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APPLICATION OF UNCONVENTIONAL MONETARY POLICY INSTRUMENTS IN MITIGATION OF THE ECONOMIC CONSEQUENCES OF THE COVID 19 VIRUS PANDEMIC

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Abstract. *Unconventional monetary policy instruments are used in conditions when monetary policy has exhausted all the usual measures and instruments that are otherwise applied by the central bank in the regular process of conducting monetary policy. The most commonly used instruments are, of course, quantitative easing or quantitative alleviation.*

The aim of this paper is to point out the application of unconventional monetary policy instruments during the economic crisis caused by the COVID 19 virus pandemic in the most important banks in the world. After a theoretical overview of the concept of quantitative easing, the paper presents the empirical experiences of the Bank of Japan, the Fed, the ECB, and other central banks. Based on the analysis of applied measures and data on the use of quantitative facilities in selected central banks, it can be concluded that they resorted to the use of this instrument in times of crisis to a greater or lesser intensity. Also, the increased liquidity caused by their implementation had a significant impact on aggregate demand, inflation and GDP. This analysis can be useful to the monetary authorities in Serbia if they are to review the application of QE in the leading monetary institutions and help them to draw the conclusions that would lead to the most painless application of this instrument in the Republic of Serbia.

Key words: *monetary policy, central bank, quantitative easing (QE), „helicopter money"*

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1. INTRODUCTION

Unconventional monetary policy instruments, due to their frequency of use in conditions of economic crises caused by various causes, are becoming increasingly applicable in conducting the monetary policy of a large number of the most important central banks. Their application is caused by certain unexpected circumstances. However, the central banks reacted very quickly to the very beginning of the crisis, making decisions on the use of quantitative easing as one of the most commonly used unconventional instruments.

Quantitative easing (QE) is used due to the ineffectiveness of other measures available to central banks. The rapid application of quantitative easing at the beginning of the pandemic crisis is the result of the inability of central banks to use conventional instruments and measures. Namely, the most influential central banks, for years now, have kept their reference interest rates at an extremely low level. In conditions of low-interest rates, which tend to zero, central banks are forced to resort to unconventional instruments in conducting monetary policy, such as quantitative easing and "helicopter money".

The first part of the paper provides a theoretical overview of this problem. More precisely, at the beginning of the paper, an attempt is made to explain the concept of quantitative incentives, their comparison with the concept of "helicopter money" and to show QE transmission channels.

The second part shows the use of QE in the period before the crisis caused by the pandemic. The application of this instrument in the Bank of Japan, the Fed and the ECB is presented, followed by an example of the application of QE in the Bank of England.

Finally, the use of quantitative easing was pointed out in order to mitigate the economic consequences during the crisis caused by the COVID 19 virus pandemic. The state of the economy during the crisis, the fall in GDP and the fall in stock exchange indices are shown. The paper finishes with the analysis of the quantitative easing measures applied by Japan, the USA and the EU.

2. REVIEW OF RELEVANT LITERATURE

2.1. Theoretical aspect of quantitative easing

In the conditions of economic crises, which can be caused by various causes, the turnover on the financial market decreases so much that it causes a decline in the real economy and a simultaneous decline in interest rates. At that moment, the standard measures of central banks can not have the desired effect, so the banks reach out to more extreme measures intended to stimulate the economy. The most commonly used instrument, in such circumstances, is quantitative easing.

Quantitative Easing (QE) is an unconventional type of monetary policy instrument of a central bank and represents the purchase of government and highly ranked corporate securities, using newly created money in the condition of very low-interest rates. More precisely, when interest rates reach such a low level that central banks can no longer manipulate them, the banks use some other instruments that will provide the economy and households with additional liquidity. Quantitative incentives are applied due to the ineffectiveness of other measures available to the central bank. In that sense, it is important to emphasize that the amount of money in circulation is increasing, which is of special

importance during the crisis, when a large number of companies and households reduce their investments and consumption; that is the way to avoid an excessive recession.

Furthermore, "quantitative easing is a tool that central banks can use to inject money directly into the economy. Money can be in the form of physical money, like banknotes, or digital, money in a bank account" (Bank of England, 2020). Also, this term is known as "QE" or "property purchase". The goal of QE is simple: by creating "new" money, it strives to increase consumption and investment in the economy (Bank of England, 2020).

Moreover, the goal of applying quantitative easing is to boost spending in order to reach the inflation target. The purchase of securities by central banks is of such proportions that it raises their price and reduces their yield. In this way, economic entities from which the central bank bought securities are encouraged to use the new liquidity for the growth of investments and consumption. In addition, the increase in investment and consumption stimulates the level of economic activity and affects the increase in price levels, which enables the establishment of the desired level of inflation.

Regarding the concept of quantitative easing, there are different interpretations of it. Some researchers argue that the relief is "quantitative" because it refers to the creation of a certain "amount" of money, while others believe that it is a mistranslation of a Japanese term that means expansive monetary policy (Bernanke, 2017, p. 7). However, as the amount of money is created by conventional instruments, it can be assumed that later interpretation of the term is more logical. On the other hand, there is still no agreement on measures that include quantitative easing (Blinder, 2010). Some economists use the term *fiscal monetization*, which presents a combination of the fiscal backstop and helicopter monetization. Although, Masciandro (2020) argues that "the mixing of a fiscal backstop and helicopter monetization is a case of policy blurring that can affect the relationship between politicians and central bankers. Conflicts between politicians and central bankers will be more likely and these, in turn, may trigger political pressures on the central bank" (Masciandro, 2020).

