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CULTURAL AND NON-CULTURAL HOLIDAY EFFECT IN JAPANESE AND SOUTH KOREA STOCK MARKETS

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ABSTRACT

This paper investigated the existence of cultural and non-cultural holiday effect in Japanese and South Korea stock markets consisting of four selected stock indexes which are Nikkei 225, JASDAQ, KOSDAQ and KOSPI. Descriptive statistics and Ordinary Least Square (OLS) with dummy variables are adopted to examine the average returns and associated with the cultural and non-cultural holiday effect behavior. It is found that post-holiday and cultural post-holiday effects happened in Nikkei 225 while KOSDAQ only showed cultural post-holiday effect. On the other hand, insignificant holiday effect was found in JASDAQ and KOSPI. This holiday and cultural influences can be explained with the arguments from the trading behavior where both countries have their own cultural, own nation holidays and traditional days affecting the trading patterns in the stock markets.

JEL classification*:F21, Z33.*
Keywords*: Holiday effects, Nikkei 225, JASDAQ, KOSDAQ, KOSPI.*

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1. INTRODUCTION

1.1 Background of the study

Seasonality which is known as calendar anomalies and holiday effects in the financial markets, are being examined for years. Studies have shown evidence of consistent seasonal patterns in the process of generating returns in future markets and bonds. In the presence of this kind of anomalies, an investor can predict their risks can be cause by the seasonal pattern of security returns when having trading activities (D.N. Greshnev, 1997). Investor behavior can be influenced by a mood that also can decide the returns and profitability of the stock market. Before long weekends and holidays, investors can also have an optimistic attitude that leads to changes in trading habits and, in turn, leads to a change in returns. As some investors go on holiday during the period, they do not trade, thereby reducing liquidity. Similar situations may arise before holidays. The pre-holiday impact has proved to be a real anomaly that is still present in

some financial markets. Some public holidays display slightly higher returns than those before the holiday. The pre-holiday effect, therefore, seems to be motivated by culture and tradition. Moreover, the global crisis and the conditions of the international stock markets has caused major changes in the trends of the indexes as well in the stock exchanges. The volatility and the recession in the economy shows the lack of consistency thus must take the measures and to analyze the holiday effect crisis. Based on the previous research, there are many evidences of the abnormal returns on holidays are called as holiday effect and has been well documented (Picou, 2006).

Evidences also shown that they are major existences of calendar anomalies in the US and in many other countries. The main calendar anomalies are the day-of-the-week effect, the turn-of the-month effect, the month of the year effect, the January effect, the Holiday effect and Halloween effect. The reasons are mostly remain unknown but the particular interest are due to the market efficiency where the stock prices shows the information available in order for the investors to have trading based on the normal profits (Wong, Agarwal, & Wong, 2006). Researches also said that the holiday effect has been the most persistent and best documented anomalies of efficient market theory. Market theory plays an important role in the prices and returns of the stock markets. The theory of stock market effectiveness implies that certain real value seems to be the price you get from an asset presently, representing any knowledge that may just push the price down or up. If the theory of efficiency is accurate, everything else that the market experts do to evaluate the market is for nothing. Only insider data will assist anyone to get an image of the success of a stock that is not reflected in what you can already see. The efficient market hypothesis (EMH) argues that all publicly accessible knowledge is completely integrated into stock prices. One of the EMH potentially adverse effects is that there are no stable trends in the stock market that can be accurately explored for abnormal returns. The EMH claims, fundamentally, that share prices are essentially forms of social interaction. In both developed markets around the globe markets, the whole phenomenon, known as the holiday effect, has also been discovered. The extraordinary returns during the public holidays are among the numerous financial anomalies that have already been reported in the literature. Trading on the day before holidays has produced reliably high returns, calculated along with several indices for different time periods. To support this, Fosback had examined that the rates of the return on the two trading days before holidays, using the S&P 500 Index, which boosted from 17.53 in 1928 to 90.19 in 1975, an increase of 414% (McGinnis, 1999) (Fosback, 1991).

Moreover, holiday effect to influences based on the country's cultures and traditions. As the investor's trading pattern might change according to the holiday. We investigate how the cultural mood gives impacts to the return of the stock markets and how the traders trade it based on the price, volatility, and the return of the day before the holiday. In Japan, there are 16 cultural holidays (e.g., *New Year's Day, Coming of Age Day, Valentine's Day, Spring Equinox, Greenery Day, Constitution Memorial Day, Star Festival, Respect for the Aged Day, Autumn Equinox, Culture Day, 7-5-3 Day, Labor Thanksgiving Day, Emperor's Birthday, National Foundation Day, Children's Day and Christmas*. Previous studies show that cultural holidays do outperform such as low price, high returns and volatility. It is also said that bosses give their employees bonuses on specific cultural holiday influencing their trading patterns (Bergsma & Jiang, 2016). For South Korea, there 8 cultural holidays (e.g., *Seollal Holiday, Children's Day, Liberation Day, Memorial Day, Chuseok Holiday, National Foundation Day, Buddha's Birthday and Christmas Day*. Confucian values are strongly influenced by South Korea culture and that this not just to pervades personal lives, but it also business. Community unity, reverence for the elders and authority, the

importance of family, friendship, and ancestors, and sometimes even culture are embraced by Confucianism. For Koreans, Kibun (equivalent to face, or honour) is extremely important and they will always strive to preserve their Kibun, or personal integrity.

