DIGITAL TRANSFORMATION OF WORK AND ESG: PERSPECTIVES ON MONOPOLY AND FAIR TRADE

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Abstract

The purpose of this paper is to understand why unemployment improvement and social inequality occur at the same time. For this question, a key factor is the capitalisation of work-related social security, such as environmental, social, and governance (ESG) resulting from digital transformation (DX). This paper will discuss two crucial points of the capitalisation of social security. Firstly it is the shareholder value, and then sustainable investment such as ESG. Shareholder value is a matter of stock price and corporate management. Nowadays, the stock price of tech giants, such as Google, Apple, Facebook and Amazon (GAFA) is skyrocketing. It has a significant impact on general corporate management just like the dot-com bubble in the '90s. Sustainable investment offers the modification of shareholder value. The sustainable investment performances of non-ethical companies and ESG (blue-chips) were investigated during the period of Lehman and the COVID-19 crisis. However, in the real sense, investment performance is not a fundamental solution to problems associated with monopolies, disparities and the environment. In particular, the monopoly situation is related to Azar's common ownership (Azar, Schmalz, & Tecu, 2017). As such, it will be essential for trade unions, who function as pension managers, to address these problems as a countervailing power (Galbraith, 1952).

Keywords: Digital Transformation (DX), Platform Monopolies, Social Security, Socially Responsible Investment (SRI), Environment, Social and Governance (ESG)

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1. INTRODUCTION

Work-related changes resulting from digital transformation are progressing, and work styles are rapidly evolving in tandem with these changes. Owing to the fragmented process of DX, the balance between capital and labour relationships, which is essential to a healthy gross domestic product (GDP), is shifting. However, digital platforms, such as GAFA, have come to dominate high-growth DX markets. Productivity is increasing as a result of DX. GAFA have come to dominate entire markets. In line with classical economic theory, vast margins resulting from monopolies' high productivity are distributed primarily among employee salaries. According to Galbraith (1952), to ensure the optimal distribution of industrial profits, it is necessary to create a countervailing power, such as voices from labour unions.

However, the Gini coefficient (disparity index) has shown a tendency to gradually increase over the last three decades and, thus, the disparity tendency does not show a proper profit distribution (Rotman, 2013). This paper aimed to clarify the two

factors contributing to the decline in unemployment and the abovementioned disparity tendency. To this end, we apply traditional economic theory to the role of monopolies in the creation of corporatism (i.e., the relationship between labour and capital). The social security system typically supports steady work that does not consist of fragmented DX work. DX has made social security systems difficult to apply to changing work styles, highlighting the need to rethink this institution. Trade unions have recently assumed an active role in pension investment and adopted sustainable investing practices, such as ESG investing, where it is called "workerscapital" (The Committee on Workers Capital[1]). Considering the insecurity of work-life balance due to dismissal, what is the difference between tax-financed social security and self-directed asset-management (i.e., environmental, social and governance) for retirement schemes?

The structure of this paper is as follows. Section 2 reviews the relevant literature. Section 3 analyses the methodology that has been used during the research. Section 4 describes inequality calculated by the unemployment rate and the Gini coefficient. Section 5 shows the history of work and technology. Section 6 is devoted to the social spending and benefit in Japan, the US, and Germany. Section 7 demonstrates sustainable investing issues. Section 8 presents financial performance during the period of the Lehman and COVID-19 crisis. Section 9 concludes the paper.

2. LITERATURE REVIEW

This section will briefly examine existing research on digitisation and work. The first paper to mention is by Frey and Osborne (2013), which examines how susceptible jobs are to computerisation. According to their estimation, about 47 per cent of the total US employment is at risk. This paper has shocked many workers. It is also an essential pillar of the discussion in this paper.

Krzywdzinski and Gerber (2020) observe that the platform economy can exacerbate social inequalities. To prove this hypothesis, they adopted several different approaches. They also conducted empirical analyses based on case studies of 15 crowd work platforms in the US and Germany. The study shows that the weaker the social safety net, the more likely platform work is to offer a flexible source of income under extremely precarious conditions, while the stronger the social safety net, the higher the market power of workers vis-à-vis the platforms (Krzywdzinski & Gerber, 2020). An important relationship exists between social safety nets and pensions. In Anglo-Saxon countries, pensions are usually invested in the financial markets to ensure appropriate returns for pensioners. However, in continental Europe, tax collection is essential because pensions and social security benefits are provided by government agencies.

