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FUNCTIONS OF ARTIFICIAL INTELLIGENCE, INCOME INVESTMENT INSTRUMENTS, AND CRYPTO MONEY IN THE ERA OF THE FOURTH REVOLUTION

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ABSTRACT

This research examines those related to Artificial Intelligence, stock robotics, and revenue intruments portfolio diversity in the context of the Fourth Industrial Revolution era, artificial intelligence, and concern for the environment. First, our results suggest that a portfolio of these assets is highly dependent, suggesting that large mutual losses are likely to occur during times of disruption in the economy. Second, it supports a large market mood in the near future, indicating that this disruption in the approaching time can increase the market mood of assets, while to support the market mood decreases for a long time.

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1. INTRODUCTION

Investment security and portfolio diversity have been a key foundational part of our investment strategy for many years. Gold has historically served as a hedge in such situations and as a safe haven during market disruptions [1]. While the security status of gold has changed with the advent of investment in theory and hedging in gold, new investment opportunities and various risk hedging strategies have emerged in recent years [2]. This white paper specifically discusses three of the new investment opportunities that have given birth to the Fourth Industrial Revolution [3]. These include the growth of companies developing artificial intelligence and robotics technologies, revenue instruments that benefit programs that help the environment, and Bitcoin, the most popular crypto money at the moment. extimation of the latter in devicing electronic circuits where an associated magnetic flux will be controlled by the electronic structure of quantum matter at the nanoscale. A main fomula of the differential form in three dimensions will be reported in the next section while reporting conclusions at the end of the article. The core technologies of the fourth Industrial Revolution

are Artificial Intelligence and Robotics. Aided by these disruptive technological developments, the Fourth Industrial Revolution will blur the boundaries between the physical, digital, and biological worlds, fundamentally changing the way we live, work and interact [4]. The number of jobs related to robotics and Artificial Intelligence has increased significantly over the past decade. Investment in Artificial Intelligence is growing at the same rate. Established companies invested IDR 2-3 billion in AI-related mergers and acquisitions and R18-27 billion in internal expenditures for initiatives. Between 2013 and 2016, venture capital investments in innovative AI startups increased by 40%. The company uses robotics and AI technologies for a variety of purposes, including managing supply linkage operations, reducing production costs and time, and ensuring consistent product quality. For example, global robot sales increased by about 150 between 2010 and 2016, while the share of jobs requiring AI skills more than fivefold between 2016 and 2013. Investment in AI is growing at the same rate. Established companies invest IDR 2-3 billion in AI-related mergers and acquisitions and IDR 18-27 billion in internal expenditures for initiatives. Between 2013 and 2016, venture capital investments in innovative AI startups increased by 40%. The company uses robotics and AI technologies for a variety of purposes, including managing supply chain operations, reducing production costs and time, and ensuring consistent product quality [5]. Companies that develop AI and robotics technologies intuitively are increasingly important and offer attractive investment opportunities for portfolio diversification. Companies that are weighing out artificial intelligence and robotics technologies are becoming increasingly important, offering attractive investment opportunities for portfolio diversity. Revenue instruments specifically designed to support specific climate or environmental related projects generally have the same characteristics as revenue instruments in traditional large companies, but revenue instruments specifically designed to support certain climate or environmental related projects are only used for projects that achieve high results in using energy and materials, reducing the impact on the environment, at the time of still guaranteeing the facility for its users. Therefore, by promoting industries and investments that focus on environmental, social, and governance (ESG) aspects in the long term, revenue instruments specifically designed to support specific climate or environmental related projects can help companies improve their financial and environmental performance. In this case, revenue instruments specifically designed to support specific climate or environmental related projects support government activities. The government is increasingly using environmental policy tools to encourage industry, increase the capacity of clean energy technologies, and improve environmental quality. Some experts believe revenue instruments specifically designed to support specific climate or environmental related projects are the best financing option for climate finance given the urgent need to address climate change and potential generational regulatory conflicts [6]. Investments are well-established and sustainable financial instruments, and although a segment of specialized income instruments (investments) has appeared on stock exchanges around the world in recent years, the size and importance of the market is constantly growing. Approved digital currencies and payment systems have been created with crypto money such as Bitcoin. Crypto money is used for the transaction identification process, but it has also become more popular as a means of investment and is sometimes viewed as the currency of choice and digital gold. Blockchain technology is seen as a major financial disruptor and a precursor to the Fourth Industrial Revolution. Since the launch of Bitcoin in 2009, the valuation of the crypto money market has increased significantly, reaching more than IDR 190 billion. There are currently more than 1,000 crypto money. There is still uncertainty about what role crypto money will play in the financial markets of the future. Bitcoin sits between gold and the US dollar on a scale that compares profits into a medium of pure exchange and a store of pure wealth. Bitcoin is more of a speculative asset or investment than money. Similarly, Bitcoin as a technology-based product, a new asset class, or a bubble event rather than a currency or security. This expert study analyzes the role of Artificial Intelligence stocks and robotics companies in portfolio diversity, taking into account average returns, potential risks, and correlations with alternative investments such as income instruments and Bitcoin to contextualize this discussion [7]. This complements the information already available in two ways. First and foremost, this is the first study to specifically examine the importance of ai and robotics companies' stock in portfolio diversity