In addition, the holiday effect refers to the finding that perhaps the total return on stock on the day of trading immediately preceding the holidays is higher (pre-holidays) than other trading days (Wing-Keung Wong, 2006) (Vergin & McGinnis, 1999). The holiday effect implies that pre-holiday average returns are higher than post-holiday returns. The holiday effect anomaly has been investigated in Japan, South Korea and other developing and developed countries (Tian Yuan, 2014). However, there are also a few countries that do not have holiday effect on their stock market (Fatta Bahadur & Joshi, 2005). Holiday effect can be categorized into two which is pre-holiday and post-holiday. The previous research did two different hypotheses to explain the holiday effect which is closed market and time diffusion hypotheses. If the returns to security follow a similar cycle of time-diffusion throughout trading and non-trading periods, post-holiday returns observed after a single-day holiday should also include rates of return for a period of two days. Nevertheless, it finds that a time diffusion cycle is incompetently demonstrating the returns after holiday. Closed market hypothesis tests show that an exchange closure that is not accompanied by a traditional holiday does not yield abnormally high pre-closure returns, while unusually high yields are still documented for holidays that are not associated with market closure (Greshnev & Smit, 1996).

The presence of seasonality has proved that there is a competence with the returns in the stock market as the investors' decision influences in it. To support this, in Indonesia, when religious holidays occurred like Eid al-Fitr, Chinese New Year and Eater, holiday effect occurs as all the races join together to celebrate together according to the Census 2010 Data (Nugroho Sasikirono, 2017). In addition, previous researches also have written that seasonality has given an impact on the non-closure stock markets especially during the overnight non-trading period as the previous day is a holiday. However, they did not find a proper statistical result supporting the pre-holiday and post-holiday effects (Paulo Gama, 2013). In addition, some of the countries do not take pre-holiday effects with higher importance but in Yates's research, it is said that the reason is due to the investor's behavior who are more Westernized with their holidays (Yates, 1997).

The current study is to investigate the cultural and non-cultural holiday effect in both Japanese and South Korea stock. The time chosen for this research among the four indexes chosen which are Nikkei 225, JASDAQ, KOSDAQ and KOSPI are in between 1965 to 2020. This study differs from the previous research as the holiday effects were examined separately without connecting with any of cultural and non-cultural holidays. Moreover, in this research it is also to identify on what major cultural holidays are affecting the holiday returns as mentioned earlier. The remaining section follows as explaining about the literature review, the methodology, the empirical results, and discussions followed by the conclusion of the paper.

2. LITERATURE REVIEW

Based on the previous studies and findings, all developed countries showed significant holiday effect in its stock markets except Singapore (Wong et al., 2006). Picou (2006) found international evidence of significant post-holiday effect in stock markets of Australia, Canada, United States, Hong Kong and England. The research has showed daytime trading after a holiday was positive and significantly different from the normal

trading days. The significant holiday effect results for Australian and Canadian stock market were also obtained by other researchers when pre-holiday effect was found (Cadsby & Ratner, 1992) (Marrett & Worthington, 2009). Moreover, another research found a similar result for United States stock market by using NYSE, AMEX and NASDAQ as stock index (Kim & Park , 1994).

For Hong Kong stock market, other researchers also found it to have a significant holiday effects (Cadsby & Ratner, 1992) (McGuinness, 2005) (Yuan & Gupta, 2014) (Chia, Lim, Ong, & Teh, 2015) (Bergsma & Jiang, 2016). Furthermore, two researches which investigate in Hong Kong stock market above found significant holiday effect in Taiwan and South Korea stock market. Cultural New Year holidays were found to give impact towards stock return. Other developed countries that had significant holiday effect in stock markets are New Zealand (Cao et al., 2009), Portugal (Gama & Vieira, 2013) and Israel (Bergsma & Jiang, 2016). In Singapore stock market, evidence of significant holiday effect found by using panel regressions method (Bergsma & Jiang, 2016). However, insignificant holiday effect was found when Autoregressive Conditional Heteroskedasticity (ARCH) and Generalized Autoregressive Conditional Heteroskedasticity (GARCH) method used (Wong et al., 2006). The result of insignificant holiday effect in Singapore stock market is more reliable since more advanced methods were used.

There are also researches done for holiday effect in stock markets of the developing countries. Based on Yuan and Gupta (2014), there were significant pre-holiday effect in India stock market. This is because of the strong returns occur on the days before the Chinese Lunar New Year holiday. While other researchers proved that there was a significant change in post-holiday returns in India (Kallarackal & Shankar, 2016). Furthermore, the higher return on pre-holiday was found in the BSE Sensex and NSE Nifty indices which show positive significant pre-holiday effects in India (Abreha & Prabakaran, 2017). Next, a few groups of researchers found significant positive holiday effect in several developing countries which is South Africa, Pakistan, Sri Lanka, Bangladesh and Kenya (Alagidede, 2013) (Chowdhury & Mostari, 2015) (Bergsma & Jiang, 2016) (Atala & Mang'unyi, 2017).