The paper by Storrie (2017) is focused on the growth of non-standard employment during the 2010s. It found that temporary contracts and self-employment grew relatively strongly from the mid-1990s to 2007. The most relevant non-standard

work is associated digitalisation, the 'gig' economy that is traded on the stock market. Indeed, the stock market is predicting strong future growth, and it would be premature to predict significant employment growth as a result of digital platforms in their current form. Possible barriers to future growth might be the substitution of labour with new technology.

Social protection is a substantial issue for digital platform work. The 'gig' economy organises income and other issues as casual work on temporary contracts. Labour laws and social protection issues concern whether the worker is self-employed or an employee. The European Social Insurance Platform sees little need for a comprehensive reform of social protection, at least regarding digital platforms performing virtual work (Storrie, 2017).

Possible future growth in this 'gig' economy will be highly speculative. Digital platform work has grown rapidly in recent years. At the same time, the most well-known platforms (e.g., Airbnb) make capital gains from the stock market. However, some factors may prevent future growth. As some platform profits are due to tax arbitrage, tax authorities may become better aware of and react to the tax issues, particularly if they continue to grow significantly. Airbnb's business model benefits from several tax advantages, including high rates of business property taxes and value-added tax (Houlder, 2017).

Grove and Clouse (2018) have pointed out that a majority of S&P 500 companies have publicly disclosed their sustainability performances with ESG metrics. The world's biggest institutional investor, Blacklock pressure these companies. Because of this pressure, these ESG reporting companies had higher financial returns than their non-ESG reporting competitors (Grove & Clouse, 2018).

Charles, Darné, and Fouilloux (2016) investigated several ESG indexes. The results on the ESG indices suggest that the weights used to construct these indices could have an impact on their risk and their performance.

3. RESEARCH METHODOLOGY

This paper sets the main questions for understanding why unemployment improvement and social inequality occur at the same time. Also, this paper uses mixed-methods research which integrates both qualitative and quantitative research. In these questions, it has shown the situation of inequality calculated by the unemployment rate and the Gini coefficient at following Section 4. In addition, the history of work and related technologies is described, which shows manual labour, mechanisation to digitisation, and the technological evolution to AI (artificial intelligence) in Section 5.

In this paper, we considered that it is necessary to change the social security system in order to eliminate the wage gap caused by DX. Therefore, we tentatively compared social security spending and benefits in the United States, Germany, and Japan in Section 6. As a result, of the three countries, only the United States outperformed spending. In other words, ESG was preferred as a capitalisation of work-related social security.

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[1] https://www.workerscapital.org/

Financial asset performance is a requirement for capitalisation of work-related social security. As a premise, trading in the market is assumed to maintain fairness and integrity that is not alienated by oligopoly or monopoly. For example, the negative effects of common-ownership as described in subsection 3 in Section 7 are not taken into account. Therefore, we calculated the performance of ESG as a method of sustainable investment from a quantitative point of view. Financial performance during the period of Lehman and the COVID-19 crisis in Section 8 is considered. The sustainable investment performances of non-ethical companies and ESG were then investigated. The stock price of non-ethical companies performed better than ESG during the Lehman crisis. However, the COVID-19 crisis has witnessed non-ethical companies performing significantly worse than ESG. Presumably, environmental disasters are recognised as posing severe risks to such investment.
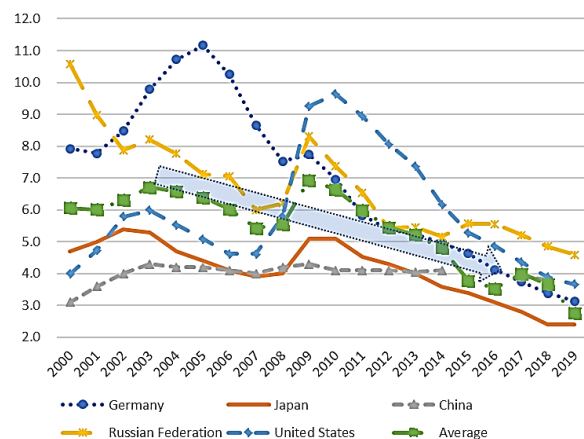
4. INEQUALITY FIGURES

Two measures in particular can verify the existence of inequality. Figures 1 and 2 show the unemployment rate and Gini coefficient, respectively.