using data from the National Association of Securities Dealers Automated Quotations Artificial Intelligence and Robotics Index. First and foremost, this is the first study to specifically examine the importance of Artificial Intelligence and robotics company stocks in portfolio diversity using data from the National Association of Securities Dealers Automated Quotations Artificial Intelligence and Robotics Index. The National Association of Securities Dealers Automated Quotations Artificial Intelligence, which was just launched in December 2017, controls the performance of high-tech companies involved in the Artificial Intelligence and robotics industries. Previous studies have only considered companies in other specialized technology-intensive sectors, including Information Technology and clean energy technologies, or technology-intensive companies in general. Second, the dependence of the increase with other assets such as Bitcoin and income instruments is the focus of this research. To this end, it also complements the rapidly growing empirical literature on crypto money and green financial instruments. We studied extreme market conditions and the spillover effect of market mood in the near and long term using two basic analytical approaches. In particular, we consider the general interconnectivity of variance decomposition and its spectral representation in combination with the decomposition of the common prediction error variance and copula-induced tail dependencies. Using daily data from December 19, 2017 to January 16, 2020, we used tail dependence as a copula and common forecast error variance decomposition to explore the market mood context. Our key findings show, first, that a portfolio consisting of underlying assets shows great dependence. This means that your losses can be compounded by your other investments during an economic breakdown, and you are very likely to suffer catastrophic losses at the same time. Second, propping up the mood of the market in the near term outweighs sustaining for a long time, so disruptions in the near term can make the assets in the portfolio more volatile. On the other hand, maintaining this portfolio reduces the transmission of long-term market mood between assets. Third, while Bitcoin and gold are the top hedging assets, Bitcoin is also subject to historical volatility, a common feature with earnings instruments and the National Association of Securities Dealers Automated Quotations Artificial Intelligence [8]. Given that the shock sustained gold on the National Association of Securities Dealers Automated Quotations Artificial Intelligence at only about 1.41%, it seems important to hedge during the economic and financial downturn. Finally, the transfer of the aggregate mood market of all financial assets is so high that the self-transferred risks inherent in the portfolio require careful diversification. Ordinary stock indices and the National Association of Securities Dealers Automated Quotations Artificial Intelligence are bad complements as hedges. In the era of the Fourth Industrial Revolution, these findings on AI stocks, cryptocurrencies, and green investment potential have important implications for portfolio diversification. The value of this asset class is recognized by the available evidence (more on that in the next section). However, despite overwhelming evidence of the importance of Artificial Intelligence, revenue instruments, and cryptocurrencies in various parts of the economy and financial sector, its use for diversifying portfolios and joint hedging has not been well explored. The study fills this gap by examining its function in portfolio diversification in the context of the Fourth Industrial Revolution.