Based on Bersgma and Jiang (2016), there were positive impact towards the stock market in China due to optimistic investor mood around cultural New Year celebrations. This is consistent with the previous findings which conducted by few researchers such as (Yuan & Gupta, 2014) (Lu et al., 2016). They found significant positive returns before the holidays occur. Moreover, several studies found that holiday effect occur in Indonesian stock market whereby overall post-holiday returns are four times higher than the return of the regular trading days (Bergsma & Jiang, 2016) (Sasikirono & Meidiaswati, 2017). The same result as in Thailand, where the result showed significant positive higher returns rate in pre-holiday and post-holiday towards the stock market in Thailand (Tangjitprom, 2010; Chancharat et al., 2018). Next, Bergsma & Jiang (2016) also found that the holiday effect exists in Thailand and Malaysia stock market. However, there are few studies had an opposite result whereby the holiday effect are not exist and insignificant towards the stock market indices in these two countries (Holden et al., 2005; Wong & Lim, 2016). Besides, there is no evidence of the holiday effect found in Nepal and Ukraine. This shows these two developing countries are insignificant to holiday effect (Fatta Bahadur & Joshi, 2005); Caporale & Plastun, 2017).

For the main country, which is Japan, all previous researches found significant holiday effect in the stock market. Tanizaki (2004) obtained evidence of the holiday effect in Japanese stock market. This result consistent with the previous study which has found that there were significant pre-holiday effect exist in Nikkei 225 index (Cadsby & Ratner

, 1992). While Picou (2006) found that there was a significant post-holiday effect in Japanese stock market due to the positive day time trading after a holiday which different from other all trading days. Besides, other researcher reported that there is a significant in pre-holiday effect with regard to Japanese stock returns. This is due to the high return on the days before the holidays occur (Yuan & Gupta, 2014).

Moreover, holiday effect was influenced by few types of holiday like New Year, Labour Day, Christmas Day and Easter and they are common in the western holidays depending on the country. For instance, Diwali which are celebrated in India, Chinese Lunar New Year in China and others documented by (Cao et al., 2009) in their studies. Besides that, Chinese New Year are also one of the most consistent holiday effects which shows the significant in the countries where the Chinese populations are high especially in Asia (Chia et al., 2015). A research done by (Wong, Neoh, Lee, & Thong, 1990) shows that the return of the stock as the Chinese New Year holidays existed are higher than other normal trading days. However, some of the studies are lack of consistency where (Yen & Shyy, 1993) used five dummy variables and found an increasing trend during the holidays then returning to normal after the holidays existed for three days.

3. METHODOLOGY

To investigate the existence of the holiday effects, the sample of data collection were collected from Yahoo Finance website for Nikkei 225 and KOSPI and from Investing.com website for JASDAQ and KOSDAQ stock index. The data sampling for each index were estimated covering around from the year of 1997 to 2020 for KOSPI, 1965 to 2020 for Nikkei 225, 2001 to 2020 for KOSDAQ, and 1993 to 2020 for JASDAQ. Using these indexes, the returns are calculated to examine the existence of Pre-Holiday and Post-Holiday effect in Japan and South Korea stock markets.

$$R_t = 100\ x\ [(\ In\ I_t - \ In\ I_{t-1})/In\ I_{t-1}],$$

It is shown where $In\ I_t$ and $In\ I_{t-1}$ are the logarithms of the stock index for periods of *t* and *t-1* which indicates the previous day and the on day. The return is calculated using the closing price indices of the day prior to the non-trading day. Pre-holiday is the day prior non-transaction day (holiday), while for the post-holiday is the day after non-transaction day. Other remaining days are non- holiday or other trading days. The probability is then studied after running the data through the E-Views 11 application. The equations below are implemented in the OLS model:

$$R_t = \alpha_0 + \alpha_1 d_1 + \alpha_2 d_2 + \varepsilon_t$$
$$R_t = \alpha_0 + \alpha_1 d_1\ Cultural + \alpha_2 d_2\ Cultural + \varepsilon_t$$
$$R_t = \alpha_0 + \alpha_1 d_1\ Non-Cultural + \alpha_2 d_2\ Non-Cultural + \varepsilon_t$$

The parameters show:

Dummy Pre-Holiday 1; Others 0
Dummy Post-Holiday 1; Others 0
Dummy Cultural Holiday 1; Others 0
Dummy Non-Cultural Holiday 1; Others 0

Where R_t is the logarithmic return of the market index shown in the equation above as α_0 , $\alpha_1 d_1$, and $\alpha_2 d_2$ are the dummy variables 'of the Pre and Post-Holiday effect. Pre-holiday returns on the day prior to a trade closing day are known as regular close-to-close returns. Post-holiday returns are likewise the regular close-to-close returns that occur the

day following market closing. In this research, the cultural holidays are taken into count as the cultural and non-cultural holidays which are affected by the returns.