Otherwise, it is necessary to distinguish between the concept of quantitative easing and "helicopter money". "Helicopter money" is a theoretical and neo-orthodox monetary policy tool used by central banks to stimulate the economy. Economist Milton Friedman introduced the term "helicopter money" in 1969 (Friedman, 1969), but it was popularized in 2002 by former FED President Ben Bernanke. This measure should be used in conditions of low-interest rates when economic growth is still weak. "Helicopter money" means that "the central bank or government supplies the economy and the population with large amounts of money as if money were being distributed or squandered from a helicopter" (Friedman, 1969).

"Contrary to the concept of using "helicopter money", central banks use quantitative easing to increase the money supply and lower interest rates by buying government or other financial securities from the market to provoke economic growth" (Nickolas, 2017). Unlike "helicopter money," which involves distributing printed money to the public, central banks use quantitative easing to create money and then buy back assets using printed money. "QE has no direct impact on the public, while "helicopter money" is made directly available to consumers in order to increase consumption" (Nickolas, 2017).

One of the main advantages of "helicopter money" is that it generates demand, which is conditioned by the possibility of increasing spending without worrying about how the money will be financed or used. Although households could deposit money into their savings accounts rather than spend it, consumer spending will apparently rise as the measures remain in place over a longer period of time. "The impact of "helicopter money" is permanent and irreversible, because money is given to consumers, and central banks cannot withdraw money

if consumers decide to put it in a savings account" (Masciandro, 2020). One of the main risks associated with "helicopter money" is that it can lead to a significant devaluation of the currency in international foreign exchange markets. However, the "helicopter money" is not a free lunch (Borio, Disyatat & Zabai, 2016). In other words, it may create monetary externalities (Masciandro, 2020).

In contrast, QEs provide capital to financial institutions, which theoretically promotes increased liquidity and the ability to borrow, as borrowing costs decrease since more money is available. The use of newly printed money to buy securities increases the amount of credit potential. QE aims to encourage banks to give more credit to consumers at a lower rate, which should stimulate the economy and increase consumption. Unlike "helicopter money", the effects of QE could be reduced by selling securities (Nickolas, 2017).

In the United States, they use the term *QE for people* instead of „helicopter money". It can take many forms. Basically, it implies the process of creating money as in QE, but money is not placed on the financial market by buying securities, yet it can be distributed to the population or invested in certain strategically important areas. If QE for people is implemented in the form of distribution of money to the population, it is the so-called "helicopter drop" or "helicopter money" concept. This concept has become significant after the crisis of 2008 and numerous waves of quantitative easing. The main danger in the application of this concept lies in the excessive and uncontrolled use of this form of monetary policy. According to O'Neill (2020), there is a need for some kind of smart People's QE now. Anyway, "the government can raise taxation or issue debt, where the latter can be purchased by either citizens or the central bank. The government finances its policy by making a simultaneous decision regarding taxes and the issuance of new debt, knowing at the same time the central bank's choices" (Masciandaro, 2020).

2.2. Transmission of quantitative easing to real economic variables

Given that quantitative reliefs are implemented in practice for a relatively short time, there is no single position on the effects of their transmission on the real and financial sector. In order to see the transmission channels of unconventional monetary policy instruments, it is necessary to isolate their impact from other monetary and fiscal measures that are being implemented at the same time (Dahlhaus at all, 2018). One of the transmission channels of quantitative easing is the *signal channel* which refers to the expectations of the public that, even after the economic recovery, the interest rate will remain at a low level. However, the signal channel has a greater impact on interest rates in the medium term as the commitment to low-interest rates will last until the economy recovers sufficiently.

One of the most important channels is the *liquidity channel*, which refers to the increase of investors' liquidity and the reduction of the liquidity premium on most securities. Through this channel, there is an increase in yields on government securities, given that quantitative easing reduces the liquidity premium. The implementation of quantitative easing should have a positive impact on the balance sheets of financial institutions and the possibility of financing economic agents.

The portfolio *substitution channel* is the third channel for transmitting the effects of quantitative easing. This channel refers to the change in the structure and value of the central bank's asset portfolio, which further influences the decisions of economic agents. When the central bank buys a certain type of property, its availability to economic agents decreases and the increased amount of money affects the fall in interest rates, increasing the availability of

loans for households and companies which, consequently, raises consumption and investment. Chebbi and Derbali (2019) also find "a significant response of volatility to an expected component of a target rate change. They highlight homogeneity in the responsiveness of European stock markets to US news announcements. It is important to note that the persistence of volatility is clear across all regressions".

One of the channels with the fastest direction of action is the *inflation channel*. It refers to investors' expectations regarding the impact of the quantitative easing policy on the level of inflation in the future. On the other hand, the impact of quantitative easing policies can be seen as an effective way to combat deflation, which is why the Bank of Japan has used this instrument for many years. Blattner and Joyce (2020) approximate that, based on "a small macrofinance Bayesian Vector Autoregression (VAR) model, euro area 10-year bond yields have been reduced by around 30 bps in 2015; this was caused by the first round of asset purchases under the European Central Bank's (ECB) public sector purchase program. This resulted in the output gap and inflation being about 0.2 and 0.3 ppt, in 2016" (Blattner and Joyce, 2020).

Finally, the *stimulus channel* refers to the effects of quantitative easing on GDP and interest rates. So far, many studies have shown that there is a significant link between changes in the "amount" of quantitative easing and changes in GDP and interest rates. Based on the research, it can be noticed that the increased amount of money in the economy, which is placed in the form of quantitative easing, will have a positive effect on GDP growth, and, vice versa, it will have a proportional effect on interest rates. Low-interest rates will stimulate investment and GDP growth in the long and medium-term.

Masciandaro (2020) argues that fiscal monetization leads to monetary stability risk, heterogeneity in income, increase in public debt and central banks' independence.