2. DIFFERENTIAL FORM IN THREE DIMENSIONS

There are usually various methods to consider when determining whether an asset is suitable for investment. For example, from a risk perspective, adding items to a portfolio will diversify and reduce risk if they are negatively correlated with other assets in the portfolio. However, a distinction must be made between safe havens, hedging and diversifying investors. An asset is usually considered an investment strategy if it has a low positive correlation with other assets. In times of turbulent markets, safe havens have the same property as hedges. A hedge is an asset that is often not correlated or negatively correlated with other assets. So, on average, diversification and hedging offer diversification benefits, but unlike safe-haven investments, they don't always reduce risk when you need it most. In the past, gold was seen as a hedge and a safe haven. However, recently, this property has also been tested for other assets, such as credit default swaps and Bitcoin, and extensive

literature has shown portfolio diversity. The study addresses three different aspects of portfolio diversification and may therefore be relevant to three different publications. Shares of robotics and AI companies topped the list. For an overview of the impact of Artificial Intelligence and robots on business models and the economy, the role of Artificial Intelligence and robotics company stocks in portfolio diversification has not been researched in previous studies. However, technology companies in general, Informatics Technology companies and cleantech companies. Stock returns and volatility for Artificial Intelligence and robotics companies are expected to be higher, on average, than companies in less technologically advanced industries. This characteristic is usually characteristic of technology company stocks. In other words, tech companies have historically shown very high volatility compared to the stock market as a whole. Similarly, technology stocks often outperform traditional stocks. In this context, a positive correlation has been found between a company's R&D capabilities (e.g. patent application) and its market value [9]. The relationship between technology stocks and various other stocks and assets can be found in the general stock market, oil prices, and clean energy stocks, cryptocurrencies, gold, and credit defaults. The price of technology stocks is reportedly not only influenced by traditional domestic and international stock prices, but also by changes in global capital markets. The interaction between technology stocks, oil prices and clean energy stocks has been researched in relatively extensive research that reveals dependence, causal relationships, and overflow effects.

One factor is that when renewable energy stocks rise, rising oil prices often push technology stocks higher. As a result, empirical studies estimate that clean energy and technology stocks have similar market responses, often showing positive causation. Similar volatility effects have been observed among the share prices of oil, clean energy, and technology companies.

Second, the relevant literature focuses on stocks and income instruments. In this context, results regarding environmental investment performance are mixed. Finding that the returns and risks of net technology stock indices are higher than traditional stock indices, while gold is often referred to as a safe haven asset in the stock market, this quality seems to apply only to some technology companies. Similarly, credit default swaps only partially serve as a reliable haven for stock indices in the technology and telecom sectors during periods of market turmoil. Similarly, revenue instruments tend to generate lower than traditional investment instruments and indicate a greater mood market. The dynamic relationship between oil prices and clean energy stocks shows causality, tail dependence and mood market spillover It has been investigated through important investigative studies. Therefore, previous research has shown that the pricing of renewable energy companies is vulnerable to the mood of the market with oil prices. The interaction between the income intrument market and other markets is explored in the relevant literature, particularly relevant to our research. The latter suggests that shocks in traditional investment instruments tend to extend to the income investment instrument market, while the former suggests that the relationship between the price of income and black investment instruments is influenced by uncertainty and market mood policies. We have found that it depends on financial market conditions. Studies by Reboredo (2018) and Reboredo and Ugolini (2019) found a minimal-to-non-existent correlation between the income and equity investment instrument markets, energy, and the high-yield corporate investment instrument market. Two studies, on the other hand, predict a close relationship not only with the investment instrument and currency markets, but also with the corporate and government investment instrument markets.

Thirdly, although the crypto money literature is relatively new, it is growing rapidly. Most research focuses on one crypto money, often Bitcoin. Investors can increase returns and reduce overall risk by including crypto money in various portfolios, but the mood of the crypto money market is significantly higher than that of traditional assets and currencies. The mood market price of a particular national currency, gold, commodities, and crypto money can all find refuge in crypto money. Investors should be cautious as cryptocurrencies can be vulnerable to built-in price bubbles (cybercrime regulatory intrusions). In addition, the value of cryptocurrencies is influenced by traditional market dynamics and crypto-specific factors such as: Social media activity on online forums and the attractiveness of crypto money for

users and investors. Many studies examining the value of cryptocurrencies in relation to other assets have found conflicting results. On the other hand, it has little or no relevance to traditional asset pricing. This missing link is evident in times of prosperity and difficulty, that the price of crypto money is largely segregated from various assets such as stocks, investment instruments, and gold, thus leading to diversification despite the fact that the crypto money market is interconnected. Such benefits of decoupling and decentralization exist only in the short term and may disappear in the long run. On the other hand, several studies have found important links between crypto money and other assets, including significant price correlations, tail dependence, and yield overflow and market mood. For example, price fluctuations in the gold and oil markets have a significant impact on the value of Bitcoin. Most of the dynamic correlation between Bitcoin and the other two markets has been determined to be negative. According to one study, the Bitcoin market tends to correlate inversely with major currencies and is highly correlated with derivatives. The crypto money market receives more mood markets than it sends, and crypto returns correlate quite closely with other assets, especially commodities. Estimating a moderate correlation between Bitcoin and stock indices, found that the return on overflow to Bitcoin from energy and technology stock indices, and fossil fuels and clean energy We found a long-term mood market effect between, Bitcoin on stocks [10].

