The Bond between Global Capital Market and Monetary Policy and the Possible Impact of the Covid-19 Pandemic on it

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Կապիտալի համաշխարհային շուկայի և դրամավարկային քաղաքականության միջև առկա կապը և COVID-19 համավարակի հնարավոր ազդեցությունը դրա վրա

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Ամփոփում. Կապիտալի շուկան կարևոր դեր է խաղում յուրաքանչյուր երկրի տնտեսական զարգացման գործում: Կապիտալի համաշխարհային շուկայում տեղի ունեցող իրադարձությունները էական ազդեցություն ունեն երկրների տնտեսական աճի և զարգացման մակարդակի վրա: Միևնույն ժամանակ, կենտրոնական բանկի կողմից իրականացվող դրամավարկային քաղաքականությունը, ազդելով ֆինանսական շուկաների, այդ թվում և դրա մաս կազմող կապիտալի շուկայի վրա, կարողանում է հասնել իր առջև դրված նպատակներին և, ի վերջո, նպաստել երկրում տնտեսական աճին:
Կապիտալի շուկայի տարբեր հատվածների և կենտրոնական բանկի դրամավարկային քաղաքականության միջև առկա է կապի բարձր աստիճան: Դրամավարկային քաղաքականության գործիքակազմը զգալիորեն ազդում է կապիտալի շուկայի ցուցանիշների վրա, որոնք էլ իրենց հերթին ազդակ են հանդիսանում կենտրոնական բանկի վարած դրամավարկային քաղաքականության ուղղությունների հնարավոր փոփոխությունների համար:
Այս համատեքստում, տվյալ հոդվածում փորձ է արվել ուսումնասիրել կապիտալի համաշխարհային շուկայի տարբեր հատվածների և կենտրոնական բանկի դրամավարկային քաղաքականության միջև առկա հնարավոր կապի առանձնահատկությունները: Կատարված կոռելյացիոն վերլուծությունը թույլ է տալիս բացահայտել դիտարկված ցուցանիշների միջև առկա կապի սերտությունը և ուղղությունը և ընդգծել փոխազդեցության հիմնական առանձնահատկությունները:
Արդիական է համարվել վերլուծել նաև այն հնարավոր ազդեցությունը, որը Covid - 19 համաճարակը կարող է ունենալ համաշխարհային կապիտալի շուկայի տարբեր հատվածների վրա: Համաճարակը և դրա հետևանքով ստեղծված բարդ իրավիճակը չեն կարող ազդեցություն չունենալ տնտեսության բոլոր հատվածների համար: Հետևաբար, հետաքրքիր է համարվել սույն հոդվածում ուսումնասիրել, թե ինչ հնարավոր փոփոխություններ են կրել դիտարկվող տնտեսական ցուցանիշները կորոնավիրուսի համաճարակի հետևանքով:
Հանգուցաբառեր՝ դրամավարկային քաղաքականություն, կապիտալի շուկա, COVID-19, տոկոսադրույք, կոռելյացիա

Связь между мировым рынком капитала и денежно-кредитной политикой и возможное влияние пандемии COVID-19 на нее

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Аннотация. Рынок капитала играет важную роль в экономическом развитии каждой страны. События, происходящие на мировом рынке капитала, оказывают существенное влияние на экономический рост и уровень развития стран. В то же время проводимая центральным банком денежно-кредитная политика, воздействуя на финансовые рынки, в том числе на рынок капитала, способна достичь поставленных целей и в конечном итоге способствовать экономическому росту в стране.
Существует высокая степень связи между различными сегментами рынка капитала и денежно-кредитной политикой центрального банка. Инструменты денежно-кредитной политики существенно влияют на показатели рынка капитала, которые, в свою очередь, выступают стимулом для возможных изменений направлений денежно-кредитной политики. В этом контексте в данной статье предпринята попытка изучения специфики связи различных сегментов глобального рынка капитала и денежно-кредитной политики. Проведенный

корреляционный анализ позволяет выявить силу и направление связей между наблюдаемыми показателями и выделить основные черты взаимодействия.
Также считается актуальным проанализировать возможное влияние пандемии Covid-19 на различные части мирового рынка капитала. Пандемию и вызванные ею тяжелые обстоятельства невозможно игнорировать во всех сегментах экономики. Следовательно, стоит изучить потенциальные изменения рассматриваемых экономических показателей в результате пандемии коронавируса.
Ключевые слова: денежно-кредитная политика, рынок капитала, COVID-19, процентная ставка, корреляция.

Introduction

Monetary policy is an important part of the country's overall macroeconomic policy. The central banks implement their goals through monetary policy tools. From this perspective, the analysis of the transmission mechanism of the monetary policy, of which the various segments of the capital market are an integral part, is of great importance.

Therefore, within the framework of the article, it was considered relevant to study the features of the interaction between the monetary policies of the US Federal Reserve and the European Central Bank and the US, German and French stock market, government and corporate bond markets which are part of the mentioned countries' capital markets. It is also interesting to study the existing bond specifics before the Covid-19 pandemic and the possible changes caused by the pandemic. The identification and evaluation of the mentioned connection for both pre-pandemic and pandemic periods will help to contribute to the further design of measures aimed at increasing the level of development of the entire capital market and its individual segments through the monetary policy toolkit.

