European Proceedings of
Social and Behavioural Sciences
EpSBS

www.europeanproceedings.com
e-ISSN: 2357-1330

DOI: 10.15405/epsbs.2021.12.04.5

ISMC 2021
16th International Strategic Management Conference

SOCIETY 5.0 AND FINANCIAL INTEGRATION IN DEVELOPED COUNTRIES

Kanish Garayev (a)*, Leyla Tahirzade (b)
*Corresponding author

(a) UNEC, S. Orucov street 3 apart 52, Baku, Azerbaijan, kanish.garayev@unec.edu,az
(b) Mardakan. Baku, Azerbaijan, leylatahirzade7@gmail.com

Abstract

Globalization has brought many countries together. It is critical for governments to be able to adapt to rapid technological development on a daily basis. Technology makes people's life easier, yet it is debatable whether all countries are responding to these developments. Industry 4.0, which Germany pioneered, is discussed, while Japan, which is at the forefront of digital technology, is remembered for its Society 5.0 concept. The procedure of complying with Society 5.0, which was designed by Japan, might be in the fastest developing countries. The goal of Society 5.0 is to increase people's quality of life by ensuring that society is integrated. The integration of financial markets in developed countries with the greatest potential for transitioning to Society 5.0 was examined in this study. Eight developed countries are used in the study. The aim of this study is to analyze financial integration by addressing the index of countries with the highest potential for transition to Society 5.0, which Japan has put forward. The correlation coefficient is used in the analysis. In this framework, data for the years 2015-2020 has been utilized. It has been investigated whether the crisis or change in the financial system of any country has affected other country markets through financial channels. Among the countries identified, the reasons why countries with high correlation coefficient and weak are strong or weak are discussed. The digital development and technological developments of Society 5.0 have resulted in rapid adaptation of technological developments, making integration in developed countries faster.

Keywords: Correlation, financial integration, society 5.0, technological development

https://doi.org/10.15405/epsbs.2021.12.04.5
Corresponding Author: Kanish Garayev
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

1. Introduction

Trends seen in recent years have led to the creation of a global financial system that is evolving under the influence of integration relations. This globalization shows itself in many areas, not just finance. Especially developed countries adapt to these trends more quickly. With the industry's robotic use, it seems that Japan, South Korea, Germany from European countries will surpass "Industry 4.0" and reach Society 5.0 quickly. Scientists stress that countries must be in co-operation in order for Society 5.0 to move on. Integration is one approach for countries to work together. Integration is the process of persons becoming integrated into a society and adapting to that society. Financial integration is the process of bringing a country's financial markets closer together and going in the same direction as those in other nations or around the world.

This study conducted financial integration analysis of the index of 8 developed countries with the highest potential for integration into Society 5.0. Financial integration has many benefits to both the country's economy and investors. Correlation coefficients have been utilized in the analysis. The stronger the association between those countries, the closer the correlation coefficient is to one. Countries that have a negative correlation coefficient are said to have a negative association. If the correlation coefficient is close to zero, the countries have a shaky link.

1.1. Financial Integration

Because to the pre-1945 world countries' conflict, the global economy was in bad shape (for example, World War 1, World Economic Depression of 1929, World War 2). The economy has collapsed as a result of conflicts and economic distress. Suggestions to reduce these effects have been one of the Bretton Woods Meeting (Demir, 2014). With this treaty, the country's foreign exchange rates were integrated into the currency of a single country, the US dollar. This system collapsed in 1971 and replaced it with the free-wave courtship regime (Erdurak, 2019). The increase in oil prices in the 1970 years followed by a large amount of USD surplus generated by the OPEC countries. As a result, the financial systems and markets that emerged in the 1980 and 1990 years have led to extensive integration (Seçme, 2018).

“Integration” means the most known definition and the connection of various variables in a single form. Integration is a new concept, and the Dutch economist J. It was introduced to science by Tinbergen (Babayeva, 2019). In the literature, there is no one type definition for financial integration derived from the concept of integration. Financial integration is commonly related with ideas like financial globalization, capital liberalization, economic growth, and foreign financial liberalization, which have a variety of definitions.