Table 1 shows the descriptive statistics for pre- and post-holiday returns. Descriptive statistics will display the mean, standard deviation, kurtosis, skewness, minimum, and the maximum values. As an overall, the average mean for Pre^1-H (Pre-Holiday for Nikkei 225), Pre^2-H (Pre-Holiday for JASDAQ), Pre^3-H (Pre-Holiday for KOSDAQ), Pre^4-H (Pre-holiday for KOSPI) , $Post^1$-H (Post-holiday for Nikkei 225), $Post^2$-H (Post-Holiday for JASDAQ), $Post^4$-H (Post-Holiday for KOSPI), Rt^1 (Return for Nikkei 225), Rt^2 (Return for JASDAQ), Rt^3 (Return for KOSDAQ) and Rt^4 (Return for KOSPI) are positive except for $Post^3$-H (Post-Holiday for KOSDAQ).

For Nikkei 225 index, the highest holiday returns were achieved on post-holiday, which is 0.1638, while the lowest were recorded on the pre-holiday which is 0.0469. The standard deviation for post-holiday 0.3504 is higher than pre-holiday 0.2617. However, the kurtosis value for pre-holiday 342.1710 is higher than the post-holiday 260.0584. For JASDAQ, the highest holiday returns were achieved on pre-holiday, which is 0.1195, while the lowest were recorded on the post-holiday 0.1021. The standard deviation for post-holiday 0.3257 is higher than pre-holiday 0.2170. However, the kurtosis value for pre-holiday 125.7678 is lower than the post-holiday 211.4495.

Meanwhile for KOSDAQ, the highest holiday returns were achieved on pre-holiday, which is 0.1613, while the lowest were recorded on the post-holiday is -0.1892. The standard deviation for post-holiday 0.4119 is higher than pre-holiday 0.2483. However, the kurtosis value for post-holiday 239.1803 is lower than the pre-holiday 252.6224. The highest holiday returns for KOSPI were achieved on pre-holiday, which is 0.1750, while the lowest were recorded on the post-holiday 0.1454. The standard deviation for post-holiday 0.4286 is higher than pre-holiday 0.2987. However, the kurtosis value for post-holiday 178.6481 is lower than the pre-holiday 190.6962.

Table 2 shows the descriptive Statistics for Cultural and Non-Cultural Holiday Effect for Nikkei 225, JASDAQ, KOSDAQ AND KOSPI. For the Cultural Pre-Holiday, JASDAQ has the highest return mean which is 0.1228 than Nikkei 225 which is 0.0993. For Cultural Post-Holiday Effect, Nikkei 255 has the highest mean return which is 0.1251 than JASDAQ which is 0.1217. For Non-Cultural Pre-Holiday, JASDAQ has the positive return which is 0.0693 than Nikkei 225 which has a negative return with -0.0873. In terms of Non-Cultural Post-Holiday, Nikkei 255 has a positive return with 0.1769 compared to JASDAQ which has a negative return of -0.0160.

For South Korea, the highest mean return achieved for the Cultural Pre-Holiday is KOSDAQ index with 0.2710 than KOSPI with 0.1339. For Cultural Post-Holiday, KOSPI has positive returns which is 0.0017 than -0.3556 for KOSDAQ with negative returns. In terms of Non-Cultural Pre-Holiday, KOSPI has the highest return with 0.2562 and -0.1327 for KOSDAQ index. For Non-Cultural Post-Holiday, KOSPI has the highest return which is 0.4313 than KOSDAQ with 0.2547.

Table 1: Descriptive statistics for pre-holiday and post-holiday return for Nikkei 225, JASDAQ, KOSDAQ AND KOSPI.

Indexes\ Variables		Mean	Standard Deviation	Kurtosis	Skewness	Minimum	Maximum	Count
NIKKEI 225	*Pre[1]-H*	0.0469	0.2617	342.1710	-7.7002	-10.1160	4.7125	604
	Post[1]-H	0.1638	0.3504	260.0584	3.9144	-9.0862	13.2346	604
	Rt[1]	0.0203	1.2297	13.3168	-0.4415	-16.1354	13.2346	14382
JASDAQ	*Pre[2]-H*	0.1195	0.2170	125.7678	-0.5357	-4.7434	3.6897	228
	Post[2]-H	0.1021	0.3257	211.4495	-0.2826	-7.5398	7.1247	228
	Rt[2]	0.0082	1.2518	13.7784	-0.8696	-12.9200	9.6034	5302
KOSDAQ	*Pre[3]-H*	0.1613	0.2483	252.6224	5.9133	-3.9516	7.6160	166
	Post[3]-H	-0.1892	0.4119	239.1803	-8.3030	-10.7040	6.4490	166
	Rt[3]	0.0014	1.5732	10.6562	-0.9441	-12.4498	10.8575	5026
KOSPI	*Pre[4]-H*	0.1750	0.2987	190.7288	1.8634	-7.2404	6.3233	215
	Post[4]-H	0.1454	0.4286	178.6787	3.4960	-7.2404	10.0238	215
	Rt[4]	0.0138	1.6794	9.5095	-0.2259	-12.8047	11.2844	5933

Table 2: Descriptive statistics for Cultural and Non-Cultural Holiday Effect for Nikkei 225, JASDAQ, KOSDAQ AND KOSPI.

