined as a financial crisis resulted from a severe contraction in asset value that led to a contraction in liquidity which spiraled out of proportion until governments offered the necessary liquidity. The financial 2007 crisis triggered a recession and a social crisis, with unemployment rates increasing dramatically.

The COVID-19 crisis that started in 2020 as a health crisis, represented a large shock to the real economy that spread into all areas of the society (from financial, to production, distribution, transportation etc.). It impacted aspects of day-to-day life. As COVID-19 spread through the world, it is triggered a pandemic and a health crisis, as well as a social and economic one. Until today the full effects of the pandemic are not fully known and difficult to forecast.

Although the origin of the corona recession is totally different from the financial crisis of 2007, both show how interconnected markets are and how we truly leave in a global environment. After outbreaks appeared outside of China, it became clear that the effects

and the pattern of the virus were not known. Governments did not know how to react to this kind of threat. The first signs of what will become a global economic recession were shown in the stock markets globally that in the early of 2020 dropped by up to 25%. Different than the financial crisis of 2007, the global economy under the corona virus was already approaching an economic down-turn. The panic caused by the spread of the virus accentuated this. In a few months, by Q3 of 2020 most major economies were entering a recession. Similar to the 2007 recession, unemployment increased in many countries. Due to the health crisis and government restrictions, industries such as the hospitality industry, tourism and transportation experienced significant difficulties.

However, the corona induced recession saw two significant different patterns than the ones in 2007. Firstly, governments reacted swiftly and provided both aid packages and monetary and fiscal stimulus to ensure necessary liquidity in the market. Secondly, oil prices, and therefore energy prices dropped significantly, helping the economy. These two effects supported a smoother recession and balanced the negative effects of the lockdowns and the drop in the consumer spendings.

To conclude, it is important to understand that the two crises under analysis do not have identical causes, and, in terms of implications, it is too soon to make any evaluations. However, the financial crisis and the corona pandemic are different episodes of the same phenomenon and of what we now call consequences of globalization and interdependency between the global markets. Both resulted in economic contractions, both resulted in panic, both showed how global markets are connected.

3. Literature Review

The question on the relationships and dependencies between independent national stock markets has been widely asked by scholars. It was often proven that markets tend to both be independent and interdependent, depending on the time frame analyzed. Grubel and Fadner (1971) were among the first who showed that interdependence of international equity markets exists, revealing that there is a relationship between the US equity markets and the West German stock market index at that time. Bessler and Yang (2003) also attempted similar methods in determining a relationship between different independent national stock markets. Established scholars such as Francis and Leachman (1998) used the Johansen procedure for cointegration testing with tests of weak exogeneity and invariance in order to ascertain whether a system of equity markets is characterized by super-exogeneity. Super-exogeneity was rejected for the system comprised of stock indices of the US, UK, Germany and Japan, according to their study.

Forbes and Rigobon (2002) showed that there is limited evidence of contagion, despite the interdependence of stock markets by measuring stock market prices co-movements. In an analysis of the Central and Eastern European markets, Syllignakis and Kouretas (2011) showed evidence of dynamic correlation analysis of financial contagion in the region. They used Dynamic Conditional Correlation (DCC) multivariate GARCH and concluded on significant evidence of contagion during 2007-2009.

But what happens when the market is exposed to a global event? The question on how the stock markets react to global crisis has been tackled by many scholars (Bartram and Bodnar, 2009). They showed that such global events lead primarily to value destruction. They displayed that in such times the most exposed are the financial markets that take a

significant higher hit than non-financial markets, though they both are estimated to have taken similar drops at the peak of the event. The same unprecedented level of risk is displayed during the covid-19 pandemic that started in December 2019. Zhang, Hu and Ji (2020) showed through a simple but original statistical analysis the impact of the COVID-19 on selected stock markets. They concluded that global financial market risk results from increased uncertainty in the market, associated with economic losses and value destruction.