The elimination of constraints on free capital flows and investment in most nations throughout the world (particularly in industrialized countries) has resulted in a major expansion in international financial integration during the last decade (Lane & Milesi-Ferretti, 2003). The integration of a country's domestic financial system with the worldwide financial market is known as financial integration (Seçme, 2018). Investors are becoming more active in international markets as financial integration improves. Local

https://doi.org/10.15405/epsbs.2021.12.04.5
Corresponding Author: Kanish Garayev
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

investors are diversifying their portfolios and reducing their exposure to adverse events in their home country by making international investments (Erdurak, 2019).

Financial integration refers to the free movement of capital, in the simplest definition. There is only one set of market rules in the integrated financial market. Participants are treated equally, with equal rights (Demir, 2014). The term "financial integration" refers to the cooperation of financial markets in a number of countries around the world. The costs of processing the integration have an impact on the foreign exchange rate, political risks, and other hazards (Seçme, 2018). The free circulation of the capital that comes with integration will allow investors to invest in more risky assets. And that's when you have an unstable balance sheet (Erdurak, 2019).

Financial integration has many benefits to both investors and the country economy and other factors. It offers investors convenience and opportunities to share financial integration risk. Due to integration, the securities in the investor's portfolio may be owned by different countries (Demir, 2014). Financial integration can also affect domestic investments in the country and the growth in the country's economy. Increasing the physical capital level per employee can help increase the economic growth rate and improve living standards. The benefits listed are particularly visible in foreign investments (Seçme, 2018). The movement of foreign capital from rich to impoverished countries allows these countries' economies to grow faster. The financial services industry and financial integration both help to boost competitiveness (Babayeva, 2019).

Although many economists and financiers believe financial integration benefits the country's economy, some economists and financiers believe it has a negative influence. They contend that long-term integration will have a negative impact on employment and earnings (Asaleye et al., 2019).

Finally, it's worth noting that financial integration and financial globalization are both related but distinct ideas. Financial globalization refers to the removal of limitations on interest and foreign exchange transactions, allowing for global capital movement. The relationship between a country's financial market and worldwide financial markets is revealed by financial integration. Despite the fact that they are two distinct ideas, financial globalization and financial integration are inextricably linked (Babayeva, 2019).

1.2. Society 5.0

Technology advancements increase the quality of life in the workplace and in society, contributing to the advancement of society. The Japanese designed Society 5.0, also known as the super smart society, as a society model in which artificial intelligence is examined in all aspects and people are most efficiently integrated with computers and robots (Saracel & Aksoy, 2020). Technology continues to innovate in the industry, reflecting the changes that have occurred in the economy and in society. From 1.0 to 5.0, these changes have occurred. The term "community 5.0" is new, and its goal is to improve people's quality of life (Pereira et al., 2020). But before we explain this, it's important to give a brief explanation of what other industrial revolutions are;

Industry 1.0: Thomas Newcomen invented the first major technology, the steam engine, in 1712. The majority of people were moved from the fields to the factories as a result of this development, and then the large factories were established.

https://doi.org/10.15405/epsbs.2021.12.04.5
Corresponding Author: Kanish Garayev
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

Industry 2.0: The second industrial revolution represents an increase in electrical power. The first car, telegraph and telephone inventions took place during this period.

Industry 3.0: The beginning of digitalization coincides with this period. Machine operation in factories in computer control has reduced labor costs.

Industry 4.0: The goal of this revolution was to build a virtual replica of the real world. The core concepts of Industry 4.0, according to the literature, are cyber physical systems, objects, and the Internet of services.

Society 5.0: Japan's new ideology, Society 5.0, attempts to integrate the most recent technological advancements into society (Saracel & Aksoy, 2020).

The goal of Society 5.0 is to raise people's living standards while also developing ways to improve the country's economy. It was developed as part of the Science and Technology Basic Plan and approved by the Council of Ministers in 2016. (Fukuyama, 2018). While many countries attempt to adapt to Industry 4.0, Japan, a developed country, is heading toward Society 5.0 thanks to its advanced technologies. This attempts to develop a super-intelligent civilization that can be managed without humans (Pereira et al., 2020).