4.1. Unemployment rate and inequality (Gini coefficient)

Figure 1 illustrates the unemployment rate in five countries – Germany, Japan, China, the Russian Federation and the US. The "Average" line of the unemployment rate in the five countries shows a steady downward trend over the last two decades at around 10% (ILOSTAT, n.d.).

Figure 1. Unemployment rate (%) in Germany, Japan, China, the Russian Federation and the United States

4.2. Gini coefficient

Income redistribution typically helps to ease inequality (Gini coefficient). Figure 2 indicates the Gini index (World Bank estimate) in five different countries (Germany, Japan, China, the Russian Federation and the US). The "Average" line of the Gini index demonstrates an upside potential over the last three decades at around 20% (The World Bank, n.d.).

Figure 2. Gini index (World Bank estimate) in Germany, Japan, China, the Russian Federation and the United States
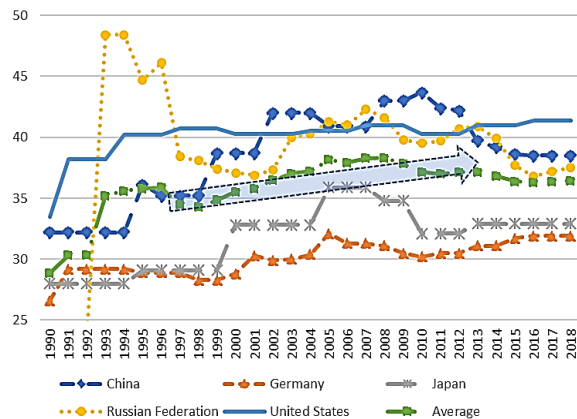
Figures 1 and 2 show different directions. The unemployment rate has been steadily declining since 2000, while the Gini index shows an increasing marginal trend since 1990. How can these two different trends be explained?

Brynjolfsson and McAfee (2014) has pointed out that the median income fails to rise even as the GDP soars, creating a striking paradox since the 1990s. Productivity has reached record levels, and innovation has never been swifter. However, the median income is falling, and fewer jobs are available. High technology is advancing so rapidly that people's skills and organisations are unable to keep pace. Digital technologies threaten jobs everywhere. However, some are reaping financial benefits – namely, those offering freemium-based digital networking services. Freemium, a portmanteau term coined from the words "free" and "premium", is a pricing strategy whereby a product or service is provided free of charge but additional features, services or virtual (online) or physical goods must be paid for. Such a price zero-sum strategy also causes disparities between users and related stakeholders. Khan (2017) said Amazon does need only making a thin return because the investor who puts their money wants to know their growth in their future. Amazon's shares trade at over 900 times diluted earnings, it's one of the most expensive stocks in the Standard & Poor's 500. This also creates a wage gap between employees whose salaries are incentives by share-option and those who work hierarchically below. This phenomenon appears as a difference between Free and Premium.

5. THE HISTORY OF WORK AND TECHNOLOGY

In this section, we briefly describe the historical background of the technological development that is relevant to this paper.

5.1. Manual labor, mechanisation and electrification

• 1700: *Manual labor* production flexibility was highest when manual labour dominated production. Flexibility is one of the main drivers behind digitalisation. Therefore, in the final stages of digitalisation, the essence of manual production,

flexibility, will be adopted to realise "high-mix low-volume" production.

• 1800: *The first industrial revolution* (mechanisation) was marked by a transition from manual labour to the water- and steam-powered mechanical loom. Steam engines were powered by coal and coal mining thus became a profitable business. The implementation of new technologies triggers different kinds of changes, including societal effects, such as the creation of a stronger middle class in the UK.

• 1900: *The second industrial revolution* followed the introduction of electrically powered mass production based on the division of labour. Factory electrification and the modern production line realised significant economic growth with increased productivity observed worldwide. The modern assembly line was introduced on a large scale based on Chicago's meatpacking industry. However, it increased unemployment, as many factory workers were replaced by machines. The Factory Acts were passed by the Parliament of the United Kingdom for regulating the conditions of industrial employment in the early 19th century. The Acts concentrated on controlling the hours of work and moral welfare of young children.

5.2. Accumulation of digitalization

• 1960: *The third industrial revolution* also known as the digital revolution, occurred after the two great wars. High-speed computers were required for cryptoanalysis and calculating missile trajectories during the Cold War. The most important innovation under these circumstances was the Internet. It was created by the Pentagon under the name 'ARPANET' as a system to facilitate contact in anticipation of an impending nuclear war. The concept of artificial intelligence was also born at the Dartmouth Conference in 1956 (Gavrilova, 2020), which studied ways to build creativity.