The sentiment of irrationality of markets can be traced back to Robert Shiller (2002) and his work surrounding irrationality of markets. He explicitly said that big market moves are historical events. The reciprocal sentence also applies; historical events are big market movers. We will test two of the most significant events of this century, the corona pandemic started in 2019 and the global financial crises started in 2007, briefly followed by the European debt crisis of 2010.

4. Methodology, Results and Discussions

In this section we present the econometric procedures used and the results yielded. We restrict the analysis to six Central and Easter European markets, reflected in the analysis through the national index. The indices reflect national champions. The national index represents the best available fully diversified portfolio. The indices under analysis are BUX (proxy for Hungary), BET (proxy for Bucharest), SOFIX (proxy for Bulgaria), ATC (proxy for Austria), WIG (proxy for Poland) and PX (proxy for the Czech Republic). We test the CEE proxies against two leading indices, the DAX (proxy for Germany) and the S&P 500 (For the USA). We did not include more generic indices such as MSI-World to avoid double correlation, as some companies would be reflected in both.

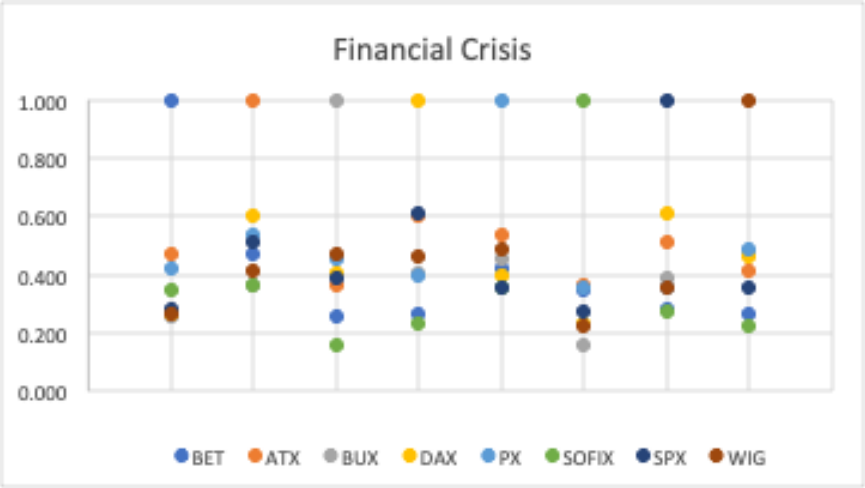
This paper will focus on volatility and not on returns, as volatility is, in this case, a better proxy for the market uncertainty. For the analysis we will use Garman-Klass (GK) volatility estimator. It uses the price return of the opening (o), closing (c), high (h) and low (l) of the particular period as follows:

$$GKHV = \sqrt{\frac{1}{N}\sum_{i=1}^{N}\frac{1}{2}\left(ln\frac{h_i}{l_i}\right)^2 - \frac{1}{N}\sum_{i=1}^{N}(2ln2-1)\left(ln\frac{c_i}{o_i}\right)^2}$$

We then use a simple correlation matrix to show initial tendencies. We move on to the Johansen's test to determine if the indices are cointegrated and if this relationship has changed significantly in the non-crisis periods. The same, we analyze for Granger causality and then we use the network approach as proposed by Diebold and Yilmaz (2015). We separate the GK volatility results in three periods: 2007-2011 as a proxy for the global financial crisis and European sovereign debt; 2012-2019 representing a period of economic recovery and ultimately 2020-2021 representing the data points for the COVID-19 global pandemic.