3. METHOD

The beginning of December 19, 2017 was mainly because the National Association of Securities Dealers Automated Quotations Artificial Intelligence Index data was available after that date, but other components were traded before that. Each variable has a total of 544 observations across the entire time span. The National Association of Securities Dealers Automated Quotations Artificial Intelligence was created to control the performance of companies involved in Artificial Intelligence and robotics, including companies in technology, industry, healthcare, and other business sectors. As a result, these proxies captured the level of innovation in the market and the performance of the sector during the Fourth Industrial Revolution [11]. Well-known investments and safe havens for investors include oil, gold, the CBOE Mood Market Index, and the MSCI Stock Index. We use the S&P Green Bond Options Index as a proxy for the income investment instruments market. Tracking the performance of income labeled investment instruments published worldwide, this index is a subset of the market value considerations of the S&P Income Investment Instrument Index. Although the market for income investment instruments only looks limited compared to other possible financial investments, investors have recently shown great interest in green investments. Last but not least, the surge in crypto money since 2013 made the market more attractive to investors, so we added Bitcoin to our base portfolio.

Table 1. Descriptive Statistics

Variables	Mean	Standard Deviation	Skewness	Kurtosis	JB	ADF
NASDAQ AI	0.00041	0.01002	-0.60558	4.41910	78.75***	-19.783***
Oil	0.00004	0.01996	-0.00049	8.36033	650.1***	-22.469***
Bitcoin	-0.00144	0.14705	-0.30783	32.51568	2000***	-35.272***
Green Bond	-0.00002	0.00483	0.21941	97.20986	20000***	-32.123***
MSCI World	0.00025	0.01301	0.26417	60.51622	75000***	-26.018***
MSCI USA	0.00039	0.01525	0.04356	62.62450	80000***	-27.623***
Gold	0.00038	0.01376	0.27584	76.08298	12000***	-29.404***
VIX	0.00047	0.09822	0.96772	20.60982	7101***	-26.435***

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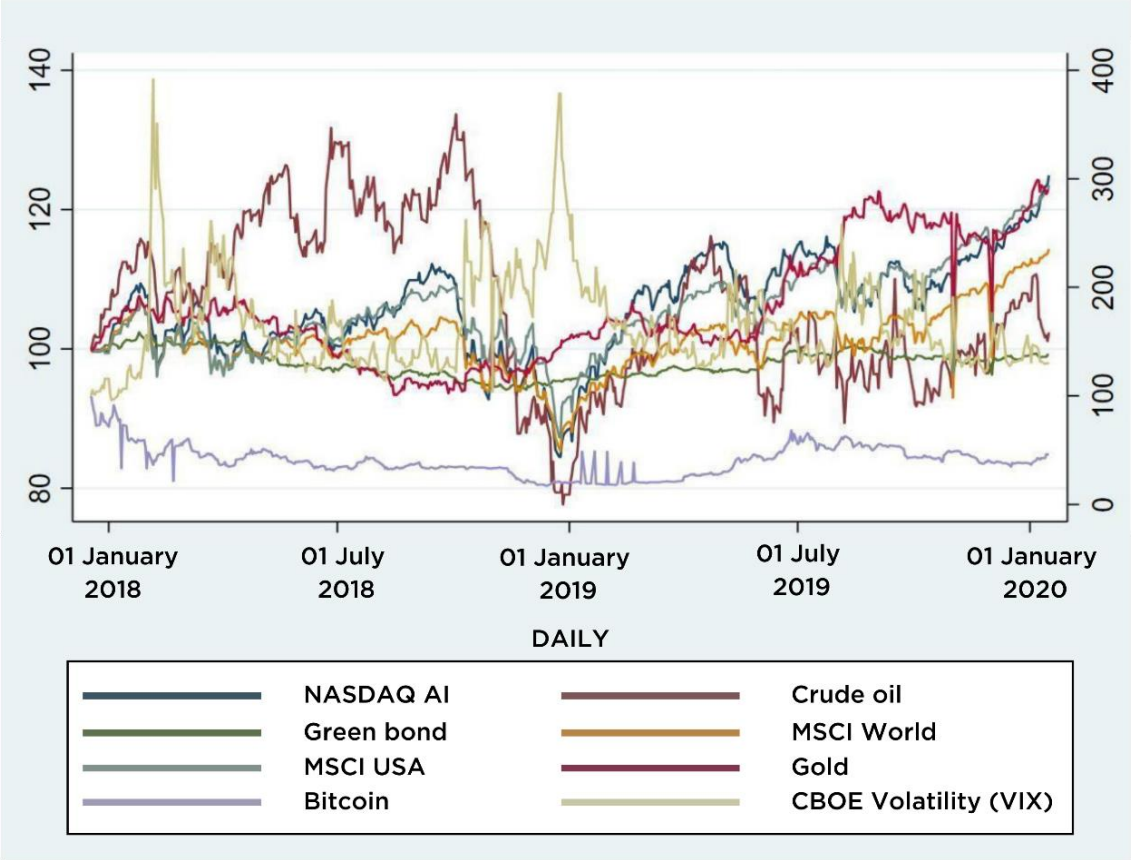
Note: these shaped symbols (***, **, and *) show the whole at the rate of 1%, 5%, and 10, respectively.