• 1970: The concept of AI involves three key factors. Intelligent machines can learn, process natural languages and, finally, create. The first learning process forms an Euler diagram (a diagrammatic means of representing relationships) that includes four circular segmentations. Deep learning forms the smallest circle in the core and machine learning is embedded within AI. The Euler diagram shows clear support for limiting the accumulation of digital resources. The Euler diagram reveals an interdependent relationship between deep learning, machine learning and AI overall.

• 1980: *Machine learning* is a subset of the broader field of AI that focuses on teaching computers how to learn without needing to be programmed. To educate a machine, three components are required: a dataset, features and an algorithm. Features are data items that demonstrate to the machine that to which it must pay attention. Our decision making is rationally bounded, but if the more qualified dataset is considered and the correct features selected, this entire system has the potential to become more efficient than humans at a given task.

• 2010: *Deep learning* is an advance class of machine learning. Different types of algorithms exist inspired by the human brain's neural networks.

Since 2015, the Central Processing Unit (CPU) has had a counterpart in the Graphics Processing Unit (GPU). GPUs enhance the overall productivity of the computer, performing parallel processing and relieving the CPU of some of its excessive processing tasks. Deep learning adopted the structure of the human neural network, and the GPU creates a complex multi-layered structure whereby abstract non-linear datasets transform from one layer to another. GPU can circulate such tasks using their ever faster, cheaper and powerfully structured processing units. Thereby, intelligent machines have been imbued with "eyes". This event may be linked to the "Cambrian explosion", in which human beings, who evolved about 4 billion years ago, acquired the ability of sight over 500 million years ago. Various technological dreams, such as self-driving technology, suddenly became reality.

A new technology that is the key to predicting the fate of AI has emerged. Called "multimodal AI", it can make advanced judgments based on multiple forms of data, such as images, sounds and documents, so that humans can understand their surroundings through their five senses. The term "multimodal AI" is derived from the Latin words '*multus*', meaning 'many' and '*modals*', meaning 'mode'. Multimodality, in the context of human perception, is simply that – the ability to utilise multiple sensory modalities to encode and decode external surroundings. AI's functions will be further expanded as humans analyse themselves scientifically.

6. SOCIAL SPENDING AND BENEFIT IN THREE TARGETED COUNTRIES

As we have seen, social protection is an essential issue for digital platform work. However, digital platforms are reluctant to meet social costs, like Airbnb as mentioned above. Tax authorities must seek new ways to charge for them.

Table 1 shows social benefits and spending in Japan, the US, and Germany (OECD, 2020). All numbers are converted to deviation scores.

Table 1. Social spending and benefit in three targeted countries

	Year	*Spending*	*Benefit*	*Difference*
Japan	2005	-0.52	-1.89	-1.36
	2015	1.20	0.34	-0.86
USA	2005	-0.76	-0.08	0.67
	2018	0.91	1.36	0.45
Germany	2005	1.34	1.19	-0.16
	2018	-0.20	-1.27	-1.07

The institutional systems in each country differ, so it is impossible to make a fundamental comparison. However, the trends in each country are evident. Germany, a supposedly high-welfare state, is decreasing its profits (-0.16 in 2005 to -1.07 in 2018). Japan is increasing its spending (-0.52 in 2005 to 1.20 in 2015), but its profits are also increasing (-1.89 in 2005 to 0.34 in 2015). Germany and Japan also made lower profits than their expenditure. And only the United States barely maintains a positive, slightly reduced balance of spending and profits. (+0.67 in 2005, +0.45 in 2018).

Condon (2020) argues that diversified investors should rationally be motivated to internalize

intra-portfolio negative externalities. Social spending comprises cash benefits and other social services and finances through direct and indirect taxation. The crucial trend of tax spending and benefit is stagnant. Looking at the US figures in Table 1, we see positive results for spending and profits. Only the US performed well with an optimal balance of states and self-governed social safety. When life insecurity is considered, how does tax-financed social security differ from self-directed asset-management (ESG)? Self-directed asset management (ESG) is similar to the democratisation of the economy or the entrusting of other hybrid-organisations, such as Calpers and Government Pension Investment Fund (GPIF).