The main purpose of this research is to reconfirm the existence of a connection between various segments of the capital markets in a number of developed countries and the monetary policy of the Central banks, as well as possible changes in this connection during the pandemic.

Literature Review

Many studies carried out by different researchers prove that there is a high degree of interaction between capital markets and monetary policies, which continues to grow even in the crisis conditions.

In their analysis researchers Ioannidis and Kontonikas found out that the relationship between stock returns and monetary conditions is important for both stock market participants and central bank policymakers. The results of their analysis show that in 80% of the reviewed 13 OECD (The Organisation for Economic Co-operation and Development) periods of tight monetary policy were accompanied with simultaneous declines in stock market values **[1]**. Another important conclusion is that monetary policy changes affect not only the current but also the future yield of securities.

The study by economists Wang and Mayes focuses on the response of stock market indices in New Zealand, Australia, Great Britain and the Eurozone to announcements of the monetary policy interest rate changes. As in previous studies, a significant negative reaction of stock prices to monetary policy surprises is found there **[2]**. In times of financial crises and uncertainties, investors become more sensitive to central banks' monetary policy announcements, so the study of the relationship between monetary policy and asset prices becomes an important issue for the central banks.

In general, from the investigation of the international literature related to the mentioned topic, it becomes clear that the connection between the monetary policy of the central bank and the global capital market is different depending on the goals and objectives of the central bank of a specific country and the monetary policy toolkit, the degree of development of the economy, the characteristics of financial markets, etc.

Research methodology

In order to reveal the features of the interaction between the global capital market and the monetary policy of central banks, a correlation analysis was carried out in the context of this article to find out the existence of linear dependence, the direction of the connection and the degree of the strength between the considered indicators. Over the course of the correlation analysis, the correlation coefficients were calculated between the indicators considered within the framework of the article.

The studied indicators are the yields of stock, government and corporate bonds, which are part of the US, German and French capital markets, and the base refinancing rates, which are the main instrument of the monetary policies of the US central bank, i.e., the Federal Reserve System and the European Central Bank. The abovementioned indicators were also subjected to a comparative analysis in order to find out the main directions of their movement during the last few years, especially before and after the Covid-19 pandemic.

The theoretical and practical part of the research was based on the works of Armenian and foreign scientists and researchers, scientific articles, etc., which are related to the capital market and the monetary policy. The sources of information for the

article were the official publications and materials of the US Federal Reserve System and the European Central Bank, also the data provided by websites that calculate and present the dynamics of stock exchange indices, government and corporate bond yields.

General economic patterns, as well as judgments formed as a result of our investigations, were the basis for the performed analyzes and presented conclusions.

Analysis and Results

The central bank of the United States is the Federal Reserve System (Fed). Monetary policy of the Fed directly affects short-term interest rates and indirectly affects long-term interest rates, exchange rates and asset prices **[3]**. Monetary policy has a lagged effect on the economy, and when the Fed makes monetary policy adjustments, it expects them to affect economic conditions in the future **[4]**.

In order to investigate the direction of the monetary policy of the Fed, the dynamics of the most important instrument of the monetary policy, the base interest rate, was observed (Figure 1).