Indexes\ Variables		Mean	Standard Deviation	Kurtosis	Skewness	Minimum	Maximum	Count
NIKKEI 225	*Cultural Pre-H*	0.0993	0.2042	160.7074	0.0067	-5.1444	4.7125	468
	Cultural Post-H	0.1251	0.2709	184.7953	2.3670	-5.2425	7.2217	468
	Non-Cultural Pre-H	-0.0873	0.1636	1854.9850	-31.4800	-10.1160	3.4119	208
	Non-Cultural Post-H	0.1769	0.2202	1248.9250	11.1787	-9.0862	13.2346	208
JASDAQ	*Cultural Pre-H*	0.1228	0.1857	134.2718	1.2309	-3.9718	3.6897	192
	Cultural Post-H	0.1217	0.2844	269.9201	-2.5100	-7.5398	7.0894	192
	Non-Cultural Pre-H	0.0693	0.1123	765.2198	-9.2674	-4.7437	2.4675	55
	Non-Cultural Post-H	-0.0160	0.1583	996.5388	12.1570	-4.7239	7.1247	55
KOSDAQ	*Cultural Pre-H*	0.2710	0.2264	348.2688	9.0213	-3.9516	7.6160	122
	Cultural Post-H	-0.3556	0.3625	356.5150	-12.3218	-10.7040	6.4490	122
	Non-Cultural Pre-H	-0.1327	0.1019	442.0770	-13.3682	-2.9103	1.7724	47
	Non-Cultural Post-H	0.2547	0.1954	515.3865	0.8992	-6.4156	5.3552	47
KOSPI	*Cultural Pre-H*	0.1339	0.2360	349.3859	0.0290	-7.2404	6.3233	141
	Cultural Post-H	0.0017	0.3364	236.9576	1.3861	-7.1777	7.3740	141
	Non-Cultural Pre-H	0.2562	0.1832	395.0326	8.1574	-4.5739	5.2609	75
	Non-Cultural Post-H	0.4313	0.2662	606.2939	11.9288	-7.2404	10.0238	75

4.0 EMPIRICAL RESULTS AND DISCUSSIONS

4.1 Descriptive statistics

From the Table 2, the research classifies into two parts which is cultural holiday and non-cultural holiday under pre-holiday and post-holiday for all 4 indexes. From Nikkei 225 indexes, result shows that cultural post-holiday and non-cultural post-holiday returns are higher than JASDAQ index in Japan. For Nikkei 225 index, both cultural and non-cultural effects the post-holiday returns. In JASDAQ index, cultural pre-holiday and non-cultural pre-holidays are higher than Nikkei 225 index which shows both cultural and non-cultural effects the pre-holiday returns.

For South Korea indexes, KOSPI, results shows that non-cultural holiday effects in both pre-holiday and post-holiday returns followed by cultural holidays in post-holidays. Only cultural holidays in KOSDAQ indexes effects in terms of pre-holiday returns.

4.2 NIKKEI 225 and JASDAQ indexes

Table 3 presents the OLS results for pre-holiday and post-holiday effects. The results show that the constant variable (C) which is non-holiday and measures mean return of other trading days is insignificant in Nikkei 225 index. Its probability is 0.2218 and more than 0.10. Besides, the pre-holiday dummy variable shows an insignificant pre-holiday effect by having probability of 0.5644. This shows that there is no variation between the return of pre-holiday and the other trading days. This result is opposite with previous study results (Cadsby & Ratner, 1992) (Tanizaki, 2004) (Yuan & Gupta, 2014). This situation might be due to indirect holiday impact towards Nikkei 225 index investors' trading behavior during pre-holiday period.

Post-holiday dummy variable shows significant post-holiday effect in Japanese stock market by having probability of 0.0034. It happens at lowest significant level which is 1% (0.01). This shows returns during post-holiday period is different from other trading days for Nikkei 225 index. This result is consistent with previous research results which also used dummy variable regression (Tanizaki, 2004) (Picou, 2006). This situation might be due to investment timing strategy of investors based on the market theory. However, coefficients for the constant, pre-holiday and post-holiday variables of Nikkei 225 index are all positive, whereby 0.0131, 0.0295 and 0.1497 respectively. Moreover, from the results, Adjusted R-Square is smaller (0.0006) than R-Squared (0.0008) compared to the other four indexes which are shown in Table 3,4 and 5. As this research only uses descriptive statistics and OLS, this value can only be a good predictor for the significance than the other indexes. A lower adjusted R-squared implies that the variables do not contribute to the model's value where further research has to be done as there are other factors that are outside from the model which needed to be investigated (Koseki, 2008).

Post-holiday dummy variable has the highest coefficient and it is opposite for the constant variable. As overall, there is holiday effect happens in Japanese stock market but only in the term of post-holiday effect, while for the pre-holiday effect does not happen. As noticed from the pattern of the holiday and the other trading days, over the past continuous years, the holiday patterns and the return patterns are being consistent as the returns are higher either a day before or a day after the cultural holidays happen. Moreover, as compared with non-cultural holidays like New Year and Bank holidays, the returns are not as higher as compared to the cultural holidays like Autumn Equinox and Constitution Memorial Day.