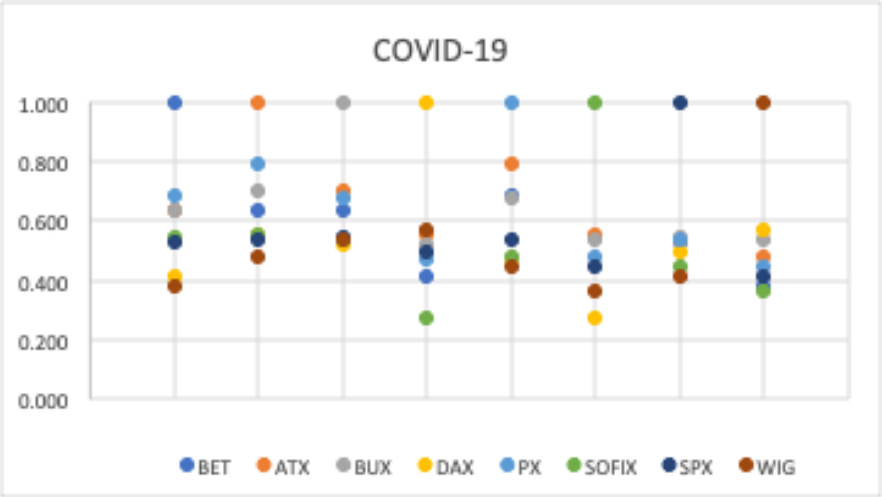
The correlation matrix for the periods shows a strong increase in correlation during global events.

Figure 6. Pairwise correlation, 1/02/2007-12/30/2011



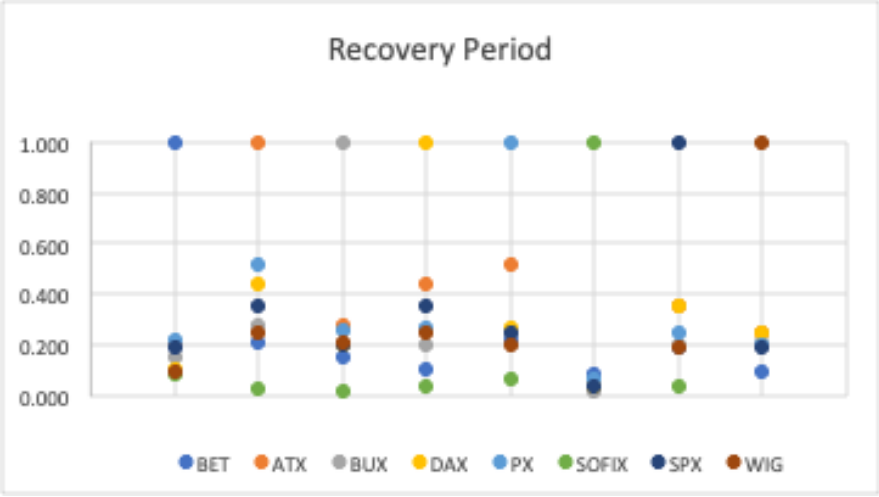
Source: Authors' own calculations

Figure 7. Pairwise correlation, 1/02/2020-12/30/2021



Source: Authors' own calculations

Figure 8. Pairwise correlation, 1/02/2012 12/30/2019



Source: Authors' own calculations

Notice that the correlation matrix is especially strong during the Corona global pandemic. We notice that **Figure 7** and **Figure 8** show a strong correlation of all markets, including the less capitalized ones, such as SOFIX. While the financial global crisis also shows shifts in the correlation matrix, the impact is limited as every index reacts different to volatility. During the pandemic however, the results show a strong correlation for all markets exposed to the same high volatility, driven by the global uncertainty in the market and around the effects of the pandemic.

Table 1. Unrestricted Cointegration Rank Test (Trace) 1/02/2007-12/30/2011

No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.2969	2,304.3940	159.5297	0.0001
At most 1 *	0.2728	1,857.0180	125.6154	0.0001
At most 2 *	0.2297	1,452.4290	95.7537	0.0001
At most 3 *	0.2167	1,121.0420	69.8189	0.0001
At most 4 *	0.2060	810.8746	47.8561	0.0001
At most 5 *	0.1798	517.9726	29.7971	0.0001
At most 6 *	0.1457	266.2153	15.4947	0.0001
At most 7 *	0.0508	66.2705	3.8415	-

Source: Authors' own calculations

When performing the cointegration test we notice that we can reject the null hypothesis in any of the tests, meaning the relationship was established and exists prior to these periods. This is in line with other literature and research such as Tudor (2011) and Kenourgios and Samitas (2011).