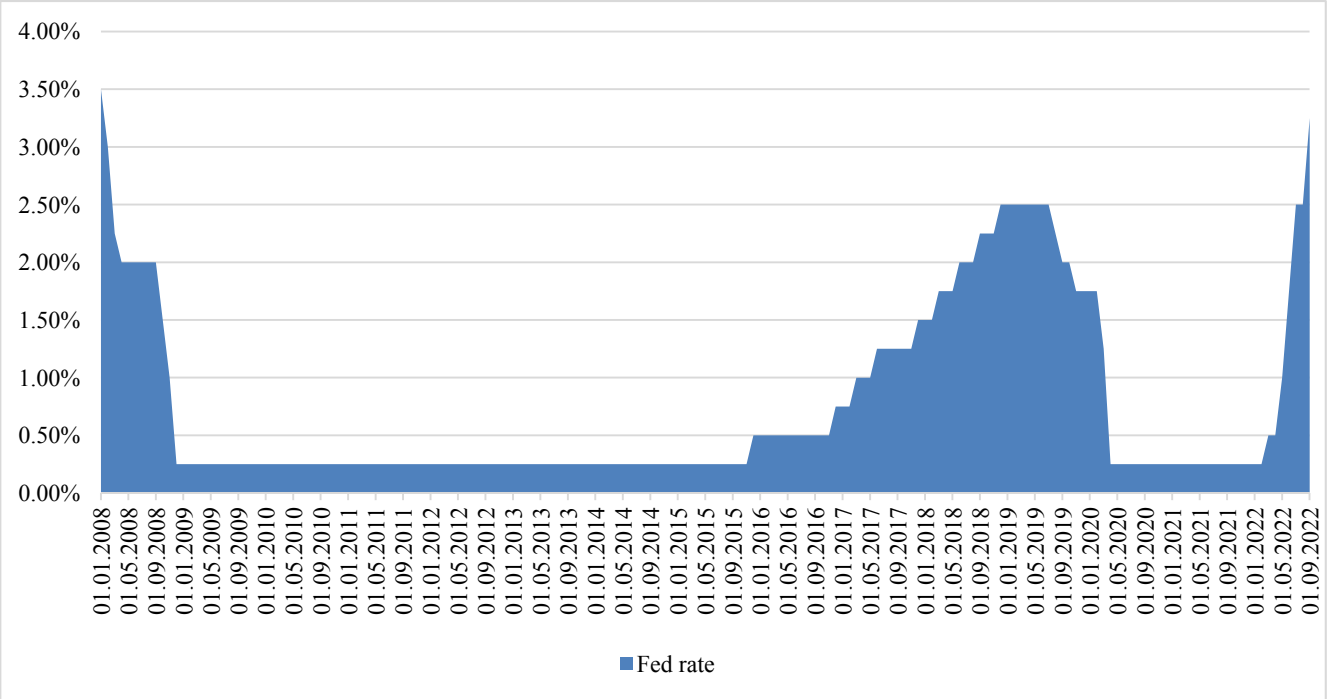

Figure 1. *The base interest rate of the US Fed in 2008-2022* [**5**]

Since 2008, the base interest rate has been reduced from 3.5% to 0.25% due to the financial and economic crisis. However, in 2016 the interest rate has already gradually started to increase accompanied with the observed recovery in the economy. During 2018, the Fed raised the base interest rate four times, taking into account the high indicators of US economic growth and inflation. Over the course of 2019-2020 Fed lowered the interest rate five times. On March 16th 2020 meeting the interest rate was cut by 1% at once, and the base rate range has been 0.00-0.25% for about two years up until March 2022. This amendment to the monetary policy was made in response to the Covid 19 pandemic and its financial, economic and health circumstances. After gradual mitigation in difficult situation caused by the pandemic, the central bank of the US decided to start raising the target range for the federal funds rate. Fed anticipates that ongoing increases in the target range will be appropriate [**6**].

The US capital market is one of the most developed and largest financial markets in the world. The S&P 500 stock index was considered to analyse the stock market which is a part of the US capital market. It is one of the most popular US stock indexes based on the market capitalizations of the 500 largest companies with common stocks listed on the New York Stock Exchange (NYSE), NASDAQ, and the Cboe BZX Exchange. Figure 2 shows the monthly performance of the S&P 500 index from 2008 to September 2022.

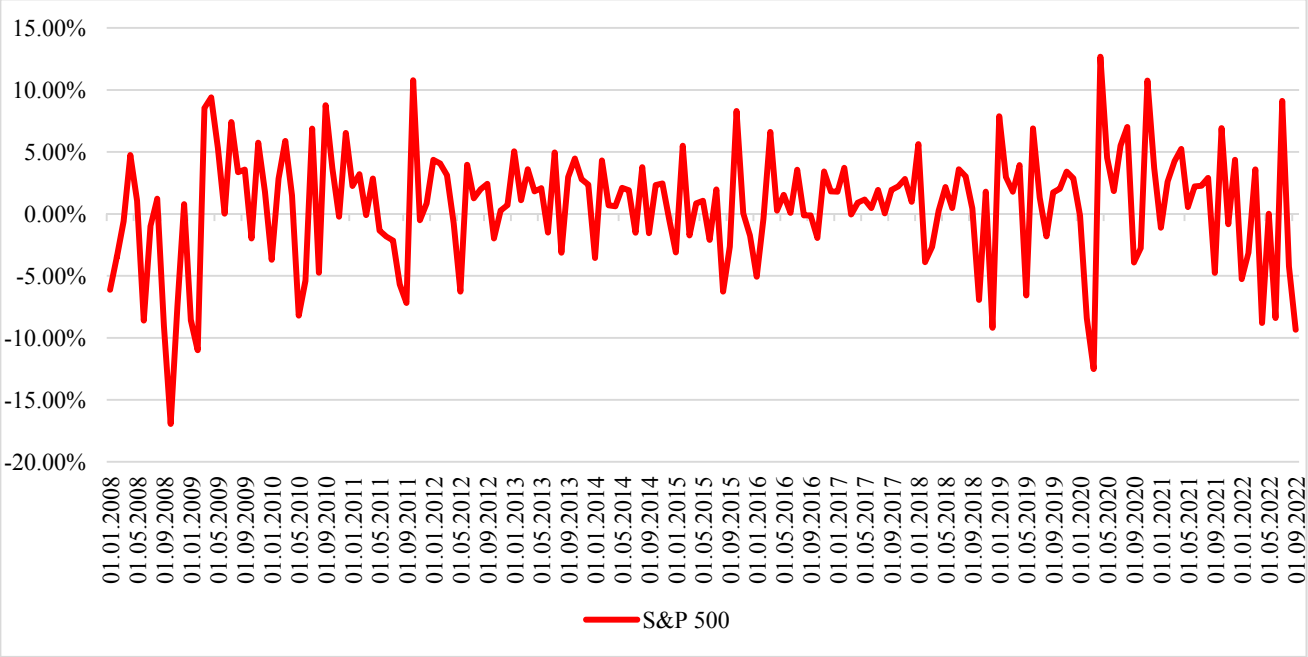

Figure 2. *The monthly performance of S&P 500 index 2008-2022* [**7**]

The dynamics of monthly returns of S&P 500 index show that the index recorded large declines during 2007-2009 financial and economic crisis and, of course, recently because of the Covid 19 pandemic and its impact on the financial markets and investors' behaviour. During the course of the observed period of time the highest rate was recorded in April 2020 (12.68%) and the lowest level was registered in October 2008 (-16.94%). The war between Russia and Ukraine is also having a huge influence on the capital markets, which is reflected, among other things, in S&P 500 movement.