Figure 1. Investment Performance January 2018 to January 2020



As shown in Table 1, assets have a positive average return over the analysis period. Bitcoin and income investment instruments are exceptions, however, and can be profitable investments with negative returns. The National Association of Securities Dealers Automated Quotations Artificial Intelligence has the second-highest average return, while the VIX is number one. The National Association of Securities Dealers Automated Quotations Artificial Intelligence has a much lower standard deviation (0.01) than the VIX (0.09) while offering higher returns than the VIX for the same oscillation unit. Also pay attention to the fact that all variables have a non-normal and stationary-level distribution. These characteristics should be considered when determining the optimal econometric approach to analyzing the potential risks of a diversified portfolio. Figure 2, which shows normalized returns over time, supports the average picture. That said, Bitcoin in particular tended to underperform during the analysis period, with the VIX showing a high level of uncertainty, peaking in early 2018 and 2019. A similar pattern is seen for crude oil, peaking above 130 and then falling below 80. Minimizing unnecessary risks and maximizing portfolio diversification across a variety of different financial assets requires detailed research [12]. Stock indices correlate very positively with all assets except Bitcoin. Although correlation is based on a linear dependency structure, Table 1 shows that variables are not normally distributed. As a result, the accompanying empirical studies provide additional insight into how to implement drastic diversification plans in the era of the Fourth Industrial Revolution.

Table 2. Correlation Matrix

Variables	NASDAQ AI	OIL	Bitcoin	Green Bond	MSCI World	MSCI USA	Gold	VIX
NASDAQ AI	1							
Oil	0.2149***	1						
Bitcoin	0.0293	-0.0117	1					
Green Bond	0.0332	-0.0228	0.0135	1				
MSCI World	0.4994***	0.1029**	0.0234	0.6334***	1			
MSCI USA	0.5120***	0.0962**	0.023	0.4357***	0.9539***	1		
Gold	-0.102	-0.0212	0.028	0.7821***	0.7287***	0.6533***	1	
VIX	-0.6333***	-0.1552***	-0.0409	-0.4131***	-0.6561***	-0.5982***	-0.2863***	1

Note: these symbols depicting (***, **, and *) indicate significance at rates of 1%, 5%, and 10%, respectively.

4. RESULTS AND DISCUSSION

4.1. Tail Linkage

Copula parameter estimates and maximum log likelihood values are shown in Table 3. Select the best copula based on the maximum log likelihood. This means that a portfolio made up of these assets will turn bearish when there is market volatility.