As it is known, the symptoms of population aging, birth rate, and decreased total population began to appear Japanese. Society 5.0 produces strategies to reduce such problems (Fukuyama, 2018). Society 5.0 philosophy suggests the implementation of some objectives such as:

- To develop solutions against aging world population,
- Bringing the virtual world and the real world together,
- The use of the Internet of things with the benefit of society,
- Creating solutions for environmental pollution and natural disasters.

Society 5.0 includes the Internet of things, artificial intelligence and digital technologies, similar to Industry 4.0. Unlike Industry 4.0, however, it covers not only industrial production, but also the issues closely related to society such as health, transportation and security services, agriculture, finance, energy and food production (Öztürk & Ateş, 2021). But it has to be said that the technological developments could allow for an even better quality of life, an even easier way of life, while at the same time leading to an unequal distribution of employment and wealth (Pereira et al., 2020).

2. Literature Review

Financial integration is defined as the process through which a country's financial market becomes increasingly linked with other economies, allowing risk to be compared across markets. It has been proposed that financial integration has a favorable influence on economic development and growth (Premaratne & Bong, 2019). In addition, financial integration increases competition, but also facilitates the flow of information (Farid, 2013).

Tullio Jappelli and Luigi Pistaferri (2011) researched it to determine that financial integration decreases portfolio risk for investors and induces consumption softening. They calculated how much more integration lessens the country's shock impact.

https://doi.org/10.15405/epsbs.2021.12.04.5
Corresponding Author: Kanish Garayev
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

In their study, Jan Babecký et al. 82013) looked at the process of financial integration during times of financial turbulence. The findings revealed that there is a link between financial instability and financial integration, and that both processes are mutually dependent.

In the study conducted by Işıl Demir (2014), the study tried to identify the impact of financial integration on the banking sector, and tried to offer some solutions to eliminate the devastating effects of financial integration and banking crises on financial systems. Due to the increased competition in local banking sectors and the emergence of new instruments, financial integration should be improved, risk diversification opportunities should be increased, as a result of financial integration.

In the study conducted by Zekeriya Oğuz Seçme (2018), the VIX Index, which is the risk index for interest, foreign currency and stock markets in Turkey, Germany, Spain, Hungary and Poland, has been investigated how the interest rate of the FED, the Central Bank of America, was affected by shock and volatilities. It has been attempted to uncover cross-market dispersions through financial channels of this interaction. This is thought to be linked to countries' levels of financial integration. When the study's findings were examined, it was discovered that the FED's interest decisions had a considerable impact on Turkey's interest rate and stock index across both long and short periods, particularly during crisis moments.

The relationship between employment and financial integration was investigated in Abiola John Asaleye et al.'s (2019) study. Based on the findings, it can be concluded that financial integration and employment have a negative association. It has been proposed that emerging countries should take advantage of the short-term benefits of financial integration.

The goal of Aziza Babayeva's (2019) research was to assess the impact of Central Asian nations' financial integration. Fixed-impact and random-impact panel data models were used to assess the influence of the study's nations' financial performance on financial integration.

Ceren Erdurak (2019) examined the link between financial integration and crises by creating balanced and unstable panel data sets from European Union member states. In the 2008 Global Financial Post-Crisis era, the ability of integration to deal with negative consequences was shown to be stronger and statistically significant for 13 nations than for all countries.

3. Research Method

The data set of the study is the stock indexes of developed countries. In this study, the daily opening prices of the stock indexes of 8 developed countries were obtained from the "Investing.com" site. Daily returns were obtained using daily opening prices, then transferred to Eviews to calculate the correlation coefficient. The 8 countries used in the study are the United States, Canada, Japan, South Korea, Australia, France, Germany and England. USA's down Jones, Canada's S&P, Japan's Nikkei 225, South Korea's KOSPI, Australia's S&P/ASX200, France's CAC40, Germany's DAX and England's FTSE 100 indices were used.