The results show that the constant variable (C) which is on the non-holiday and measures mean return of the other trading days is insignificant in JASDAQ index. Its

probability is 0.8686 and more than 0.01. Besides, pre-holiday dummy variable shows insignificant pre-holiday effect by having probability of 0.2246. Post-holiday dummy variable shows insignificant in post-holiday effect in Japanese stock market by having probability of 0.2109 which is more than 1% (0.01). Meanwhile, the coefficients for the constant, pre-holiday and post-holiday variables of Nikkei 225 index are having negative and positive results, whereby -0.0028, 0.0984 and 0.1013 respectively. RT(-1) variable has the highest coefficient and it is opposite for the constant variable. As overall, there is holiday effect happens in JASDAQ stock market but only in term of post-holiday effect, while for the pre-holiday effect less likely to happen. However, Tian Yuan and Rakesh Gupta (2014) also have found that there were significant presence of pre-holiday effects in Japan and in other seven Asian countries after examining with ARMA (1,1)-GARCH (1,1) model which supporting this research positively especially about cultural holidays as they examine that Chinese Lunar New Year (CLNY) holiday even had impacts in pre-CLNY in their chosen stock markets. Moreover, it is found that Japan has the second highest pre-holiday returns and are affected by the traditional festival occurred in that country as 0.49% percent (Yuan & Gupta, 2014). Based on this, the statement of whether cultural holidays do impact on the stock markets' returns, it is definitely a true with all the evidences shown.

Table 4 shows the Cultural and Non-Cultural Holiday Effect for Nikkei 225 and JASDAQ Indexes. From cultural holiday analysis, it is shown that the constant variable (C) is for both the indexes are insignificant. Its probability which is 0.1787 and 0.9171 are more than 0.01. Besides, cultural pre-holiday dummy variable for Nikkei 225 is significant by having the probability of 0.1436. However, JASDAQ indexes shows insignificant pre-holiday effect by having the probability 0.2985. Cultural post-holiday dummy variable shows significant returns for Nikkei 225 which is less than 10% (0.1) by having the probability of 0.0567. However, the probability for JASDAQ shows insignificant return with 0.1871. Meanwhile, the coefficients for the constant, pre-holiday and post-holiday variables of Nikkei 225 index and JASDAQ index are having negative and positive results, whereby 0.0143, 0.0845, and 0.1101 respectively under Nikkei 225 and -0.0018, 0.0915 and 0.1161 for JASDAQ index.

For non-cultural holiday analysis, it is shown that the constant variable (C) for Nikkei 225 is significant with the probability of 0.0550 which is less than 10 % (0.1) than JASDAQ index which has insignificant results with 0.7281. Moreover, non-cultural pre-holiday dummy variable for Nikkei 225 shows significant results with the probability of 0.1410 which is < than 1% (0.1) and post-holiday dummy variable also shows significant returns which is 0.0461. However, non-cultural pre-holiday and post-holiday dummy variable for JASDAQ is insignificant with the return of 0.9048 and 0.8933. The estimated results from both methods where the significance are in between (< 1%, <5%, <10%) to confirm the existence of the effects and it shows that Nikkei 225 has more pre-holiday and post-holiday effects compared to JASDAQ index.

To justify the results, Nikkei 225 has the most significant results compared to JASDAQ index in Japan. Although both indexes are from the same country, the results vary due to the difference in the amount of data collected. This is due to the number of holidays in Nikkei 225 data collection are higher than JASDAQ stock index. However, both indexes have a common and same holiday when investigated. The cultural holidays in Japan are New Year's Day, Coming of Age Day, Valentines' Day, Spring Equinox, Greenery Day, Constitution Memory Day, Star Festival, Respect for the Aged Day, Autumn Equinox, Culture Day, 7-5-3 Day, Labor Thanksgiving, Emperor's Day,

Christmas, National Foundation Day, Children's Day. The non-cultural holidays in Japan are September Equinox, Health and Sports Day, Bank Holiday, Shōwa Day, Coronation Day, Sea Day, Between Day, Mountain Day, Bridge Public Holiday and Enthronement Ceremony Day.

Table 3: Pre- & Post- Holiday Effect for Nikkei 225 and JASDAQ indexes.

Sample Period	Nikkei 225		JASDAQ	
	1/06/1965 - 2/19/2020		4/12/1993 - 8/05/2013	
	Coefficient	Prob.	Coefficient	Prob.
C	0.0131	0.2218	-0.0028	0.8686
Pre-Holiday	0.0295	0.5644	0.0984	0.2246
Post-Holiday	0.1497	0.0034	0.1013	0.2109
Rt(-1)	-0.0131	0.1172	0.2953	0.0000
F-Statistics	3.7869		169.9346	
Prob (F-Statistics)	0.0099		0.0000	

Table 4: Cultural and Non-Cultural Holiday Effect for Nikkei 225 and JASDAQ indexes.