Table 3. Copula Estimation

Collaborate	Normal-Copula	Student-t Copulas
National Association of Securities Dealers Automated Quotations Artificial Intelligence - Oil	0.2382 [15.28]	0.2469 [17.81]
National Association of Securities Dealers Automated Quotations Artificial Intelligence - Bitcoin	0.005916 [0.0091]	0.00408 [0.9616]
National Association of Securities Dealers Automated Quotations Artificial Intelligence - Green bond	0.02244 [0.1313]	0.01573 [1.198]
National Association of Securities Dealers Automated Quotations Artificial Intelligence - Gold	-0.04039 [0.4255]	-0.04523 [2.936]
National Association of Securities Dealers Automated Quotations Artificial Intelligence - MSCI World	0.8404 [328.2]	0.8618 [382.5]
National Association of Securities Dealers Automated Quotations Artificial Intelligence - MSCI US	0.802 [275.6]	0.8234 [325.9]
National Association of Securities Dealers Automated Quotations Artificial Intelligence - VIX	-0.6784 [164]	-0.685 [175.3]

Note: The calculated copula linkage parameters are shown in the table for Student copules and Gaussian copules. Maximum log probability in parentheses. The range of parameters is bound to the copula in question. For example, the Gaussian parameter is limited to the interval (-1.1). Variables measure attachment.

Our study is the first to examine the structure of the National Association of Securities Dealers Automated Quotations AI that is tail-to-tail linkage to different financial assets compared to previous studies. Income Investment Instruments and financial markets, oil and stock markets, gold and stock markets all show evidence of common dynamics in previous studies.

4.2. Displacement of the market mood in a short and long time

Because we use common forecast error variance decomposition to assess market mood connectivity, two common properties are important [13]. First, choose two time periods. 1 to

5 trading days for analysis in a short time, 5 trading days up to unlimited for long time analysis. The main reason for choosing this strategy is that traditional trading is often carried out 5 days a week. Investors should have a week to rebuild their portfolios. In other words, you have to balance it according to performance. The Akaike Information Criterion is used to select 2 trading days as the ideal time lag as this method is based on autoregressive vector forecasting. In addition, it is an ideal time lag for short-term and long-term analysis. Tables 4 and 5 show the interrelationship of market mood in a short period of time and a long time. Before proceeding to a full study, it is important to note that the overall market mood shift is 60.48. This indicates that the mood of the asset market is above average.

Table 4. Mood market movements from 1 to 5 days of market production process

To	From							
	NASDAQ AI	**Oil**	**Bitcoin**	**Green bond**	**MSCI World**	**MSCI USA**	**Gold**	**VIX**
NASDAQ AI	**38.21**	0.26	0.12	0.76	0.25	0.17	0.35	4.42
Oil	0.46	**78.30**	0.07	0.28	0.09	0.16	0.14	0.42
Bitcoin	0.37	0.15	**70.84**	0.12	0.05	0.06	0.04	0.14
Green bond	1.04	0.17	0.10	**71.32**	2.64	13.68	4.12	2.27
MSCI World	1.51	0.13	0.03	10.82	**60.41**	0.10	1.06	3.67
MSCI USA	1.30	0.20	0.04	5.25	64.32	**1.72**	1.46	2.09
Gold	0.71	0.17	0.03	12.11	54.94	0.69	**3.56**	5.22
VIX	0.48	0.34	0.32	3.53	0.35	2.56	1.04	**79.76**

Note: The given value is a variance change process based on the VAR spillover model with exogenous variables.

In general, shorter maturities have more residual volatility than longer maturities. A closer look in the short term reveals that the National Association of Securities Dealers Automated Quotations Artificial Intelligence prefers to be the sender rather than the receiver. With the exception of the VIX, which remitted 4.42%, the average percentage that other financial assets send to these assets ranges from 0.12% to 0.76%. In comparison, the index added 0.48%, 1.30%, and 1.51% to the VIX, the US equity market, and the mood of the global equity market, respectively. Although the stock market measurements are larger, the magnitude of the stock market measurements is smaller than the corresponding volatility obtained, indicating that the National Association of Securities Dealers Automated Quotations AI has a small stock market mood. Similar to this, NASDAQ Artificial Intelligence sends more market mood to other assets than it receives. However, marginal effects are also very small, for example the 0.46% volatility transferred to oil compared to the 0.26% market mood received from oil. Therefore, we can draw two important conclusions from our short-time research [14]. First, the transfer of market mood from other financial assets to the National Association of Securities Dealers Automated Quotations Artificial Intelligence is generally less than 1.5%, excluding self-transfers. Notably, our results also support the use of Bitcoin and gold as hedging instruments for portfolios containing shares of Artificial Intelligence and robotics 2019 companies. Less than 0.03% of bidirectional transfers between Bitcoin and gold are significant. Secondly, be careful when including related categories, especially the National Association of Securities Dealers Automated Quotations Artificial Intelligence, MSCI World and USA, in your portfolio. However, this effect is less than 2% in size, so it is not significant enough to cause problems.