3. Quantitative Easing – Empirical Experiences

The use of quantitative easing dates back to the time after the Great Depression. It is well known that overnight interest rates were at a very low bound immediately after the U.S. Great Depression (1934-1939). At the same time, American monetary authorities decided to apply policies that could be understood as today's debates on quantitative easing. Firstly, there were attempts to stabilize yields on Treasury bonds, which was done by open market operations. Furthermore, rapid growth in high-powered money was generated. Finally, the authorities did not prevent high-powered money to be impacted by transitory factors. All of this resulted in "a portfolio effect of short-duration asset supply on term premiums" (Hanes, 2018). After this period, central banks very rarely opted for the use of quantitative easing. They resorted to the use of this instrument only in conditions of sudden, unexpected shocks and crises.

The Central Bank of Japan (BOJ) was forced, at the beginning of the 21st century, to introduce some unconventional measures after a long period of stagnation, chronic deflation and a failed zero interest rate policy. Japan was the first in the world, in recent history, to start applying quantitative easing in 2001, in order to achieve the desired level of inflation and revive its own economy. The goal of monetary expansion was no longer to reduce short-term interbank interest rates (which were at zero), but to increase banks' liquidity surpluses by buying Japanese treasury bills, government bonds and other financial assets from banks.

The experience of Japan between 1999 and 2006 is a true example of the use of quantitative easing. Taking into account deflationary pressures, the Central Bank of Japan

introduced a zero interest rate policy in early 1999, committing to keep the interest rate at zero as long as there is a fear of deflation. After a brief economic recovery that manifested itself in an increase in the general price level above zero (lasting only a month), the Central Bank of Japan stopped applying this policy in August 2000. In March 2001, the bank introduced a policy of quantitative easing, committing at the same time to keep the interest rate at zero until the price level stabilizes. At the beginning of the implementation, the amount of 5 billion yen was determined, which was inserted into the financial system as a surplus of reserves. In addition, the Central Bank announced that it would increase the purchase of long-term government bonds. Until the end of the application of quantitative easing, the amount was increased to 30 billion yen. The assistance was intended for both the financial and corporate sectors to improve their credit activities.

In March 2011, Japan was hit by a devastating earthquake that left great consequences on Japan's economy. There was a large drop in industrial production and a decrease in household consumption. During 2013, public debt exceeded the level of 240% of GDP. Faced with major economic problems, Japan will begin a recovery program in early 2013. The recovery program known as Abenomix is based on a combination of fiscal stimulus and strong monetary expansion. The main goal of the program was to stop 15-year deflation by increasing the inflation rate to 2%, all while pursuing an expansionary monetary policy.

During Japan's long-running struggle against deflation, it became increasingly clear that stronger monetary easing was needed (Ueda, 2012). In April 2013, the Central Bank of Japan introduced a new policy of quantitative easing. Quantitative easing is designed to overcome the limitations of other monetary policy instruments. "Quantitative relief consists of two main elements:

- First, quantitative easing strives to increase inflationary expectations and, therefore, drastically change deflation and the way of public thinking that has emerged through the bank's strong commitment to achieving the 2% price stability target at the earliest possible time.
- Second, the pressure of the mass purchases of government bonds by the Central Bank is strong not only on short-term nominal interest rates, but on the overall yield curve" (https://www.boj.or.jp).
- By combining these two elements, quantitative easing allows the bank to significantly reduce not only short-term but also long-term real interest rates.

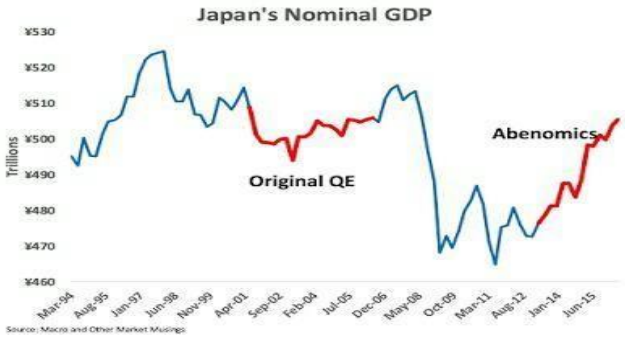

Fig. 1 Application of quantitative easing in Japan, 1994-2015
Source: www.tradingeconomics.com

In respect of the purchase of government bonds, the bank bought bonds with a maturity of up to 40 years. When QEs were introduced, the bank's operating policy was to buy government bonds. During 2013, the bank bought government bonds worth 50 million yen. The following year, the rate of redemption was increased to 80 million yen. In this way, quantitative easing, which differs drastically from other measures, begins to affect price growth and mild inflation by increasing the amount of money in circulation.

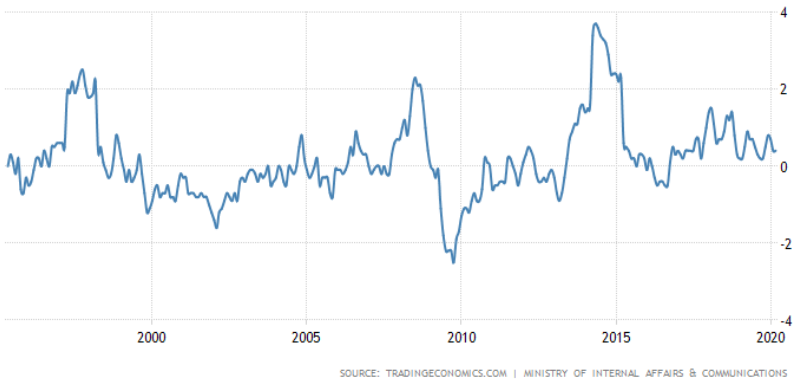

Fig. 2 The impact of QE on inflation in Japan, 2000-2020
Source: https://tradingeconomics.com/japan/inflation-cpi (23.4.2020.)