6.1. Stock price, consumption and savings

Generally speaking, stock price and consumer behaviour are highly correlated. The stock price is a leading indicator of the economy. Therefore, for example, in the US, households have a high shareholding ratio, which affects their consumer behaviour. In addition, the EU and Japan show similar behaviour trends with price fluctuations in leading stock indexes.

Stock prices affect consumption, but what about the opposite concept – savings? Why do households save money? There are various reasons for saving, and here we are considering the case of saving money from the long-term perspective to secure the cost of living after retirement, called a pension. According to the OECD, the household saving rates in G7 nations (Canada, France, Germany, Italy, Japan, the United Kingdom and the US) have shown a steady downward trend for over 20 years (OECD, 2020). In Germany, for example, various social insurance programs provide for most of the household's needs in old age, such as medical care and substantial retirement pensions (Poterba, 1993). Therefore, Germany's savings rate is relatively stable among the G7 countries.

7. SUSTAINABLE INVESTING

According to Deutsche Bank estimates, global financial assets are worth around $242 trillion in 2014 (Sanyal, 2014). This $242 trillion capital market size splits into a variety of financial instruments (e.g., stocks, bonds and derivatives). According to a 2005 calculation by the Japan Securities Research Institute, the total of stocks, bonds and derivatives are approximately $112.8 trillion (Japan Securities Research Institute, 2006). Due to the old statistic in 2014, other World Federation of Exchanges (WFE) stats for 2017 are applied to this issue, stock ($85.3 trillion), bond ($76.2 trillion) and derivative ($8 trillion), and the value of the securities assets are roughly $169.5 trillion in 2017 (World Federation of Exchanges, 2019). Globally, sustainable investing assets in the major markets stood at $30.7 trillion at the start of 2018. Then, the total sustainable investing assets are estimated by roughly 19% of the securities assets mentioned above.

According to the Global Sustainable Investment Review, Europe continued to get the highest proportion at 46% in 2018. However, the European presence is stagnant since 2016 at nearly 53%. The proportions of sustainable investing assets in the United States have remained mostly level at 39% in 2018. Meanwhile, Japan has shown impressive growth where sustainably managed assets grew tripled because the GPIF adopted ESG for their investment strategy.

Sustainable investment methods encompass, above all, the following activities and strategies:
- negative/exclusionary screening;
- positive/best-in-class screening;
- ESG integration.

7.1. Negative/exclusionary screening

Negative/exclusionary screening is the exclusion of certain sectors or companies from a fund or portfolio. Negative/exclusionary screening practices are based on specific ESG criteria. As in 2016, the largest sustainable investment strategy globally is negative/exclusionary screening ($19.8 trillion), followed by ESG integration ($17.5 trillion). Negative screening remains the largest strategy in Europe and has grown by 31 per cent over the past two years to $19.7 trillion in assets. ESG integration continues to dominate in the US, while corporate engagement and shareholder action are the dominant strategies in Japan (The Global Sustainable Investment Alliance, 2018).

7.2. Fiduciary duty

According to Friedman (1991), "nobody spends somebody else's money as carefully as he spends his own". Friedman also follows primitive classical economics, saying that "top-management is responsible for maximising economic interests to its shareholders and should not fulfil other responsibilities" and must comply with laws and social norms and efficiently conduct business for shareholders, in which case, donations do not mean that the business is contrary to the interests of the shareholders. He also argues that "top-management that accepts social responsibility without making maximum profit for shareholders will undermine the foundation of a free society". However, he did not anticipate highly advanced ESG funds with the social approach of "comply or explain".

7.3. ESG (environment, social and governance)

ESG investing constitutes portfolios of equities and/or bonds for which environmental, social and governance factors have been integrated into the investment process. ESG adopts inclusion criteria, a mainstream investment method. Socially responsible investment (SRI) also integrated ESG factors into the investment process (Shimizu, 2018).

- *Environmental* risk exerts a potentially negative impact on air, land, water, ecosystems and human health. Company environmental activities encompass climate change, natural resources, pollution and waste and environmental opportunities.
- *Social* risks are addressed by company social activities, such as promoting health and safety, encouraging labour-management relations, protecting human rights and focusing on product integrity. Social activities yield positive outcomes by increasing productivity and morale and improving brand loyalty.

• *Governance* chiefly concerns two main factors – corporate governance and behaviour (MSCI, n.d.). It also concerns ownership and control, board diversity, accounting and executive compensation.