As shown in Table 5, the displacement of the market mood is less persistent over a long period of time, indicating less interconnectivity between assets. Investors who tend to hold their portfolios for the long term should focus on two main points. First, the ripple effect is dominant in equity investing, regardless of the time horizon. Second, you can combine the National Association of Securities Dealers Automated Quotations Artificial Intelligence with other assets such as oil, gold, and Bitcoin to diversify your portfolio.

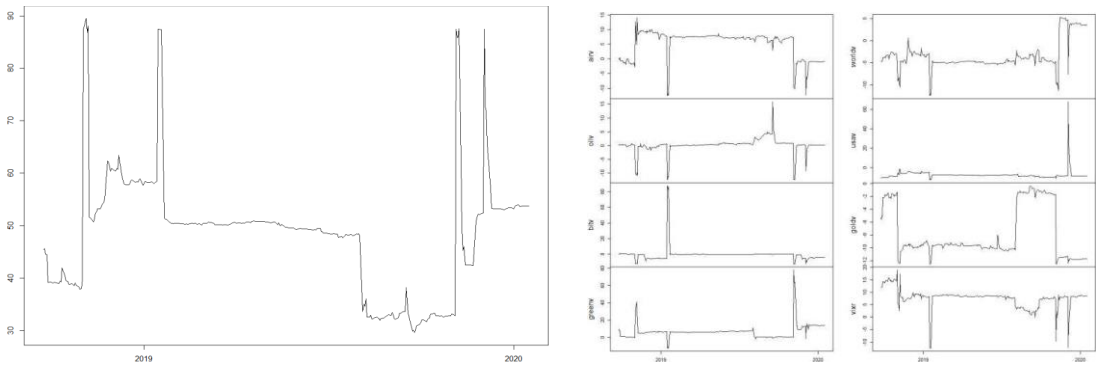
Table 5. Moving the Market Mood from 5 Days Market productivity process to Day Unlimited market productivity process

To	From							
	NASDAQ AI	**Oil**	**Bitcoin**	**Green bond**	**MSCI World**	**MSCI USA**	**Gold**	**VIX**
NASDAQ AI	**41.74**	0.11	0.10	0.18	0.31	0.08	0.13	12.82
Oil	0.41	**19.25**	0.05	0.07	0.00	0.01	0.04	0.25
Bitcoin	0.23	0.09	**27.86**	0.00	0.04	0.00	0.00	0.00
Green bond	0.67	0.01	0.01	**2.69**	0.03	0.69	0.05	0.51
MSCI World	0.23	0.02	0.03	3.30	**18.25**	0.01	0.30	0.14
MSCI USA	0.09	0.05	0.03	1.87	19.83	**0.50**	0.54	0.71
Gold	0.12	0.02	0.05	3.71	18.54	0.02	**0.06**	0.05
VIX	0.46	0.12	0.04	0.42	0.03	0.39	0.06	**10.10**

Note: The given value of the variance change process is based on a VAR spillover model with exogenous variables.

4.3. Total Dependence

Figure 2 shows the overall connectedness of the portfolio of all financial assets considered using a rolling window of at least a 250-day market productivity process. Therefore, our forecasts are focused on the period from the end of 2018 to the beginning of 2020. Not surprisingly, connectedness is often about 50%. In contrast, this peak total tripled in 2019 alone. Figure 2 reveals that Bitcoin, the Income Investment Instrument, and the National Association of Securities Dealers Automated Quotations Artificial Intelligence are the main sources of surprise. As shown in Figure 3, the endogenous shocks of Bitcoin and income investment instruments are also quite large ((70.84% and 71.32% respectively in the order provided), indicating highly volatile returns. Endogenous shocks over a short period of time and a long time then appeared in the National Association of Securities Dealers Automated Quotations Artificial Intelligence (38.21% and 41.74%, respectively). These figures confirm our conclusion that the National Association of Securities Dealers Automated Quotations Artificial Intelligence, Income Investment Instruments, and Bitcoin are staggering. Further, these results suggest that although the National Association of Securities Dealers Automated Quotations Artificial Intelligence, Bitcoin, and Income Investment Intrument can be viewed as good investments due to their high returns, the high mood of the market of price movements for these assets and the resulting innate risks should be considered [15]. On the other hand, the remaining assets are only recipients because the net overflow value is negative during this period.



