DOI: https://doi.org/10.32782/2524-0072/2022-45-47

UDC 336.1.07

REASONS AND CONSEQUENCES OF CRYPTOCURRENCY RECESSION FOR THE WORLD'S ECONOMY

ПРИЧИНИ ТА НАСЛІДКИ СПАДУ КРИПТОВАЛЮТ ДЛЯ СВІТОВОЇ ЕКОНОМІКИ

Matskevych Dmytro, Granovska Inna
Hryhorii Skovoroda University in Pereiaslav

Мацкевич Дмитро Іванович
аспірант,
Університет Григорія Сковороди в Переяславі
ORCID: https://orcid.org/0000-0002-9765-8305

Грановська Інна Володимирівна
кандидат економічних наук,
Університет Григорія Сковороди в Переяславі
ORCID: https://orcid.org/0000-0003-4270-5001

The research proposed a solution to the current problem, which consists in substantiating the theoretical foundations for interaction between classical economy, crypto economy and local manufacturing. Achieving the specified goal made it necessary to solve the following tasks, which consisted in the characteristics of world's crises and searching main reasons of economy recession and world's crises consequences. The factors influencing the world's economy and in turn the crypto economy are defined. Consider the current situation with the economy taking into account russian invasion of Ukraine and considering the effect on cryptocurrencies, and the crypto ecosystem in general. Research was made on the visual presentation of the economic downturn on the DJIA and STOXX charts. Investigated superficially correlations between: DJIA and STOXX, BTC pricing and ETH pricing, DJIA, STOXX, BTC pricing and ETH pricing and demonstrated results on charts.

Keywords: economy, crypto, cryptocurrencies, BTC, ETH, DJIA, STOXX.

Дослідження запропонувало вирішення поточної проблеми, яке полягає в обґрунтуванні теоретичних основ взаємодії між класичною економікою, крипто економікою та локальним виробництвом (мається на увазі виробництво матеріальних речей, а саме комплектуючими до апаратного забезпечення). Досягнення зазначеної мети зумовило необхідність вирішення наступних завдань, які полягали в характеристиці світових криз та пошуку основних причин економічного спаду та наслідків світових криз, за допомогою огляду та аналізу вже відомих світових економічних спадів, їхніх наслідків на промисловість, соціальний стан суспільства та на життя людей в цілом. Розглянуто події, що призвели до того чи іншого економічного спаду за останні 22 роки. Як дані для аналізу було обрано дані промислового індексу Доу-Джонса (DJIA) за останні 22 роки і проведено аналітичні дослідження (зіставлення) відомих економічних кризисів та спадів що відображаються на DJIA. Таким чином було визначено фактори, що впливають на світову економіку і, в свою чергу, на крипто економіку. Розглянуто поточну ситуацію в економіці з урахуванням російського вторгнення в Україну та розглянуто вплив на криптовалюти та крипто екосистему в цілому в результаті вторгнення, за допомогою схожої методики як і для визначення факторів, але вибрані дані лише за останній рік і , як приклад, було обрано не лише промисловий індекс Доу-Джонса , а й фондового індексу STOXX, як показник для відображення економічного стану Європи (оскільки DJIA більше характерний для США). Проведено дослідження щодо візуального відображення економічного спаду на графіках DJIA та STOXX, що власне і було основою для дослідження і на основі якого було побудована методологія для даного дослідження. Поверхнево досліджено кореляції між: DJIA та STOXX (дані для даного дослідження було взято за допомогою обробки даних з API та нормуванню даних, адже на меті було показати тенденцію зростання та падіння в часових площинах, щоб продемонструвати кореляцію економіки США та Європи), ціноутворенням BTC та ціноутворенням ETH (дані для даного дослідження було взято за допомогою обробки даних з API ресурсу що моніторить ціни на криптовалюти, та нормуванню даних, адже на меті було показати тенденцію зростання та падіння в часових площинах, щоб продемонструвати кореляцію ціноутворення різних концептуально і ідейно криптовалют), DJIA, STOXX, ціноутворенням BTC та ціноутворенням

ETH (основою цього дослідження є об'єднання і подальший аналіз всіх вище перерахованих даних для демонстрації кореляції між класичною економікою та криптовалютами) та продемонстровано результати цього дослідження на графіках.

Ключові слова: економіка, крипто, криптовалюти, BTC, ETH, DJIA, STOXX.

Formulation of the problem in general. The global economic situation is in a recession phase for now and as a consequence it affects all people's live's sectors, from agriculture to crypto and IT. For the first view, cryptocurrency was developed as an independent open decentralized system without any government regulation, but is it actual for now, it's a rhetorical question. A lot of the world's actions affect the global economy and, as a result of cryptocurrencies This field is not only empirical. It feels like a great deal of theoretical work.

Analysis of recent research and publications. There is not a large number of published works devoted to the study of crypto currency and material or economical stuff relations Wei Zhang, Pengfei Wang, Xiao Li, Dehua Shen, Gabriel Gajardoa, Werner D. Kristjanpoller, Marcel Minutolo. That's why this topic has to be researched in detail.

Unresolved parts of the common problem. The most recent results on the analyzing of relation between cryptocurrencies and classic economy emphasize that we do not have, on the one hand, comparing crypto currency price with different stock market indexes, on the other hand, comparing cryptocurrency pricing with material stuff which depends on crypto currencies popularity.

The purpose of the article. This article highlights cryptocurrencies' recession reasons and some consequences which come from this recession. This article compares some big economic crashes and shows how it shows on some stock market index trends.

Presenting main material. Most economic recessions were caused by global events such as large stock exchange crashes, demonstrations, wars, pandemonium, and so on. This article covers the majority of the world's economic crises of the twenty-first century:

– The Dot-Bomb Recession: March 2001–November 2001;

– The Great Recession: December 2007–June 2009;

– The COVID-19 Recession: February 2020–April 2020;

– Recession caused by 2022 Russian invasion of Ukraine.

The Dot-Bomb Recession: March 2001–November 2001. Following what was then the longest economic growth in US history, the collapse of the dotcom bubble contributed to one of the mildest recessions on record [1].