	Nikkei 225		JASDAQ	
Sample Period	1/06/1965 - 2/19/2020		4/12/1993 - 8/05/2013	
	Coefficient	Prob.	Coefficient	Prob.
C	0.0143	0.1787	-0.0018	0.9171
Cultural Pre-Holiday	0.0845	0.1436	0.0915	0.2985
Cultural Post-Holiday	0.1101	0.0567	0.1161	0.1871
Rt(-1)	-0.0131	0.1166	0.2953	0.0000
F-Statistics	2.7026		169.9086	
Prob (F-Statistics)	0.0439		0.0000	
	1/06/1965 2/19/2020		4/12/1993 - 8/05/2013	
C	0.0199	0.0550	0.0058	0.7281
Non-Cultural Pre-Holiday	-0.1272	0.1410	0.0194	0.9048
Non-Cultural Post-Holiday	0.1723	0.0461	-0.0218	0.8933
Rt(-1)	-0.0130	0.1181	0.2954	0.0000
F-Statistics	2.6839		168.8501	
Prob (F-Statistics)	0.0450		0.0000	

Note: Cultural holidays in Japan: New Year's Day, Coming of Age Day, Valentines' Day, Spring Equinox, Greenery Day, Constitution Memory Day, Star Festival, Respect for the Aged Day, Autumn Equinox, Culture Day, 7-5-3 Day, Labor Thanksgiving, Emperor's Day, Christmas, National Foundation Day, Children's Da

4.3 KOSPI and KOSDAQ indexes

Table 5 presents the OLS results for pre-holiday and post-holiday effects. The results show that the constant variable (C) which is non-holiday and measures mean return of other trading days is insignificant in KOSDAQ index. Its probability is 0.9267 and more than 0.01. Besides, pre-holiday dummy variable shows insignificant pre-holiday effect by having probability of 0.1637. Post-holiday dummy variable shows significant post-holiday effect in South Korea stock market by having probability of 0.1142 which is less than 10% (0.1). However, the coefficients for constant, pre-holiday and post-holiday variables of KOSDAQ index are having positive and also negative results, whereby 0.0021, 0.1724 and -0.1955 respectively. Pre-holiday dummy variable has the highest coefficient and it is opposite for constant variable.

As overall, there is holiday effect happens in KOSDAQ stock market but only in term of post-holiday effect, while pre-holiday effect less likely to happen. Previous studies shows that during the cultural New Year month, its returns were higher but out of their 11 market researches, other countries had most of the significant results compared to South Korea which shows significantly negative for regression analysis (Bergsma & Jiang, 2016). In additional on that, South Korea has the most profound impact when Chinese Lunar New Year occurred three days before the holiday happened (Yuan & Gupta, 2014). This shows that cultural holidays do play an important role in the Asian stock returns and its patterns.

The results show that the constant variable (C) which is non-holiday and measures mean return of other trading days is insignificant in KOSPI index. Its probability is 0.9157 and more than 0.01. Besides, pre-holiday dummy variable shows insignificant pre-holiday effect by having probability of 0.1593. Post-holiday dummy variable shows insignificant post-holiday effect in South Korea stock market by having probability of 0.2492 which is more than 1% (0.01). However, coefficients for constant, pre-holiday and post-holiday variables of KOSPI index are having positive results, whereby 0.0024, 0.1641 and 0.1344 respectively. Pre-holiday dummy variable has highest coefficient and it is opposite for constant variable.

As overall, there is holiday effect happens in KOSPI stock market but only in term of pre-holiday effect, while post-holiday effect less likely to happen. However, South Korea market seems to be not effective and previous researches supported that negative returns occurred after the Chinese New Year effect which is considered as a cultural holiday in their country. They found out that they are having coefficient results which are 5.8 times greater but insignificantly with rejected null hypothesis in the dummy variable regression (Sazali Abidin & Tian, 2012).

Table 6 shows the Cultural and Non-Cultural Holiday Effect for KOSPI and KOSDAQ Indexes. From cultural holiday analysis, it is shown that the constant variable (C) is for both the indexes are insignificant. Its probability which is 0.6357 and 0.8847 are more than 1% of the significance level. Besides cultural pre-holiday and post-holiday dummy variable for KOSPI is insignificant with the probability of 0.3910 and 0.9337. KOSDAQ indexes having significant results in both pre-holiday and post-holiday returns with less than 5% in the value of 0.0466 and 0.0108. This shows that KOSDAQ indexes have cultural and non-cultural holiday effects compared to KOSPI and general holiday effects vary from cultural and non-cultural holiday effects.

Table 5: Pre- & Post- Holiday Effect for KOSPI and KOSDAQ indexes.

Sample Period	KOSPI		KOSDAQ	
	7/02/1997 - 3/26/2020		1/02/2001 - 4/06/2020	
	Coefficient	Prob.	Coefficient	Prob.
C	0.0024	0.9157	0.0021	0.9267
Pre-Holiday	0.1641	0.1593	0.1724	0.1637
Post-Holiday	0.1344	0.2491	-0.1955	0.1142
Rt(-1)	0.0432	0.0009	0.0855	0.0000
F-Statistics	4.8250		13.7434	
Prob (F-Statistics)	0.0023		0.0000	

Table 6: Cultural and Non-Cultural Holiday Effect for KOSPI and KOSDAQ indexes.