(a) overall Market Mood Relation (b) Clean Spill Market Mood

Figure 2. Overall Portfolio Correlation and Net Spill Market

5. CONCLISION

The Fourth Industrial Revolution has brought unprecedented challenges to all parts of the global economy, financial markets, and society [16]. It also opens up new perspectives when it comes to Artificial Intelligence, Blockchain, and cryptocurrencies. In parallel, the global challenge of the 21st century is climate change. To address this challenge, there have been efforts from many sectors, including the financial sector, to address this problem through green investment options such as green bonds. With this story in mind, our research

sets out to find solutions to very old problems in the new era of the Fourth Industrial Revolution. We explore the idea of portfolio diversification in the context of artificial intelligence, Blockchain technology or cryptocurrencies, income investment instruments, and classic assets such as ordinary stocks and pre-industrial commodities such as gold [17]. Thus, this important study contributed to the rapid growth of empirical research on cryptocurrencies and green financial instruments, which demonstrates the importance of Artificial Intelligence and robotics stocks in portfolio diversity.

The conclusions and general findings consist of four main components. A portfolio consisting of these assets initially shows a strong dependence. This suggests that the worst-case scenario occurs during times of economic and financial turmoil, as all alternative investments tend to incur significant losses at the same time [18].

Secondly, the volatility of carryovers is greater in a short period of time than in a long period of time. As a result, long-term holdings of these portfolios reduce the mood of the transfer market between assets, while short-term shocks can improve the market mood of other financial assets in the portfolio. It should be noted that Bitcoin is also subject to the mood of its historical market, which is complicated, but gold and Bitcoin are expected to be the top two hedging positions. Characteristics are also found in income investment instruments and the National Association of Securities Dealers Automated Quotations Artificial Intelligence. Using gold, one of the oldest asset classes, in a portfolio as a buffer against the threat of recession proved to be very effective. This is because the shock spread to the National Association of Securities Dealers Automated Quotations Artificial Intelligence is only about 1.41%. Last but not least, the overall displacement of the mood of the market in all financial assets is very high, averaging about 50% with two peaks approaching 90%. Our conclusion is that portfolios have inherent self-transfer risks and require the right type of diversity.

Our results have many useful implications for governments and investors interested in diversifying their portfolios in the era of the Fourth Industrial Revolution. Investors should be aware that portfolio risks still exist when diversifying their holdings among shares of Artificial Intelligence and robotics companies, cryptocurrencies, and income investment instruments [19]. Such portfolios are particularly vulnerable to significant collective losses, especially during periods of high market mood. We want to emphasize the importance of gold as a hedge. In particular, I would like to highlight the importance of gold as a safe haven for risk mitigation in both normal and recessionary recessions. Our results recommend a buy and hold approach to reduce the risks associated with market mood overflow by reducing the transmission of market mood over a long period of time. Investors need to do the right diversification to combat the rest of the overall high market mood. For example, you may not want to combine popular stock indices and the National Association of Securities Dealers Automated Quotations Artificial Intelligence in the same portfolio. Investors should understand that in addition to the performance of Artificial Intelligence and robotics companies, other industries also have a significant impact on the performance of the Artificial Intelligence Index. We focus the attention of politicians and managers from two main angles. To reduce potential risks between different markets, a regulatory framework addressing information asymmetry should first be considered. When it comes to financial metrics, it is clear that fintech and Artificial Intelligence financial assets provide misleading information. Secondly, when making insider trading recommendations, managers should consider the worst-case scenario of a possible loss, or a risky value. In addition, the simple process of updating the latest financial technology information helps to reduce the risk of risk transfer between different markets [20].

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Since the Artificial Intelligence index is a new investment destination and crypto money, income investment instruments and Artificial Intelligence indices are still immature, our research has some limitations. Future research may focus on diversifying asset classes and cover both developed and emerging markets [21].

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