In early 1999, the Fed hiked the fed funds rate from 4.75% to 6.5% by July 2000. The September 11 attacks and the resulting economic disruptions may have expedited the conclusion of the recession by persuading the Fed to continue decreasing the fed funds rate. By mid-2003, the benchmark rate had fallen to 1% [2].

During the late 1990s bull market, investments in Internet-based enterprises spurred a fast rise in US technology stock equity values, known as the dotcom bubble. During this time, the value of equities markets increased enormously, with the technology-dominated Nasdaq index growing from under 1,000 to more than 5,000 between 1995 and 2000. Things began to shift in 2000, and the bubble burst in 2001 and 2002, sending stocks into a bear market. The Nasdaq index, which had increased fivefold between 1995 and 2000, plummeted from a high of 5,048.62 on March 10, 2000, to 1,139.90 on October 4, 2002, a 76.81% drop.

Most dotcom stocks had gone bankrupt by the end of 2001. Even blue-chip technology firms like Cisco, Intel, and Oracle have lost more than 80% of their value. The Nasdaq would take 15 years to reclaim its high, which it accomplished on April 24, 2015.

The Internet bubble, often known as the dotcom bubble, arose from a mix of speculative or fad-based investing, an availability of venture capital funding for companies, and the failure of dotcoms to produce a profit. During the 1990s, investors poured money into Internet businesses in the hopes that they might one day become lucrative. Many investors and venture capitalists abandoned a conservative strategy for fear of missing out on the expanding usage of the Internet.

With capital markets pouring money into the industry, start-ups were racing to become large as rapidly as possible. Companies that do not possess proprietary technologies have abandoned fiscal prudence. They spent a lot of money on marketing in order to create brands that would set them apart from the competitors. Some startups spend up to 90% of their advertising expenditure.

In 1997, record quantities of capital began to flood into the Nasdaq. By 1999, Internet startups had received 39% of all venture capital funding. The majority of the 457 initial public offerings (IPOs) that year were for Internet firms, with 91 in the first quarter of 2000 alone. The AOL Time Warner megamerger in January 2000 set a new record for the largest merger failure in history. The bubble eventually burst, leaving many investors with significant losses and countless Internet firms bankrupt. Amazon, eBay, and Priceline are examples of companies that famously weathered the boom.

As a result of The Dot-Bomb Recession, GDP declined: 0.3%. Peak unemployment rate: 5.5%.

The Great Recession: December 2007–June 2009. The countrywide decline in US property values prompted a worldwide financial crisis, a stock market bear market that saw the S&P 500 fall 57% at its lows, and the worst economic slump since the 1937-38 recession [3].

Global investment into the United States had maintained market rates low, perhaps promoting shady mortgage underwriting and mortgage-backed securities marketing practices. [4] Oil prices reached historic highs in mid-2008 before plummeting, devastating the US oil sector.

A housing bubble, also known as a real estate bubble, is a rapid increase in home prices caused by demand, speculation, and reckless expenditure that eventually leads to a crash. Housing bubbles often begin with a spike in demand due to limited supply, which takes a relatively long time to refill and increase. Speculators pump money into the market, pushing up demand even more. At some point, demand falls or stagnates as supply rises, causing a rapid drop in prices and the bubble to burst.

A housing bubble is a short-term occurrence that can endure for years. It is usually caused by something out of the ordinary, such as manipulated demand, speculation, unusually high levels of investment, excess liquidity, a deregulated real estate financing market, or extreme forms of mortgage-based derivative products, all of which can lead to unsustainable home prices. It causes a rise in demand against supply.

Housing bubbles are less common than stock bubbles, but typically persist twice as long, according to the International Monetary Fund (IMF). Housing bubbles not only result in a big real estate crisis, but they also have a substantial impact on people of all socioeconomic backgrounds, communities, and the whole economy. They can compel individuals to search for methods to pay down their mortgages through various programs, or they may force them to raid their retirement assets in order to stay in their houses. Housing bubbles have been one of the primary causes of individuals losing their investments.

Due to the high transaction and carrying costs involved with home ownership, housing markets have historically been less prone to bubbles than other financial sectors. A quick expansion in loan availability, however, can attract borrowers into the market and stimulate demand by combining very low interest rates with lax credit underwriting requirements. Interest rate increases and stricter lending rules might reduce demand, leading the housing bubble to implode.

The iconic housing bubble in the United States in the mid-2000s was caused in part by another bubble, this time in the technology industry. It was intimately tied to, and some believe was the cause of, the 2007–2008 financial crisis.

During the late 1990s dotcom bubble, many new technology firms' common stock was bought up to exceptionally high values in a relatively short period of time. Speculators seeking a fast profit bought up the market capitalizations of firms that were nothing more than startups and had yet to generate genuine revenues. By 2000, the Nasdaq had reached its pinnacle, and as the technology bubble burst, many of these once high-flying equities crashed to radically lower price levels.

As investors fled the stock market in the aftermath of the dotcom boom and subsequent stock market crisis, many shifted their funds into real estate. At the same time, the United States Federal Reserve lowered and maintained interest rates low in order to counteract the slight recession that followed the technological crash, as well as to alleviate anxiety following the September 11, 2001 World Trade Center assault.

This influx of cash and credit coincided with a variety of government programs aimed at encouraging homeownership as well as a slew of financial market developments that improved the liquidity of real estate-related assets. Home values climbed, and an increasing number of individuals began to purchase and sell residences.

Over the next six years, the enthusiasm for homeownership reached worrisome proportions as interest rates fell and tight lending rules were largely abandoned. It is believed that 20% of mortgages in 2005 and 2006 went to

persons who would not have qualified under regular lending criteria. These individuals were labeled subprime borrowers. Over 75% of these subprime loans were adjustable-rate mortgages with low beginning rates and a two- to three-year reset period.

The government's support of widespread homeownership prompted banks to decrease their interest rates and lending criteria, resulting in a home-buying frenzy that drove the median sales price of homes up by 55% between 2000 and 2007. The home-buying craze attracted speculators, who began flipping properties in as little as two weeks for tens of thousands of dollars profit.