Sample Period	KOSPI		KOSDAQ	
	7/01/1997 - 3/26/2020		1/02/2001 - 4/06/2020	
	Coefficient	Prob.	Coefficient	Prob.
C	0.0106	0.6357	0.003284	0.8847
Cultural Pre-Holiday	0.1227	0.3910	0.285825	0.0466
Cultural Post-Holiday	-0.0119	0.9337	-0.365954	0.0108
Rt(-1)	0.0432	0.0009	0.085562	0.0000
F-Statistics	3.9516		15.75069	
Prob (F-Statistics)	0.0079		0.0000	
	7/01/1997 - 3/26/2020		1/02/2001 - 4/06/2020	
C	0.0047	0.8320	-0.0007	0.9752
Non-Cultural Pre-Holiday	0.2478	0.2037	-0.1272	0.5837
Non-Cultural Post-Holiday	0.4266	0.0287	0.2554	0.2660
Rt(-1)	0.0432	0.0009	0.0849	0.0000
F-Statistics	5.8191		12.6882	
Prob (F-Statistics)	0.0006		0.0000	

Note: Cultural holidays in South Korea: Seollal Holiday, Children's Day, Liberation Day, Memorial Day, Chuseok Holiday, National Foundation Day, Christmas Day, Buddha's Birthday

For non-cultural holiday analysis, it is shown that the constant variable (C) for both indexes are insignificant with the probability of 0.8320 and 0.9752 respectively. Moreover, non-cultural pre-holiday dummy variable for KOSPI show insignificant results with the probability of 0.2037. However, in non-cultural post-holiday dummy variable

shows significant results with 0.0287 which is less than 5%. Meanwhile, for KOSDAQ index, OLS shows insignificant results for both for non-cultural pre-holiday and post-holiday dummy variables with the value of 0.5837 and 0.2660 respectively.

To justify the results, it shows that KOSDAQ indexes have effects in cultural holidays and KOSPI indexes have effects in non-cultural holidays. This is because KOSDAQ composite represents the aggregate market value of the KOSDAQ Market. It is comprised of all the issues listed on the KOSDAQ Market excluding mutual funds, preferred stocks. However, KOSPI is a market value weighted index, composed of all common stocks, excluding the preferred stocks and collective investment schemes, listed on the KOSPI Market, thus measuring the price movements of the KOSPI Market. Even both stock markets have similar holidays, their pricing and base index are which causes insignificant and significant. This needs further model data analysis to find out the specific probability influence. Moreover, researches from Kee-Heon Cho and Chang-Ryong Ko said multiples of KOSDAQ is generally higher than those of KOSPI. Even for technology firms, valuation in KOSPI mostly relies on earnings of the company, but that in KOSDAQ mostly relies on relative price. Forecasting of KOSPI reports is more accurate than that of KOSDAQ reports (Kee-Heon Cho, 2015).

The cultural holidays in South Korea are Seollal Holiday, Children's Day, Liberation Day, Memorial Day, Chuseok Holiday, National Foundation Day, Christmas Day, Buddha's Birthday. The non-cultural holidays in South Korea are New Year's Day, Independence Movement Day, Arbor Day, Constitution Day, Hangeul Proclamation Day, National Assembly Election Day, Presidential Election, Local Election Day and Labor Day.

To summarize, this part presented the findings of holiday effect, cultural and non-cultural holiday effects in this paper. The objective of this paper is to examine the existence of the cultural and non-cultural holiday effect in the Japanese and South Korea stock markets. To specifically identify the cultural and non-cultural holidays in both countries. The holiday data is collected from Japan and South Korea over the period from 1965-2020. Using descriptive statistics and Ordinary Least Square (OLS) with dummy variables, it is found that Nikkei 225 from Japan and KOSDAQ from South Korea is significantly positive among the four indexes. The estimated results from both methods where the significance are in between (< 1%, <5%, <10%) to confirm the existence of the effects. Based on the results analyzed, Japan has the highest significant results compared to South Korea and in terms of cultural holiday, it can be said that during cultural holiday the investor will invest more than during non- cultural holiday. Japan has the frequent and higher traditional holidays giving a different pattern of returns a day or two before the holidays occurred like Autumn Equinox and Constitution Memorial Day. South Korea having a different cultural and tradition which is very unique in their own ways. South Korea have many holidays but the main two big holidays are Chuseok (Thanks giving) and Seollal (Korean Lunar New Year). However, there are still no evidence supporting that their cultural holidays gave a major impact than Japan where further researches need to be conducted in the future.

5.0 CONCLUDING REMARKS

In conclusion, it is interesting to examine the holiday effect in Japan and South Korea stock markets with different cultural orientation. This results basically useful in understanding the investors in both market's behavior before and after the holidays.

Besides, this study also compares the returns during the holiday effect, especially for the cultural and non-cultural holidays in both markets.

As for future research, the findings of this study is a good reference in coding the straddling period of pre and post holiday. As we find that the seasonality appears differently in both markets, future research on holiday effect may extend the investigation into more details or specific holidays as comparative study. In addition to contributing into the empirical literature, our results are important for behavioral finance in general. Since behavioral finance is still a rich field for future research, it would be of interest to examine the holiday effects with different market values or sizes influences.

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