While we cannot disregard the long run relationship for all periods, the statistic indicates a strong relationship for the COVID-19 period. Therefore, we can conclude that the series are related and can be combined in a linear fashion and that even if there are shocks in the short-run, they converge in the long-run.

In the short run by using the pairwise Granger Causality Test (**Table 4**) we identify also a short-run relationship between variables. We can conclude that for the crisis periods there is significant strong correlation between past values and present values of series. For the series we notice 56 causality relations during the financial crisis period, 52 for the corona crisis, both of which are significantly higher than the 32 relationships during the recovery period.

Table 2. Unrestricted Cointegration Rank Test (Trace) 1/02/2020-12/30/2021

No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.3629	980.0394	159.5297	0.0001
At most 1 *	0.3082	771.2869	125.6154	0.0001
At most 2 *	0.2851	600.6614	95.7537	0.0001
At most 3 *	0.2518	445.2830	69.8189	0.0001
At most 4 *	0.2195	310.9555	47.8561	0.0001
At most 5 *	0.1884	196.2323	29.7971	0.0001
At most 6 *	0.1605	99.5653	15.4947	0.0001
At most 7 *	0.0393	18.5544	3.8415	-

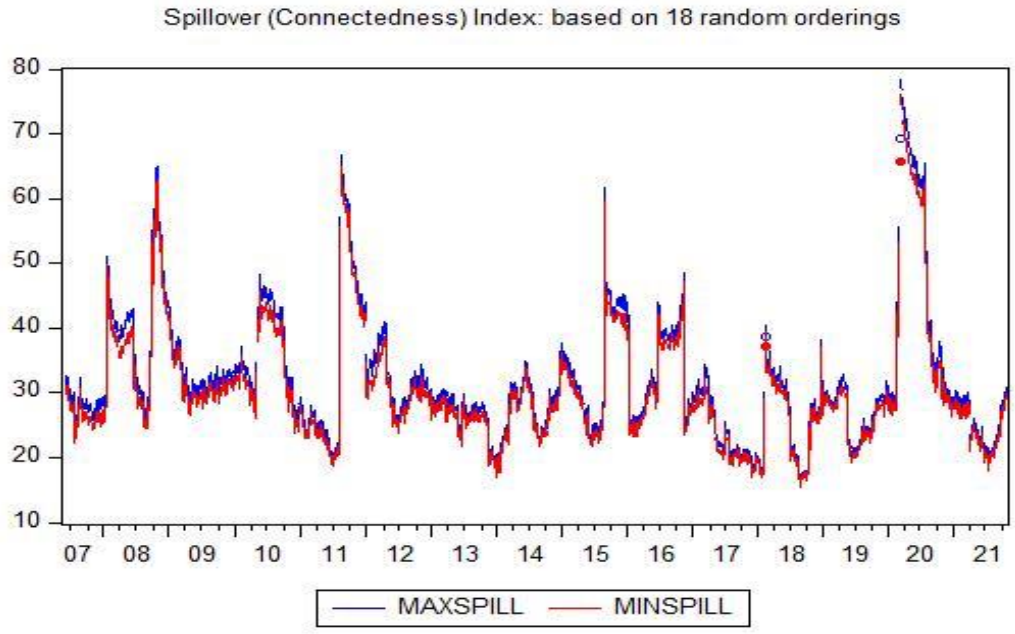
Source: Authors' own calculations

Table 3. Unrestricted Cointegration Rank Test (Trace) 1/05/2012-12/30/2019

No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.2483	3,477.5820	159.5297	1.0000
At most 1 *	0.2331	2,901.5660	125.6154	1.0000
At most 2 *	0.2191	2,366.0660	95.7537	1.0000
At most 3 *	0.2075	1,867.1000	69.8189	1.0000
At most 4 *	0.1881	1,397.8830	47.8561	1.0000
At most 5 *	0.1790	977.3299	29.7971	0.0001
At most 6 *	0.1534	579.3889	15.4947	0.0001
At most 7 *	0.1136	243.3886	3.8415	-