During the same time period, the stock market began to recover, and interest rates began to rise by 2006. As symptoms of the economy faltering surfaced in 2007, adjustable-rate mortgages began resetting at higher rates. With housing prices at an all-time high, the risk premium was too great for investors, who stopped buying homes. When house owners realized that their home values may actually fall, housing prices began to fall, prompting a large sell-off in mortgage-backed securities. Between 2007 and 2009, housing values fell 19 percent, and huge mortgage defaults resulted in millions of foreclosures over the next three years.

As a result of The Great Recession, GDP declined: 4.3%. Peak unemployment rate: 9.5%.

The COVID-19 Recession: February 2020–April 2020. The COVID-19 epidemic arrived in the United States in March 2020, and the following travel and work restrictions prompted job losses, culminating in an exceptionally brief but intense recession. [5] The unemployment rate rose from 3.5% in February 2020 to 14.7% in April 2020 before falling to 4% by the end of 2021, limited by $ 5 trillion in pandemic relief expenditures. [6] Furthermore, the Federal Reserve's balance sheet rose from $ 4.1 trillion in February 2020 to roughly $ 9 trillion by the end of 2021, complementing a federal funds rate that stayed around zero until March 2022 [7].

Quantitative easing (QE) is a type of monetary policy in which a central bank, such as the Federal Reserve of the United States, acquires securities on the open market in order to lower interest rates and expand the money supply. Quantitative easing generates additional bank reserves, increasing liquidity for banks and boosting lending and investment. The Federal Reserve administers QE policies in the United States.

Quantitative easing generates additional bank reserves, increasing liquidity for banks and boosting lending and investment. The Federal Reserve administers QE policies in the United States. When interest rates are approaching zero and economic growth has halted, quantitative easing is frequently adopted. Central banks have few instruments to affect economic development, such as interest rate cuts. Central banks must purposefully boost the supply of money in order to cut interest rates further. Central banks use quantitative easing to infuse bank reserves into the economy by purchasing government bonds and other securities. Increasing the money supply reduces interest rates even more and gives liquidity to the financial system, allowing banks to lend on more favorable conditions. During the COVID-19 epidemic, quantitative easing was employed, and the Federal Reserve raised interest rates.

Recession caused by the 2022 russian invasion of Ukraine. The economic consequences of russia's invasion of Ukraine in 2022 began in late February 2022, only days after russia recognized two separatist Ukrainian republics and launched an invasion of Ukraine. Following economic sanctions, substantial portions of the russian economy, russian billionaires, and officials of the russian government have been targeted. russia has reacted with its own sanctions. During the COVID-19 recession, both the conflict and the sanctions had a significant detrimental influence on global economic recovery. Russia is expected to suffer a 30-year economic setback as a result of its conflict. Protests and strikes have erupted across Europe in response to rising bills and living expenses. russia has been sanctioned since 2014 over its invasion of Crimea.

Additional restrictions were imposed in the run-up to the 2021 invasion. During the military buildup, the russian stock market fell by 20%. The International Monetary Fund's (IMF) managing director, Kristalina Georgieva, warned that the violence constituted a significant economic danger to the region and the world. She also stated that the IMF might assist other nations affected by the crisis, in addition to the $ 2.2 billion credit package being planned for Ukraine. The World Bank Group's president, David Malpass, stated that the war will have far-reaching economic and social consequences, and that the bank was developing alternatives for considerable economic and fiscal assistance to Ukrainians and the area.

Despite unprecedented international sanctions on russia, payments for energy and raw materials, as well as food supplies, were mainly exempt from these measures due to the possible impact on global food prices. russia and Ukraine are large producers of wheat, which is sold to Mediterranean and North African nations via the Bosporus. The withdrawal of several russian banks from SWIFT is likely to have an impact on the country's exports. Because russia is the primary commercial and economic partner for post-Soviet governments in Central Asia, as well as a significant destination for millions of CIS migrant workers, sanctions against russia have affected Central Asia particularly hard.

Sanctions also included asset bans on russia's Central Bank, which owns $630 billion in foreign-exchange reserves, in order to prevent it from mitigating the impact of sanctions. "I am completely persuaded that this is highly necessary not just to freeze assets but also to make it feasible to confiscate it, to make it accessible for the rebuilding" of Ukraine, said European Council President Charles Michel on May 5. The 2022 assaults and accompanying economic sanctions had a significant impact on the russian and Ukrainian economies, as well as reduced supplies to some global markets.

All these economic crises are demonstrated on trends (Fig. 1). The picture shows DJIA states from 2000 to 2022, and obviously, according to this trend, world events affect DJIA and the world's economy in general. Looking at this trend, we can make a conclusion: economic recessions have an effect on DJIA, or at least displayed on it.

But as is well known, DJIA shows the economic state of the USA, but as stated below, in this article is mentioned the world's economy. Let's investigate other stock market indexes associated with europe. Let's compare DJIA and STOXX from 2021 to 2022. According to trends Fig. 2, Fig. 3, pic 4 some conclusions can be made: DJIA and STOXX are self dependent or at least self correlated.

The main ideas of BTC and cryptocurrencies in general were to be independent of the world's economy and to be a reliable currency as a result. But the main aims of cryptocurrencies were leveled as soon as people began to become interested in crypto. Banks and governments wanted to legalize this kind of currency and as a result control it. On pictures Fig. 5, Fig. 6 shows prices of 2 the most popular cryptocurrencies for the last year. Trend Fig. 7 shows that ETH depends on BTC, just to demonstrate that at least ETH is not an independent currency (relatively pricing). According [Pic A] [Pic F] [Pic G] some conclusions can be made: recently cryptocurrencies are in a recession state. ETH pricing is dependent on BTC pricing and as a result the most of cryptocurrencies pricing are dependent on BTC pricing.