The recovery program quickly began to yield results, with the annual GDP growth rate in the first quarter of 2013 increasing by 3.5%, compared to the previous quarter while exports and personal consumption also grew. At the same time, the main goal of the monetary policy of the Central Bank of Japan - inflation of 2% - "fell into the water" as inflation began to slow down and reached only 0.5% in early 2015.

The Federal Reserve (FED) started implementing quantitative easing during the global economic crisis in November 2008 and applied it in three parts - QE1, QE2 and QE3. During these three waves in the implementation of quantitative easing, the value in which securities were redeemed varied, and at the end of the third round, at the end of October 2014, the accumulation of securities was at the level of 4.5 trillion dollars.

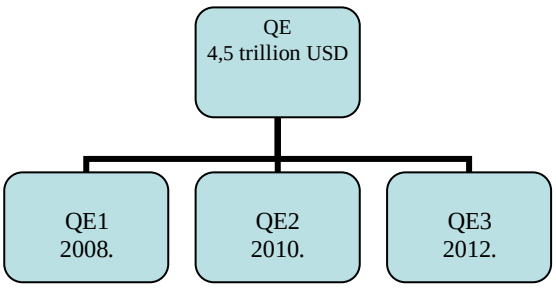

Fig. 3 FED`s Quantitative Easing, 2008-2014
Source: Authors, based on the https://www.federalreserve.gov/econres/feds/files/2018071pap.pdf

Given that the crisis that started from the real estate market had great consequences for the US economy, it was necessary, in conditions of low-interest rates, to apply a new monetary policy instrument, because conventional instruments and measures did not yield results in "revival" of the economy and start-up consumption.

By the end of 2008, the targeted Federal Reserve rate had reached a zero lower limit and QEs had become one of the most important instruments for conducting monetary policy. In November 2008, the Federal Committee for Open Market Operations announced that the FED was moving to implement QE1: The Federal Reserve had purchased US $ 3 trillion. During 2010 and 2011, the Federal Reserve implemented two additional programs solely by purchasing treasury bills. The first, in August 2010, the Federal Committee announced the beginning of the second round of quantitative easing (QE2) which eventually led to a total purchase of US $ 778 billion in long-term government securities. However, given disappointing economic activity and still relatively high unemployment, the third round of quantitative easing (QE3) was launched in September 2012. After the improvement of economic trends, the program was formally completed in October 2014. Luck and Zimmermann (2018), in their research, come to the conclusion that the effect of QE1 on economic activity and employment in the USA is not strong enough and that it was necessary to apply the other two rounds of quantitative relief in order to obtain certain results. They point out that the impact of unconventional monetary policy instruments and measures on GDP and employment is not of high significance.

Fig. 4 The impact of QE on employment in USA, 2008-2014
Source: https://tradingeconomics.com/united-states/unemployment-rate (1.5.2020.)

Based on Figure 4, it can be seen that, during the QE approval period by the FED, the unemployment rate was high and began to decline only after the third round of quantitative easing.

As for the European Central Bank (ECB), it has also approached the application of quantitative easing in order to mitigate the consequences of the great world economic crisis. Due to the fact that the EU implements a unique monetary policy in the countries that use the euro, but different fiscal policy, the ECB has long avoided the implementation of quantitative easing. Until the end of 2014, the ECB used the various monetary policy instruments at its disposal to drive economic growth and achieve an inflation target of 2%. The ECB started applying quantitative easing in early 2015, because it did not reach inflation target by applying conventional instruments and measures; this led to problems due to the possible conflict of these measures with the provisions of the EU Statute. Moreover, the Federal

Constitutional Court of Germany has sought an opinion from the European Court of Justice on the view that the implementation of QE is contrary to the provision of prohibiting the ECB from directly financing governments by purchasing their securities.

In the period when inflation in the Eurozone, after more than two years of QE implementation, reached a level slightly below 2%, this growth was expected to be influenced by QE. However, although at first glance it seemed that the increase in inflation was a consequence of quantitative easing, certain circumstances that also had an impact on the achieved level of inflation, such as the jump in oil prices, were ignored, and it was concluded that QE did not have such a strong impact on inflation as expected. After that short-term increase in inflation, there was a new decline in the following period, until March 2018, when growth is observed, which all supports the suspicion that the effects of QE are not so strong.

Fig. 5 Inflation trends in the Euro area, 2010-2020
Source: https://tradingeconomics.com/euro-area/inflation-cpi (28.3.2020.)

In addition to the analyzed banks, which were pioneers in the application of quantitative easing, the Bank of England should also be mentioned; this bank also used QE during the crisis and after the so-called Brexit. While the government was implementing austerity measures, the Bank of England, on the other hand, created 445 billion pounds of new money, which was placed on the financial market by buying securities. Although QE, combined with an interest rate of almost 0%, helped keep the UK economy from deteriorating further, there were still side effects in terms of deepening inequality among the population, due to rising stock and real estate prices. This, of course, affected the wealthy strata of the population. The Bank of England confirmed that the richest 10% of people made a profit of around 350 thousand pounds, which they would not have made without quantitative easing. In August 2016, the Bank of England was forced to resort again to buying securities in order to respond to the uncertainty in the market caused by the consequences of Brexit.

According to the International Monetary Fund, the quantitative easing provided by large central banks after 2008 appears to have helped improve market confidence and boost economic growth. However, some authors argue that the effects of quantitative easing are controversial.