Source: Authors' own calculations

Figure 9. Spillover Index 2007-2021



Source: Authors' own calculations

Table 4. Pairwise Granger Causality Tests

	Global Financial Crisis		Corona		Recovery Period	
Null Hypothesis:	**F-Statistic**	**Prob.**	**F-Statistic**	**Prob.**	**F-Statistic**	**Prob.**
ATX does not Granger Cause BET	23.53	0.000	36.9925	0.00	15.7583	0.00
BET does not Granger Cause ATX	14.0103	0.000	3.39574	0.03	8.53112	0.00
BUX does not Granger Cause BET	12.648	0.000	30.4474	0.00	3.77603	0.02
BET does not Granger Cause BUX	47.5408	0.000	2.96901	0.05	4.03767	0.02
DAX does not Granger Cause BET	10.4967	0.000	15.5606	0.00	3.42922	0.03
BET does not Granger Cause DAX	31.901	0.000	11.4851	0.00	4.58011	0.01
PX does not Granger Cause BET	18.4308	0.000	13.1818	0.00	2.05868	0.13
BET does not Granger Cause PX	30.3807	0.000	5.05323	0.01	7.00914	0.00
SOFIX does not Granger Cause BET	20.0227	0.000	40.9399	0.00	1.02478	0.36
BET does not Granger Cause SOFIX	8.37047	0.000	1.97006	0.14	0.20275	0.82
SPX does not Granger Cause BET	27.817	0.000	40.6857	0.00	17.3797	0.00
BET does not Granger Cause SPX	26.3661	0.000	3.531	0.03	6.13107	0.00
WIG does not Granger Cause BET	14.9693	0.000	16.2397	0.00	2.69086	0.07
BET does not Granger Cause WIG	28.9543	0.000	15.7451	0.00	1.77333	0.17
BUX does not Granger Cause ATX	19.4866	0.000	5.83456	0.00	5.7016	0.00
ATX does not Granger Cause BUX	53.2001	0.000	7.77272	0.00	15.5415	0.00
DAX does not Granger Cause ATX	11.0519	0.000	6.9689	0.00	6.91391	0.00
ATX does not Granger Cause DAX	27.1922	0.000	10.5071	0.00	1.99261	0.14
PX does not Granger Cause ATX	12.0598	0.000	4.15835	0.02	10.8894	0.00
ATX does not Granger Cause PX	57.6198	0.000	19.0333	0.00	7.24439	0.00
SOFIX does not Granger Cause ATX	34.6321	0.000	12.9496	0.00	1.43114	0.24
ATX does not Granger Cause SOFIX	11.3108	0.000	6.16585	0.00	2.61262	0.07
SPX does not Granger Cause ATX	48.6207	0.000	10.6139	0.00	24.8137	0.00
ATX does not Granger Cause SPX	54.1138	0.000	16.7557	0.00	3.22138	0.04
WIG does not Granger Cause ATX	9.62447	0.000	14.6702	0.00	2.66535	0.07
ATX does not Granger Cause WIG	22.5556	0.000	5.22609	0.01	0.68192	0.51
DAX does not Granger Cause BUX	20.1722	0.000	3.0139	0.05	12.5665	0.00
BUX does not Granger Cause DAX	10.1003	0.000	4.1535	0.02	2.35266	0.10
PX does not Granger Cause BUX	15.017	0.000	3.46223	0.03	8.08048	0.00
BUX does not Granger Cause PX	22.5016	0.000	13.6825	0.00	6.48144	0.00
SOFIX does not Granger Cause BUX	30.5769	0.000	15.2326	0.00	0.07877	0.92
BUX does not Granger Cause SOFIX	10.1323	0.000	12.6496	0.00	2.54943	0.08
SPX does not Granger Cause BUX	56.4168	0.000	10.765	0.00	16.5683	0.00
BUX does not Granger Cause SPX	7.99509	0.000	18.4685	0.00	2.80804	0.06
WIG does not Granger Cause BUX	13.1577	0.000	25.8007	0.00	3.27405	0.04
BUX does not Granger Cause WIG	17.8494	0.000	5.13043	0.01	0.27277	0.76