In the result of the cryptocurrency recession, popularity and people's interest in crypto have decreased as a result, the price of

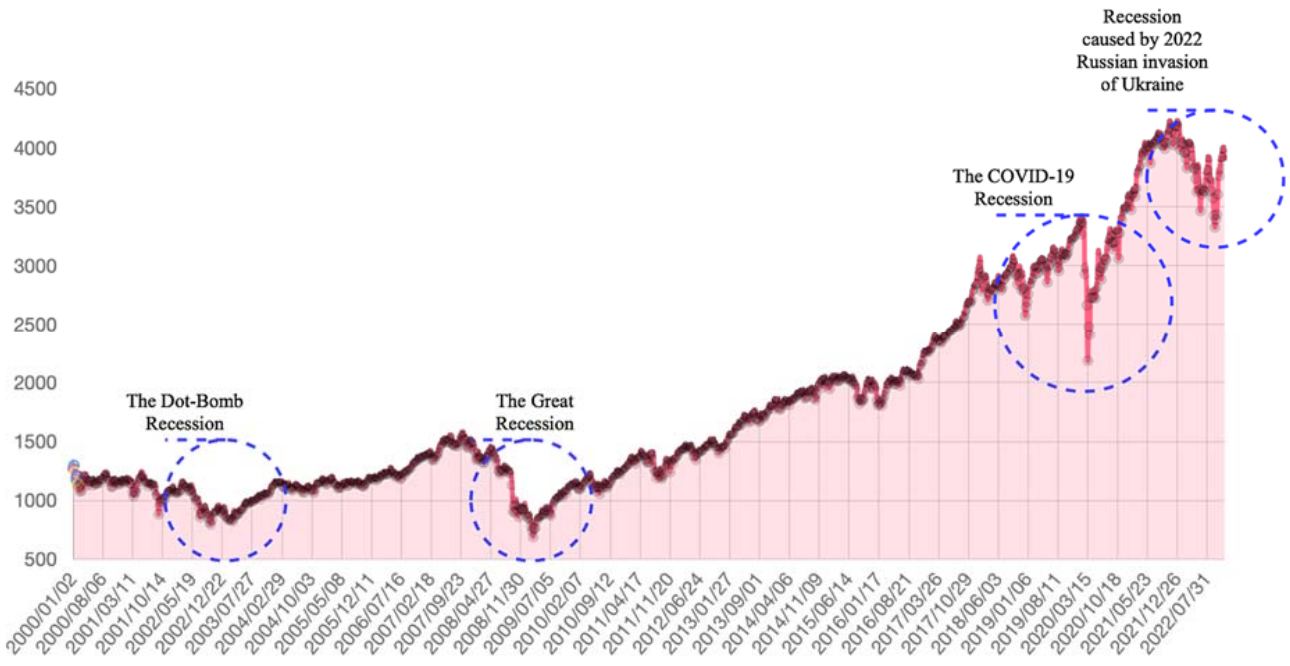

Fig. 1. Dow Jones Industrial Average 2000–2022 (resource: marketwatch platform)

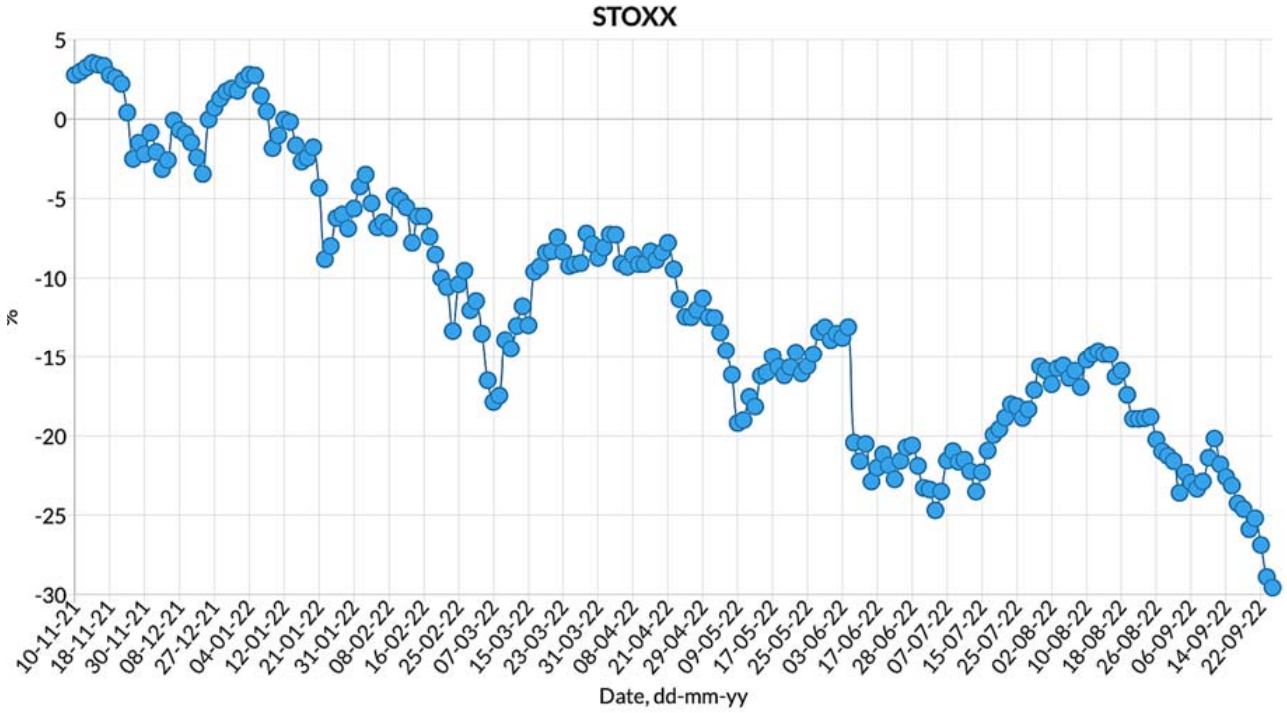

Fig. 2. STOXX stock index (%) 2021–2022 (resource: marketwatch platform)