4. Application of QE in Overcome the Negative Effects on the Economy during the Covid 19 Pandemic

The second wave of quantitative easing in the world is related to the period after the pandemic caused by the coronavirus. Economic policymakers in all countries around the world are facing the effects on the economy of the devastating virus COVID-19.

Public health experts are taking the lead in treating the population, while fiscal policy makers are helping to finance public health while providing critical assistance to people whose lives and livelihoods have been destroyed by the virus and its effects. At that time, the collapse of the economic system caused by the "stay at home" necessity led to the collapse of the financial system through the freezing of lending and consumption, so the goal of monetary policy was to restart both segments. In the short term, public health goals require people to stay at home except in the case of necessary food purchases and doing chores, especially if they are ill or at-risk category of the population. Thus, production and consumption inevitably decreased.

The actions of the central banks were very similar to those taken during the crisis in 2008 caused by disturbances in the mortgage market. The first steps of the central banks were to lower the reference interest rates as much as possible, given that in some central banks they were already at a very low level. Also, many central banks have eased the conditions for obtaining loans to households and the economy. If a company that has financial difficulties lays off or refuses to hire workers, it will lose the experienced employees it needs to continue its normal business. "On the other hand, a family temporarily without income can lose a mortgage, losing a home. To avoid permanent damage from virus-induced deterioration, it is important to ensure that credit is available to otherwise healthy borrowers facing a temporary period of low income or no income" (Financial Times, 2020). Finally, a large number of central banks have resorted to the application of unconventional instruments and measures such as quantitative easing and "helicopter money".

However, monetary policy authorities face an even greater challenge. They must ensure that the economic damage from a pandemic is not long-lasting. Ideally, "when the effects of the virus pass, people will return to work, school, shops, and the economy will return to normal. In that scenario, the recession may be deep, but it is necessary to influence all measures to keep it short" (Financial Times, 2020). However, this is not the only possible scenario; if critical economic relations are disrupted by weak activity that has lasted for months, the economy will need a very long time to recover.

In **Japan**, as in all countries of the world, the strong consequences of the crisis were felt, which could be seen on the basis of stock market movements. The Nikei index started to fall at the end of February, and in March its value reached its lowest level. A month and a half later, it starts to grow and at the end of April, it increases by 2.14%.

According to the data, the Japanese retail fell by 4.6% in March compared to the year before, and the consumer confidence index in Japan fell to 21.6 in April 2020 from 30.9 in the previous month, reaching its lowest level.

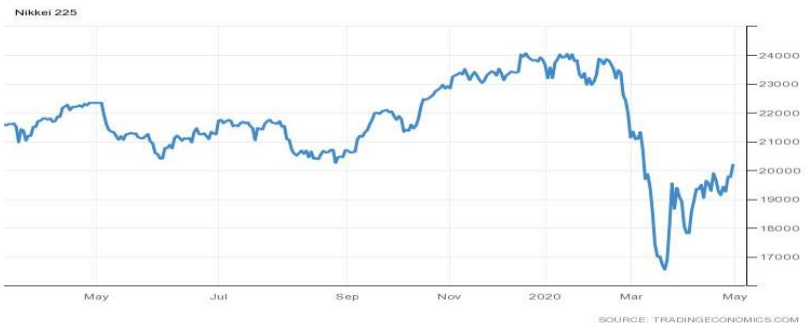

Fig. 6 Trend of *Nikei* index on the stock market, march 2019 – may 2020.god.
Source: https://tradingeconomics.com/japan/stock-market (25.4.2020.)

The overall events had a strong effect on Japan's GDP, reaching 0.8% in 2019 and 1.8% in early 2020. The GDP growth rate decreased by 1.8% in the quarter during the three months to December 2019, which is in line with the preliminary reduction of 1.6%. This was the fastest decline in GDP since the second quarter of 2014, as consumption fell by 2.8% after a sales tax increase in October. In addition, investment spending fell by 4.6%, while government spending rose 0.2% and public investment growth fell to a 0.7% low (https://tradingeconomics.com/japan/gdp-growth).

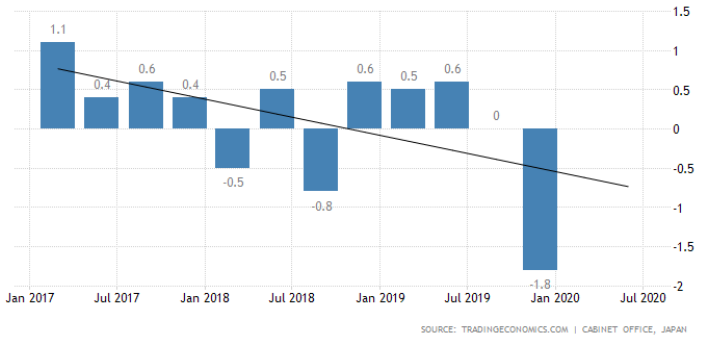

Fig. 7 Japan`s BDP, 2017-2020
Source: https://tradingeconomics.com/japan/gdp-growth (25.4.2020.)

"At the Monetary Policy Meeting, the Policy Board of the Bank of Japan decided upon the following:

- The Bank will apply a negative interest rate of minus 0.1 percent to the Policy-Rate Balances in current accounts held by financial institutions at the Bank.
- The Bank will purchase Japanese government bonds (JGBs) so that 10-year JGB yields will remain at around zero percent. While doing so, the yields may move upward and downward to some extent mainly depending on developments in economic activity and prices.
- With regard to asset purchases other than JGB purchases, the Bank decided, by a unanimous vote, to set the following guidelines.