Two types of ethical investment exist: SRI and ESG. The significant difference between them is the idea of "comply or explain", which clearly shows the clear shift in stance from "exclusionary strategy" to market-driven investment. The idea of "comply or explain" can be adopted by all public-related companies. Therefore, an index fund will offer efficient investment possibilities for those investors. An index holds all potential stocks as one stock. SRI screening can be applied using either inclusionary (positive) or exclusionary (negative) methodology (Knoll, 2002).

7.4. Value, supply chain and sheared value

"Competitive Advantage" written by Porter in 1985 (as cited in Ankli, 1992), gave the concept of the "value chain". Primary and support activities in the value chain are included, such as logistics, marketing HR and others. Porter suggests that a firm might develop a competitive advantage by interrelationship with any one of these activities. Also, Porter and Heppelmann (2014), suggest about information technologies (IT) into the product value chain. IT-driven transformation, such as DX accelerates to giving rise to huge productivity gains and growth over the economy. In recent time, IT is becoming an integral part of the product itself. Embedded sensors, processors, software and connectivity, are included in a product and coupled with a product cloud in which product data is stored and analysed, which is called "Smart, Connected Products".

The value chain creates high value for products through mutual relationships between internal and external activities. Workflow becomes more fragmented causes a unique work process synthesis thorough out the computer networking. Usually, the existing organisation, especially the worker, has the knowledge and other types of the dataset which will be not only bonding to the physical organisation but also using a resent machine network in cyberspace. Due to the work digital transformation, the social security system cannot adapt to these changing jobs, so ESG can provide a view to reconstructing this system.

Porter, Serafeim, and Kramer (2019) suggest also in his "shared value" theory and ESG, need to examine the actual link between social impact and profitability. Off cause, he hasn't express denying any effects of ESG. For example, consider the power generation industry: twenty years ago, government regulation set electricity prices and conferred regional monopolies. A Five Forces analysis would have correctly predicted a stable and profitable source. Many investors bought utility stocks. Now, many markets have been deregulated. Such deregulation induces market competition and creates new innovation, like solar and wind technologies (Porter, Serafeim, & Kramer, 2019).

8. FINANCIAL PERFORMANCE DURING THE PERIOD OF LEHMAN AND COVID-19 CRISIS

Because of COVID-19 crisis the investment in the high-tech industry, which is considered to have low CO2 emissions, also stable results is becoming very active. A list of public corporations by market capitalisation shows 7 companies out of the global top 10 of those companies are related to Internet communication technologies (Microsoft, Apple Inc., Amazon.com, Alphabet Inc., Alibaba Group, Facebook, Inc., Tencent).

Here, we compared the performance of SRI exclusion criteria (with 137 stocks selected by the Norway Council of Ethics) with the Global Dow as an index without negative/exclusionary screening (Norges Bank, 2020; "The Global Dow", n.d.). The 137 stocks selected by the Norway Council of Ethics used Bloomberg's ESG information and compared the performance with the Global Dow in their portfolio function.

• *Exclusion list of the Norway Council of Ethics*

The Government Pension Fund of Norway is a sovereign wealth fund owned by the government of Norway. The Government Pension Oil Fund was established in 1990. It has over US$1 trillion in assets it the world's largest sovereign wealth fund (SWF). It is the largest pension fund in Europe and larger than the California public-employees pension fund (CalPERS), one of the largest institutional investors in the United States (The Council on Ethics, 2020). They need to invest with fair trade as a giant SWF.

• *The Global Dow*

It's a stock index, which is composed of the stocks of 150 top companies from around the world as selected by Dow Jones (S&P Dow Jones Indices, 2020).

8.1. Lehman crisis

On September 15, 2008, Lehman Brothers filed for bankruptcy. Lehman's bankruptcy was the largest in history, with $639 billion in assets and $619 billion in debt. Lehman was the fourth-largest US investment bank at the time of its collapse, with 25,000 employees worldwide.

As known, this crisis was a financial crisis, so there was a high correlation with unethical companies whose profits were stable, here the stocks excluded by the Norway Council of Ethics. And it works just like the Global Dow. Period: the fund price was calculated from November 3, 2008, to December 31, 2010 ($n = 564$) using Excel correlation (Correl) function; calculated as 0.9524. The total return is the exclusion list of the Norway Council of Ethics at 34.45% and other the Global Dow at 29.80%.