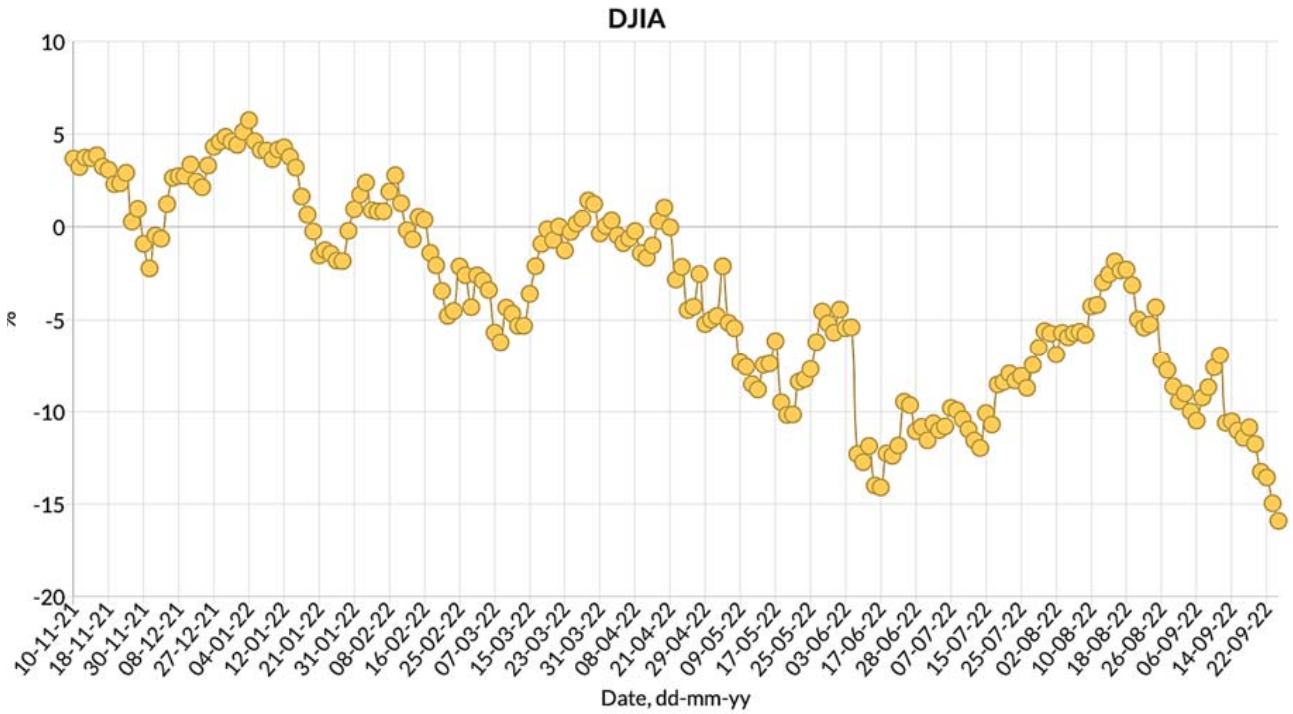

Fig. 3. DJIA stock index (%) 2021–2022 (resource: marketwatch platform)

hardware which is used for 'mining' decreased. Fig. 8 shows the price on graphic cards which can be used for cryptocurrency mining during this year. Conclusion: obviously, the price on GPU was decreased.

According to all topics data, investigated data can be merged in one trend via normalization (Fig. 9). More theoretical models were received by other scientists. But predicting the next trends curve is still impossible, a weak-form efficiency

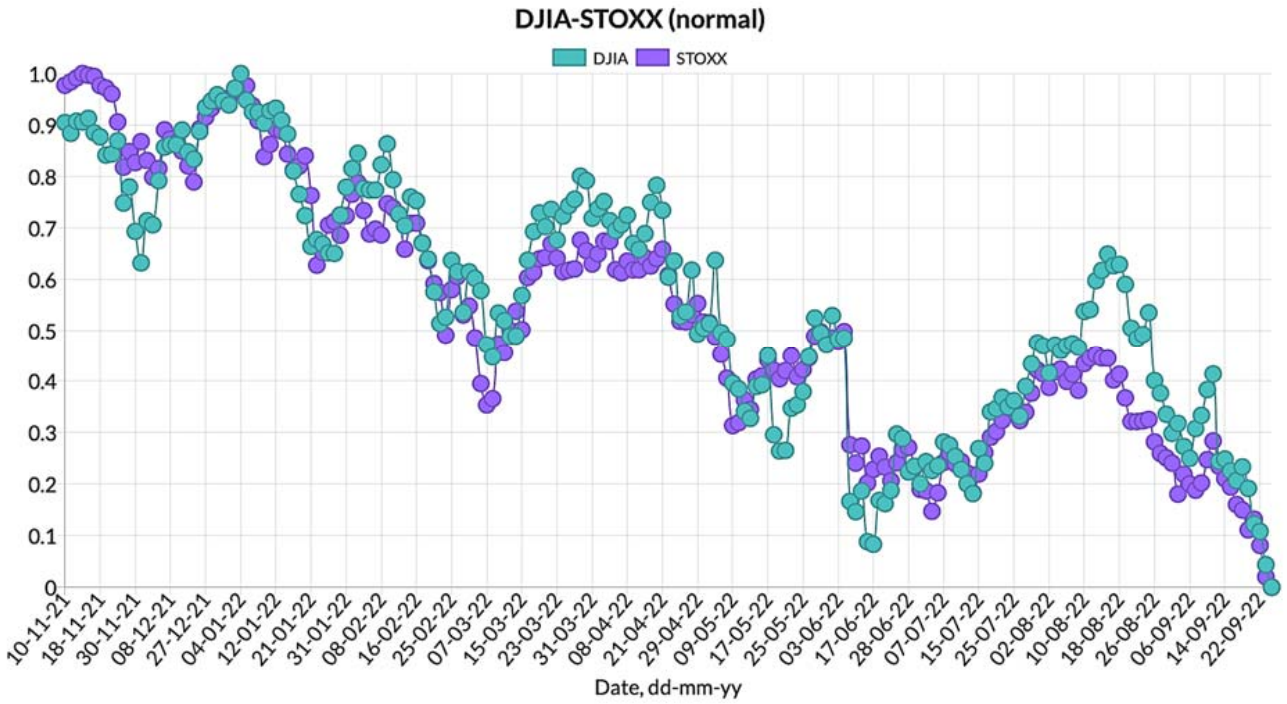

Fig. 4. DJIA and STOXX stock index 2021–2022 (normalized) (resource: processed data from marketwatch platform)