- The Bank will purchase exchange-traded funds (ETFs) and Japan real estate investment trusts (J-REITs) so that their amounts outstanding will increase at annual paces of about 6 trillion yen and about 90 billion yen, respectively.
- The Bank will continue with 'Quantitative and Qualitative Monetary Easing (QQE) with Yield Curve Control', aiming to achieve the price stability target of 2%, as long as it is necessary for maintaining that target in a stable manner" (Bank of Japan, 2020).

The Central Bank of Japan will monitor "the risks deemed most relevant to the conduct of monetary policy and adjust the policy as necessary, taking into account developments in economic activity and prices as well as financial conditions. In particular, in a situation where the risks are high, the Bank will not hesitate to take additional mitigation measures" (Bank of Japan, 2020).

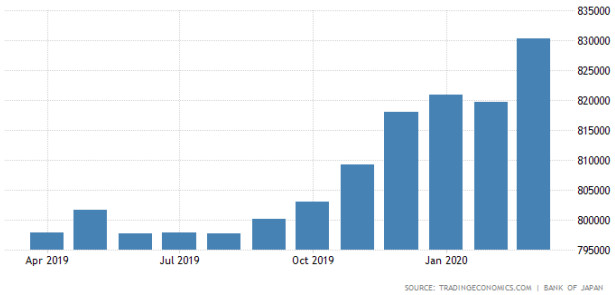

Fig. 6 Annual variations of monetary aggregate M1 in Japan, April 2019 - April 2020
Source: https://tradingeconomics.com/japan/money-supply-m1 (26.4.2020.)

Based on the movement of the monetary aggregate M1, it can be noticed that the Central Bank of Japan conducted a very expansive monetary policy during the crisis caused by the coronavirus pandemic.

The **US** Federal Reserve, as one of the world's leading banks, has had to take careful steps to mitigate the effects of the economic crisis caused by the COVID-19 pandemic, given that its decisions are a reference for many of the central banks.

The crisis caused by the pandemic was reflected in the financial market, which can be seen based on the movement of the Dow Jonson index, shown in Chart 9.

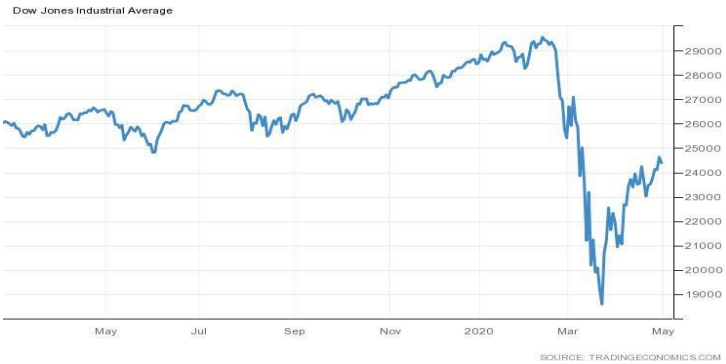

Fig. 9 Trend of *Dow Jonson* index na finansijskom tržin stock market, 2019-2020
Source: https://tradingeconomics.com/united-states/stock-market (30.4.2020)

Based on the analysis of the movement of the Dow Jonson index shown in the graph, a strong decline in this index can be observed during the pandemic, i.e. in the first quarter of 2020. After that period, it has started growing slightly.

The downward trend of the American economy can also be followed on the basis of GDP trends. The US economy experienced a 4.8% decline in the first quarter of 2020, ending the longest period of economic growth. Personal consumption has had the largest decline since 1980, and investment has declined fourfold in the period under review. In addition, exports and imports fell sharply, while government spending rose.

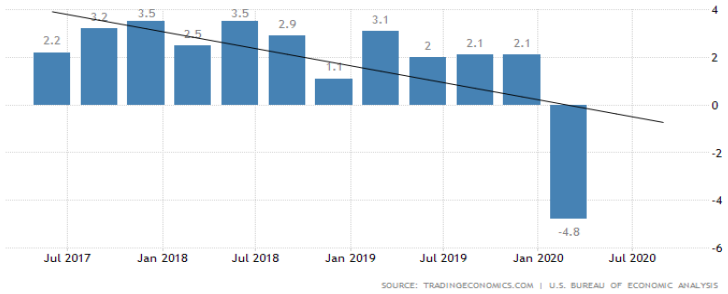

Fig. 10 United States` GDP falling, first quarter of 2020
Source: https://tradingeconomics.com/united-states/gdp-growth (30.4.2020)

Given the current state of the real and financial spheres of the US economy, the Federal Reserve announced in January that it would cut the reference interest rate again to boost the economy during the coronavirus epidemic. The plan to alleviate the economic downturn caused by the virus includes cutting interest rates to near zero and implementing a $ 700 billion quantitative easing program. This conditioned the growth of the monetary aggregate M_0 from 3.454 billion USD in February to 3.883 billion USD in March 2020.

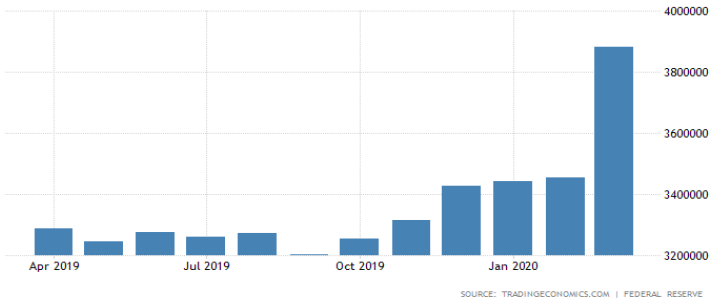

Fig. 11 Trend of monetary aggregate M0 in USA, april 2019 – april 2020
Source: https://tradingeconomics.com/united-states/money-supply-m0

The Fed announced the placement of a large amount of money in the form of "helicopter money", because the Secretary of the Treasury proposed that a check of $ 1,000 be delivered to every American, saying: "Americans need cash now, and the president wants to give them cash now in the next two weeks" (Bloomberg, 2020, para 4). Numerous measures have been taken on the side of fiscal policy in the form of delaying the payment of obligations for 90

days. Thus, the fiscal authorities will have to borrow to cover the deficit caused by the direct giving of money to citizens (helicopter money), and the monetary authorities will buy bonds from them and pump liquidity into the system.