The data range covers 6 years, the years 2015-2020 (including 2020). This data is obtained from the official website "Investing.com". The weekly returns of these 8 indexes are calculated based on the 6-year weekly opening prices. For some countries, the graphs obtained with the original values for the weekly return rates for these indexes are as follows (see figures 1-4);

https://doi.org/10.15405/epsbs.2021.12.04.5
Corresponding Author: Kanish Garayev
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

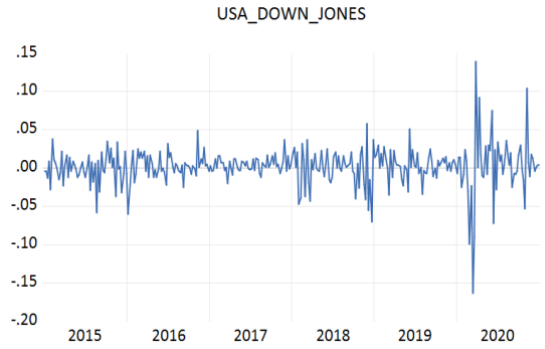

Figure 1. USA index rates (2015-2020)

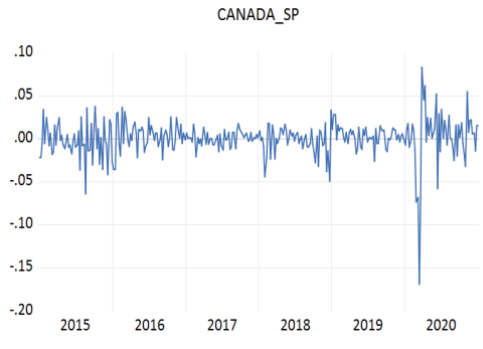

Figure 2. Canada index rates (2015-2020)

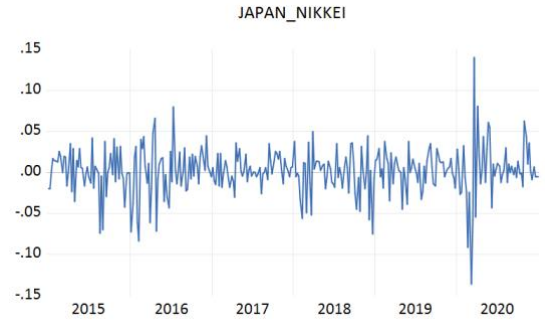

Figure 3. Japan index rates (2015-2020)

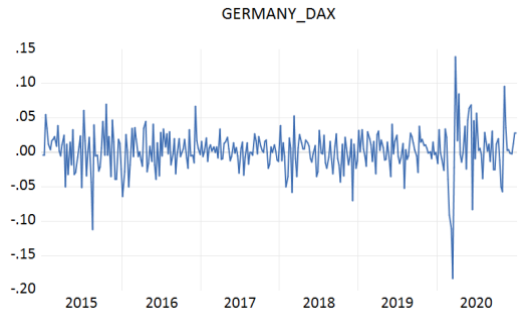

Figure 4. Germany index rates (2015-2020)

The graphics were obtained with the help of the Eviews. The charts above illustrate the weekly return rates of certain indexes. The return rates of all four nations (the United States, Canada, Japan, and Germany) fell dramatically in 2020, as seen in the graphs. In general, all four nations saw comparable trends in the same years.

3.1. Correlation Analysis

This study use the correlation coefficients technique. As a result, index opening prices for the nations were first determined, after which the weekly returns were determined using these opening prices, and finally the correlation coefficients between these returns were determined. The Eviews software was used to calculate correlation coefficients.

The ratio of the explained variation to unexplained variation is defined as the correlation coefficient (r);

$$r = \frac{N\sum xy - \sum x \sum y}{[[N\sum x^2 - (\sum x)^2][N\sum y^2 - (\sum y)^2]]^{1/2}}$$

If the linear curve passes through all points on the graph, then r = 1. R always receives a number between -1 and 1. If there is a strong positive relationship between variables, the time value is closer to 1.

https://doi.org/10.15405/epsbs.2021.12.04.5
Corresponding Author: Kanish Garayev
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

If there is a negative strong relationship between variables, the time will be closer to r-1. In poor relationships, the r value is closer to 0. To summarize, if the r value takes a number between 0.00 and 0.25, that time is weak, if the weak relationship receives a number between 0.26 and 0.49, if the medium relationship receives a number between 0.50 and 0.69, if the high relationship 0.90 receives a number between 0.70 and 0.89, 1.0 we can say that there is a very high positive relationship at this time.