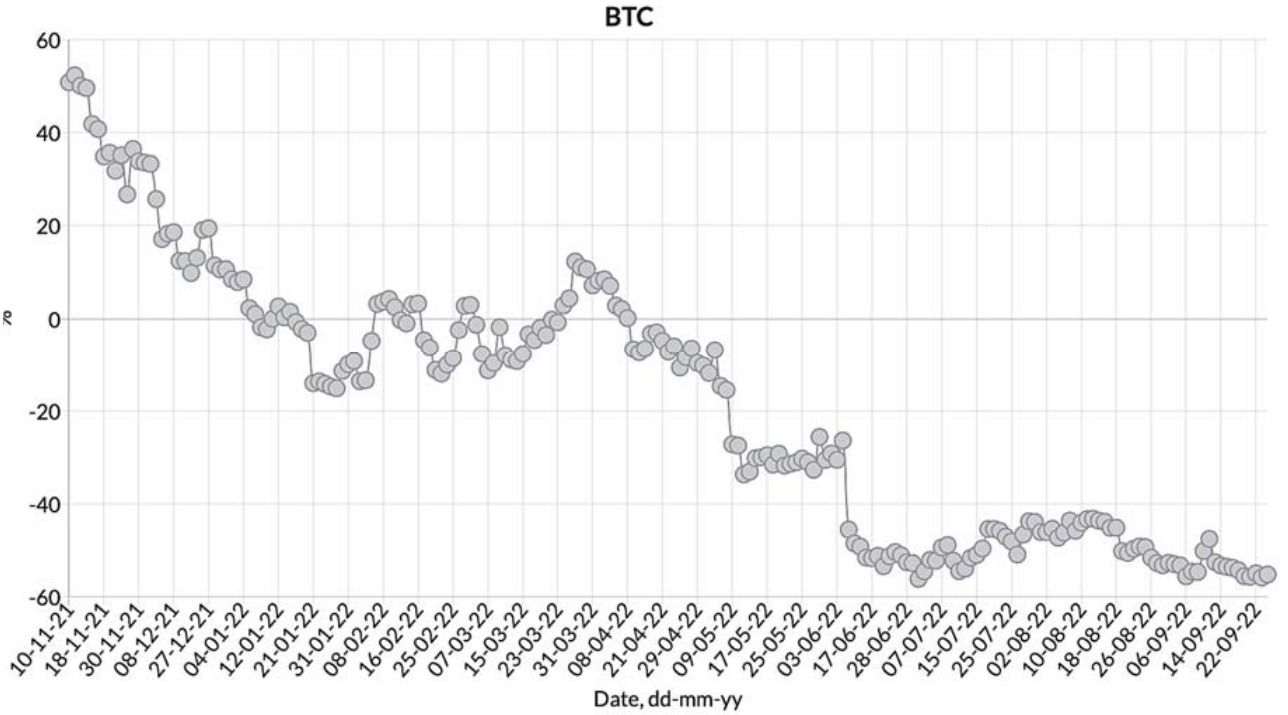

Fig. 5. BTC pricing (%) 2021–2022 (resource: marketwatch platform)

means that the stock price cannot be predicted because the current stock price already reflects the information of the past stock price. The issue of market efficiency has been explored in the stock market, futures market, foreign exchange market and other markets [8]. Also should be understood, that BTC has stronger correlation with material stuff (manufacturings)

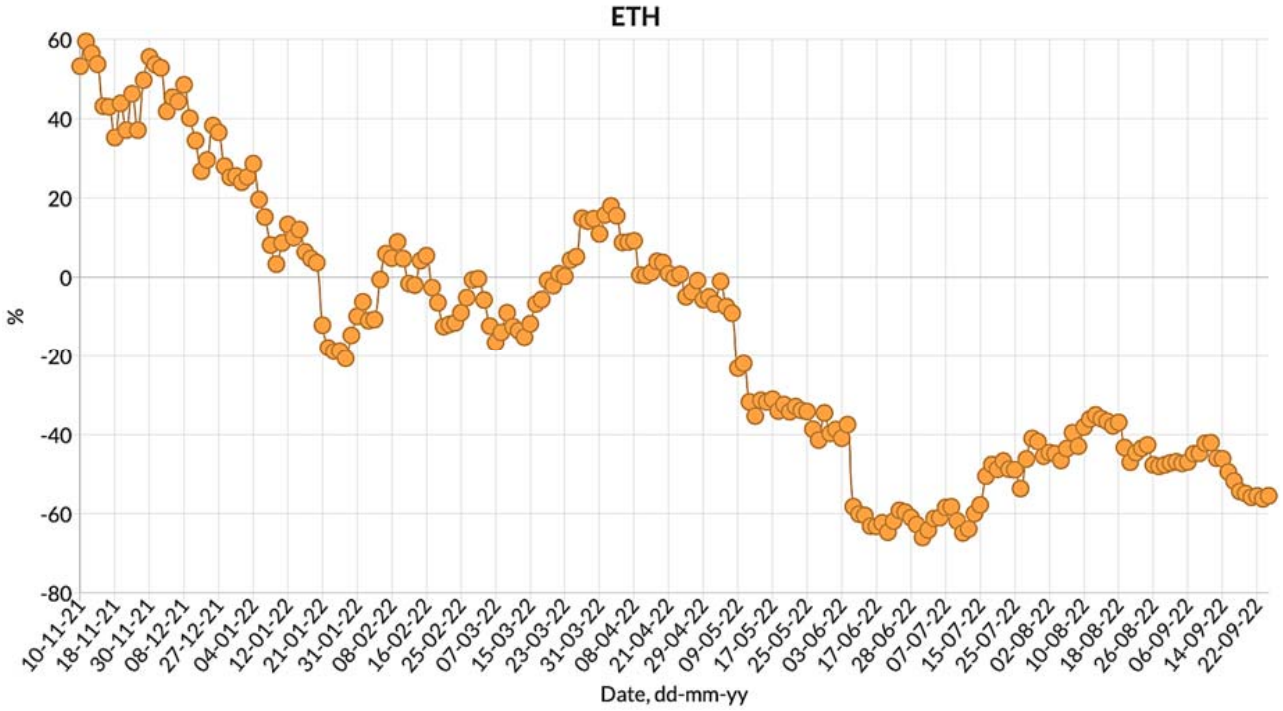

Fig. 6. ETH pricing (%) 2021–2022 (resource: marketwatch platform)