We calculated the correlation coefficient between the base interest rate of the US Federal Reserve and the monthly returns of the S&P 500 index for 2008-2022 (see Table 1).

Table 1. *The correlation matrix of Fed interest rate and S&P 500 index before the start of the pandemic and during it* [**8**]

Jan 2008 – Dec 2019		Fed interest rate	S&P 500
	Fed interest rate	1	
	S&P 500	-0.146390785	1
Jan 2020 – Sep 2022		Fed interest rate	S&P 500
	Fed interest rate	1	
	S&P 500	-0.398061681	1

The correlation coefficient of the two mentioned indicators shows the direction of the relationship between them: that is, high S&P 500 index corresponds to low interest rates. However, this bond is not strong, which indicates that the monetary policy of the Fed has only a mediated effect on the stock market, and besides the base interest rate, the indices of the companies included in the S&P 500 index are influenced by many other factors. Before the start of the pandemic the connection between these indicators were weaker, but during Covid-19 it has become a bit stronger although staying negative.

In order to study the interaction between US monetary policy and the government bond market, the yields of US government bond with 1-year (short-term), 5-year (medium-term) and 10-year (long-term) maturities were considered. To analyse the bond of the US corporate bond market and the Fed rate, the average monthly yields of high-quality corporate bonds of three maturities were also considered. Figure 3 shows the dynamics of yields of state and corporate bonds with the specified maturity in 2008-2022 on monthly basis.

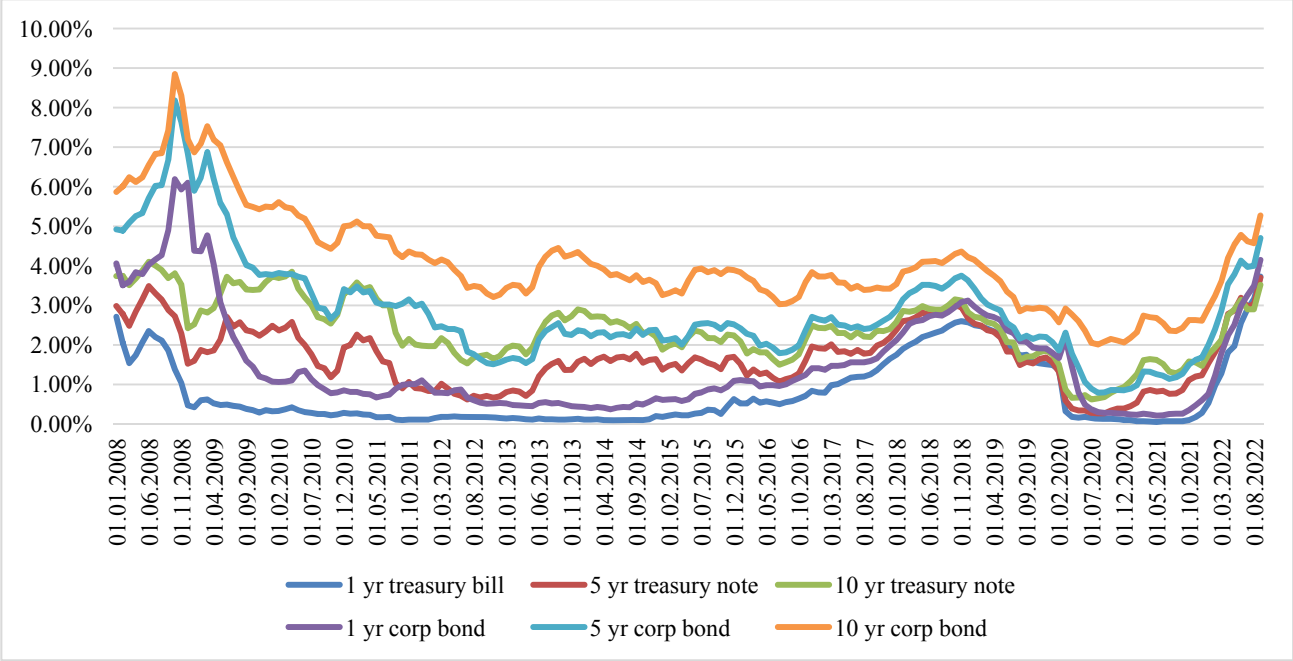

Figure 3. *US short-term, medium-term and long-term government bonds and high-quality corporate bonds yields in 2008-2022* [**9**]

Since 2008, there has been a decline in government bond yields, but later, starting from 2016, yields have again risen. This rise has lasted until the start of the pandemic. Covid-19 caused a dive in US government bonds' interest rates, which was because of the fall in Fed's base refinancing rate. Parallel to the mitigation of the pandemic symptoms and circumstances in many countries around the world, the yields of the government bonds have embarked on the surge. An increase in corporate bond yields was recorded in 2008-2010 during the financial crisis. The Covid -19 pandemic has had almost the same influence on the yields of the short-, medium- and long-term corporate bonds as it has had on the government bonds' market in the USA.