8.2. COVID-19 crisis

The COVID-19 crisis, also known as the corona-virus crisis, is an ongoing global pandemic of coronavirus disease 2019 (COVID-19). The outbreak was first identified in December 2019 in Wuhan, China. The World Health Organization declared the outbreak a Public Health Emergency on January 30, 2020. An abnormal situation, such as a crisis mention above gives many implications for comparing stock performance. As known, this COVID-19 crisis is a pandemic and the ESG investment methodology is very suitable which developed from SRI mentioned above. Exclusion criteria of the Norway Council of Ethics include violation of fundamental ethical norms such as fundamental humanitarian principles,

nuclear weapons, tobacco and other unethical issues.

For this reason, the correlation between the stocks excluded by the Norwegian Ethics Committee and the Global Dow is low compared to the Lehman crisis. Duration: the fund price was calculated from November 1, 2019, to August 20, 2020 ($n = 218$) using Excel's Correl. Calculated as 0.9226. The total return is the exclusion list of the Norway Council of Ethics at -10.225% and other the Global Dow at -0.35%.

8.3. The dilemma between ESG and the "common ownership"

Charles, Darné, and Fouilloux (2016) suggest that "the results on the ESG indices show that the weights used to construct these indices (sustainability-score weights vs market cap-weights) seem to have an impact on their risk and their performance". Therefore, there are different ethics of market participants, which cause this other performance between the Lehman crisis and the COVID-19 crisis. This is also proved in the paper by Charles, Darné, and Fouilloux (2016). In other words, there is a major paradigm shift at ethics in the COVID-19 crisis, and a shift to sustainable investment such as SRI and ESG can be considered. However, from the view of "common ownership" such as by Azar, Schmalz, and Tecu (2017), even if the direction of ESG investment increases, the dilemma will eventually occur that the monopoly tendency will accelerate. For this reason, the existence of trade unions that strongly promote sustainable investment methods is essential.

9. CONCLUSION

This paper was to understand social security as it relates to work that has changed as a result of digital transformation. The progressed DX of work has been mentioned in Section 5 about the history of work and technology. An optimal combination of capital and labour is crucial for increasing gross domestic product. Here ESG and a trade union are concerned. The monopoly of digital platforms (GAFA) is becoming stronger due to the decentralisation of work from the inevitable nature of the network. This threatens the collapse of the organisation and especially the weakening of trade unions. GAFA's vast margin makes huge disparities because it is mainly distributed to investors and top managers, not to employee salaries.

The difference between tax-financed social security and self-directed asset-management (ESG)

has been referred to in Section 6 "Social spending and benefits in the three target countries". The argument in this section is that the balance between social security by tax and self-directed asset-management (ESG) is essential. According to Galbraith (1952), to ensure the optimal distribution of industrial profits, it is necessary to create a countervailing power, such as voices from trade unions.

The major paradigm shift at ethics in the COVID-19 crisis has been referred to in Section 8, "Financial performance during the period of Lehman and COVID-19 crisis". The stock price of non-ethical companies is better performed during the Lehman crisis than the COVID-19 crisis. The major ethical paradigm shift in the COVID-19 crisis drives ethical investment such as SRI and ESG. Therefore, ethical education is necessary.

However, because of the COVID-19 crisis, investment in sustainable GAFA is becoming very suitable. It creates a very paradoxical situation between sustainable and monopole situation. The "common ownership" is concerned. In recent years, some researchers have theorised that the "common ownership" of shares in competing firms within a concentrated industry may lead to anticompetitive effects (BlackRock, n.d.).

New decentralised systems such as blockchain have emerged and have challenged the central government and private monopolies. It applies to social security systems. It's related to the difference between tax-financed social security and self-directed asset-management (ESG).

In this paper, several issues are concerned, such as "common ownership" that monopoly and oligopoly are triggered. The solution for this issue will be HHI (Herfindahl-Hirschman Index) which should consider the degree of industry concentration, especially when choosing the right investment decision by ESG investing. However, HHI is appropriate from the perspective of consumer protection and has limitations from the perspective of securities investment.

In recent years, with the need for drastic reform of the social security system. ESG investment as capitalization of work-related social security has more attracted because associated with the stock-market manageability.

How is the peer-to-peer blockchain applied to social "security"? Peer-to-peer ethics are essential. Understanding, clarifying and managing the ownership structure of heterogeneous investors, which is similar to stakeholder management, will be a topic of future discussion.

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