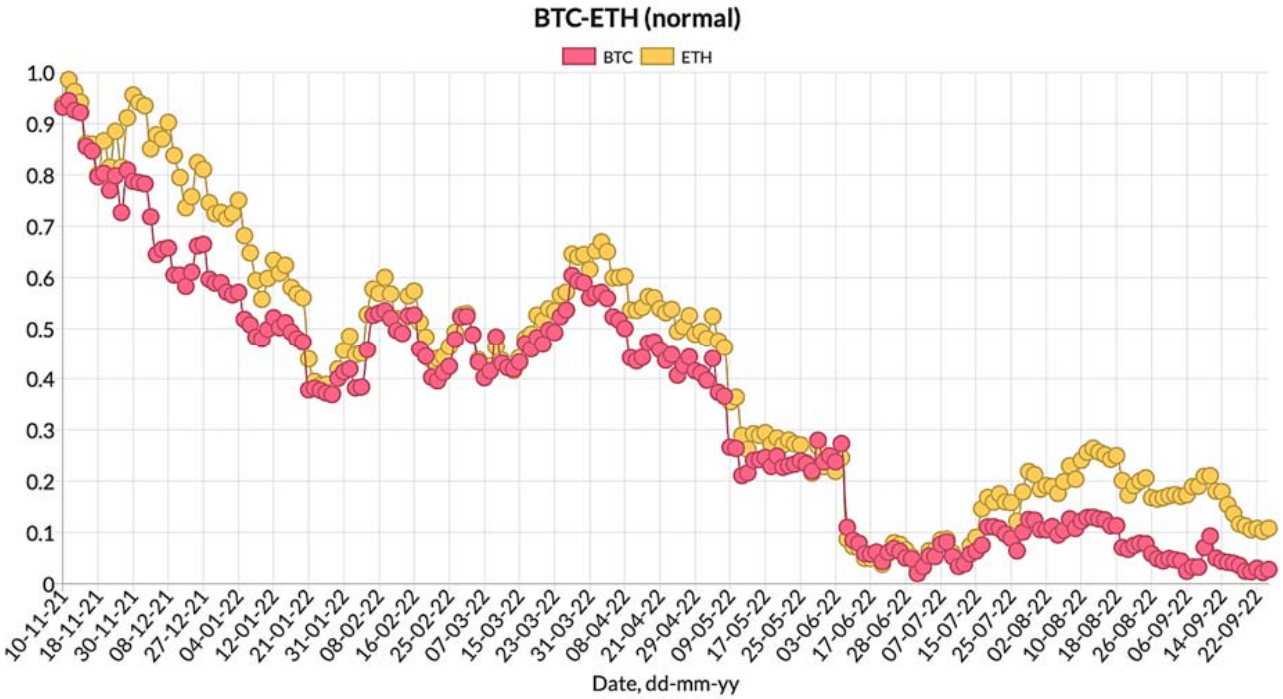

Fig. 7. BTC-ETH pricing 2021–2022 (normalized)
(resource: processed data from marketwatch platform)

and DJIA (or other indexes) than other cryptocurrencies [9].

Conclusions. According to researched data some conclusions can be made: World's economy is sensitive to global and local events or at least local events become global (Fig. 1). Recently the world's economy has been in a recession (Fig. 2, Fig. 3). DJIA and STOXX are self dependent or at least self correlated (Fig. 4). Recently cryptocurrencies are in a recession