If printing and giving money to the public causes citizens to go out and spend, "helicopter money" could stimulate inflation, which would not be good for the "wounded" economy. On the other hand, if citizens decide to keep checks for precautionary measures, it would cause a problem due to a large amount of liquidity, but, at the same time, insufficient spending.

The **European Union** has also been hit by the economic crisis caused by the COVID-19 pandemic crisis. Given this, it is necessary to, firstly, look at the state of the EU economy based on financial market trends and GDP trends.

In terms of financial market trends, it can be observed that the Euro Stoxx 50 has had a decline of 875 points or 23% since the beginning of 2020. The movement of this reference index from the Eurozone is shown in the graph below.

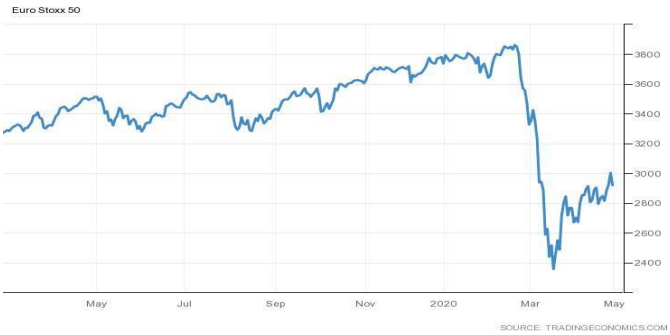

Fig. 12 Trend of Euro Stoxx 50 index, may 2019 - may 2020
Source: https://tradingeconomics.com/euro-area/stock-market (1.5.2020.)

The eurozone economy experienced a 3.8% decline in the first quarter of 2020, compared to market expectations of -3.5%. This was the biggest reduction in GDP since 1995, because, due to the coronavirus pandemic from the middle of March, a huge number of companies were forced to stop working, and consumers had to stay at home. The economies of France, Spain and Italy had the biggest decline (https://tradingeconomics.com/euro-area/gdp-growth).

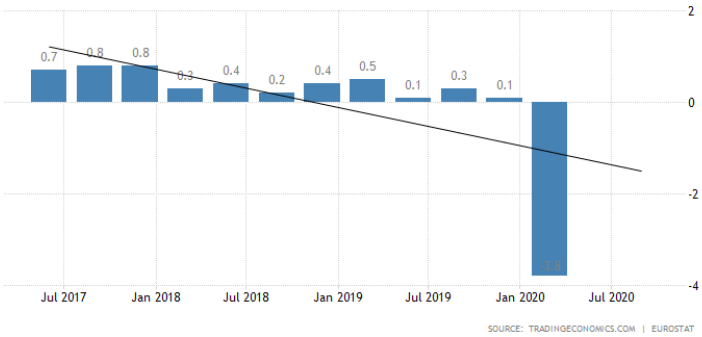

Fig. 13 GDP falling in European Union, first quarter of 2020
Source: https://tradingeconomics.com/euro-area/gdp-growth (1.5.2020.)

Given this, the European Central Bank was forced to, in addition to standard instruments and measures and extremely low repo rates, approach non-standard monetary policy measures. "The ECB's Asset Purchase Programme (APP) is part of a package of non-standard monetary policy measures that also includes targeted longer-term refinancing operations, and which was initiated in mid-2014 to support the monetary policy transmission mechanism and provide the amount of policy accommodation needed to ensure price stability.

It consists of the:

- corporate sector purchase programme (CSPP)
- public sector purchase programme (PSPP)
- asset-backed securities purchase programme (ABSPP)
- third covered bond purchase programme (CBPP3)" (https://www.ecb.europa.eu/mopo/implement/omt/html/index.en.html#abspp).

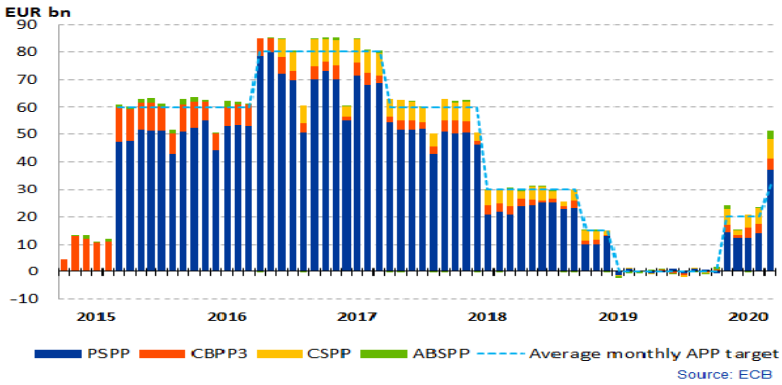

Fig. 14 Overview of the use of quantitative ECB easing, 2014-2020
Source: https://www.ecb.europa.eu/mopo/implement/omt/html/index.en.html#abspp (1.5.2020.)

In Europe, some use the term "corona bonds" to denote bonds which central banks purchase for increasing the liquidity of the economy and population (Waltenberger, 2020).