In order to investigate the connection between the monetary policy and US government and corporate bond markets, the correlation coefficients of the base interest rate of the Fed and the average monthly yields of government and corporate bonds for 2008-2022 were calculated (see Table 2).

Table 2. *Correlation coefficients between the base interest rate of the Fed and the yields of US government and corporate bonds before the start of the pandemic and during it* [**10**]

	Economic Indicator	Correlation coefficient
Jan 2008 – Dec 2019	1 yr short-term government bond	0.965775652
	5 yr medium-term government bond	0.628337175
	10 yr long-term government bond	0.218912894
	1 yr corporate bond	0.624459086
	5 yr corporate bond	0.271056545
	10 yr corporate bond	0.03685786
Jan 2020 – Sep 2022	1 yr short-term government bond	0.908538893
	5 yr medium-term government bond	0.760073993
	10 yr long-term government bond	0.71047347
	1 yr corporate bond	0.898773771
	5 yr corporate bond	0.799557833
	10 yr corporate bond	0.768398493

As we can see, the relationship between government bonds and the interest rate of the Fed is direct, that is, an increase in the Fed interest rate leads to an increase in the yields of government bonds and vice versa. The strongest relation is observed with the yields of short-term bonds. In particular, the correlation coefficient between the interest rate of the FED and 1 year government bond yields before the pandemic was equal to about 0.97 and this is the only case when the correlation coefficient has fallen for the Covid-19 pandemic period. For other maturities and types of bonds, the bond has become stronger compared to the pre-pandemic period. The correlation decreases as the maturity increases. The same pattern can also be observed for the pandemic period. Like in case of the government bonds, the relationship between the Fed interest rate and corporate bond yields is direct. Along with the growth of maturities of corporate bonds, the correlation of the yields with the Fed interest rate also weakens.

The European Central Bank (ECB) is the central bank of the 19 member states of the European Union that have adopted the euro currency. The ECB main aim is to maintain price stability, i.e. to safeguard the value of the euro [**11**].

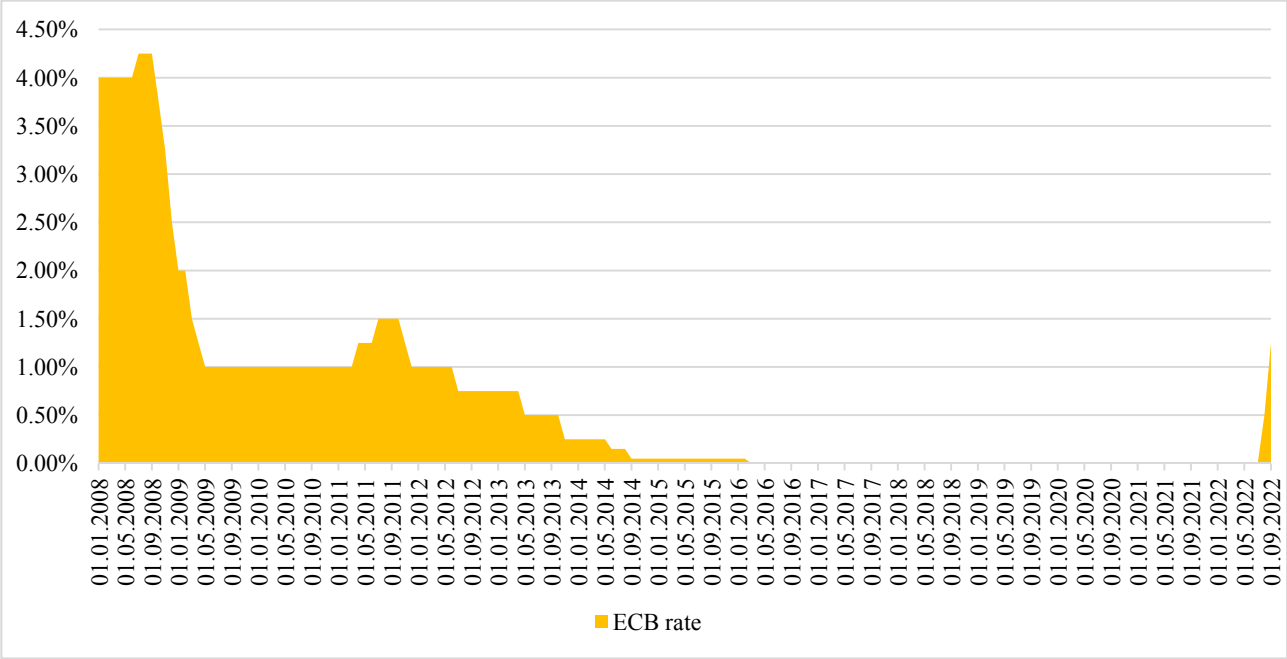

Figure 4. *The base interest rate of the European Central Bank in 2008-2022* [**12**]

In order to observe the specifics of the monetary policy implemented by the ECB, the movement of the most important instrument of the ECB's monetary policy, the base interest rate, was studied (see Figure 4). Since 2008 the refinancing rate has been lowered by the ECB due to the low inflation environment, global financial and economic crisis, macroeconomic and geopolitical uncertainties. And since March 2016, the interest rate has been reduced to 0%. The rate has been kept in this level until mid-summer 2022, when it has been raised to 0.5%. Since then the rate has been going up to handle high inflation environment.