3.2. Results

The link between the developed country index and the correlation coefficient analysis is tested in this study. The weekly returns were initially computed using the indexes' 6-year opening prices, then entered into the software, and the correlation matrix was calculated.

Table 1. Results

	USA	CANADA	SOUTH KOREA	JAPAN	FRANCE	GERMANY	ENGLAND	AUSTRALIA
USA	1	0,81	0,26	0,33	0,78	0,76	0,75	0,64
CANADA	0,81	1	0,40	0,38	0,79	0,76	0,76	0,68
SOUTH KOREA	0,26	0,40	1	0,53	0,42	0,40	0,31	0,18
JAPAN	0,33	0,38	0,53	1	0,49	0,48	0,33	0,28
FRANCE	0,78	0,79	0,42	0,49	1	0,93	0,78	0,56
GERMANY	0,76	0,76	0,40	0,48	0,93	1	0,74	0,55
ENGLAND	0,75	0,76	0,31	0,33	0,78	0,74	1	0,64
AUSTRALIA	0,64	0,68	0,18	0,28	0,56	0,55	0,64	1

First, it is important to note that there is no negative correlation coefficient between the index of the 8 designated countries. So, there is a positive correlation coefficient between the indices of the 8 developed countries selected for the study, and therefore a positive relationship. Investors often care about the weak correlation coefficient, even if they are negative and positive. Because this time, the crisis in one country does not affect the other, so the diversification in their portfolio is positive.

In general, it is possible to see that when the results are looked at, the countries with the most powerful relationship, the highest correlation coefficient, are between the United States and Canada. It is possible to say that the commercial relations between these two countries are high. These two countries are moving at a similar level. Other countries where the relationship of America is strong are France, Germany and England, respectively. There is a high positive correlation coefficient between Australia and USA.

The countries in which the Kanada relationship is high are similar to the United States. It's possible to see America, France, Germany and England in the early days. The correlation coefficients between France, Germany and Britain were driven in 0.70. The main reason for this is because they are members of the same union (European Union). The main reason these 3 countries have a high correlation coefficient with the United States can be because they trade highly with each other, because production and consumption structures are similar and other reasons.

The lowest correlation coefficient appears to be between Australia and South Korea. Considering that the trade relationship between Australia and South Korea is not weak, it can be said that the reason

https://doi.org/10.15405/epsbs.2021.12.04.5
Corresponding Author: Kanish Garayev
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

for the weak correlation coefficient between these two countries is that their production and consumption structures are not similar. In the table 1, the country in which the South Korean relationship is the highest is Japanese with 0.53 correlation coefficient. We can show why these two countries are close to one another, their influence is similar, and their production and consumption habits are similar.

Canada is the country where Australia has the greatest correlation coefficient (0.68). This is due to the fact that Canada and Australia have strong and varied bilateral ties. Canada, defense and security, commerce, economic growth, and illegal immigration are among the topics on which he consults with Australia on a regular basis to create mutual interests in the fight against terrorism, transportation, and other concerns (Canada - Australia Relations, 2021). Other countries in which Australia's relationship is strong are the United States and England.

4. Conclusion and Discussion

The purpose of this study is to measure the integration of financial markets in developed countries with a greater likelihood of parading into Society 5.0. In recent years, technological elements such as artificial intelligence, the Internet of things and big data have become more common with digital transformation, and have differentiated our everyday lives. Societies are changing at a much larger scale than before with technological advances in light of information from past experiences. The process of compliance with Society 5.0, created by Japan, may be in the fastest developed countries. Society 5.0 raises the quality of life and increases the speed of globalization. It brings financial and economic comfort not only to social life, but also to countries. From a financial standpoint, financial integration gives investors great opportunities. In this study, the financial indices of 8 developed countries, including Japan, which created Society 5.0, have been analyzed and the level of financial integration has been calculated. The digital development and technological developments caused by Society 5.0 have been concluded that rapid adaptation to technological developments has led to faster integration in developed countries.