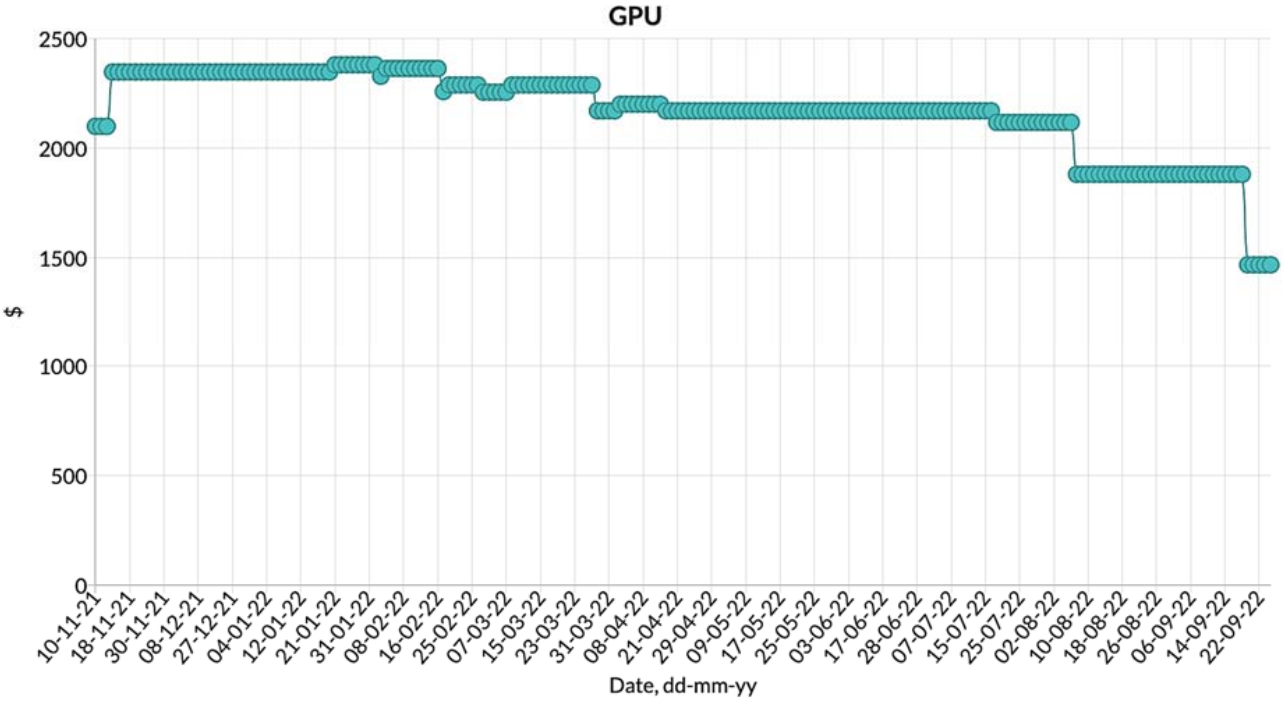

Fig. 8. GPU pricing ($) 2021–2022 (resource: amazon store)

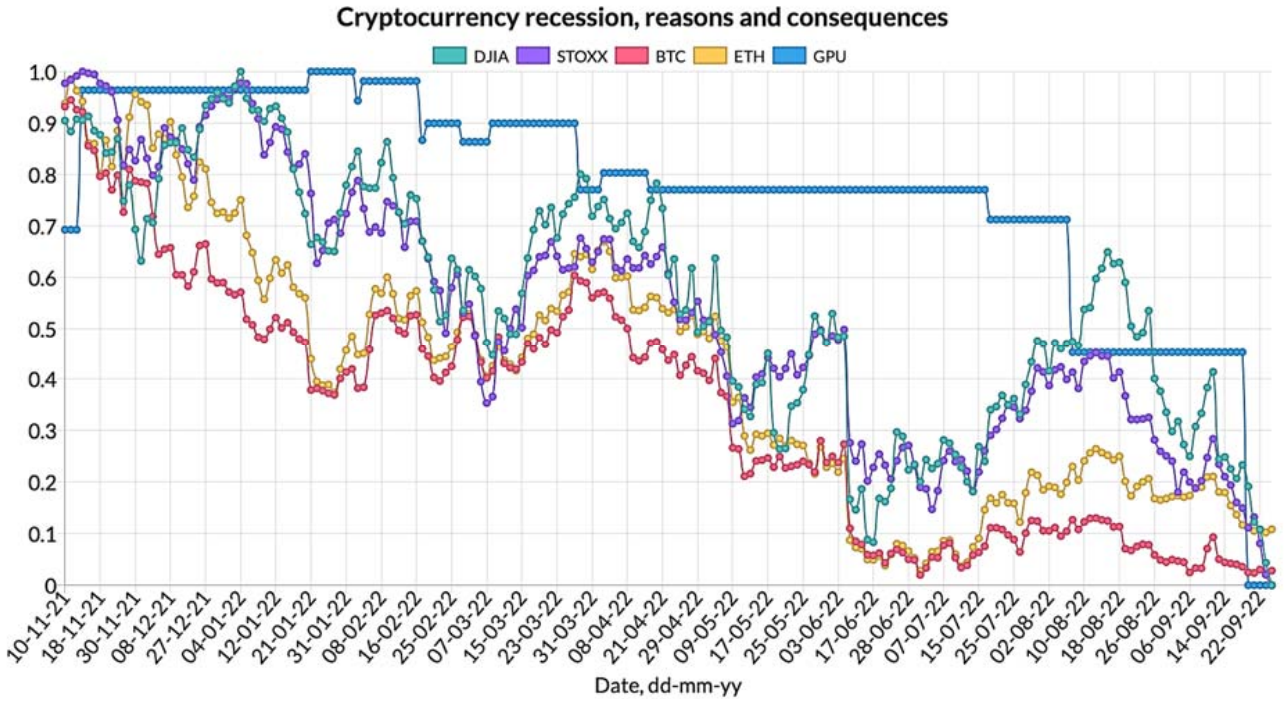

Fig. 9. Cryptocurrency recession, reasons and consequences 2021–2022 (resource: processed data from marketwatch platform and amazon store)

(Fig. 5, Fig. 6). ETH pricing is dependent on BTC pricing and as a result the most of cryptocurrencies pricing are dependent on BTC pricing (Fig. 7). The price on GPUs decreased for the last year (Fig. 8). Cryptocurrency recession is the result of economic recession, it follows that world or local events affect the cryptocurrency recession more than people thought before. As a result, the cryptocurrency recession affects GPUs manufacturing and pricing (Fig. 9). The main idea of cryptocurrency was broken. The reliability of the cryptocurrency has not been confirmed.

REFERENCES:

1. Federal Reserve Bank of St. Louis. "The 2001 Recession: How Was It Different and What Developments May Have Caused It?"
2. FRED, Federal Reserve Bank of St. Louis. "Federal Funds Effective Rate."
3. Federal Reserve History. "The Great Recession."
4. International Monetary Fund. "What Caused the Global Financial Crisis? Evidence on the Drivers of Financial Imbalances 1999–2007," pp. 29–30.
5. National Bureau of Economic Research. "Business Cycle Dating Committee Announcement July 19, 2021."
6. The New York Times. "Where $5 Trillion in Pandemic Stimulus Money Went."
7. Board of Governors of the Federal Reserve System. "Recent Balance Sheet Trends."
8. W. Zhang, P. Wang, X. Li & D. Shen (2018). The inefficiency of cryptocurrency and its cross-correlation with Dow Jones Industrial Average, Physica A. doi: 10.1016/j.physa.2018.07.032.
9. G. Gajardoa, W. D. Kristjanpoller & M. Minutolo (2018). Does Bitcoin exhibit the same asymmetric multifractal cross-correlations with crude oil, gold and DJIA as the Euro, Great British Pound and Yen? Chaos, Solitons and Fractals (109), 195–205. doi: 2010.1016/j.chaos.2018.02.029.