The capital markets of Germany and France are considered as the most developed economies of the Eurozone, that's why they were chosen to get an idea of the features of the capital market in the Eurozone. The German DAX and the french CAC stock indices were taken as an indicator of the stock market, which is a part of the capital market. DAX includes the 30 largest German companies listed on the Frankfurt Stock Exchange. CAC 40 is a capitalization-weighted average of the 40 most significant stocks out of the 100 largest market capitalization companies on the Euronext Paris stock exchange. Figure 5 shows the monthly performance of DAX and CAC indices for 2008-2022.

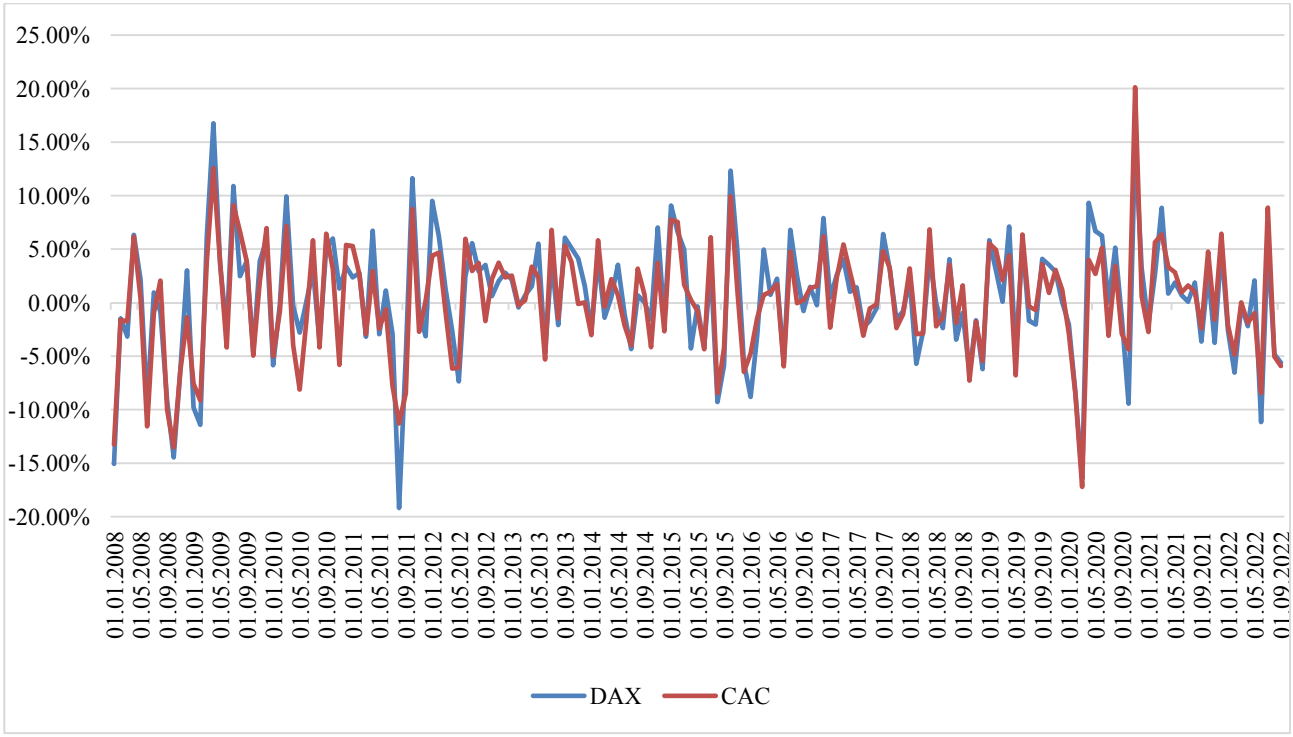

Figure 5. *The monthly performance of DAX and CAC stock indices 2008-2022* [**13**]

The study of the monthly returns of the DAX index makes clear that the highest level was recorded in April 2009 (16.76%) and the lowest in August 2011 (-19.19%). In the observed period CAC 40 index recorded its lowest value in March 2020 (-17.21%) and the highest level was in November 2020 (20.12%).

To investigate the interaction between the ECB monetary policy and the European stock market, the correlation coefficients between the ECB refinancing rate and the DAX and CAC indices' monthly returns were calculated for 2008-2022 (see Table 3).