PX does not Granger Cause DAX	33.5948	0.000	10.7843	0.00	7.17829	0.00
DAX does not Granger Cause PX	36.1581	0.000	8.89446	0.00	9.31979	0.00
SOFIX does not Granger Cause DAX	36.3951	0.000	7.00968	0.00	1.08679	0.34
DAX does not Granger Cause SOFIX	18.0871	0.000	6.34853	0.00	0.05688	0.94
SPX does not Granger Cause DAX	36.6206	0.000	16.9509	0.00	22.3544	0.00
DAX does not Granger Cause SPX	5.6002	0.004	9.03307	0.00	2.78285	0.06
WIG does not Granger Cause DAX	8.72645	0.000	16.1301	0.00	1.96063	0.14
DAX does not Granger Cause WIG	13.6041	0.000	1.35122	0.26	1.05593	0.35
SOFIX does not Granger Cause PX	35.3279	0.000	28.9628	0.00	3.65264	0.03
PX does not Granger Cause SOFIX	10.2701	0.000	4.4738	0.01	1.20955	0.30
SPX does not Granger Cause PX	74.5052	0.000	35.6271	0.00	22.0123	0.00
PX does not Granger Cause SPX	38.8078	0.000	14.1159	0.00	5.57744	0.00
WIG does not Granger Cause PX	18.7527	0.000	13.6602	0.00	4.49705	0.01
PX does not Granger Cause WIG	9.72311	0.000	6.68741	0.00	0.67204	0.51
SPX does not Granger Cause SOFIX	34.8796	0.000	4.21761	0.02	4.46826	0.01
SOFIX does not Granger Cause SPX	48.5126	0.000	6.03125	0.00	4.6022	0.01
WIG does not Granger Cause SOFIX	6.31188	0.002	13.2284	0.00	1.79284	0.17
SOFIX does not Granger Cause WIG	34.6912	0.000	17.3493	0.00	0.35585	0.70
WIG does not Granger Cause SPX	9.9507	0.000	20.8239	0.00	3.94234	0.02
SPX does not Granger Cause WIG	48.9318	0.000	14.1344	0.00	8.58315	0.00

Source: Authors' own calculations

5. Conclusion

The relationships between the different stock indices presented in this paper highlight the implications of increasingly connected capital markets for portfolio diversification. Particularly in times of global distress and shocks, geographic diversification of stock holdings cannot effectively hedge risks. On the contrary, portfolio managers responding to signals of distress by following similar investment strategies and retreating to safer investments can amplify shocks. Both during the financial crisis and COVID-19 pandemic, the correlation and causality relationships between stock market indices increased. This highlights that despite the different triggers and causes for each crisis, some of the effects are similar and that in times of panic, irrespective of the source of the panic, stock markets correlate. This leaves countries that are heavily dependent on foreign investment in particularly precarious positions, as volatility can trigger sudden outflows of capital, with consequences for exchange rates, financial stability, debt sustainability, cred conditions, and economic performance (Ocampo, 2017). Policymakers must reconsider the value and purpose of measures to manage capital flows to limit the impacts of volatility and shocks, a response that aligns with the position taken by the International Monetary Fund (2022).

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