The first title of the study was given information on financial integration and Society 5.0, then the opening prices were selected by selecting the index of 8 developed countries, then calculated weekly returns and included in the program. the level of financial integration between countries has been calculated by calculating correlation coefficients between 8 countries. The country with the highest correlation coefficient is between France and Germany. The main reason for this is that these two countries are considered member states of the European Union, and we can say that the trade relations between these two countries are high. Any crisis in the country can easily affect the other country on a basis. That's why investors are afraid to invest in the securities of the two countries at the same time.

The other two countries with strong ties are the United States and Canada. France, Germany, and the United Kingdom are among the countries with whom the United States has a strong connection. The major reason for this is because business ties are strong, and production and consumption patterns are comparable. The study's other findings are detailed in the "Results" section.

References

Asaleye, A. J., Lawal, A. I., Popoola, O., Alege, P. O., & Oyetade, O. O. (2019). Financial integration, employment and wages nexus: evidence from Nigeria. *Montenegrin Journal of Economics, 15*(1), 141-154.

Babayeva, A. (2019). Orta Asya Ülkelerinde Finansal Entegrasyon Ve Ticaret [Financial Integration and Trade in Central Asian Countries] [Master's thesis]. Trakya Üniversitesi Sosyal Bilimler Enstitüsü.

Babecký, J., Komárek, L., & Komárková, Z. (2013). Financial Integration at Times of Financial Instability. *Finance a úvěr-Czech Journal of Economics and Finance*, 25-45.

Canada - Australia Relations. (2021, June). Canadain international. https://www.canadainternational.gc.ca/

Demir, I. (2014). Finansal Entegrasyon Ve Türk Bankacılık Sistemine Etkisi [Financial Integration and Its Impact on the Turkish Banking System] [Master's thesis]. Niğde Üniversitesi Sosyal Bilimler Enstitüsü.

Erdurak, C. (2019). Finansal Kriz Ve Finansal Entegrasyon Arasındaki İlişkinin Ampirik Analizi: Avrupa Birliği Üzerine İnceleme [Empirical Analysis of the Relationship Between Financial Crisis and Financial Integration: A Study on the European Union] [Master's thesis]. İstanbul Üniversitesi Sosyal Bilimler Enstitüsü.

Farid, S. (2013). Financial Integration in African Emerging Markets. *African Economic Conference 2013* (pp. 1-20). Johannesburg: Economic Lecturer at Institute of African Researches and Studies.

Fukuyama, M. (2018, July). Society 5.0: Aiming for a New Human-Centered Society. *Special Article*. Japan Spotlight.

Jappelli, T., & Pistaferri, L. (2011). Financial integration and consumption smoothing. *The Economic Journal, 121*(553), 678-706. https://doi.org/10.1111/j.1468-0297.2010.02410.x

Lane, P., & Milesi-Ferretti, G. (2003). International Financial Integration. *Palgrave Macmillan Journal*, 82-113. https://doi.org/10.2139/ssrn.495625

Öztürk, F., & Ateş, E. (2021). *İnsanlık Yararına Teknolojik Dönüşüm: Toplum: 5.0* [Technological Transformation for the Benefit of Humanity: Society: 5.0]. Bilim ve Teknik.

Pereira, A., Lima, T., & Charrua-Santos, F. (2020). Industry 4.0 and Society 5.0: Opportunities and Threats. *International Journal of Recent Technology and Engineering (IJRTE)*, 3305-3308. https://doi.org/10.35940/ijrte.D8764.018520

Premaratne, G., & Bong, A. (2019). The Impact of Financial Integration on Economic Growth in Southeast Asia. *Journal of Asian Finance, Economics and Business*, 107-119. https://doi.org/10.13106/jafeb.2019.vol6.no1.107

Saracel, N., & Aksoy, I. (2020). Toplum 5.0: Süper Akıllı Toplum [Society 5.0: Super Smart Society]. *Social Sciences Research Journal (SSRJ)*, 26-34.

Seçme, Z. O. (2018). Gelişmekte Olan Ülkelerde Uluslararası Finansal Entegrasyon, Döviz Kuru Ve Volatilite: Türkiye Üzerine Bir Çalışma [International Financial Integration, Exchange Rate and Volatility in Developing Countries: A Study on Turkey] [Doctoral dissertation]. İstanbul Üniversitesi Sosyal Bilimler Enstitüsü.