Table 3. *The correlation coefficients of ECB interest rate and DAX, CAC indices before the start of the pandemic and during it* [**14**]

	Economic Indicator	Correlation coefficient
Jan 2008 – Dec 2019	DAX	-0.242370468
	CAC	-0.280215591
Jan 2020 – Sep 2022	DAX	-0.19681811
	CAC	-0.212752531

As in the case of the USA, the correlation coefficients between the refinancing rate and stock indices in Germany and France show that their connection is inverse both before the Covid-19 pandemic and during it. The correlation is not strong, since ECB monetary policy has only a mediated effect on the stock market, and the companies included in the indices are certainly influenced by many other factors alongside with the refinancing rate. During the pandemic period the bond between these mentioned indicators has become even weaker.

The relationship between the ECB's monetary policy and the government bond market in Germany and France was also studied. The yields of short-term (1-year), medium-term (5-year) and long-term (10-year) government bonds were considered as indicators of the government bond market (see Figure 6).

As can be seen, short-term, medium-term and long-term government bond yields both in Germany and France were mostly in the negative area during the Covid-19 pandemic. Over the course of the current year interest rates for the observed maturities have become higher consolidating near 2% for the

first time since 2013-2014. This is due to fears of recession, concerns related to the conflict between Russia and Ukraine and higher base interest rates of the central banks.

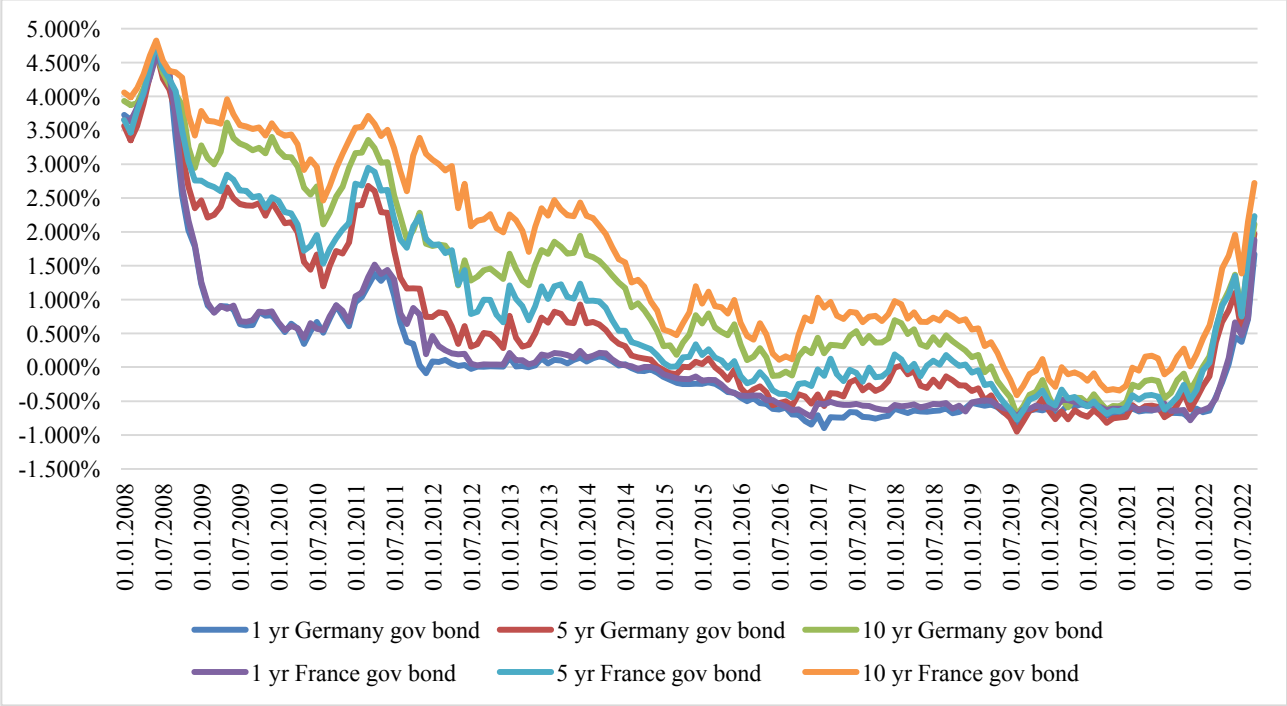

Figure 6. *German and French short-term, medium-term and long-term government bonds yields in 2008-2022* [**15**]

Table 4 shows the correlation coefficients between ECB refinancing rate and German and French government bonds' monthly yields for 2008-2022.

Table 4. *The correlation coefficients of ECB interest rate and Germany, France government bond yields before the start of the pandemic and during it* [**16**]

	Economic Indicator	Correlation coefficient
Jan 2008 – Dec 2019	1 yr German government bond	0.960939544
	5 yr German government bond	0.888673626
	10 yr German government bond	0.832989586
	1 yr French government bond	0.969626244
	5 yr French government bond	0.8915988
	10 yr French government bond	0.813680676
Jan 2020 – Sep 2022	1 yr German government bond	0.827719577
	5 yr German government bond	0.683108338
	10 yr German government bond	0.655224201
	1 yr French government bond	0.820410816
	5 yr French government bond	0.676595584
	10 yr French government bond	0.64331957

The connection between the given government bonds and the ECB's refinancing rate is direct, which means an increase in the interest rate by the ECB leads to an increase in the yields of government bonds and vice versa. The strongest impact is observed on short-term bond yields, in particular the correlation coefficient between the ECB interest rate and short-term bond returns in the

German market was equal to about 0.96 before the pandemic. As the maturity increases, the correlation relation weakens, particularly in case of 5-year German government bond the correlation coefficient is about 0.89 before the Covid-19 and 0.68 during the pandemic. Almost the same direction and strength of connection can be seen in case of French government bond market and ECB mail rate. Unlike the situation in the US bond market (the only exception is 1 yr short-term US government bond), the calculated correlation coefficients between the base interest rate and observed European bond markets are lower during the pandemic compared to the taken period before it.