Based on the graphs, it can be noticed that the ECB used quantitative facilities in the form of programs for the purchase of assets in the period from 2014 to 2018, and after that in 2019 it stopped using them. However, due to the new circumstances related to the coronavirus, they again resorted to the use of these measures. In this regard, the ECB launched the *Pandemic Emergency Purchase Program (PEPP)* in March 2020 to address serious risks in the monetary policy transmission mechanism. PEPP is a temporary program for the purchase of private and public sector securities with a total amount of 750 billion euros. All eligible asset categories under the existing asset purchase program (APP) are also eligible under the new program. The ECB will cancel the net purchase of assets under the PEPP after assessing that the crisis phase of COVID-19 is over, but in any case not before the end of 2020 (https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200318_1~3949d6f266.en.html).

Given the low reference interest rate and the use of unconventional instruments and monetary policy measures, the movement of the monetary aggregate M1 shows a growing trend in the first quarter of 2020.

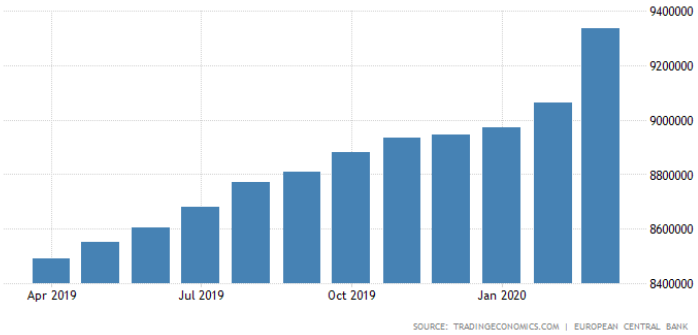

Fig. 15 Trend of the monetary aggregate M1 in Euro area, april 2019 - april 2020
Source: https://tradingeconomics.com/euro-area/money-supply-m1 (1.5.2020.)

The growth of the money supply is the result of the application of instruments and measures of the ECB, but also the activities of the European Investment Bank, which provided 200 billion euros for the European economy. It set up a "protective shield" for European companies by forming a guarantee fund in response to COVID-19, first approving an amount of 25 billion euros. This money is intended for small and medium enterprises and corporations in the real economy and is part of the already mentioned support package.

In addition to the analyzed countries, it is necessary to mention the Bank of England, whose Monetary Policy Committee voted at a special meeting on March 19th to reduce the reference rate to 0.1% and increase the share of British government bonds by 200 billion pounds.

After these central banks, a large number of central banks in the world have approached the use of unconventional instruments and monetary policy measures, such as QE and "helicopter money".

5. CONCLUSION

In conditions when interest rates have reached such a low level that central banks can no longer manipulate them, they resort to the use of unconventional instruments that will provide the economy and the population with additional liquidity. Quantitative Easing (QE) is the most commonly used instrument from the group of unconventional instruments and is a form of expansionary monetary policy of a central bank. They represent the purchase, primarily of government securities with a long maturity, the use of newly created money, and in conditions of very low interest rates.

In addition to quantitative easing, which is aimed primarily at the economy and the financial sector, central banks resort to the use of "helicopter money" aimed at the population.

Quantitative incentives have been intensively applied during the global economic crisis since 2008. They were used by most of the world's leading banks and had a certain impact on inflation, GDP and employment.

The second wave of quantitative easing in the world is related to the period after the pandemic caused by the coronavirus. Economic policy makers in all countries around the globe are facing the effects on the economy of the devastating virus COVID-19.

Public health experts are taking the lead in treating the population, while fiscal policy makers are helping to finance public health while providing critical assistance to people whose lives and livelihoods have been destroyed by the virus and its effects. At that time, the collapse of the economic system caused by the "stay at home" necessity led to the collapse of the financial system through the freezing of lending and consumption, so the goal of monetary policy was to restart both segments.

Based on the analysis presented in the paper, it can be noticed that all leading central banks, among which the actions of the Bank of Japan, the Fed and the ECB were specifically considered, applied special programs of measures related to increasing liquidity of the economy and households. They "injected" a large amount of money through the so-called quantitative easing and "helicopter money" to start consumption, production, employment and economic growth.

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PRIMENA NEKONVENCIONALNIH INSTRUMENATA MONETARNE POLITIKE U UBLAŽAVANJU EKONOMSKIH POSLEDICA PANDEMIJE IZAZVANE VIRUSOM COVID 19

Nekonvencionalni instrumenti monetarne politike koriste se u uslovima kada je monetarna politika iscrpela sve uobičajne mere i instrumente koje inače primenjuje centralna banka u redovnom procesu vođenja monetarne politike. Najčešći primenjivan instrument su, svakako, kvantitativne olakšice ili kvantitativna popuštanja.

Cilj rada je da ukaže na primenu tih nekonvencionalnih instrumenata monetarne politike za vreme ekonomske krize izazvane pandemijom virusa Covid 19 u najznačajnijim bankama sveta. Nakon teorijskog pregleda pojma kvantitativne olakšice, u radu su prikazana empirijska iskustva Banke Japana, FED-a, ECB i drugih centralnih banaka. Na osnovu analize primenjenih mera i podataka o upotrebi kvantitativnih olakšica u izabranim centralnim bankama, može se zaključiti da su one pribegavale upotrebi ovog instrumenata u periodima kriza. Poseban akcenat u radu je dat na upotrebu QE u krizi izazvanoj pandemijom Covid 19. Ova analiza može biti od koristi nosiocima monetarne vlasti u Srbiji radi analize primenjenih instrumenata u vodećim centralnim bankama sveta i njihovoj primeni u centralnoj banci Republike Srbije.

Ključne reči: *monetarna politika, centralna banka, kvantitativne olakšice (QE), novac iz helikoptera*