Conclusion

Thus, as a result of analysing the correlation between different segments of the global capital market and the central banks' monetary policy, we can make a number of conclusions. In particular, for all the countries studied within the framework of this article, it is clear from the correlation analysis that the monetary policy has the biggest and direct impact on the government bond market. The relationship between government bond yields and the refinancing rate of central banks in the observed developed countries is directly proportional, that is, an increase in the interest rate led to an increase in government bond yields and vice versa. The strongest effect is, as expected, on short-term bond yields, while the correlation decreases as the maturity of financial instruments increases.

In case of corporate bond yields, in countries with developed capital markets, the relations between the central bank's base rate and corporate bond yields are directly proportional as well and, as in the case of government bonds, weaken as maturities increase.

In contrast to the abovementioned segments of the capital market, the correlation between the stock indices characterizing the stock market and the base interest rate of the central bank in the considered developed countries is negative and weak, because the stock market is not in the zone of direct influence of monetary policy, and its impact can only be mediated.

The Covid-19 pandemic hasn't changed the direction of the existing bonds between observed economic indicators drastically. It has only registered an influence over the strength of the connection in studied segments of the markets, making the correlation a little stronger or weaker depending on the certain market situations and specifics.

Thus, as a result of the analysis, it has been revealed that the correlation between monetary policy and some segments of the capital market is significant. The bond between these two economic indicators hasn't been much affected by the Covid-19 pandemic and its financial, health and economic circumstances. Therefore, the monetary policy implemented by the central banks can contribute to the revitalization and normalization of the capital market during both common and crisis situations, which in turn can increase the effectiveness of the monetary policy transmission mechanism and ultimately lead to the acceleration of the economic growth in the country.

References

1. **Ioannidis C., Kontonikas A.**, "Monetary Policy and the Stock Market: Some International Evidence", School of Management, University of Bath, Bath, UK, Department of Economics, University of Glasgow, Glasgow, UK, September 2006. page 17-18 (https://www.researchgate.net/publication/5080997_Monetary_Policy_and_the_Stock_Market_Some_International_evidence)
2. **Wang Sh., Mayes D.,** "Monetary Policy Announcements and Stock Reactions: An International Comparison", University of Auckland, New Zealand, North American Journal of Economics and Finance, 2012. page 20 (https://www.rbnz.govt.nz/-/media/ReserveBank/Files/Publications/Seminars%20and%20workshops/feb2012/4682253.pdf)
3. Official website of the US Federal Reserve (https://www.federalreserve.gov/monetarypolicy.htm)
4. Official website of the US Federal Reserve: The Federal Reserve System Purposes & Functions: Conducting Monetary Policy. Page 30 (https://www.federalreserve.gov/aboutthefed/files/pf_3.pdf)
5. Fed Interest rate (https://www.investing.com/central-banks/)
6. Federal reserve press release: FOMC statement, September 21, 2022 (https://www.federalreserve.gov/monetarypolicy/files/monetary20220921a1.pdf)
7. S&P 500 index historical data (https://www.investing.com/indices/us-spx-500-historical-data)
8. The table was created by the authors based on their own calculations and the data from the official website of the US Federal Reserve System (https://www.federalreserve.gov/monetarypolicy/openmarket.htm) and https://www.investing.com/indices/us-spx-500-historical-data.
9. US government and corporate bonds yields (https://fred.stlouisfed.org/categories/22)
10. The table was created by the authors based on their own calculations and the data from the official website of the US Federal Reserve System (https://www.federalreserve.gov/monetarypolicy/openmarket.htm) and https://fred.stlouisfed.org/categories/22.

11. Official website of the ECB (https://www.ecb.europa.eu/ecb/tasks/html/index.en.html)
12. ECB Interest rate (https://www.ecb.europa.eu/stats/policy_and_exchange_rates/key_ecb_interest_rates/html/index.en.html)
13. DAX and CAC historical data (https://www.investing.com/indices/germany-30-historical-data and https://www.investing.com/indices/france-40-historical-data)
14. The table was created by the authors based on their own calculations and the data from the official website of the European Central Bank (https://www.ecb.europa.eu/stats/policy_and_exchange_rates/key_ecb_interest_rates/html/index.en.html) and https://www.investing.com/indices/germany-30-historical-data and https://www.investing.com/indices/france-40-historical-data
15. Germany and France government bond yields (https://www.investing.com/rates-bonds/world-government-bonds)
16. The table was created by the authors based on their own calculations and the data from the official website of the European Central Bank (https://www.ecb.europa.eu/stats/policy_and_exchange_rates/key_ecb_interest_rates/html/index.en.html) and https://www.investing.com/rates-bonds/world-government-bonds

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